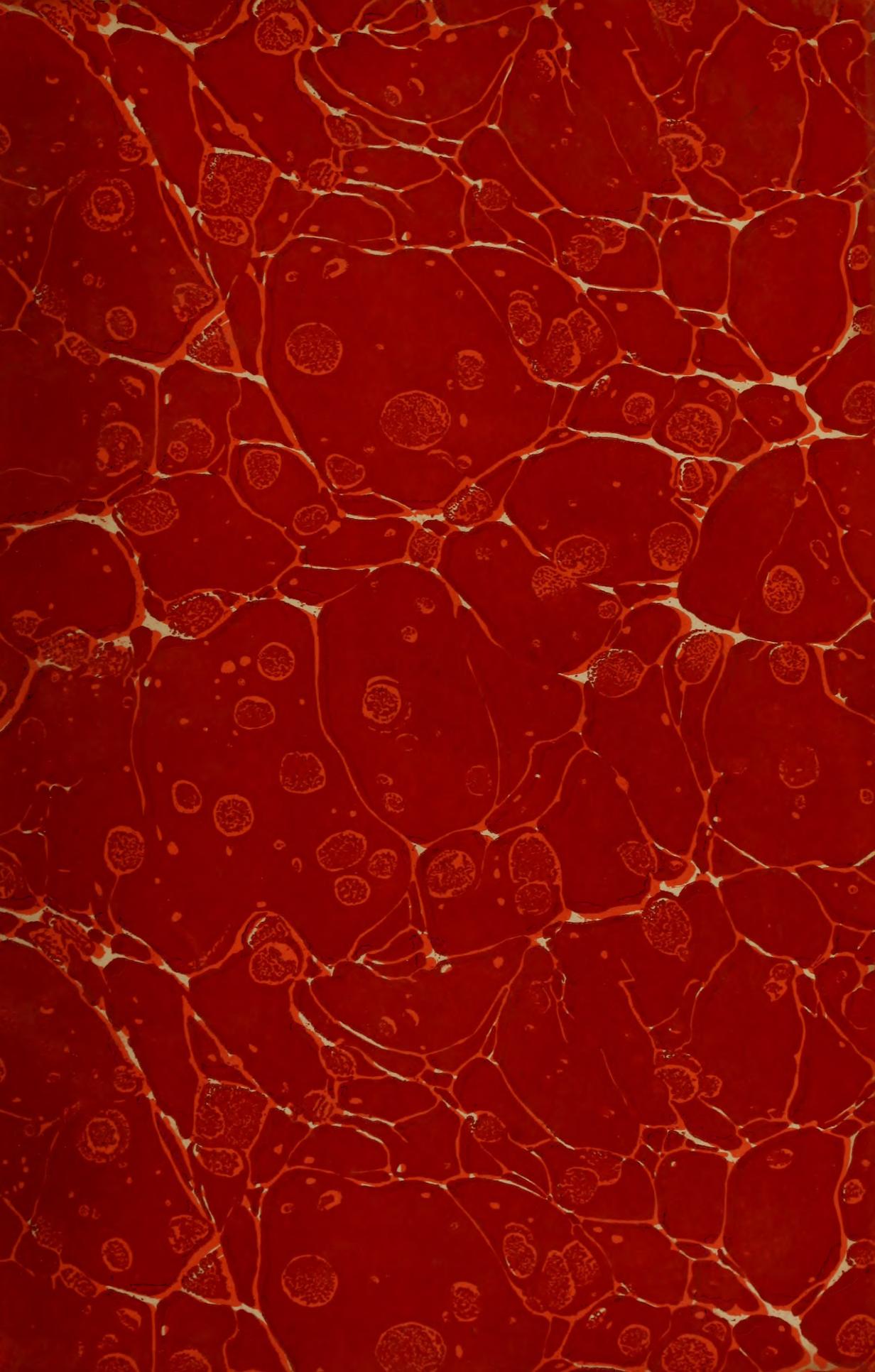


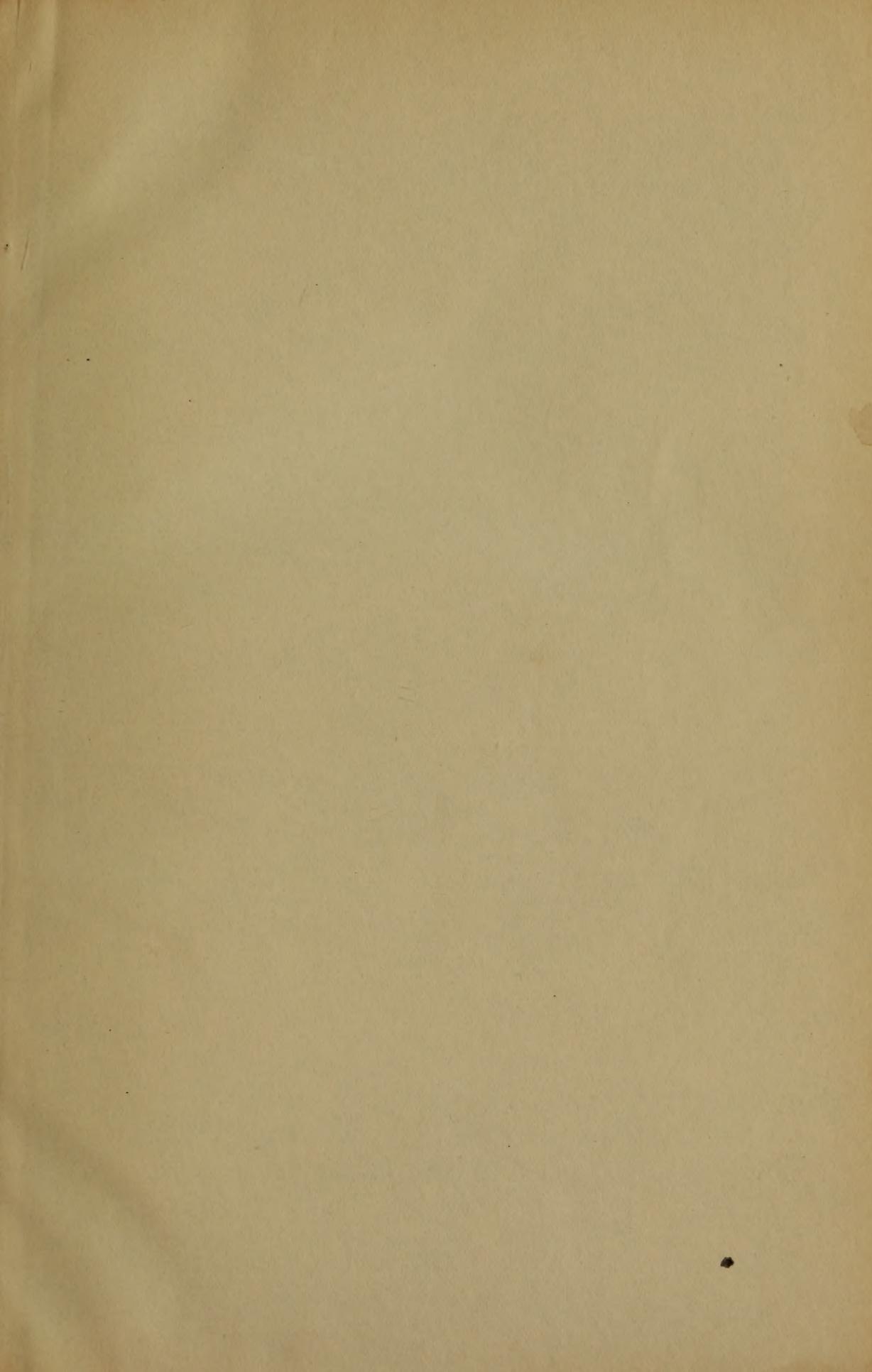


Class QL461

Book .E98

SMITHSONIAN DEPOSIT





4
The Annual Subscription for 1918 is 9/-.

[See p. 2 of Wrapper.]

Third Series, No. 37.]
[No. 644.]

JANUARY, 1918.

[PRICE 1/- NET.]

THE
ENTOMOLOGIST'S
MONTHLY MAGAZINE.

EDITED BY

G. C. CHAMPION, F.Z.S. J. E. COLLIN, F.E.S.

W. W. FOWLER, D.Sc., M.A., F.L.S.

R. W. LLOYD, F.E.S. G. T. PORRITT, F.L.S.

J. J. WALKER, M.A., R.N., F.L.S.

VOLUME LIV.

[THIRD SERIES—VOL. IV.]

“J'engage donc tous à éviter dans leurs écrits toute personnalité, toute allusion dépassant les limites de la discussion la plus sincère et la plus courtoise.”—Laboulbène.

LONDON:

GURNEY & JACKSON (MR. VAN VOORST'S SUCCESSORS),

33, PATERNOSTER ROW, E.C. 4.

TAYLOR AND FRANCIS, RED LION COURT, FLEET STREET.

NOTICE.—Owing to the greatly increased cost of paper, printing, etc., the Editors of the Magazine are compelled to raise the subscription to 9s. per annum (post free). Subscriptions for the 1916 volume should be remitted as soon as possible to R. W. LLOYD, I. 5, Albany, Piccadilly, London, W. 1.

The price of a single ordinary number is 1s.

EXCHANGE.

Duplicates—Rhopalocera from Japan and Formosa. *Desiderata*—those from England and exotic countries.—S. SATAKE, No. 48 Aoyamaminamimachi 5-chome, Tokyo, Japan.

REDUCED PRICES FOR BACK VOLUMES.

FIRST SERIES.

This can only be obtained in complete Volumes (bound or unbound).

A limited number of sets, from Vol. x to Vol. xxv can still be obtained at £2 15s. per set net (in parts), or of five consecutive Vols. at £1 per set net (if bound, 1s. per Vol. extra).

Certain of the Vols. i to ix can be had separately at 10s. each.

SECOND SERIES.

Vols. i to xv. are now offered at £3 per set net (in parts), or £1 2s. 6d. for five consecutive Vols. (if bound, 1/- per Vol. extra).

THIRD SERIES.

Vol. li (Third Series, Vol. i) can be supplied by the Publishers at 7/6 (8/6 if bound) per copy. Cover for binding, 1/-.

Vol. li (1915) contains 23 Plates (one coloured), a complete Monograph of the British Siphonaptera, and numerous extra pages of text.

Apply to the Publishers.

MEETINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON, 11, Chandos Street, Cavendish Square, W.—Wednesday, January 16th (ANNUAL MEETING), February 6th.

The Chair will be taken at 8 o'clock in the evening precisely.

The Library is open daily from 9 a.m. to 6 p.m. (except on Saturdays, when it is closed at 2 p.m.), and until 10 p.m. on Meeting nights.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge. The Second & Fourth Thursdays in each month, at 7 p.m. The lantern will be at the disposal of Members for the exhibition of slides.

The Chair will be taken punctually at 8 o'clock.

THE LONDON NATURAL HISTORY SOCIETY, which meets at 7 p.m. on the 1st and 3rd Tuesdays in each month, at Room 20, Salisbury House, Finsbury Circus, E.C., will be glad to welcome at its Meetings any French or Belgian entomologists now staying in this country, and to give them the benefit of its library and collections. Communications should be addressed to the Secretary, Salisbury House, E.C.

Hon. Sec.: J. Ross, 18, Queen's Grove Road, Chingford, N.E.

Chingford Branch. The Chingford Local Branch meets at the Avenue Café opposite Chingford Station, at 8 p.m., on the 2nd Monday in each month.

JAN 17 1919

THE

ENTOMOLOGIST'S MONTHLY MAGAZINE:

EDITED BY

G. C. CHAMPION, F.Z.S. J. E. COLLIN, F.E.S.

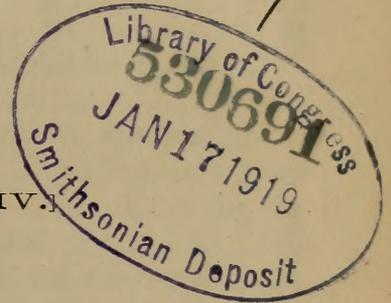
W. W. FOWLER, D.Sc., M.A., F.L.S.

R. W. LLOYD, F.E.S. G. T. PORRITT, F.L.S.

J. J. WALKER, M.A., R.N., F.L.S.

VOLUME LIV.

[THIRD SERIES—VOL. IV.]



“J’engage donc tous à éviter dans leurs écrits toute personnalité, toute allusion dépassant les limites de la discussion la plus sincère et la plus courtoise.”—*Laboulbène.*]

LONDON:

GURNEY & JACKSON (MR. VAN VOORST'S SUCCESSORS).

33, PATERNOSTER ROW, E.C. 4.

1918.

QL461
E98

PRINTED BY TAYLOR AND FRANCIS,
RED LION COURT, FLEET STREET, E.C. 4.

	PAGE		PAGE
Nicholson, C., F.E.S.	39	Thompson, E., M.R.C.S., R.A.M.C. ...	17
Perkins, M. G., R.G.A.	15	Tomlin, J. R. le B., M.A., F.E.S.	225
Perkins, R. C. L., M.A., ¹ D.Sc., F.E.S., 36, 67, 107, 115, 129, 226, 253		Turner, H. J., F.E.S.	19, 41, 65, 93, 115, 164, 186, 213, 227, 255
Ryle, G. B.	39, 209	Walker, J. J., M.A., R.N., F.L.S.	182, 211, 246
Sharp, D., M.A., F.R.S.	1, 154, 209, 274	Walsh, G. B., B.Sc.	162
Sharp, W. E., F.E.S.	13, 23, 244	Wheeler, Rev. G., M.A., F.Z.S. ...	66, 166

GENERAL INDEX.

	PAGE
Acanthocinus aedilis L. in North Devon	137
Acari, The association of, with Insects	39
Alianta pictipennis Fauv., Note on	183
Amarochara bonnairei Fauv. (glabriventris Rye) at Box Hill	280
Anchomenus (Agonum) sahlbergi Chaud., Re-occurrence of, in Scotland	33
Andrena wilkella K., and its allies, The synonymy of, with notes on habits as confirming specific distinctions	36
Anthrenus varius F., Abundance of, in Essex	64
Aphides collected in South-eastern Russia in 1917, Some notes on	200
Apion (Erythrapion) miniatum Germ. in Scotland	64
Apions, The British Red (Studies in Rhynchophora, 3)	1
Atomaria zetterstedti Zett. (= salicicola Kraatz) a British insect	155
Bombus terrestris L. at midwinter in New Zealand	212
Braconidae, Notes on. XII. On the Liophroninae. With description of a new British species	85
Butterflies of the Oxford district, The, 246; Swarms of	16
Byrrhus pilula, Further notes on the larva of	15
Caenocara subglobosa Muls., a species of Coleoptera new to Britain.. .. .	55
Campodea, On two new species of, 157; On a new species of (C. devoniensis, sp. n.), from South Devon	277
Campodeidae, Records and descriptions of some British	109
Cercyon (Coleoptera, Hydrophilidae), On some species hitherto assigned to the genus	274
Ceuthorrhynchus rapae Gyll. at Oxford.. .. .	209
Cholëva angustata F. and its allies	30
Chortophila pilipyga Villeneuve in Britain	156
Cladius viminalis Fallen, The egg-laying of	9
Coccinella septempunctata L. parasitized by a Dipteron, Phora fasciata Fall.	91
Coleoptera captured in the garden of the Hospital of St. Jean, Arras, France, 251; of the Downs and country round Brighton, 209; of Crowthorne (a Parish of Berkshire), Some further notes on the, 23; of South Devon and Cornwall, The coast-frequenting, 208; at Mickleton (Glos.), 39; in the Oxford district, Recent captures of, 182; in the Plymouth district, 91; in the Plymouth district and from the Lizard, Cornwall, 250; Suffolk, Some notes on	159

Otiorrhynchus porcatus Herbst at Oxford	209
Oxford District, The Butterflies of the	246
Phigalia pilosaria, Abundance of, at Burnley	113
Phyllobius calcaratus F., Note on	105
Pipunculidae and Stylopidae in Homoptera	137
Plusia moneta in Cheshire, etc.	211
Protective Resemblance and Mimicry in a Locust Larva, A combined instance of	92
Psylla sorbi L. in Britain	113
REVIEWS.—“Memoir of the Reverend Octavius Pickard-Cambridge, M.A., F.R.S.” by his Son, Arthur Wallace Pickard-Cambridge, M.A., 185; Report of the Proceedings of the Second Entomological Meeting held at Pusa on the 5th to 12th February, 1917, edited by T. Bainbrigge Fletcher, R.N., F.L.S., etc.	138
Rhadinoceraea micans Klug in Cheshire	212
Sapyga clavicornis L. and other Hymenoptera, in old posts at Oxford	184
Saphium immaculatum Oliv., an additional genus and species to our List of British Coleoptera	131
Scymnus, The larva of, 39; capitatus, The Life-history of	8
Silpha nigrita Creutz in Co. Durham	162
SOCIETIES.—Entomological Society of London, 66, 166; South London Entomological Society, 19, 41, 65, 93, 115, 164, 186, 213, 227, 255; Yorkshire Naturalists' Union: Entomological Section	21
Somatochlora arctica Zett., A new locality for	185
Sphaeriestes Steph., Notes on the British species of	77
Staphylinidae, New Oriental (1), 102; (2), 169; (3)	214
Staphylinus pubescens De G. in Essex	39
Strepsiptera of the genera Stylops and Halictoxenus, Synopsis of British	67
Stylops, The assembling and pairing of, 129; and stylopized bees, Further notes on	115
Sysciophthalmus Heller, Note on the Curculionid-genus, with a description of a new species from Tierra del Fuego, 35; crawshayi Champ.: synonymical note	64
Tanagra atrata, Aberration of	113
Tenebrionidae (Coleoptera), A remarkable new genus of, from Tropical Africa	149
Tretothorax Lea (Coleoptera), A note on the systematic position of the genus	152
Trichiosoma, Parasites of the hawthorn, 163; tibiale, The emergence of, from its cocoon	11
Trigonogenius globulum Sol. in London	40
Trioza velutina Förster, Note on	114
Trogophloeus impressus Lac., an addition to the List of British Coleoptera	198
Trypetidae from the Oxford district, with notes on their time of appearance and food-plants	87
Vanessa antiopa in Cheshire, 92; in the north of Essex	280
Zephyrus quercus, the “swarming” of	211

SPECIAL INDEX...

COLEOPTERA.		PAGE	
	PAGE		
<i>Acalles ptnoides</i>	161	<i>Bledius atricapillus</i> , 208; <i>opacus</i> ...	160
<i>Acanthocinus aedilis</i>	137	<i>Bryaxis haematica</i> , <i>helferi</i>	160
<i>Acius sulcatus</i>	210	<i>Buprestis geometrica</i>	199
<i>Acupalpus brunnipes</i> , 26; <i>dorsalis</i> ...	27	<i>Byrrhus pilula</i> (larva)	15
<i>Acylophorus flavicornis</i> (sp. n.), 214; <i>longiceps</i> (sp. n.), 172; <i>maculi-</i> <i>cornis</i> (sp. n.)	214	<i>Bythinus puncticollis</i>	160
<i>Agabus uliginosus</i> , 182; <i>unguicularis</i>	27	<i>Caenocara bovistae</i> , 55, 56; <i>subglobosa</i>	55
<i>Agriotes pilosus</i>	251	<i>Caenopsis waltoni</i>	92
<i>Aleochara maculata</i>	182	<i>Callidium sanguineum</i>	251
<i>Alianta pictipennis</i>	183	<i>Calodera rufescens</i> , <i>umbrosa</i>	182
<i>Amalus haemorrhous</i>	161	<i>Capnodis indica</i>	199
<i>Amara anthobia</i> , 159, 182; <i>famelica</i> , 27; <i>patricia</i>	182	<i>Carabus arvensis</i> , 211; <i>auratus</i>	251
<i>Amarochara bonnairei</i> , <i>glabriventris</i>	280	<i>Cardiophorus equiseti</i>	251
<i>Anchomenus quadripunctatus</i> , 26; <i>sahlbergi</i> , 33; <i>semistriatus</i> , 64; <i>sexpunctatus</i>	26	<i>Cassida sanguinolenta</i>	183
<i>Anisodaotylus binotatus</i> , var. <i>nemori-</i> <i>vagus</i> , var. <i>spurcaticornis</i>	27	<i>Cathormiocerus maritimus</i>	251
<i>Anomophthalmus insolitus</i>	64	<i>Catobleps blattoides</i> (sp. n.), 151; <i>chatanayi</i> (sp. n.)	152
<i>Antaretobius lacunosus</i> , 53; <i>lati-</i> <i>cauda</i> (sp. n.), 54; <i>rugirostris</i> (sp. n.)	54	<i>Cerycon bifenestratus</i> , 274; <i>obso-</i> <i>letus</i> , etc.	159
<i>Antaretonomus peroni</i>	43	<i>Cerycon granarius</i> , 275; <i>lugubris</i> , 275, var. n. <i>intermixtus</i> , 275; <i>minutus</i> , 274; <i>pumilio</i> (sp. n.), 277; <i>sternalis</i> (sp. n.)	276
<i>Anthrenus claviger</i> , 91; <i>varius</i>	64	<i>Ceuthorrhynchidius barnevillei</i> , 182; <i>horridus</i> , 161; <i>triangulum</i>	182
<i>Aphthona coerulea</i>	92	<i>Ceuthorrhynchus euphorbiae</i> , <i>pilosel-</i> <i>lus</i> , 182; <i>punctiger</i> , 183; <i>rapae</i> , 209; <i>setosus</i> , 92; <i>trimaculatus</i> , 182; <i>viduatus</i>	92
<i>Apion curtisi</i> , 251; <i>minimum</i> , etc., 161; <i>schönherri</i> , 208; <i>sedi</i>	251	<i>Chlaenius nigricornis</i>	211
<i>Atheta euryptera</i> , 159; <i>excellens</i> , 250; <i>exilis</i> , <i>halobrectha</i> , 159; <i>liliputana</i> , 250; <i>monticola</i> , <i>para-</i> <i>doxa</i> , 159; <i>perexigua</i> , 250; <i>sub-</i> <i>sinuata</i> , 159; <i>villosula</i>	27	<i>Chlorophanus viridis</i>	251
<i>Atomaria zetterstedti</i>	155	<i>Choleva angustata</i> , 30; <i>cisteloides</i> , 31; <i>fuliginosa</i> , 160; <i>glauca</i> (sp. n.), 31; <i>intermedia</i> , 31, 160; <i>sturmi</i>	30
<i>Attelabus curculionoides</i>	64, 92	<i>Chrysomela hyperici</i> , 64; <i>margi-</i> <i>nalis</i>	251
<i>Aulonodera darwini</i> (sp. n.)	51	<i>Cicindela sylvatica</i>	26
<i>Balaninus venosus</i>	211	<i>Cis alni</i>	161
<i>Bembidiomorphum convexum</i> (sp. n.)	45	<i>Clambus punctulum</i>	250
<i>Bembidium doris</i> , 26; <i>normannum</i> , 159; <i>obliquum</i>	26	<i>Coelambus confluens</i> , 210; <i>9-line-</i> <i>atus</i>	27
		<i>Coeliodes dryados</i> , 92; <i>ruber</i>	92

PAGE	PAGE		
Colon denticulatum, viennense.....	182	Hydrophilus piceus	159
Conopalpus testaceus	182	Hydroporus angustatus, 159; ferru-	
Conosoma laterale (sp. n.)	217	gineus, 182; umbrosus	159
Coprophilus striatulus	160	Hylastinus obscurus	161
Corticaria eppelsheimi	163	Hypera fasciculata	161
Corylophus sublaevipennis	250	Hypulus quercinus	92
Corymbites tessellatus	161	Ilyobates bonnairei, 280; forticornis	182
Creophilus maxilloeus, var. ciliaris ...	162	Ips 4-punctata	182
Crioceris lili	251	Lamprosoma concolor	91
Cryptocephalus aureolus, 210; bi-		Lasioderma serricorne	162
punctatus, var. lineola	182	Lathrobium quadratum	160
Cryptaroha imperialis, strigata	161	Leucitus rufipennis (sp. n.)	171
Cryptophagus løvendali, 15; populi		Leucocraspedum nigromaculatum	
.....	182, 207	(sp. n.)	218
Dacoderus acanthomma (sp. n.)	153	Limnobaris T-album	250
Deporaus mannerheimi	250	Listroderes katerensis (sp. n.), 52;	
Docemina crassipes (sp. n.)	50	quadrituberculatus (sp. n.)	51
Donacia braccata, 161; clavipes	183	Lophocateres pusillus	162
Dorytomus validirostris	182	Lucanus cervus	210
Dromius sigma	159	Lycoperdina succincta	56
Dryops algericus	91	Malthodes atomus, 225; minimus ..	210
Elater sanguinolentus, var. paleatus		Mantura chrysanthemi, 92, 161;	
.....	183, 209	rustica	92
Elmis chilensis (sp. n.)	48	Masoreus wetterhali	251
Endomychus coccineus	278	Medon apicalis, 27; obsoletus	91
Enicmus histrio	210	Megacronus cingulatus	160
Erythrapion brachypterum (sp. n.), 7;		Megadytes glaucus	45
cruentatum, 5, 92; desideratum		Melanophila acuminata, 199, 244,	
(sp. n.), 4; fraudator (sp. n.), 5;		278; ignicola (sp. n.)	200
frumentarium, 6; miniatum, 3,		Melasis buprestoides	182
64; rubens, 7, 92; sanguineum .	7	Meloë proscarabaeus	162
Euconosoma elegans (sp. n.)	216	Micragyrtes ocelligerus (sp. n.)	46
Euplectus abeillei	182	Micraspis 16-punctata	91
Evaesthetus scaber	160	Micrurula melanocephala	91
Geotrupes typhoeus	251	Millidium trisulcatum	182
Gymnetron antirrhini, 92; collinus,		Molorchus minor	182
linariae, rostellum, 182; vil-		Morychastes australis	48
losulus	161	Myrmecopora uvida	159
Hammaticherus lacordairei	225	Myrmetes piceus	27
Harpalus discoideus	208	Necrophorus interruptus	210
Henoticus serratus	27	Neuraphes angulatus, longicollis, 250;	
Hesperus terminalis (sp. n.).....	104	minutus	250
Heterothops nigra	160	Nordenskjöldella flavitarsis	45
Homalium punctipenne	160	Noterus clavicornis	159, 210
Homalopia ruricola	210	Notothecta anceps	27
Homalota exarata, splendens	182	Ochina hederæ	91
Hydnobius forticornis (sp. n.)	47	Ochthebius metallescens, var. poweri	208

PAGE	PAGE		
Oligota apicata	27	Sibinia primita	161
Olophrinus octolineatus (sp. n.)	218	Silpha nigrita	162
Ora, see pp. 95, 273.		Silusa rubiginosa	160
Orchestes avellanae, stigma	92	Smicronyx reichei	183
Orobitis cyaneus	92	Sphaeriestes aeratus, 83; ater, 79; castaneus, 81; foveolatus, 82; mutilatus, 81, var. bishopi, 82; virescens	83
Orthocerus muticus	161	Staphylinus bryanti (sp. n.), 104; caesareus, 27; pubescens	39
Otiorrhynchus porcatus	209	Stenus ater, etc., 160; confluens (sp. n.)	103
Oxyomus porcatus	161	Sysciophthalmus crawshayi (sp. n.), 35,	64
Oxytelus fulvipes	182	Tachinus rufipennis	250
Palorus depressus, ratzeburgi	161	Tachys parvulus	208
Panagaeus 4-pustulatus	182	Telephorus oralis	161
Pediacus dermestoides	182	Tetartoma fungorum	161
Pelobius tardus	159, 210	Thamiaraea cinnamomea	159
Phalacrus hybridus	161	Thoracochirus exasperatus (sp. n.), 169; umbilicatus (sp. n.)	169
Philonthus lucens, 182; rufiventris (sp. n.), 170; trossulus, etc.	160	Tomicus laricis	92
Philorhinum sordidum	160	Trachyploeus myrmecophilus	250
Philothermus cribricollis (sp. n.)	48	Trechus hornensis	44
Phloeophthorus rhododactylus	162	Tretothorax	152
Phyllobius calcaratus, 105; viridi- collis	183	Tribolium navale	163
Phyllotreta tetrastigma	161	Trigonogenius globulum	40
Phytoecia cylindrica	182	Tritoma bipustulata	210
Placusa tachyporoides	250	Trogophloeus elongatulus, foveolatus, 160; impressus	198
Platystethus robustus (sp. n.)	102	Tychius lineatulus, 182; pygmaeus, tibialis	161
Pocadius ferrugineus	56	Valgus hemipterus	251
Pria dulcamarae	91	Zabrus gibbus	209
Prionoscirtes reliquus (sp. n.)	94		
Psammoechus bipunctatus	161		
Pselaphus dresdensis	182		
Psylliodes marcida	161		
Pterostichus angustatus	25		
Pteryx suturalis	250		
Ptomaphagus sericatus	160		
Quedius brevis, 27; taprobanus (sp. n.), 171; umbrosus	208		
Rhantus pulverosus	210		
Rhizopertha pusilla	161		
Rhynchocheilus andrewesi (sp. n.) ..	105		
Rhytidosomus globulus	183		
Saprinus virescens	182		
Scaphium immaculatum	131		
Scirtes, see pp. 145, 273.			
Scymnus arcuatus, 39; capitatus (larva), 8; testaceus	161		
Sericoderus lateralis	160		
Siagonum quadricorne	210		

DIPTERA.

Acidia cognata, heraclei, 87; lych- nidis	18
Aciura rotundiventris	87
Alophora hemiptera	18
Argyra argentata	164
Beris morrisii	18
Carphotricha guttularis	90
Chilosia praecox	18
Chortophila brassicae, 157; pilipyga ...156, 157	

	PAGE
<i>Dolichopus wahlbergi</i>	18
<i>Ensina sonchi</i>	90
<i>Gonyglossum wiedemanni</i>	87
<i>Helophilus hybridus</i>	18
<i>Hormopeza obliterata</i>	278
<i>Leptogaster cylindrica, guttiventris</i>	18
<i>Microdon devius</i>	18
<i>Odontomyia argentata</i>	164
<i>Pachygaster atra</i>	18
<i>Paloptera umbellatarum</i>	91
<i>Phora fasciata</i>	91
<i>Pipunculus modestus, terminalis, variipes, xanthopus</i>	18
<i>Raphium longicorne</i>	18
<i>Sphenella marginata</i>	90
<i>Spilographa artemisiae, zoe</i>	88
<i>Stratiomys potamida</i>	18
<i>Syrphus ribesii, umbellatarum</i>	18
<i>Tabanus bromius</i>	18
<i>Tephritis absinthii, 90; bardanae, 91; hyoscyami, miliaria, proboscidea, 90; vespertina</i>	91
<i>Theriopectes distinguendus, tropicus, var. bisignatus</i>	18
<i>Trypeta acuticornis, 89; colon, cornuta, florescentiae, onotrophes, serratulae, tussilaginis</i>	88
<i>Urophora aprica, cardui, quadrifasciata, solstitialis, 89; stylata</i>	89, 91
<i>Volucella inanis</i>	18

HEMIPTERA.

<i>Anthocoris nemoralis, nemorum, 253; sarothamni</i>	135
<i>Aphis cardui, laburni, myosotidis, etc.</i>	201, 202
<i>Asciodema obsoletum</i>	135
<i>Athysanus sordidus</i>	252
<i>Beosus maritimus</i>	134
<i>Calocoris alpestris, 253; lineolatus</i> ..	135

	PAGE
<i>Camma, species of</i>	175
<i>Chilacis typhae</i>	153
<i>Cixius cunicularius, nervosus</i>	252
<i>Conostethus salinus</i>	134
<i>Coranus subapterus</i>	16, 132
<i>Corixa selecta</i>	57
<i>Cryptosiphum artemisiae</i>	202
<i>Decora, species of</i>	231
<i>Delphax difficilis</i>	252
<i>Deltocephalus abdominalis, etc.</i>	252
<i>Derbe championi (sp. n.), fowleri (sp. n.), nervosa, 230; westwoodi</i>	229
<i>Dicronotropis hamata</i>	252
<i>Dictyonota fuliginosa, strichnocera</i> ..	135
<i>Dicyphus constrictus, 134; epilobii, 135; globulifer</i>	134
<i>Diospolis annetti (sp. n.), 176; elongata</i>	174
<i>Diostrombus, species of</i>	175
<i>Dryobius croaticus</i>	202
<i>Eriococcus devoniensis</i>	17
<i>Eurydema dominulus, 135; oleraceum</i>	134
<i>Fescennia aurea, bimaculata</i>	236
<i>Gonocerus acuteangulus</i>	136
<i>Helcita nitagalensis, wahlbergi</i>	175
<i>Herpis aburiensis (sp. n.)</i>	236
<i>Hyalopterus arundinis</i>	183
<i>Interamma angusta, ascendens, subvaria</i>	241
<i>Lecanium capreae</i>	252
<i>Leptopterna ferrugata</i>	252
<i>Levu, species of</i>	231
<i>Livilla ulicis</i>	252
<i>Losbanosia vuilleti</i>	175
<i>Lygus cervinus, 134, lucorum</i>	184
<i>Macrosiphum sonchi</i>	201
<i>Macrotylus paykulli</i>	135
<i>Megaloceraea ruficornis</i>	252
<i>Metacanthus elegans</i>	135
<i>Metatropis rufescens</i>	135
<i>Microphysa elegantula, 134; pselaphiformis</i>	253
<i>Microvelia, species of</i>	212, 213
<i>Mysidia elatior, spreta</i>	230
<i>Myzus cerasi</i>	201

	PAGE
<i>Nabis flavomarginata</i> , 252; <i>lativentris</i> , 132; <i>major</i> , <i>rugosus</i>	17
<i>Neodiostrombus basalis</i>	175, 204
<i>Notonecta fabricii</i> , <i>furcata</i> , <i>glauca</i> , 56-58; <i>halophila</i> (sp. n.), 58; <i>maculata</i> , 57; <i>marmorea</i>	58
<i>Oncopsis flavicollis</i>	252
<i>Orthotylus rubidus</i> , 134; <i>virens</i>	227
<i>Pamendanga</i> , species of, 175; <i>distanti</i> (sp. n.), 202; <i>grahami</i> (sp. n.), <i>pseudoabscissa</i> (sp. n.)	203
<i>Patara pattersoni</i> (sp. n.)	233
<i>Phenice fasciolata</i> , <i>neavei</i> (sp. n.), <i>stellulata</i> , <i>tessellata</i>	235
<i>Phra amplificata</i> , <i>atromaculata</i> , <i>pictipennis</i>	242
<i>Phylus palliceus</i>	253
<i>Piezodorus lituratus</i>	135
<i>Pithanus maerkeli</i>	184, 252
<i>Plesiocoris rugicollis</i>	252
<i>Plesiodema pinetellum</i>	253
<i>Proutista</i> , species of, 175; <i>pseudodecisa</i> (sp. n.), 177; <i>wilemani</i> (sp. n.)	243
<i>Psallus</i> , species of	253
<i>Pseudohelcita walkeri</i>	175, 204
<i>Psylla madi</i> , 114, 252; <i>nigrita</i> , 252; <i>sorbi</i>	113
<i>Psyllopsis fraxini</i> , <i>fraxinicola</i>	252
<i>Pyrrhoneura mlanjensis</i> (sp. n.)	239
<i>Rhopalosiphum lactucae</i> , <i>ribis</i>	201
<i>Robigus pattersoni</i> (sp. n.)	241
<i>Schizoneura ulmi</i>	202
<i>Symidia flava</i> (sp. n.)	234
<i>Syntames chiriquensis</i> , <i>sufflavus</i>	233
<i>Tetraneura ulmi</i>	202
<i>Trioza galii</i> , <i>velutina</i>	114
<i>Zoraida</i> , species of, 175, 176; <i>aburien- sis</i> (sp. n.), 206; <i>distanti</i> (sp. n.), 204; <i>kirkaldyi</i> (sp. n.), 205; <i>ridleyi</i> (sp. n.), 205; <i>wallacei</i> (sp. n.)	206
<i>Zoraidoides malabarensis</i>	175

HYMENOPTERA.	PAGE
<i>Andrena afzeliella</i> , 68, 70; <i>atriceps</i> , etc., 69, 71; <i>bucephala</i> , <i>labialis</i> , 73; <i>carbonaria</i> , 68; <i>chrysoseles</i> , etc., 71; <i>convexiuscula</i> , etc., 36; <i>parvula</i> , 72; <i>synadelpha</i> , 71; <i>trimmerana</i> , 129; <i>wilkella</i> , 36, 68-70, 129-131: species of, 206; <i>stylopized species of</i> ...	115, 116
<i>Andricus furunculus</i> , <i>nodifex</i> , <i>rhyzomae</i> , 180; <i>occultus</i> , <i>xanthopsis</i> , 178; <i>sufflator</i> , <i>trotteri</i>	179
<i>Anthidium manicatum</i>	185
<i>Anthophora furcata</i>	185
<i>Bombus terrestris</i>	212
<i>Centistes lucidator</i>	86
<i>Chrysis cyanea</i> , <i>ignita</i> , <i>pustulosa</i> ...	185
<i>Cladius viminalis</i>	9
<i>Colletes daviesana</i>	208
<i>Crabro</i> , species of	184
<i>Cynips corruptrix</i>	178
<i>Dasypoda hirtipes</i>	207
<i>Didea alneti</i>	213
<i>Diodontus</i> , species of	184
<i>Diplolepis flosculi</i> , <i>quercus</i>	181
<i>Emphytus cinctus</i>	164
<i>Halictus arnoldi</i> , 253; <i>xanthopus</i> , 76, 108: species of, 253; <i>stylopized species of</i>	74, 75, 116, 185
<i>Hoplocampa alpina</i>	163
<i>Liophron ater</i> , <i>muricatus</i> , 86; <i>saxo</i> ...	85
<i>Lophyrus pini</i>	164
<i>Megachile apicalis</i> , <i>argentata</i> , 18; <i>centuncularis</i> , etc.	185
<i>Nematus perspicillatus</i> , <i>salicis</i>	164
<i>Nomada furva</i> , 226; <i>ochrostoma</i> , 38; <i>solidaginis</i>	226
<i>Osmia caerulescens</i> , <i>leaiana</i> , <i>rufa</i> ...	185
<i>Panargyrops claviger</i>	164
<i>Passaloeocus</i> , species of	184
<i>Pemphredon</i> , species of	184
<i>Pimpla instigator</i>	163
<i>Prosopis</i> , species of	185
<i>Psenulus pallipes</i>	184
<i>Pteronus pini</i> , <i>sertifer</i>	9
<i>Rhadinoceraea micans</i>	212
<i>Sapyga clavicornis</i> , <i>quinquepunctata</i>	184

	PAGE
<i>Spilomena troglodytes</i>	184
<i>Stelis aterrima</i>	185
<i>Stigmus solskyi</i>	185
<i>Trichiosoma tibiale</i>	11, 164
<i>Trigonaspis synaspis</i>	180
<i>Trypoxylon clavicerum, figulus</i>	184

LEPIDOPTERA.

<i>Abraxas grossulariata</i> , vars. 22, 255 ; <i>sylvata</i>	258
<i>Acronycta leporina</i>	213
<i>Adopaea thauamas</i>	250
<i>Aglais urticae</i> , 247, var.	20
<i>Agriades coridon</i> , 20, 249 ; var. <i>syn-</i> <i>grapha</i>	42
<i>Agriopis aprilina</i>	42
<i>Agrotis segetum</i>	21
<i>Aletia empyrea</i> (n. sp.)	61
<i>Alsophila aescularia</i>	187
<i>Amphidasys betularia</i>	213
<i>Anosia berenice</i> , 214 ; <i>plexippus</i>	16
<i>Apatura iris</i>	247
<i>Aphantopus hyperanthus</i>	249
<i>Apodemia glaphyra</i>	65
<i>Arctia caja</i> , vars.	228
<i>Argynnis adippe</i> , 21, 248 ; <i>aglaia</i> ...	248
<i>Aricia astrarche</i> , 249 ; <i>medon</i>	41
<i>Asteroscopus cassinea</i>	22
<i>Augiades sylvanus</i>	250
<i>Boarmia consortaria</i> (melanic)	42
<i>Brenthis euphrosyne</i> , 248 ; <i>selene</i> ...	248
<i>Callophrys rubi</i>	249
<i>Camptogramma bilineata</i> melanic ...	254
<i>Carterocephalus palaemon</i>	250
<i>Catagramma excelsior, pastazza</i> , 167 ; <i>sorana</i>	66
<i>Catonephele acontius, batesii</i>	165
<i>Charaegas graminis</i>	21
<i>Choerocampa celerio, elpenor, por-</i> <i>cellus</i>	21
<i>Chrysophanus dispar</i> , var. <i>rutilus</i> ...	67
<i>Clerome eumeus</i>	187
<i>Coenonympha pamphilus</i>	19, 249
<i>Colias edusa, hyale</i>	20, 247

	PAGE
<i>Cosmotriche potatoria</i> , var.	42
<i>Cosymbria pendularia</i> , var. <i>nigrosub-</i> <i>roseata</i>	42
<i>Cyaniris argiolus</i>	249
<i>Cydia pomonella</i>	20
<i>Dicranura vinula</i>	187
<i>Dione vanillae</i>	214
<i>Dodona adonira, durga, unida</i>	65
<i>Dryas paphia</i>	248
<i>Dynamine agatha</i>	167
<i>Echenias penthea</i>	65
<i>Ematurga atomaria</i>	187
<i>Enarmonia woeberiana</i>	255
<i>Epinephele janira</i> , 249 ; <i>lycaon</i> , var. <i>lupinus</i> , 93 ; <i>tithonus</i>	249
<i>Eriopsela fractifasciana</i>	22
<i>Euchloë cardamines</i>	247
<i>Eugonia polychloros</i>	247
<i>Euploea depuseti</i>	213
<i>Euproctis chrysorrhoea, similis</i>	186
<i>Gnophos glaucinaria</i>	115
<i>Gonepteryx rhamni</i>	247
<i>Heliconius charitonia</i>	214
<i>Hesperia malvae</i>	250
<i>Hibernia defoliaria</i> , var.	93
<i>Hypolimnas bolina</i> , var.	42
<i>Hyponomeuta euonymella</i>	20
<i>Hyria muricata</i>	115
<i>Junonia coenia</i>	214
<i>Lasiocampa quercus</i>	228
<i>Libythea bachmanni</i>	16
<i>Ligdia adustata</i>	20
<i>Limenitis disippus, floridensis</i> , 214 ; <i>sibylla</i>	247
<i>Liparis auriflua, chrysorrhoea</i>	186
<i>Lomaspolis marginata</i> , var.	65
<i>Lophopteryx camelina</i>	65
<i>Lycaena arion</i> , 66 ; <i>hanno</i> , 214 ; <i>icarus</i>	249
<i>Lycia hirtaria</i>	20
<i>Lycorea halias</i>	213
<i>Macroglossa stellatarum</i>	225
<i>Melanargia galatea</i>	248
<i>Melitaea athalia</i> , 250 ; <i>aurinia</i>	248
<i>Mesene phareus</i>	65
<i>Mimas tiliae</i>	186
<i>Morpho perseus</i>	42

PAGE

Stylops analis (sp. n.), 73; aterrima, 72, 129; bimaculatae (sp. n.), 71; cornii, 68; dalii, 68, 73; hammella (sp. n.), 71; melittae, 69; nassanowi, 68; nevinsoni (sp. n.), 71; spencii, 71; spreta (sp. n.), 73; thwaitesi, 69, 70; wilkellae (sp. n.)70, 129

THYSANURA.

PAGE

Campodea devoniensis (sp. n.), 277; emeryi, 277, 278; fragilis, 109; gardneri (sp. n.), 110; giardi, grassii, 111; lankesteri, 110; lubbocki, 109, 158; meinerti (sp. n.), 157; ribanti, 277; silvestrii (sp. n.), 110; staphylinus, 110, 111; wallacei (sp. n.), 158; westwoodi (sp. n.),112, 158

ADDITIONS TO THE BRITISH INSECT FAUNA
 BROUGHT FORWARD OR NOTICED IN THIS VOLUME.

COLEOPTERA.

SPECIES.	PAGE
<i>Atomaria zetterstedti</i> Zett.	155
<i>Caenocara subglobosa</i> Muls.	55
<i>Cerycon lugubris</i> Payk. var. inter- mixtus Sharp (var. n.) ...	276
„ <i>pumilio</i> „ (sp. n.) ...	277
„ <i>sternalis</i> „ (sp. n.) ...	276
<i>Choleva glauca</i> Britten (sp. n.)	31
<i>Elater sanguinolentus</i> Schr., var. <i>paleatus</i> Cand.	183, 209
<i>Erythrapiion brachypterum</i> Sharp (sp. n.)	7
„ <i>desideratum</i> Sharp (sp. n.)	4
„ <i>fraudator</i> Sharp (sp. n.)	5
<i>Scaphium immaculatum</i> Lac.	131
<i>Trogophloeus impressus</i> Lac.	198

DIPTERA.

<i>Chortophila pilipyga</i> Villeneuve	157
<i>Hormopeza obliterata</i> Zetterstedt.....	278

HEMIPTERA.

<i>Notonecta halophila</i> Edwards (sp. n.).	58
<i>Psylla sorbi</i> L.	113

HYMENOPTERA.

<i>Andricus furunculus</i> Beyerinck	180
„ <i>nodifex</i> Kieffer	180

SPECIES.	PAGE
<i>Andricus occultus</i> Tschek	178
„ <i>rhyzomae</i> (Hartig).....	180
„ <i>sufflator</i> Mayr	179
„ <i>trotteri</i> Kieffer	179
„ <i>xanthopsis</i> Schlecht.	178
<i>Cynips corruptrix</i> „	178
<i>Diplolepis flosculi</i> Giraud.....	181
„ <i>quercus</i> Fourc.....	181
<i>Liophron saxo</i> Reinhardt	85
<i>Trigonaspis synaspis</i> (Hartig)	180

STEPSIPTERA.

<i>Halictoxenus arnoldi</i> Perkins (sp. n.).	107
„ <i>cylindrici</i> „ (sp. n.).	75
„ <i>tumulorum</i> „ (sp. n.).	75
<i>Stylops analis</i> „ (sp. n.).	73
„ <i>bimaculatae</i> „ (sp. n.).	71
„ <i>hammella</i> „ (sp. n.).	72
„ <i>nevinsoni</i> „ (sp. n.).	71
„ <i>spretta</i> „ (sp. n.).	73
„ <i>wilkellae</i> „ (sp. n.).	70

THYSANURA.

<i>Campodea devoniensis</i> Bagnall (sp. n.)	277
„ <i>gardneri</i> „ (sp. n.)	110
„ <i>giardi</i> Silvestri	111
„ <i>grassii</i> „	111
„ <i>meinerti</i> Bagnall (sp. n.)...	157
„ <i>silvestrii</i> „ (sp. n.)...	110
„ <i>wallacei</i> „ (sp. n.)...	158
„ <i>westwoodi</i> „ (sp. n.)...	112

LIST OF NEW GROUPS, GENERA, SPECIES, &c.,
DESCRIBED IN THIS VOLUME.

COLEOPTERA.		SPECIES.	PAGE
GROUP.			
	PAGE		
EUCONOSOMINI <i>Cameron</i>	216	<i>Erythraption fraudator</i> <i>Sharp, Britain</i>	5
		<i>Euconosoma elegans</i> <i>Cameron,</i>	
		<i>Borneo</i>	216
		<i>Hesperus terminalis</i> .., <i>Java</i> ...	104
		<i>Hydnobius forticornis</i> <i>Champion,</i>	
		<i>Chile</i>	47
		<i>Leucitus rufipennis</i> <i>Cameron, Borneo,</i>	
		<i>etc.</i>	171
		<i>Leucocraspedum nigromaculatum</i>	
		<i>Cameron, Ceylon</i>	218
		<i>Listroderes katerensis</i> <i>Champion</i>	
		<i>Tierra del Fuego</i>	52
		„ <i>quadrituberculatus</i>	
		<i>Champion, Tierra del Fuego</i>	15
		<i>Melanophila ignicola</i> <i>Champion, India</i>	200
		<i>Micragyrtes ocelligerus</i> .., <i>Chile</i>	46
		<i>Olophrinus octolineatus</i> <i>Cameron,</i>	
		<i>Borneo</i>	218
		<i>Ora angularis</i> <i>Champion, Brazil</i>	144
		„ <i>antiqua</i> .., <i>Batchian</i> ...	139
		„ <i>atrosignata</i> .., <i>Assam</i>	140
		„ <i>bifoveifrons</i> .., <i>W. Africa</i> ...	102
		„ <i>bituberculata</i> .., <i>Brazil</i>	98
		„ <i>calcarata</i> .., <i>Amazons</i> ...	100
		„ <i>cassidiformis</i> .., <i>Cameroons,</i>	
		<i>etc.</i>	100
		„ <i>cinnamomea</i> .., <i>Brazil</i>	99
		„ <i>compressa</i> .., <i>Ceylon</i>	143
		„ <i>coronata</i> .., <i>Borneo</i>	143
		„ <i>gamma</i> .., <i>Brazil</i>	97
		„ <i>gibbosa</i> .., <i>Borneo</i>	142
		„ <i>macropus</i> .., <i>S. Nigeria</i> ..	101
		„ <i>rufipennis</i> .., <i>Madagascar</i>	139
		„ <i>rugosissima</i> .., <i>Perak, etc.</i> ..	141
		„ <i>triradiata</i> .., <i>British</i>	
		<i>Guiana</i>	95
		„ <i>vigintiguttata</i> .., <i>Mashona-</i>	
		<i>land</i>	101
		<i>Philonthus rufiventris</i> , <i>Cameron,</i>	
		<i>Ceylon</i>	170

SPECIES.	PAGE
<i>Philothermus cribricollis</i> <i>Champion</i> ,	
<i>Chile</i>	48
<i>Platystethus robustus</i> <i>Cameron</i> ,	
<i>India</i>	102
<i>Prionoscirtes reliquus</i> <i>Champion</i> ,	
<i>Penang</i>	94
<i>Quedius</i> (<i>Raphirus</i>) <i>taprobanus</i>	
<i>Cameron, Ceylon</i>	171
<i>Rhynchocheilus andrewesi</i> <i>Cameron</i> ,	
<i>India</i>	105
<i>Scirtes acuminatus</i> <i>Champion, Borneo</i>	266
„ <i>africanus</i> „ <i>Natal</i>	194
„ <i>andamanus</i> „ <i>Andamans</i>	224
„ <i>atrifrons</i> „ <i>Sumatra</i> ..	265
„ <i>auriculatus</i> „ <i>Perak</i>	257
„ <i>bifoveatus</i> „ <i>Ceylon</i> ...	259
„ <i>bipustulatus</i> „ <i>Borneo</i> ...	219
„ <i>buckleyi</i> „ <i>Ecuador</i> ..	148
„ <i>cincticollis</i> „ <i>Amazons.</i> ..	147
„ <i>crassicornis</i> „ <i>Penang</i> ...	260
„ <i>curvipes</i> „ <i>Assam</i> ...	266
„ <i>cyphonoides</i> „ <i>Burma</i> ...	269
„ <i>decemguttatus</i> „ <i>S. India.</i> ..	220
„ <i>decemnotatus</i> „ <i>Perak, etc.</i>	223
„ <i>dichrous</i> „ <i>Borneo</i> ...	260
„ <i>dispersus</i> „ <i>Brazil</i> ...	191
„ <i>ephippiatus</i> „ <i>Borneo</i> ...	222
„ <i>excavatus</i> „ „ ...	258
„ <i>flavocinctus</i> „ „ ...	219
„ <i>flavoguttatus</i> „ „ ...	220
„ <i>flavomaculatus</i> „ <i>Brazil</i> ...	146
„ <i>flavomarginatus</i> „ <i>Antilles</i> .	190
„ <i>flavonotatus</i> „ <i>Borneo</i> ...	222
„ <i>floresianus</i> „ <i>Flores</i> ...	264
„ <i>forticornis</i> „ <i>Brazil</i> ...	190
„ <i>helodinus</i> „ <i>Br. E. Africa</i>	196
„ <i>helvolus</i> „ <i>Brazil</i> ...	191
„ <i>holosericeus</i> „ <i>Borneo</i> ...	268
„ <i>lacunosus</i> „ „ ...	257
„ <i>laevicollis</i> „ <i>Brazil</i> ...	192
„ <i>longiusculus</i> „ <i>Borneo</i> ...	271
„ <i>lutens</i> „ <i>Brazil</i> ...	148
„ <i>malayanus</i> „ <i>Perak</i> ...	267
„ <i>matanganus</i> „ <i>Borneo</i> ...	269
„ <i>melanurus</i> „ „ ...	271
„ <i>melas</i> „ <i>India</i> ...	267

SPECIES.	PAGE
<i>Scirtes multiguttatus</i> „ <i>Brazil</i> ...	146
„ <i>nigeriensis</i> „ <i>S. Nigeria</i>	195
„ <i>nigrans</i> <i>Champion, Brazil</i> ...	188
„ <i>nigrolimbatus</i> <i>Champion</i> ,	
<i>Madagascar</i>	196
„ <i>nilgiriensis</i> <i>Champion, India.</i>	272
„ <i>patkainus</i> „ <i>Assam</i> ...	266
„ <i>quadrifoveatus</i> „ <i>Ceylon</i> ...	260
„ <i>retusus</i> „ <i>Ceram</i>	265
„ <i>rufotinctus</i> „ <i>Borneo</i> ...	262
„ <i>scaphiformis</i> „ <i>India</i>	261
„ <i>sexfoveatus</i> „ <i>Borneo</i> ...	259
„ <i>sphaericus</i> „ <i>Borneo</i> ...	197
„ <i>strigosus</i> „ <i>Brazil</i> ...	192
„ <i>subcostatus</i> „ <i>Uganda</i> ...	193
„ <i>subulatus</i> „ <i>Nigeria</i> ...	196
„ <i>sulcigerus</i> „ <i>Borneo</i> ...	256
„ <i>sumatranus</i> „ <i>Sumatra.</i> ..	270
„ <i>tetrastigma</i> „ <i>Assam</i> ...	221
„ <i>trinitatis</i> „ <i>Trinidad</i> ...	189
„ <i>validus</i> „ <i>White Nile.</i>	194
„ <i>vittifrons</i> „ <i>Sierra</i>	
<i>Leone</i> ...	195
„ <i>zambesianus</i> „ <i>Zambesi</i> ...	193
<i>Staphylinus bryanti</i> <i>Cameron, Ceylon</i>	104
<i>Stenus confluens</i> „ <i>India</i> .	103
<i>Sysciophthalmus crawshayi</i> <i>Champion</i>	
<i>Tierra del Fuego (=Anomophthalmus insolitus Fairm.)</i> ...	35, 64
<i>Thoracochirus exasperatus</i> , <i>Cameron</i> ,	
<i>Borneo</i>	169
„ <i>umbilicatus</i> , <i>Cameron</i> ,	
<i>Borneo</i>	169

HEMIPTERA.

GENERA.

NEODIOSTROMBUS <i>Muir</i>	174, 204
PSEUDOHELICITA „	174, 204
SYMIDIA „	234

SPECIES.

<i>Derbe championi</i> <i>Muir, Panama</i>	230
„ <i>fowleri</i> „ <i>Guatemala</i>	230

SPECIES.	PAGE
<i>Diospolis annetti</i> <i>Muir, Nigeria</i>	176
<i>Herpis aburiensis</i> ,, <i>Gold Coast</i> ...	236
<i>Notonecta halophila</i> <i>Edwards, Britain</i>	58
<i>Pamendanga distanti</i> <i>Muir,</i>	
<i>Ceylon</i>	202
,, <i>grahami</i> ,, <i>Ashanti etc.</i>	203
,, <i>pseudoabscissa</i> <i>Muir,</i>	
<i>Sula</i>	203
<i>Patara pattersoni</i> <i>Muir, Gold Coast</i>	233
<i>Phenice neavei</i> ,, <i>Nyasaland</i>	235
<i>Proutista pseudodecisa</i> <i>Muir,</i>	
<i>Australia</i>	177
,, <i>wilemani</i> <i>Muir, Formosa</i> ...	243
<i>Pyrrhoneura mlanjensis</i> <i>Muir,</i>	
<i>Nyasaland</i>	239
<i>Robigus pattersoni</i> <i>Muir, Gold Coast</i>	241
<i>Symidia flava</i> ,, <i>Br. Guiana</i>	234
<i>Zorida aburiensis</i> ,, <i>Gold Coast</i>	206
,, <i>distanti</i> ,, <i>E. Africa</i>	204
,, <i>kirkaldyi</i> ,, <i>Ceylon</i> ...	205
,, <i>ridleyi</i> ,, <i>Singapore</i>	205
,, <i>wallacei</i> ,, " "	206

LEPIDOPTERA.

<i>Aletia empyrea</i> <i>Hudson, N. Zealand</i>	61
<i>Parectopa zorionella</i> <i>Hudson,</i>	
<i>N. Zealand</i>	62

SPECIES.	PAGE
<i>Sabatinea aurella</i> <i>Hudson, N. Zealand</i>	62
<i>Titanomis tetragona</i> ,, ,,	62
<i>Xanthorhoe pseudostinaria</i> <i>Hudson,</i>	
<i>N. Zealand</i>	61

STREPSIPTERA.

<i>Halictoxenus arnoldi</i> <i>Perkins,</i>	
<i>Britain</i>	107, 108
,, <i>cylindrici</i> <i>Perkins,</i>	
<i>Britain</i>	75, 108
,, <i>tumulorum</i> <i>Perkins,</i>	
<i>Britain</i>	75, 108
<i>Stylops analis</i> <i>Perkins, Britain</i>	73
,, <i>bimaculatae</i> <i>Perkins,</i>	
<i>Britain</i>	69, 71
,, <i>hammella</i> ,, ,,	69, 71
,, <i>nevinsoni</i> ,, ,,	69, 71
,, <i>spretta</i> ,, ,,	73
,, <i>wilkellae</i> ,, ,,	69, 70

THYSANURA.

<i>Campodea devoniensis</i> <i>Bagnall, Britain</i>	277
,, <i>gardneri</i> ,, ,,	110
,, <i>meinerti</i> ,, ,,	157
,, <i>silvestrii</i> ,, ,,	110
,, <i>wallacei</i> ,, ,,	158
,, <i>westwoodi</i> ,, ,,	112

EXPLANATION OF PLATE.

British *Stylopidae* (see pp. 67-76).

ERRATA.

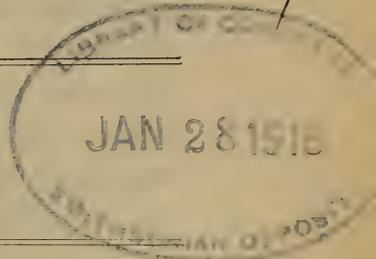
- Page 158, line 16 from bottom, *for* "larvae" *read* "larva."
 ,, 175, ,, 15 ,, ,, *for* "ZARAIDA" *read* "ZORAIDA."
 ,, 215, ,, 13 ,, top, *for* "EUCONONOSOMA" *read* "EUCONOSOMA."
 ,, 249, ,, 5 ,, top, *for* "*Epinephile*" *read* "*Epinephele*."
 ,, 272, ,, 3 ,, bottom, *for* "connex" *read* "convex."
 ,, 279, ,, 20 ,, top, *for* "hypogygium" *read* "hypopygium."
-

THE

ENTOMOLOGIST'S MONTHLY MAGAZINE:

VOLUME LIV.

[THIRD SERIES, VOL. IV.]



STUDIES IN RHYNCHOPHORA.*

BY D. SHARP, M.A., F.R.S.

3.—THE BRITISH RED APIONS.

The species of the genus *Apion* are much in need of a careful study. The genus, as at present understood, is very extensive. Herr Hans Wagner has devoted much attention to it, and we are indebted to him for a catalogue of *Apionidae* (published in 1910 by W. Junk) in which exactly 1000 species are assigned to the genus *Apion*. This is, however, probably not one-tenth of those existing in the world.

I have recently had occasion to study the genitalia of a few species,† and I find so much difference in the construction of this important mechanism that I have no doubt the genus will be divided into numerous genera when these parts are well studied and comprehended.

Apion, however, offers special difficulties, not only because of the minute size of the creatures, but also on account of the peculiar construction of the parts in question. I am mentioning this, not because I have any intention of attempting to develop this study at present, but rather because Herr Wagner, who has attempted to use these characters, has not met with much success.

He has recently published a paper (München. Kol. Zeitschr. iii, 1906, p. 199), entitled, [translated] "Is *Apion cruentatum* Walton to be separated as a species from *Apion frumentarium* Payk.?" He tells us that he has studied the male characters of 60 specimens from Bohemia, and an equal number from other countries, and as a result he finds that the two forms should not be considered distinct. At the same time he

* Continued from Vol. LIII, pp. 100-103, May 1917.

† I have the pleasure of thanking Commander Walker for sending me many fresh specimens of *Apion* for dissection.

admits that he is not satisfied with this conclusion, and in his catalogue of the genus he gives the two as distinct.

His study of the aedeagus is not, however, adequate. I have been engaged for more than a year in examining the male characters in *Rhynchophora*, and I find that the best specific characters are those of the internal sac. Wagner does not allude to this part of the structure at all. Besides this, in *Apion* the tegmen offers very important characters, and no attempt to deal with these has been made, beyond allusion to the length of the "Paramerenplatte" and some slight remarks as to the "Paramerengabel."

The study of the sac in *Rhynchophora* is of the first importance, as I have remarked, but it is attended by great difficulties which attain their maximum in the genus we are discussing. The sac in *Rhynchophora* is often very long, and when not evaginated projects anteriorly much beyond the chitinous tube in which it is invaginated (the median lobe of Sharp and Muir, the penis of many writers). In order to study it, it must be evaginated, and this I have not succeeded as yet in doing in any *Apion*; the median lobe is usually long and slender in the genus and the sac is entirely occluded within it. It must therefore be long before we can understand this structure in *Apion*; anyone who can give an account of it in even a single species of the genus will be making an important contribution to its study.

The species of many genera of *Rhynchophora* are in a very unsatisfactory state of discrimination, and this I am convinced is largely due to the want of satisfactory and thorough study of the genitalia.]

I make these remarks because the work of so good and truthful an entomologist as Herr Wagner is as it stands a serious discouragement to a necessary and all-important study. The difficulties of carrying out such work in a thorough and conclusive manner are in the case of *Apion* extremely great, but they must be overcome by skill and patience. At present the investigation of the sex characters by even the best writers on the subject is inadequate. We are all beginners.

Schilsky and others have proposed about 25 subgenera of the great genus *Apion*. Most of these are arbitrary and are enumerated but not adopted in Wagner's Catalogue. I find in examining the genitalia of our British species such important differences among them, as to leave no doubt that several good genera exist. One of Schilsky's subgenera, *Erythrapion*, is the subject of this paper, and it is one of the groups that can, I believe, be accepted as a good genus. Schilsky established his subgenus on the colour, which, although very remarkable,

is perhaps scarcely sufficient. Wagner has since pointed out that these red species possess a remarkable process on the tegmen which he calls "spornförmig." This spur is a very important character, but I find that it exists also in the subgenus *Protapion* of Schilsky (*flavipes*, *dissimile*, etc.). *Protapion* is perhaps the nearest ally of *Erythrapion*, but is no doubt sufficiently distinct. I therefore propose *Erythrapion* as a valid genus with the following preliminary definition:—

ERYTHRAPION Schilsky, Käf. Eur. xliii, 1906, p. vi.

Color rufus. Aedeagus temonibus articulatis; tegmine elongato, apice haud diviso, ciliato, anterius processu libero. Spiculum gastrale minutum. Segmentum ultimum ventrale medio profunde emarginato. Vesica occulta.

As regards the distinction of *Apion frumentarium* and *cruentatum*, I may merely remark that the failure to distinguish them satisfactorily arises from each of the two being really composite, so that a further analysis is essential:—

Key to British Species.

- | | |
|-----------------------------------------------------|----------------------|
| 1. Dorsum of abdomen pale yellow, concolorous | 2. |
| " " " in larger part black | 7. |
| 2. Wings elongate | 3. |
| " abbreviate | <i>desideratum.</i> |
| 3. Size large | <i>miniatum.</i> |
| " small | 4. |
| 4. Rostrum not longer than thorax | 5. |
| " longer than thorax | 6. |
| 5. Thorax cylindrical | <i>cruentatum.</i> |
| " conico-cylindric | <i>fraudator.</i> |
| 6. Size small, rostrum strongly curved | <i>rubens.</i> |
| " larger, " less strongly curved | <i>sanguineum.</i> |
| 7. Wings elongate | <i>frumentarium.</i> |
| " abbreviate (not longer than elytra) | <i>brachypterum.</i> |

1.—*Erythrapion miniatum* Germar.

This is the largest and most beautifully coloured of our species; the sexes are very much alike. The female has the rostrum just evidently longer and more slender than the male; in the latter sex the length of the rostrum is about the same as from the front of the eyes to the front of the thorax, in the female it is very slightly longer; in each sex it is strongly curved. The form of the head is scarcely different in the two. The abdominal segments readily distinguish the two, however; the terminal one is flat in the female, convex in the male, the 2nd segment is a little longer in the female and its hind margin is less perpendicular.

The male structures are very remarkable. The last (true) ventral plate is very deeply emarginate, but not divided into two. The median lobe is like that of no other; it has a dilated lower lip forming a broad plate; the tube is usually laterally compressed, but is capable of much expansion, two ridges run along its upper face, which are contiguous or separate over the orifice, according to the amount of distention; a very delicate process can be seen forming the upper lip of the median orifice when the orifice is expanded, but usually this process is pressed down and cannot be seen; the struts are long in comparison to the length of the lobe itself, being nearly as long as the two ridges previously mentioned. The cap-piece of the tegmen is ample but not elongate and is ciliate at the extremity; the anterior process is elongate.

In the female the spermatheca appears to be of unusual form, being much coiled, but as I have only one mount of it I cannot satisfactorily appreciate its characters.

I have several mounts of the aedeagus; the one from which the characters are chiefly drawn is No. 364. In this the sac (before the mount was made) was partially extruded, but has become indrawn subsequently.

This species appears to be rather common on the larger species of *Rumex* in England, but I have seen none of it from Scotland.

2.—*Erythrapion desideratum*, sp. n.

Rufum, haud nitidum, subtiliter pubescens, fortiter punctatum, thorace medio mediocriter dilatato; alis perbrevibus. Long. cum rostro, 3½–3¾ mm.

Rather larger and more robust than *E. cruentatum*, of a duller red, equally strongly punctured, the prothorax more dilated in the middle. The abdominal segments are pure yellow, and the wings are very short, almost triangular in form. The rostrum is very stout, and the eyes are widely separated.

The aedeagus is very like that of *E. cruentatum* but is more robust, and the ridges forming the margins of the trough (of the median lobe) appear to be more thickened: the little swelling at the tip of the median lobe is rather larger; the cap-piece of the tegmen is very symmetrically formed, with an elliptically rounded tip bearing long cilia.

Arran, Aug. 1864, 1 ex.; Claygate, Aug. 1865, 2 exs.; Thornton and Dysart, June 1866, 2 exs.; Cambridge, Oct. 1866, 2 exs.; Cairn Water, Dumfries, April 1868, 4 exs.; Thornhill, July 30th, 1868, 1 ex.; also 2 specimens of which I neglected to note the source; they were probably given to me many years ago as *cruentatum*. One female, taken at Logie, near Forres, by Dr. Jenkinson (27. ix. 1909), probably belongs here, though it has the head differently shaped.

3.—*Erythrapion cruentatum* Walton.

This species differs from *E. minutum* by its smaller size (long. cum rostro 3 mm.) and by the thorax being almost cylindrical, scarcely dilated in the middle. The punctuation of the head is coarse, that of the thorax very dense but a little finer.

The sexes are very much alike, in both the rostrum is short and much curved; it is a little longer in the female, but scarcely longer than the thorax.

The aedeagus has been figured and discussed by Herr Hans Wagner (München. Kol. Zeitschr. iii, 1906, p. 199), but it is necessary to make some remarks on his views, though I do so with reluctance, as *E. cruentatum* is a rare species with me, and I have not been able to ascertain some of the points of importance. Wagner is, however, incorrect in figuring the struts of the median lobe as continuous with the body of the lobe; they are articulated thereto just as the fork of the tegmen is articulated with the cap-piece, as is correctly shown by Wagner; moreover, the tegmen is represented in a very inadequate manner; in order to show it properly it should be dissected away from the median lobe. Herr Wagner takes so much pains with his work and is so truthful that it is a pity his efforts should be frustrated by defective methods; and I cannot say whether his figure of "*cruentatum*" aedeagus refers to *cruentatum*, *desideratum*, or some other species.

I believe the species I call *cruentatum* is probably that which Walton had before him, but his description is so short that this can only be ascertained with certainty by examination of his types, and I do not know where they are, or even if they have been preserved.

The only localities I can give with certainty for *cruentatum* as understood by me are Brockenhurst and Oxford (Commander Walker),* at both of which it occurs in company with *E. frumentarium*. No doubt it and *desideratum* are mixed in British collections, and this may not improbably have been the case with Walton.

4.—*Erythrapion fraudator*, sp. n.

Pallide rufum, abdomine concolori; alis elongatis. Long. cum rostro 3 mm.

This is easily distinguished from *E. frumentarium* by the quite pallid dorsal segments. As I have not detected any other difference between the two it is useless attempting a long description.

* The very distinct red *Apion*, which I have hitherto regarded as *E. cruentatum*, is found sparingly at Oxford by sweeping rank marsh-herbage in summer and autumn, as well as in damp tufts of grass and flood-refuse in winter. I believe its food-plant in this locality to be the common sorrel (*Rumex acetosa*), and that it only occurs accidentally in the dry situations affected by *E. frumentarium* and other species of the group.—J. J. W.

I have seen only four specimens. Two males and a female have been standing in my series of *frumentarium* for many years, and I have no locality for them. The fourth specimen, from Shirley Warren, Southampton, I have lost by an unfortunate accident.

I may here notice an example from Arran in which the dorsal segments are of a rather dirty yellow colour. I believe it will prove to be another species, as the aedeagus is extremely slender, especially the apical part.

5.—*Erythrapion frumentarium* Payk.

This name includes several forms, some of which may be good species. Its diagnostic characters in Britain are the black dorsal plates of the abdomen and the long perfectly developed wings. In our country it is distinct from *cruentatum* Walt., and from *desideratum*, described above. Schilsky and Wagner have, however, failed to distinguish them on the Continent.

The rostrum is short, stout, curved, in the male about as long as the thorax, in the female a little longer; in the female the eyes are a little shorter in front and rather more prominent than they are in the male.

The thorax is slender, a little broader at the base than at the front margin, and slightly swollen across the middle. In each sex the length of the neck is about equal to that of the eye.

If all the individuals I assign to it are really one species (as to which I have some doubts) it is decidedly variable. Large females have a distinctly longer and more coarsely punctate neck; but the sexual differences in these parts are decidedly variable.* This renders it easy to make a mistake as to the sex in some cases, but a reference to the very different shape of the abdomen in the two at once removes this difficulty.

The median lobe of the aedeagus is long and slender, almost pointed at the tip but with a minute incrustation there; the struts are rather long, quite half the length of the body of the lobe; the cap-piece of the tegmen is but little elongate, and its cilia seem to be very minute.

The species is fairly common from the north of Scotland (Nethy Bridge) to the south of England. It occurs on *Teucrium scorodonia* as well as on *Rumex acetosella*.

* Speaking of *A. spencei*, Walton says "the prominence of the eye, and consequent narrowness of the forehead varies considerably in both sexes, but surprisingly so in the female," Ent. Mag. v, 1837, p. 13.

6.—*Erythrapion brachypterum*, sp. n.

Pallide rufum, abdominis segmentis dorsalibus nigris; alis abbreviatis. Long. cum rostro $2\frac{1}{2}$ -3 mm.

I see no good distinction from *E. frumentarium* beyond the abbreviated wings; these are somewhat variable in length and shape, and till a thorough study of the aedeagus, including the sac, shall be made, the status of the form must be doubtful.

The aedeagus is extremely like that of *E. frumentarium*. In the most successful of several mounts we have made, the cilia at the apex of the tegmen are very conspicuous.

E. brachypterum is a common insect at Brockenhurst, and I believe it lives on *Rumex acetosella*. It also occurs at Poole and Oxford.

7.—*Erythrapion rubens* Stephens.

This species is well known. It has the rostrum rather longer in each sex than *frumentarium*. The dorsum of the abdomen is pale yellow. The aedeagus is very delicate, comparatively short, and has a very slender apex; the articulated portion of the struts of the median lobe is short, but is rather longer than the unarticulated part of the sides of the body that looks like a continuation of the struts. The cap-piece of the tegmen is very delicate, elongate, and with a delicate chitinous strip on each side at the tip, that may possibly be agglutinated cilia.

E. rubens occurs, with *brachypterum*, on *Rumex acetosella* at Brockenhurst, and Commander Walker has found it freely on *Teucrium* at Oxford.

8.—*Erythrapion sanguineum* De Geer.

I have never met with this species, and am indebted to my friend Commander Walker for my specimens. It is a larger insect than *rubens*, with a longer and less curved rostrum. The aedeagus is very like that of *rubens*, with a long cap-piece. The very minute incrassation at the tip of the median lobe is turned downwards, not upwards as in other species. This is indicated in the figure given by Wagner, München. Kol. Zeitschr. iii, p. 202.

Brockenhurst.

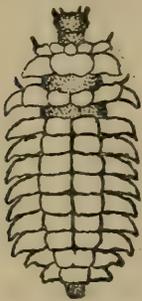
October 12th, 1917.

THE LIFE-HISTORY OF *SCYMNUS CAPITATUS* F.

BY GILBERT J. ARROW, F.E.S.

Although the little Coccinellid beetles of the genus *Scymnus* are very numerous in almost all parts of the world and fourteen species are known in this country, scarcely anything seems to be recorded as to their life-history, and I believe no figure of a larva exists except the extremely crude representations by Réaumur of the "hérisson" or "barbet blanc" which there is no means of identifying with any particular species. The second name (meaning "white poodle") is quite appropriate, but the soft woolly covering does not produce the least resemblance to a hedgehog. Sharp, in the "Cambridge Natural History," states that the larvae of *Scymnus* have small depressions on the surface from which it has been ascertained that waxy secretions exude. During the past summer I have found larvae of *Scymnus capitatus* at Tooting, in company with *Conwentzia psociformis*, upon oaks infested with *Phylloxera*, upon which both were preying. It is interesting to notice that the two predaceous insects are both characterized by the property of exuding a waxy secretion, the beetle in the larval, and the Neuropteran in the adult stage.

In *Scymnus capitatus* the waxy substance forms a complete covering upon the upper surface, the head and legs alone being without it, and in the resting position these also are concealed by the projecting tufts. When active the white masses upon each segment are separated just enough to allow free movement to the body, although the movements are always slow. After moulting, the animal is greyish and naked, but the secretion begins to appear again immediately. Seen without its covering the larva resembles those of *Coccinella* and *Adalia*, but is less tapering in form. The feeding-habits are also practically the same. Fabre mentions a "barbet" of undetermined species which he found on the ground beneath terebinth-trees, feeding upon *Aphidae* fallen from above, but the one I have represented here was invariably upon the leaves of oak.



♂

Larva of *Scymnus capitatus*, magnified 7 diam.

The method of pupation is very peculiar. The larvae fix themselves by the hind extremity, as in other *Coccinellidae*, and in little groups of two or three, generally in some hollow upon a slightly withered leaf. The body becomes contracted and assumes a nearly circular shape, but beyond this there is no apparent change. The cottony mass forms a complete covering for the pupa as for the larva. The larval skin shrinks back and leaves the pupal envelope applied closely to this protecting coat,

from which it cannot be separated. The beetle eventually emerges (after a period of about a fortnight), not by the pupal skin splitting along the back as usual, but from the ventral side, the dorsal part remaining entire and inseparably attached to the waxy covering.

It is interesting to notice that before attaining the fully mature condition the freshly developed beetle passes through stages of pigmentation, which are represented in allied species of *Scymnus*. First of a uniform reddish-yellow colour it shortly after begins to darken upon the posterior part of the pronotum and the anterior part of the elytra, as in *S. haemorrhoidalis*, and, finally, the terminal part of the elytra, and, in the female, the greater part of the pronotum, also become black.

Like many of the small *Coccinellidae* belonging to the same group, the male and female beetles are differently coloured, the former being decorated with yellow patches, which are not found in the latter.

9 Rosedale Road, Putney, S.W.

Nov. 1917.

THE EGG-LAYING OF *CLADIUS VIMINALIS* FALLEN.

BY T. A. CHAPMAN, M.D., F.Z.S.

The few saw-flies of whose egg-laying I know anything present some that lay their eggs superficially on leaves, closely related to others that lay their eggs in shallow grooves; at the other extreme, several, such as *Pteronus pini* and *sertifer*, make deep hollows by turning out the excavated material. Intermediate between these are those in which I have most interested myself, that lay their eggs in pockets formed by raising merely the delicate cuticle of the leaves or stems. Owing to the transparency of the thin cuticle the action of the saws in forming the pockets is not difficult to see.

I have described what I could see in the cases of *Trichiosoma* and *Cimbex* and also in *Phymatocera*.* *Cladius viminalis* lays its eggs in a similar manner and the details of the procedure differ in a few particulars only from those noted in the above-named species.

On May 27th, 1917, I put several newly-emerged females of *C. viminalis* on some twigs of Black Poplar, and on the 28th I found that eggs had been laid on the petioles of six leaves. It has long been known as the habit of the species to lay the eggs in the petioles. On

* Trans. Ent. Soc. Lond. 1914, p. 173; Ent. Record, xxvii, p. 145; Proc. Ent. Soc. Lond. 1916, pp. liii, lxxvii; and Mr. Morice's Presidential Address, Ent. Soc. Lond. 1911.

examining these petioles it seemed to be clear that the fly laid her eggs on either side of the leaf-stalk, but always from the upper margin, but on the 29th, a fly having been induced to lay on a fresh petiole, she was seen to do so from the under margin; from this, and further observations, it appears that the margin selected is a matter of accident or convenience, and that the margin that happens to be uppermost is most likely to be used. The petioles of the leaves of this poplar are flattened from side to side, especially towards the leaf where they are very deep, from upper to lower margins, but narrower than nearer the stem. They are therefore rather flat on each side, so that the laying is under a flat, rather than a curved, surface. The middle of the petiole is the selected portion, the more rounded base and very thin end being avoided. The two sides are indifferently occupied. The six leaves above referred to presented the following as the numbers of eggs laid on each side:—8-11, 10-10, 9-9, 12-24, 7-0, 8-5. The eggs vary a little in their spacing, each fills a separate pocket, each pocket is about 1.5 mm. (measured along petiole), and the space between pockets may be from 0.7 to 1.0 mm.

In the process of laying the cuticle is pierced at the upper (or lower) margin of the side of the petiole by the sharp tip of the saw. The saw advances very rapidly, keeps all the time close under the cuticle, going first straight down and then curving up, just as in *Trichiosoma*, or *Phymatocera*, till it is directed forwards from the opening of entry, and then the egg is laid in the same apparently magic way as in those genera. During the laying the terebra retreats to the position of first complete entry and is then withdrawn. The insect then advances a step to the position for the next pocket—the whole process is much more rapid than in the other species referred to.

The saws seem to be always quite straight and have an extremity narrowing to a sharp point. This dagger-like point makes the first entry and continues the first straight advance, but the widening to take the whole width of the terebra is done by the margin of the saws, and practically the whole of the cutting, as the terebra sweeps round to form the cavity of the pocket, is done by the margins of the saws. In penetrating, the points of the saws advance and retreat in relation to the supports, and the points of each saw advance alternately; this alternate advance seems to have less amplitude than their combined advance and retreat. It may be described better, perhaps, by saying that the two saws advance together and then retreat, but at one advance one saw is in front, in the next the other, and so on alternately. The sharp stiletto of the saws is thrust a long way beyond the support and then withdrawn,

and there is a twinkling in the upper part of the saws demonstrating that they also advance and retreat alternately. The cuticle of the petioles is very minutely wrinkled, so that the view of the parts is not quite so clear as in *Trichiosoma*, as well as their being smaller, so that one cannot always be as positive as to what one sees as in that genus. It is just possible that the saws advance alternately beyond the supports—in fact, they certainly do so; the doubt is as to whether the other saw hardly moves when its fellow advances or whether it accompanies for about half the amplitude of the movement. The great difference between *Cladius* and *Trichiosoma* is that in the latter the saws curve round the end of the support, but do not leave it in their to-and-fro movements, and the cutting is done by the margins of the curved extremities; in *Cladius* the saws in their to-and-fro movements keep straight, go beyond the supports and do the penetration, but not the widening of the cutting by their sharp points.

It is, perhaps, curious that the oviposition should take place equally on each side of the petiole; it is, possibly, because it is well to make the most of a suitable one; before settling down to ovipositing, the fly walked up and down the petiole and went more than once round the leaf, and would appear to bite the surface close to the petiole, not, however, breaking the surface; it was probably a test as to whether the subcuticular cell-walls were tender and at a stage at which they could be easily cut by the terebra. The selected leaves were always fully developed, but only just so, younger and older being refused, though at this date the tree afforded few leaves that one could suppose to be over-mature. This biting of the leaf as some sort of test of the petiole reminds me of the action of the larva of *Cerura vinula*, and of some other larvae, that before beginning to eat a leaf would often strongly pinch the petiole close to the leaf, but without biting it—that is, not breaking the surface.

Reigate.

Dec. 3rd, 1917.

THE EMERGENCE OF *TRICHIOSOMA TIBIALE* FROM ITS COCOON.

BY T. A. CHAPMAN, M.D., F.Z.S.

I reared a number of larvae of this species in hope of making some further observations as to parthenogenesis in *Trichiosoma*.

In the case of this species, and in *Cimbex sylvarum*, the observations so far are that the females begin to lay as soon as they emerge, but after a time, and while still with a considerable egg-content, they refuse to lay

any more. All these eggs produce males; the conclusion is that the female now wishes to pair, and will thereafter lay eggs producing females; but one wants observation in addition to inference, and so far I have not succeeded in getting any pairings in these saw-flies

On May 10th, 1917, already a large number (all males) of *Trichiosoma tibiale* (hawthorn) had emerged from the cocoons afforded by larvae reared last summer.

The process of emergence from the cocoon was observed in a number of instances. To find an emerging fly, one listens to the jar containing the cocoons, and, if one is emerging, the crackle of the jaws of the fly on the cocoon is heard, and a search soon finds the cocoon involved. If all goes well, the whole process does not take many minutes.

The cutting off of the lid is, of course, done by the jaws, but not in the way one presupposes; the first thing to attract one's attention is that the slit is freely bathed by some liquid, sometimes plentiful enough to wet some of the outer surface of the cocoon and always to wet a good deal of the head of the fly, probably inevitable, as in the revolution of the fly in cutting the whole circle, the back and other portions of the head touch the surface already cut on the side opposite to that being cut at the time. The next point is that the jaws do not act by gnawing, as one might, indeed, have concluded from their structure, being sharp-pointed and not constructed for gnawing; the lid is also evidently cut off. But it is not cut by a scissors-action of the jaws, as would seem to be a very probable method of action from the pointed ends and sharp inner edges.

The actual process is that the point of one jaw is thrust through the cocoon (softened by the fluid?) up to the first of the two teeth on the inner edge, the point of the other jaw engages the inner surface of the cocoon several millimetres back and at a point towards which the cutting-jaw is drawn, and in being so drawn the cocoon is cut in the required direction by the sharp edge, just beyond the teeth and apparently also by the edge of the first (and at times, second?) tooth, the line of cocoon to be cut falling into the angle between the tooth and the forward inner cutting-margin of the jaw. The incision is thus made by one jaw only, in much the same way as paper or cloth is sometimes cut by a pair of scissors, when they are not used as scissors, but the two blades remaining unmoved as regards each other, the paper is cut at the angle between them, or really by the edges of the two blades where they meet, but by a knife, not a scissors, action—a futile procedure unless the paper is firmly held, as the cocoon is by the other jaw. A certain portion being

thus cut, the fulcrum jaw is released and takes a fresh *point d'appui* a little further back and the process is repeated. It seems immaterial which jaw takes which function, as I saw first one and then the other used for cutting.

This came about by an accident that sometimes happens. As a rule, the circle cutting off the lid is fairly good and the end of the cutting meets almost exactly the point at which it began. But this is not always so, and in two or three instances a failure so to meet led the insect to make other tentative incisions, in some of which it operated towards the right, in others to the left. It may be asked how I knew what the jaw in the interior of the cocoon was doing. I ascertained this first by inference, as the end of one mandible only appeared externally, and it pressed on doing all the cutting, the other jaw being unaccounted for. But towards the end of the process I was able to raise the lid sufficiently to see the *modus operandi* from the interior. This did not prevent the fly from continuing the process as if undisturbed. Nevertheless, in several cases, a beginning to cut the lid was stopped, I could only suppose from my moving the cocoon. When the process was well advanced, the moving of the cocoon to examine the process in action did not lead to any cessation in the operation. The whole process when all goes well takes very few minutes. In one case, however, the lid had been spun rather solidly against a curve of the twig against which the cocoon was fixed, and so the lid did not lift off, and this led to long delay in getting out; finally, the lid was partly cut, partly forced loose from the twig. I met, in this instance, with a curious feature: I forced up the lid sufficiently for the insect to emerge, but it refused to do so, but continued to work at the lid attachment. I experimented in two other instances, offering, by forcing up the not quite separated lid, an easy means of egress, but the inmates would have none of it, but kept on cutting, at once emerging when this was completed. This instinct to complete their task in the proper way gave me a very satisfactory opportunity of seeing the method of working from the inside.

Reigate.

Dec. 3rd, 1917.

On the introduction of Insect Aliens to the British Islands.—During a perusal of the December issue of this Magazine * my attention was arrested by some remarks by Mr. E. E. Green on the capture of certain exotic butterflies in the south of England, conjectured by him to have been deliberately

* Ent. Mo. Mag. liii, 1917, p. 278.

released in this country, or the descendants of such invited colonists. Now my purpose in alluding to this note is not to discuss whether Mr. Green's hypothesis may or may not be correct, but to consider for a moment his statement that, "should these two butterflies (*Laertias philenor* and *Papilio bianor*) actually gain a footing in the south of England it will be a matter for congratulation," and his implied encomium on the action which may have led to such a result. I must confess that to me it appears very questionable whether entomologists are justified, however great the pleasure to be derived from a contemplation of such beautiful insects, in thus interfering with and modifying the natural fauna of any insular area such as the British Islands. For it becomes at once obvious that were such methods of colonization adopted to any considerable or successful extent, it would, by the introduction of quite misleading and illusive factors, render completely fallacious any theories as regards distribution which may in the future be erected on what might be supposed to represent the autochthonous fauna of Britain. Of course it may be replied that these butterflies in question are so conspicuously unlike any British species, that even if they did become permanently established here no Lepidopterist could ever mistake them for anything but what they would be—introduced aliens—even if there existed no printed record of their introduction by Mr. Cecil Floersheim or other similar liberator. It is the principle involved, however, which I am now questioning and not this particular application of it, and students of other Orders will, I think, easily realize how hopeless would be the attempt to construct any credible theory of faunistic distribution, past land connections, submerged Continental areas, and so on, topics to which that great entomologist Dr. Russel Wallace has devoted one of his most interesting volumes, had a century ago some enthusiast imported from other lands and set free in suitable areas in this country various species of his special Order, because their beauty might gratify the eye or excite the interest of generations to come. The same argument would, of course, hold good as regards the flora of any insulated area; but the damage (if damage it be) has already been to a large extent done in this country, and all botanists are aware how difficult it is now for many of our apparently native plants to vindicate their claim to be in reality autochthonic. Possibly the question may be regarded by many entomologists as too trivial to be worth discussion; I am, however, not entirely convinced that this is so, and am tempted to write this brief note in the hope that it may elicit the opinion of biologists better fitted to judge of the subject on its merits than I may be.—W. E. SHARP, Crowthorne, Berks: Dec. 15th, 1917.

Cryptophagus lovendali Ganglbauer in Richmond Park.—In one of the enclosures in Richmond Park is a large dead oak-tree, in which I have occasionally found the remains of *Megapenthes tibialis* during the past ten years. I visit it several times every year, hoping eventually to find perfect specimens. In August last I noticed that a strong colony of *Vespa germanica* had established its nest in this tree, the wasps entering and leaving it by a small hole about ten feet from the ground, situated behind a large projecting piece of the trunk. Having determined to take the nest after the wasps had died off (such places being very good traps for beetles), I set out on November 20th, armed with a saw and digger. After cutting away the projecting wood, the nest—a very large one—was exposed in a hollow of the tree. The whole nest, with

the débris behind and beneath it, was collected into a bag and taken home for examination. The contents of the bag were shaken through a sieve, and large numbers of *Cryptophagi*, small beetle larvae (of the same?), and a few specimens of *Coninomus nodifer* were found to be present. The remains of the nest with the larvae have been placed in a large glass-bowl for rearing-purposes. The *Cryptophagi* collected (some 80 in number) all belong to one species, with the exception of six *C. scanicus* L., and one of its var. *patruelis* Stm. After carefully studying the more abundant species I came to the conclusion they were *C. lœvendali* Ganglbauer. It will be remembered that Mr. Champion, who introduced this species to the British list (Ent. Mo. Mag. xlv, 1908, p. 123), captured two specimens in July 1907, among a number of *Cryptophagi* taken in a hollow in a beech-tree in the New Forest. Having asked him to compare a number of my specimens with the New Forest ones, he has kindly done so, and he says he considers them to be *lœvendali*. My specimens vary much in size, ranging from 1·8–2·5 mm. in length, and in colour with nearly black elytra and dark red head and thorax, to all dark, or lighter, red. Ganglbauer considered *C. lœvendali* to be a variety of *C. pubescens* Stm., but I agree with Champion and Deville (*l. c.*) that it must be treated as specifically distinct. From *C. pubescens* it may be known by the three-jointed club to the antennae, the thorax more rounded at the base, and the darker colour. *C. pubescens* is generally found in wasps' nests—I used to take it freely in such situations at Chiddingfold (Ent. Rec. x, 1898, p. 307)—but this is no reason why it should be considered to be the typical form of *lœvendali*. From *C. scanicus* it may be known by its duller surface, coarser puncturation, thorax much less sharply narrowed at the base, somewhat narrower 9th antennal joint, and shorter antennae and legs. Out of all my specimens not more than twelve are quite perfect; most have lost one leg, or one antenna, or parts of them, and others are much more mutilated. Butler (Ent. Mo. Mag. xxxii, 1896, p. 89) referred to similar numbers of *C. pubescens*, sent to him by Tuck from wasps' nests, being mutilated, but he expressed the opinion that the injuries were not caused by the wasps. Morley (Ent. Mo. Mag. xxxv, 1899, p. 256) wrote a note on the same point, having found that a number of *C. lycoperdi* Hbst., carefully collected from a "puff-ball," were similarly mutilated. All my specimens when captured were at once put into laurel, being picked up by means of a fine damp paint-brush. I am of opinion that the beetles unintentionally bite off bits of their fellows' legs and antennae when feeding close together.—H. ST. J. DONISTHORPE, 19 Hazlewell Road, Putney Hill, London, S.W. 15: Dec. 12th, 1917.

Further notes on the larva of Byrrhus pilula L.—In view of Mr. Champion's article on the larva of this species in the last number of the Entomologist's Monthly Magazine, the following notes may be of interest. In January, 1914, I found several examples of the larva of *Byrrhus pilula* L. under mossy turf at Loosley Row, near Princes Risborough, Bucks. They were identified from Westwood's figure, and, in addition, two specimens of the perfect insect occurred with them. The larvæ were always to be seen under turf near the top of a small bank, and when taken appeared to be hibernating, for each was inert and found in a small round earthen cell. They soon became active, however, and were several times observed to be gnawing grass roots. From the size of the specimens I should say that they were half-grown. An attempt

to rear the larvae failed, for they soon became sickly and gradually shrivelled up without actually dying, but so as to spoil them absolutely for preservation as specimens.—MICHAEL G. L. PERKINS (Cadet R.G.A.), 4 Dean's Yard, Westminster Abbey, S.W.: Dec. 15th, 1917.

Swarms of butterflies.—The "Entomological News" for October, 1917, contains a very interesting account of the swarming of two species of butterflies in Texas, by Mr. J. L. Bernheim. It is as follows:—"On Sept. 4th, 1916, and for several days following, near Eagle Pass, Texas, the air was fairly alive with swarms of *Libythea bachmanni* (Snout butterfly), which were flying towards the north. They occupied a strip about a mile wide eastward from Rio Grande, in which region the vegetation is most abundant. They extended upward as far as the eye could reach, and borne by a mild breeze from the south, were moving quite swiftly. During this time I made several collecting trips south of Eagle Pass and at each step stirred up veritable clouds of this interesting butterfly which immediately rose in the air and started north. There were literally millions of them, and many of them had evidently completed their allotted span of life as they were dropping from the air in large numbers. . . . Late in October, while collecting east of Eagle Pass, I came upon a small pond upon the banks of which grew several quite large mesquite trees. These trees were almost covered with swarms of Monarchs (*Anosia pleippus*). They remained until the following day, when nearly all of them left within an hour or so. Two days later the willows growing upon the bank of the Rio Grande were the resting place for a still larger swarm, some of which remained several days." The illustration accompanying Mr. Bernheim's note shows a swarm of *A. pleippus* resting in one of these trees.—EDS.

Note on Coranus subapterus De G.—A specimen of *Coranus subapterus*, ♀, captured by myself in August in the New Forest, was kept alive till the beginning of October by feeding it on Aphides and Lepidopterous caterpillars. I was much interested in watching its method of attack upon a young larva of *Spilosoma lubricipeda*. It approached the caterpillar very cautiously, standing well up on its legs, with head raised, rostrum extended, and antennae bent, but with their tips pointing forward. The whole attitude indicated caution and alertness. When near enough, it reached forward and gave the caterpillar a sudden prick with its rostrum, at once darting backward to be out of the way of the writhings of its victim, which were rapid and violent as soon as it received the puncture. Meanwhile the *Coranus* was intently watching, and as soon as the caterpillar became quiet, it again cautiously approached in the same attitude as before, and gave another sudden prick, again backing quickly out of harm's way. As the result of this second puncture, a large drop of liquid exuded from the wound, and the caterpillar, after a few feeble struggles, became quiescent, and was then found to be dead. The *Coranus* at once came up again and at leisure proceeded to suck the caterpillar, and did not leave the banquet till its own body was greatly distended and that of its victim was drained almost dry. Thus the puncture given by this Reduviid was sufficiently virulent to kill by two attacks, and, in less than a couple of minutes, a caterpillar quite as large as itself.

I kept the insect in the hope of securing ova, and in this I was not disappointed. Shortly before its death at the end of the first week in October

it laid seven eggs on a small twig of heather which I had enclosed with it. After this effort, it seemed to become numbed, moving about slowly, and seeming to have lost the power of holding on by its claws, and then it soon died. The eggs are not inserted in the tissues of the plant, but are attached to the exterior amongst the needle-like leaves by a gummy secretion. They usually lie on one side, but some are attached by the posterior pole. They are rather striking objects, of a very dark, shiny, pitchy-brown colour, and surmounted by a curious whitish crown at the anterior end, which makes them somewhat conspicuous. A good description of the ova has been given by De Geer, who, however, calls them black instead of dark pitchy-brown, as mine certainly were. The shape, cylindrical and slightly curved, is very similar to that of certain *Nabidae* which I have been able to obtain, e.g. *Nabis major* and *N. rugosus*, and is also not unlike that of the bed-bug, but there is more elaboration about the coronal cap. In view of the scarcity of suitable food for the young Reduviids during the winter months on an open heath such as *Coranus* delights in, it seems probable that eggs laid in October would remain in that condition through the winter and not hatch until the following spring.—E. A. BUTLER, 14 Drylands Road, Hornsey, N. 8: Oct. 9th, 1917.

Additional localities for Eriococcus devoniensis Green.—Mr. E. E. Green, in recording Dr. Imms' capture of this Coccid at Delamere, Cheshire (Ent. Mo. Mag., Nov. 1917, p. 261), refers to this as the third locality; he has evidently not seen my record of the species for two other counties—(1) Chester-le-Street, Durham (Vasculum, vol. ii, no. 3, p. 92; (2) Yorkshire (Entomologist, vol. xlix, Aug. 1916, p. 173). In both instances I corrected the error with regard to the food plant. I can now add two more counties and several other localities to its known range. It occurs in extreme abundance on every Cleveland Moor I have visited, although there it can never exceed the numbers massed together in one limited area on Waldrige Fell, Durham. During August, 1917, I wandered over the Fells near Alston, where Cumberland and Northumberland meet, and I discovered the insect in both the counties in question—in some cases very freely. Lastly, whilst examining various Ericaceous plants in company with my friend Bagnall in the far west of Durham, far away from its lowland habitat, I detected the insect in some numbers on *Erica tetralix* not far from Stanhope, and later in the same day near Waskerley Reservoir.—J. W. HESLOP HARRISON, D.Sc., Zoological Dept., Armstrong College, Newcastle-on-Tyne: Dec. 1917.

A Hymenopterous note from the Eastern Front.—A small bee has made herself unpopular by building solitary cells of leaf and wax in the stethoscopes of several of the officers of the 66th General Hospital up in the mountains east of Salonika. No fewer than four of our medical officers have brought similar specimens to me. The little creature is most industrious, and one sees her crawling into the chest-piece of the stethoscope every few minutes to her cells in the rubber-tubes beyond. We have amused ourselves by detaching the chest-piece from the rubber and watching her consternation when she emerges from the forked end of the chest-piece into the light of day instead of her cell (this has been known to be varied with bets on which side she emerges from), and when she has recovered from her surprise she tries again and goes up the other tube. When the nest has been rudely extruded (in order to use

the instrument she has blocked up) she starts again, and the specimen I send blocked my stethoscope on four successive days. She also makes nests in old nail-holes in wood, but I have not found her boring her own hole. We should all like to know her name.—F. THOMPSON, M.R.C.S., L.R.C.P. Lond., R.A.M.C.: *September 6th, 1917.*

[The insect sent by Mr. Thompson to Commander Walker is a ♀ of *Megachile apicalis* Spinola. This species is pretty common in all districts round the Mediterranean. I have taken it in Spain, S. France, Algeria, Italy, Greece, Palestine, and Egypt. Its nearest British ally is *M. argentata* F., which is also common—as well as several other species nearly related to it—throughout the Mediterranean region.—F. D. MORICE.]

Diptera in 1917.—Except on two or three occasions, when the weather was uniformly unfavourable, I have only been able this year to collect in localities within easy reach of London. However, I think the following species are worth recording, as being from new localities, or sufficiently uncommon to merit attention:—*Pachygaster atra* Meig., Cleeve Hill, Glos., on a window, July 28th. *Stratiomys potamida* Meig., on *Heracleum* in a field at the foot of Leith Hill, Surrey, July 2nd. *Beris morrisii* Dale, 1 ♂, near the top of Leith Hill, July 2nd. *Theriopectes tropicus* Meig. var. *bisignatus* Jaenn., a ♀. at Oxted, June 14th. *T. distinguendus* Verr., males seen in abundance on Leith Hill on July 2nd, hovering in the sun over roads, 15 or 20 in ten yards of road. I noticed them as early as 6.30 a.m. (Greenwich time), and they seemed to have disappeared by soon after 10 a.m. The males of *Tabanus bromius* L., were also common here, but resting on palings, never hovering. *Leptogaster guttiventris* Zett., one specimen on Leith Hill, July 2nd. *L. cylindrica* De G., abundant near Oxted, June 14th. *Dolichopus wahlbergi* Zett., one male at Great Bedwyn, Wilts, July 15th. *Rhaphium longicorne* Fln., Epping Forest, several males in a limited locality, June 7th. *Pipunculus modestus* Hal., Leith Hill, July 21st. *P. terminalis* Thoms., one male in Epping Forest on June 7th, also at Oxshott, Surrey, on August 16th. *P. varipes* Meig., Leith Hill, July 21st. *P. xanthopus* Thoms., one male in Epping Forest, June 7th. *Chilosia praecox* Zett., common at Barton Mills, May 15th. *Syrphus umbellatarum* F., Oxted, August 30th. *Volucella inanis* L., Oxshott, August 16th. *Helophilus hybridus* Lw., near Oxshott, August 23rd. *Chrysotoxum octomaculatum* Curt., Oxted, August 30th. *Microdon devius* L., near Oxted, June 14th. *Alophora hemiptera* F., Great Bedwyn, Wilts, one male on an Umbellifer, July 15th. *Acidia lychnidis* F., Cleeve Hill, Glos., July 28th.—T. W. KIRKPATRICK, The Deanery, Ely, Cambs.: *October 13th, 1917.*

The association of Oribatids with Insects. - One is constantly coming across convex and more or less circular mites under moss and in similar situations during the winter, which I remember to have had some trouble in my young days to satisfy myself were not beetles. From this bowing acquaintance I learnt to call them collectively Oribatidae, and passed them by on the other side! That they were associated in any way with insects I cannot remember to have heard, nor can I here refer to the Ray Society's monograph upon the family. It was because I noticed some of these mites on a specimen of the beetle *Oxytelus sculpturatus* Grav., under a board, lying on the ground in

my paddock here, on April 20th, 1917, that I placed it in a tube. On looking at it indoors, I found that two of the mites were now detached from the beetle and walking about, though in some way connected with each other; these took no further notice of the beetle. To the latter were still attached six mites--their position was most remarkable, being high in air, at the top of an elongate filament thrice the length of the body (remining one of pictures of "The Martians" in Mr. Wells's story), which in each case was fixed to the hardest part of the insect's chitin--one to the centre of the frons, three to the disc of the thorax, one to the disc of the right elytron, and one to the disc of the penultimate segment. The mites are castaneous with flavescent legs and nearly circular body, but a lens shows neither sculpture nor antennae. The eight legs are usually held still, curled beneath the body, though occasionally seen groping for a fulcrum they never attained. The filament proceeds from the anal extremity, though whether connected with oviposition or not I cannot tell; it varies somewhat in length in the different specimens, though this does not appear to be owing to its corresponding depth in the insect's body, for I cannot see that it pierces the chitin. Two of the mites were leaning against each other, in this elevated position, though all the filaments seemed perfectly capable of bearing their weight for the first two or three days. No change was observable till the morning of the 23rd, when the filaments seemed a little slack, so that the mites curved over and now nearly touched the surface of the beetle, though their legs, etc., were still retracted. At noon the same day the beetle was moribund, with its abdomen much shrunken; but the mites showed no signs of inflation, on the contrary, their ventral surface was decidedly less convex than at first. The beetle was dead at 8 P.M. The 24th showed the mites flatter yet; on the 26th they were still more deplanate and were all lying over as though their filaments had lost rigidity; and so they remained till the 28th, when I put them by, on the chance of further developments taking place later on; but none are apparent to the present date. The only other instance I can cite of this kind is the presence of a crowd of fully a dozen similar, though certainly slightly larger, Oribatids attached in like manner to the disc only of the abdomen of a specimen of the Orthalid Dipteron, *Scoptera vibrans* Linn., which was kindly sent to me on July 20th, 1900, from Tostock, in Suffolk, by Mr. W. H. Tuck, now of Bury St. Edmunds.—CLAUDE MORLEY, Monks Soham House, Suffolk; Oct. 20th, 1917.

Societies.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY :
September 13th, 1917.—Mr. Hy. J. TURNER, F.E.S., President, in the Chair.

Mr. Hugh Main exhibited an observation-cage with the burrow of *Cicindela campestris* containing the already perfected imago, which would, however, not emerge from the "dug-out" till the spring. He also showed a Mantid from Sicily which readily took larvae and flies when offered to it; and he reported the large green grasshopper, *Locusta viridissima*, as feeding readily on larvae of *Pieris brassicae* when offered to it. Mr. Leeds, a number of aberrations of *Coenonympha pamphilus* from Herts, including upperside specimens with absence and variations in size of the apical spot of fore wing, variations in amount and

depth of marginal shading of both wings, with *ab. lyllus*, several with straw-coloured areas, with *ab. pallida*, an additional spot on fore wings, apical spots having small white centre, two spots on the hind wings, straw-coloured striations between nervures, and underside specimens having small ocelli, very dark ground, ocelli with emphasized straw circles, the ocelli doubled, small additional black spots attached to the ocelli, with extra ocelli, and asymmetrically marked examples. Mr. Turner reported that Dr. Chapman had carefully examined the trio of *Hyponomeuta euonymella* previously exhibited and found that the second male was firmly attached to one of the abdominal segments of the first male by the claspers. Mr. Ashdown, the Coleopteron *Geotrupes pyrenaicus* from Oxshott, with other species of the genus. Mr. Barnett, a long varied series of *Bryophila perla*, including yellow, generally dark, and strongly marked examples, and a short series of *B. muralis*. Mr. Pearson, a battered specimen of *Papilio machaon* recently captured at Dover. Mr. Sperring, long varied series of *Polyommatus icarus* from Portsmouth, dark *Spilosoma lubricipeda* with hind wings as dark as the fore wings, a rich yellow *Pieris napi* from Donegal, 2nd brood, and a plum-coloured *Aglais urticae*. Reports were made as to *Colias edusa*, *Agrius convolvuli*, *Plusia gamma*, parasites and *Pieris brassicae* larvae, and Ants occurring with *Agriades coridon*.

September 27th, 1917.—Mr. W. WEST (Greenwich) in the Chair.

Mr. Moore exhibited *Papilio machaon* from Bayenghem, Pas de Calais. Mr. Barnett, bred series of *Ochyria ferrugata* and *Venilia maculata* and aberrations of *Polyommatus icarus*. Mr. West (Greenwich), specimens of the cocoons with pupae of *Cydia pomonella* formed in a rug of varied colours placed near stored apples. Mr. Blair, living *Adimonia tanacetii* from the Isle of Man.

October 11th, 1917.—Mr. HY. J. TURNER, F.E.S., President, in the Chair.

Mr. Turner, on behalf of Dr. R. C. L. Perkins, a large number of *Pararge aegeria*, bred and captured this year, in continuation of his investigations of 1916, and summarized the conclusions so far arrived at by the late Mr. A. E. Gibbs and Dr. Perkins. Mr. A. A. W. Buckstone, series of *Agriades coridon* from Shere, including (1) somewhat small specimens from the Surrey Hills, (2) dwarf specimens, (3) normal sized specimens from other Surrey localities and Royston for comparison, and read notes on the dwarf race. He also contributed "Short Notes": (1) The abundance of *Blatta germanica* at the Admiralty Restaurant; (2) The abundance of *Vanessa io* near Dorking; (3) The occurrence of *Hesperia malvae* at Byfleet July 7th, Guildford July 12th; (4) Pupae of *Lycia hirtaria* passing three winters in that stage; (5) The perfection of the imagines of *Ligdia adustata* in autumn in the pupa for emergence in the spring; (6) The large percentage of autumn larvae which have been parasitised; and (7) Reported the occurrence of both *Colias hyale* and *C. edusa* in Surrey on Oct. 1st. Mr. Brook, the gall of the Cecidomyid *Urophora cardui* on thistle. Mr. West (Greenwich), the beetle *Necrobia rufipes* which had attacked stores of copra and spread in numbers to neighbouring dwelling-houses, and *Rhizophagus parallelcolis* which had attacked seed-potatoes at Brockenhurst. Mr. Leeds, many aberrations of *Agriades coridon* and *Polyommatus icarus* from the Chilterns, Herts and Hunts. The Rev. F. M. B. Carr reported *V. io* and *Pyrameis atalanta* as very common in Cheshire this season.—HY. J. TURNER (*Hon. Reporting Editor*).

YORKSHIRE NATURALISTS' UNION: ENTOMOLOGICAL SECTION.—The Annual Meetings of the Entomological Section of the Yorkshire Naturalists' Union were held at the Leeds Institute on October 27th, 1917. Mr. W. P. WINTER, B.Sc., the President of the Section, occupied the chair at both the afternoon and evening meetings.

The usual business, which included the election of Officers and the presentation of the Annual Reports, was transacted, and Mr. G. T. PORRITT, F.L.S., F.E.S., was unanimously elected President of the Section for the ensuing year. Reports on the work done in the various Orders of insects were given by the Secretaries of the different Committees. That on *Coleoptera* by Dr. W. J. Fordham, F.E.S., showed the following nine additions made to the County list since the 1916 report—*Atheta brittani* Joy (Bubwith), *Atheta nitidula* Er. (Swaledale and Cleveland), *Gabrius appendiculatus* Sharp (Bubwith), *Gabrius stipes* Sharp (Skipwith and Buckden), *Bledius erraticus* Er. (Richmond), *Cerylon fagi* Bris. (Bubwith), *Cryptcephalus parvulus* Müll. (near Bawtry), *Lissodema cursor* Gyll. (West Garforth), and *Ceuthorrhynchus rugulosus* Hbst. (Bubwith). In addition, a doubtful record of *Bolitochara lunulata* Pk. was confirmed by a specimen from Cleveland. There were also a number of new vice-comital records.

An extensive report on *Lepidoptera* was presented by Mr. B. Morley. The season appears to have been a good one, and species usually scarce have in some instances turned up in numbers. *Vanessa antiopa* L. has been taken in one or two localities (Silsden and Pickering), and *Sphinx convulvi* L. has occurred all over the county, the curious point in its distribution being that it has been mostly recorded from the vicinity of towns—Keighley (2 ♂♂, 1 ♀), Middlesbrough (seven specimens), Doncaster (quite common), Barnsley, York (four), Pickering, and a considerable number at Scarborough being among the instances cited. *Choerocampa celerio* L. has been taken at Scarborough. Mr. W. Hewett has taken *Plusia moneta* Fab. near York and *Sesia culiciformis* L. at Warthill. In Cleveland Mr. T. A. Loft-house, F.E.S., has found the season good. A hard winter appears favourable to insect life, and larvae were abundant from spring to autumn and a large number of common butterflies were observed. *Vanessa io* L. occurred at Middlesbrough. (This insect has been recorded from several localities this year. The experience of most of the lepidopterists present at the meeting was that it is usually an uncommon butterfly in Yorkshire. Mr. J. F. Musham says that it has been recently common at Selby on fallen fruit.) Dr. H. H. Corbett noted an abundance of common species in the Doncaster district, and reported that a young collector had taken sixteen species of butterflies in the neighbourhood, including *Argynnis adippe* L. He also recorded *Zeuzera aesculi* L., *Choerocampa porcellus* L., and *elpenor* L. Mr. Hooper reported the destruction of acres of white turnip near Wakefield by the larvae of *Agrotis segetum* Schiff. of which there were sometimes four or five to a root. Mr. Morley had found *Microlepidoptera* in great abundance, and also commented on the swarms of *Charaëas graminis* L. in August on both moors and lowland pastures. In some parts of South-west Yorkshire the larvae have been a great pest this year, and Mr. Morley mentioned the fact that the Penistone town roller was "mobilized" to deal with the invasion.

Messrs. Rosse Butterfield, F.E.S., and J. F. Musham, F.E.S., reported on

the order *Hymenoptera*. Mr. Butterfield noted *Bombus jonellus* Kirb. as plentiful in his district, and recorded *Nomada alternata* Kirb. and *Halictus atricornis* Smith from Shipley Glen and *Nomada bifida* Thoms., *fabriciana* L., and *luthburiana* Kirb., plentifully at Bolton Abbey and Beamsley. Mr. Musham's best captures at Selby were *Anthophora pilipes* F. and *Megachile centuncularis* L.

Numerous exhibits were on view, some of which were exceedingly interesting. In *Coleoptera* Mr. E. C. Horrell showed *Lissodema cursor* Gyll. taken at West Garforth by Mr. J. Digby Firth, F.L.S., F.E.S. Mr. M. L. Thompson, F.E.S., showed, among other species, the following: *Amara praetermissa* Sahlb. (*rufocincta* Dej.), *Cymindis vaporariorum* L., *Atheta nitidula* Er., *A. tibialis* Heer, *Bolitochara lunulata* Pk., *Mycetoporus rufescens* Steph. (*lucidus* Er.), *Bythinus burrelli* Denny, and *Rhinomacer attelaboides* F.—all from North Yorkshire (Cleveland or Swaledale),—and a specimen of an imported Bruchid, *Spermophagus pectoralis* Sharp, from Middlesbrough. He also showed *Phytobius (Eubrychius) velatus* Beck, of which he found the cocoons on *Myriophyllum* at Greatham Marsh in South Durham. Dr. Fordham showed, among other species, *Atheta britteni* Joy, *Quedius umbrinus* Gr., *Q. longicornis* Kr., *Gabrius stipes* Sharp, *Atomaria ruficornis* Marsh., *Anomala aenea* DeG. (*frischii* Fab.), *Rhagonycha translucida* Kryn. (*unicolor* Curt.), *Chrysomela graminis* L. (abundant on Tansy in Clifton Ings, York, where it has been found with greater or less frequency for nearly a hundred years), *Corynetes coeruleus* DeG. (occurring in a house with *Anobium striatum* Ol. [*domesticum* Fourc.], on which it is probably parasitic), and *Xyloterus domesticus* L. He also exhibited a black form of *Pterostichus coerulescens* L. (*versicolor* Stm.), numerous colour varieties of *Plateumaris sericea* L., and several colour forms of *Phyllodecta vitellinae* L., all taken in Yorkshire this year. Dr. Fordham exhibited, on behalf of Mr. E. G. Bayford, F.E.S., specimens of *Aleochara bilineata* Gyll. which had been received from Mr. G. Parkin, of Wakefield, who had found them preying on the Cabbage Fly (*Chortophila brassicae* Bouché), and whose observations on the life-history were in accord with the account given in the E. M. M. 1916, p. 161.

In *Lepidoptera* Dr. Corbett showed some butterflies from the Somme front, including *Papilio machaon* L., *Pieris brassicae* L. (a ♂ larger than the usual British specimens and blacker on the costa), *Colias edusa* F. (a fine example of var. *helice* Hb.), *C. hyale* L. (several), *Vanessa cardui* L. and *V. urticae* L. (smaller and darker than most British specimens). Captain H. D. Smart, M.C., R.A.M.C., F.E.S., showed a ♂ of *Asteroscopus cassinea* Hb., taken recently in Eserick Park. Mr. Alfred Kay exhibited some varieties of *Abraxas grossulariata* L., including *semiviolacea* and *nigrosarsata* from Huddersfield, and a very fine light-coloured specimen of *Arctia caja* L. Mr. B. Morley showed several *Microlepidoptera* including melanic forms of *Scoparia ambigua* Tr. (from a locality near Skelmanthorpe, where it is evidently becoming darker, as only a few melanic specimens were taken last year and none previously), a fine series of varieties of *Paedisca solandriana* L., two specimens of *Eriopsela fractifasciana* Haw. (new to the county), and some yellow varieties of *Tortrix corylana* F. Mr. W. Hewett showed some *Lepidoptera* and *Orthoptera* which he had received recently from New Zealand.

In *Hymenoptera* Mr. Butterfield exhibited specimens of all the British

species of *Vespa* (not all, however, from Yorkshire), and specimens of stylo-pised bees, and Mr. Musham brought some species captured in his garden at Selby, including *Andrena trimmerana* Kirb., *Prosopis communis* Kirb., *Halictus smeatmanellus* Kirb., and *cylindricus* F., *Crabro leucostomus* L., *Colletes darisianus* Sm., *Odynerus pictus* Curt. (which showed a preference for *Viola* blooms, creeping round to the back after alighting and there remaining motionless), *Anthophora pilipes* F., and *Megachile centuncularis* L.

In other Orders Dr. Corbett showed some *Odonata* from the neighbourhood of Doncaster—*Libellula 4-maculata* L., and *fulva* Müll., *Sympetrum scoticum* and *striolatum* Charp., *Aeschna cyanea* Müll., *juncea* L., and *grandis* L., *Brachytron pratense* Müll., *Lestes sponsa* Haus., *Agrion puella* L., *Pyrrosoma nymphula* Sulz., *Enallagma cyathigerum* Charp., and *Ischnura elegans* v. d. Lind.

Mr. F. Booth exhibited the cockroach—*Leucophaea surinamensis* L.—taken in a conservatory at Manningham, Bradford.

At the evening meeting Mr. W. Denison Roebuck, M.Sc., F.L.S., F.E.S., read a paper 'On the Lincolnshire Distribution of the Large Copper Butterfly, and the President, Mr. W. P. Winter, made some 'Remarks on the Spinning of Spiders,' illustrated with specimens and lantern-slides.

The attendance at both meetings was good, all quarters of the county being represented by members present.—W. J. FORDHAM.

SOME FURTHER NOTES ON THE COLEOPTERA OF CROWTHORNE (A PARISH OF BERKSHIRE).

BY W. E. SHARP, F.E.S.

As I have already ventured to publish in these pages* a few observations relative to the occurrence of Coleoptera in this district during the years 1914–1915, it may not be out of place if I supplement these by such further notes as I have been able to make during the two seasons which have since elapsed. The point of such observations lies principally in the differential frequency of appearance which they reveal—indeed, perhaps nothing is more obvious or more interesting to the student of field Entomology than the annual or periodic ebb and flow of particular specific life.

Excluding such specially dramatic phenomena as the unexpected and quite irregular irruptions of migrant swarms of certain species of Lepidoptera, we find even among the more static Coleoptera an abundance or a scarcity, a novel manifestation or a total disappearance, during different or even successive years, which no rules seem to govern nor environmental conditions regulate.

Doubtless, however, these phenomena are strictly dependent on causes which are quite within the sphere of our understanding and

* Ent. Mo. Mag. 1916, pp. 86–89, 131–134.

would finally become explicable by the minute application of two very obvious factors. Of these the more important and omnipresent is certainly meteorological conditions which as a causal chain often indirect and perplexingly complicated affect one or more of the stages of specific Insect life; the other the intelligent operations of mankind acting through change in Environment.

The recent admirable paper contributed to these pages by Mr. G. B. Walsh * deals so fully with this subject that I need not further dilate upon it here, merely remarking briefly on the application of these two factors in this special district.

Our general remembrance of the weather of the last two years recalls the wet and cold summer of 1916 with its few sporadic days or weeks of sunshine, followed by a very severe winter, which began so early as to exclude any autumn and lasted so late as to deprive us of our usual hesitating and reluctant spring, so that on its passing at the end of April we found ourselves suddenly in the temperature of midsummer. But as such reminiscences are often misleading for phenological purposes, I may perhaps be allowed to quote the definite figures issued by the Meteorological Office for this district, thus:—

MEAN TEMPERATURE F.

1915.	1916.	1916.	1917.
July ... 51·9	Jan. ... 34·3	July ... 58·4	Jan. ... 39·7
Aug. ... 51·9	Feb. ... 33·2	Aug. ... 61·7	Feb. ... 33·8
Sep. ... 47·5	Mar. ... 37·3	Sep. ... 55·0	Mar. ... 32·8
Oct. ... 42·0	April... 41·3	Oct. ... 52·0	April... 39·0
Nov. ... 31·3	May ... 55·4	Nov. ... 42·9	May ... 45·6
Dec. ... 30·9	June ... 59·7	Dec. ... 34·8	June ... 46·1

RAINFALL, INCHES.

1915.	1916.	1916.	1917.
July ... 5·06	Jan. ... 1·22	July ... 0·6	Jan. ... 1·1
Aug. ... 2·70	Feb. ... 4·16	Aug. ... 5·1	Feb. ... 0·8
Sep. ... 2·88	Mar. ... 5·27	Sep. ... 1·9	Mar. ... 1·7
Oct. ... 3·03	April... 78	Oct. ... 3·9	April... 1·9
Nov. ... 1·88	May ... 2·20	Nov. ... 4·3	May ... 1·5
Dec. ... 5·74	June ... 1·72	Dec. ... 3·1	June ... 2·3

* Ent. Mo. Mag. 1915, pp. 225-232, 257-261.

WATKINS & DONCASTER, Naturalists,

Keep in stock all Articles for Entomologists, Ornithologists, Botanists, &c.: Umbrella Net, 7/-; Folding Cane or Wire, 3/6, 4/-, 4/6; Plain Ring Net, 1/3, 2/-, 3/-; Pocket Boxes, 6d., 9d., 1/-, 1/6; Store Boxes, with Camphor Cells, 2/6, 3/6, 4/-, 5/-, 6/-; Zinc Pocket Boxes, 9d., 1/-, 1/6, 2/- Setting Boards, from 5d. to 1/10; Complete set of 14 boards, 10/6; Breeding Cages, 2/6, 4/-, 5/-, 7/6; Sugaring Tins, 1/6, 2/-; Sugaring Mixture, ready for use, 1/9 per tin; Setting Houses, 9/6, 11/6, 14/-; Glass Topped and Glass Bottomed Boxes, from 1/- per doz.; Zinc Killing Boxes, 9d., 1/-; Coleoptera Collecting Bottles, 1/6, 1/8; Collecting Box, containing 26 tubes (very useful for Coleopterists, Microscopists, &c.), 4/6; Brass Chloroform Bottle, 2/6.

Improved Pocket Pupa-digger in leather sheath (strongly recommended), 1/9; Steel Forceps, 1/6 to 3/- per pair; Pocket Lens, from 1/6 to 8/6.

Taxidermists' Companion, containing most necessary implements for skinning, 10/6; Scalpels, with ebony handles, 1/3; Fine Pointed Scissors, 2/- per pair; Brass Blow-pipes, 4d., 6d.; Egg Drills, 2d., 3d.; ditto, best quality, 9d. each; Botanical Vasculum, 1/6, 2/9, 3/6, 4/6; Label List of British Macro-Lepidoptera, with Latin and English Names, 1/6; List of British Lepidoptera (every species numbered), 1/-; or on one side for Labels, 2/-.

SILVER PINS FOR COLLECTORS OF MICRO-LEPIDOPTERA, &c., as well as minute insects of all other families.

We stock various sizes and lengths of these Silver Pins, which have certain advantages over the entomological pins usually employed.

For instance, insects liable to become greasy and verdigrisy, like Sesiidae, are best pinned on Silver pins, which will last much longer than the ordinary pins (whether enamelled black, or gilt, or silvered).

We shall be pleased to send pattern cards on application.

A large stock of British, European, and Exotic Lepidoptera, Coleoptera, and Birds' Eggs.

ENTOMOLOGICAL PINS.

The "DIXON" LAMP NET (invaluable for taking Moths off street lamps without climbing the lamp posts), 3s. 6d.

SHOW ROOM FOR CABINETS, &c.

36, STRAND, LONDON, W.C., ENGLAND.

Birds and Mammals, &c., Preserved & Mounted by first-class workmen.

Our New Price List (100 pp.) sent post free to any address on application.

FOR SALE.

16 NATURAL HISTORY CABINETS

BELONGING TO THE LATE DR. MASON,

ALSO

FOUR MICROSCOPICAL CABINETS,

Containing Microscopical Slides by G. R. VINE, of Sheffield.

ALSO

400 BRITISH BIRDS IN CASES.

Apply—Mrs. MASON, TRENT HOUSE, BURTON-ON-TRENT.

ENTOMOLOGICAL NEWS.

A forty-eight page illustrated magazine, issued monthly, except in August and September, devoted to the study of INSECT LIFE. It contains a resumé of the proceedings of a number of Entomological Societies, and also articles by the leading Entomologists in the United States and Canada. Valuable information for the beginner, the economic entomologist, and the systemist. **TWO DOLLARS a year in advance.** Single copies, 25 cents. Address—

ENTOMOLOGICAL NEWS,

The Academy of Natural Sciences,

1900 RACE STREET, PHILADELPHIA, PA.

THE CANADIAN ENTOMOLOGIST.

A MONTHLY MAGAZINE DEVOTED TO THE STUDY OF SCIENTIFIC ENTOMOLOGY.

Volume 50 is now in course of publication. Back volumes can be supplied. It is the oldest established Magazine of the kind in America, and has a world-wide circulation. Subscription, \$2 per annum, payable in advance, which includes a copy of the Annual Report of the Entomological Society of Ontario to the Legislature. Editor, Dr. E. M. Walker, Biological Department, University of Toronto, Toronto, Canada.

Address: Entomological Society of Ontario, Guelph, Canada.

THE SIX COLOURED PLATES illustrating the articles on "SOME INTERESTING BRITISH INSECTS,"

with the accompanying text (issued in the Ent. Mo. Mag. for September, 1909, January and September, 1910, September, 1911, and August, 1913), are issued in a separate wrapper, price 2s.

APPLY TO THE PUBLISHERS.

For Covers for binding the 1917 Volume apply to the Publishers.

A SYNOPSIS OF THE BRITISH SIPHONAPTERA, by the
 Hon. N. CHARLES RÖTHSCHILD, M.A., F.L.S., illustrated by Eight Plates
 (issued in the Ent. Mo. Mag. for March, 1915, pp. 49-112), price 1s. 6d. Apply to
 the publishers.

Scale of Charges for Advertisements.

Whole Page.....£3. Half Page.....£1 11s. 6d. Quarter Page.....17s.

Lowest charge, 7s. up to 5-lines; 1s. per line afterwards.

Repeated or continuous Advertisements per contract.

There is no charge for Lists of Duplicates and Desiderata.

All payments and applications for the above should be made to

B. W. LLOYD, I. 5, Albany, Piccadilly, W.

AUTHORS are requested to send their communications and proofs to either
 J. J. WALKER, Aorangi, Lonsdale Road, Summertown, Oxford; or
 G. C. CHAMPION, Broomhall Road, Horsell, Woking.

COLEOPTERA ILLUSTRATA,

CARABIDAE.

Vol. 1, No. 3.

CARABIDAE.

PRICE \$1.

CONTENTS.

PRICE \$1.

LEISTUS
ferrugineus Linn.

BLAPHRUS
aureus Mull.

LOROCERA
pilicornis Fabr.

BROSCOSOMA
baldense Putz.

BEMBIDIUM
fasciolatum Duft.
articulatum Gyll.

CILLENUS
lateralis Sam.

THALASSOPHILUS
longicornis Sturm.

TRECHUS
discus Fabr.

ANOPHTHALMUS
hirtus Sturm.
v. rostratus Mots.

PTEROSTICHUS

lepidus Leske.
cupreus Linn.
infuscatus Dej.
puncticollis Dej.
crenatus Dej.
barbarus Dej.
carbonicolor Sols.
macer Marsh.
aterrimus Hrbst.
elongatus Duft.
oblongopunctatus Fabr.
angustatus Duft.
melanoscelis Chaud.
niger Schall.
vulgaris Linn.
nigritus Fabr.
minor Gyll.
interstinctus Sturm.
negligens Sturm.
subsinnatus Dej.
brevis Duft.
caspicus Men.
cognatus Dej.
aethiops Panz.
globosus Fabr.

PTEROSTICHUS

cylindricus Hrbst.
melas Creutz.

ABAX

ater Vill.
ovalis Duft.
schuppelii Pall.
rendschmidtii Germ.
corsicus Dej.

MYAS

chalybaeus Pall.

AMARA

ingenna Duft.

ZABRUS

chaleus Fald.
heros Fald.
seidlitzii Schaum.
graecus Dej.
blapoides Creutz.

ANISODACTYLUS

binotatus Dej.
signatus Panz.

ACCURATE ENLARGED PEN DRAWINGS, UNIFORM IN SIZE,
 ONE TO A PAGE 8vo.

COLEOPTERA ILLUSTRATA will be mailed upon receipt of price.

HOWARD NOTMAN, 136 JORALEMON STREET, BROOKLYN, N.Y., U.S.A.

Vol. I, Nos. 1 and 2, \$1 each.

CONTENTS.

PAGE

Studies in Rhynchophora. 3.—The British Bed Apions.— <i>D. Sharp, M.A., F.R.S.</i>	1
The Life-history of <i>Seymus capitatus</i> F.— <i>G. J. Arroit, F.E.S.</i>	8
The Egg-laying of <i>Cladius viminalis</i> Falco.— <i>T. A. Chapman, M.D., F.Z.S.</i>	9
The emergence of <i>Trichosema tibiale</i> from its cocoon.— <i>Id.</i>	11
On the introduction of Insect Aliens to the British Isles.— <i>W. E. Sharp, F.E.S.</i>	13
<i>Cryptophagus lewendali</i> Ganglbauer in Richmond Park.— <i>H. St. J. Donisthorpe, F.Z.S.</i>	14
Further notes on the larva of <i>Byrrhus pilula</i> L.— <i>M. G. Perkins, R.G.A.</i>	15
Swarms of butterflies.— <i>Eds.</i>	16
Note on <i>Coranus subapterus</i> De G.— <i>E. A. Butler, B.A., B.Sc., F.E.S.</i>	16
Additional localities for <i>Eriococcus devoniensis</i> Green.— <i>J. W. H. Harrison, D.Sc.</i>	17
A Hymenopterous note from the Eastern Front.— <i>F. Thompson, M.R.C.S., R.A.M.C.</i>	17
Diptera in 1917.— <i>T. W. Kirkpatrick, F.E.S.</i>	18
The association of Oribatids with Insects.— <i>Claude Morley, F.Z.S.</i>	18
SOCIETIES.—South London Entomological Society	19
Yorkshire Naturalists' Union: Entomological Section	21
Some further notes on the Coleoptera of Crowthorne (a Parish of Berkshire).— <i>W. E. Sharp, F.E.S.</i>	23

THE NATURALIST:

A MONTHLY ILLUSTRATED JOURNAL OF

NATURAL HISTORY FOR THE NORTH OF ENGLAND

EDITED BY

T. SHEPPARD, M.Sc., F.G.S., F.B.G.S., F.S.A.Scot.,

THE MUSEUM, HULL;

AND

T. W. WOODHEAD, Ph.D., M.Sc., F.L.S.,

TECHNICAL COLLEGE, HUDDERSFIELD;

WITH THE ASSISTANCE AS REFEREES IN SPECIAL DEPARTMENTS OF

J. GILBERT BAKER, F.R.S., F.L.S., GEO. T. PORRITT, F.L.S., F.E.S.,

Prof. P. F. KENDALL, M.Sc., F.G.S. JOHN W. TAYLOR, M.Sc.,

RILEY FORTUNE, F.Z.S.

The Journal is one of the oldest Scientific Periodicals in the British Isles, dating back to 1833, and is circulated widely amongst the principal Naturalists of the country.

LONDON: A. BROWN AND SONS, LIMITED, 5, FARRINGDON AVENUE, E.C.

And at Hull and York.

PRICE, SIXPENCE NET. BY POST SEVENPENCE.

Prepaid Subscription, 6s. 6d. per annum, post free.

The Annual Subscription for 1918 is 9/-.

[See p. 2 of Wrapper.]

Third Series, No. 38.] FEBRUARY, 1918. [PRICE 1/- SET.
[No. 645.]

THE
ENTOMOLOGIST'S
MONTHLY MAGAZINE.

EDITED BY

G. C. CHAMPION, F.Z.S. J. E. COLLIN, F.E.S.

W. W. FOWLER, D.Sc., M.A., F.L.S.

R. W. LLOYD, F.E.S. G. T. PORRITT, F.L.S.

J. J. WALKER, M.A., R.N., F.L.S.

VOLUME LIV.

[THIRD SERIES—VOL. IV.]

"J'engage donc tous à éviter dans leurs écrits toute personnalité, toute allusion dépassant les limites de la discussion la plus sincère et la plus courtoise."—Laboulbène.

LONDON:

GURNEY & JACKSON (MR. VAN VOORST'S SUCCESSORS),

38, PATERNOSTER ROW, E.C. 4.

TAYLOR AND FRANCIS, RED LION COURT, FLEET STREET.

NOTICE—Owing to the greatly increased cost of paper, printing, etc., the Editors of the Magazine are compelled to raise the subscription to 9s. per annum (post free). Subscriptions for the 1918 volume should be remitted as soon as possible to R. W. LLOYD, 1, 5, Albany, Piccadilly, London, W. 1.

The price of a single ordinary number is 1s.

EXCHANGE.

Wanted—Pterophoridae (plume moths) of the United Kingdom, or those from any other part of the World, exchange or cash. *Duplicates*—Lepidoptera and Odonata from Japan and Formosa.—AKIO NOHIBA, Ichijoji, Ottagun, Kyoto, Japan.

REDUCED PRICES FOR BACK VOLUMES.

FIRST SERIES.

This can only be obtained in complete Volumes (bound or unbound).

A limited number of sets, from Vol. x to Vol. xxv can still be obtained at £2 15s. per set net (in parts), or of five consecutive Vols. at £1 per set net (if bound, 1s. per Vol. extra).

Certain of the Vols. i to ix can be had separately at 10s. each.

SECOND SERIES.

Vols. i to xv. are now offered at £3 per set net (in parts), or £1 2s. 6d. for five consecutive Vols. (if bound, 1/- per Vol. extra).

THIRD SERIES.

Vol. li (Third Series, Vol. i) can be supplied by the Publishers at 7/6 (8/6 if bound) per copy. Cover for binding, 1/-.

Vol. li (1915) contains 23 Plates (one coloured), a complete Monograph of the British Siphonaptera, and numerous extra pages of text.

Apply to the Publishers.

MEETINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON, 11, Chandos Street, Cavendish Square, W.—Wednesday, February 6th, March 6th.

The Chair will be taken at 8 o'clock in the evening precisely.

The Library is open daily from 9 a.m. to 6 p.m. (except on Saturdays, when it is closed at 2 p.m.), and until 10 p.m. on Meeting nights.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge. The Second & Fourth Thursdays in each month, at 7 p.m. The lantern will be at the disposal of Members for the exhibition of slides.

The Chair will be taken punctually at 8 o'clock.

THE LONDON NATURAL HISTORY SOCIETY, which meets at 7 p.m. on the 1st and 3rd Tuesdays in each month, at Room 20, Salisbury House, Finsbury Circus, E.C., will be glad to welcome at its Meetings any French or Belgian entomologists now staying in this country, and to give them the benefit of its library and collections. Communications should be addressed to the Secretary, Salisbury House, E.C.

Hon. Sec.: J. Ross, 18, Queen's Grove Road, Chingford, N.E.

Chingford Branch. The Chingford Local Branch meets at the Avenue Café, opposite Chingford Station, at 8 p.m., on the 2nd Monday in each month.

Now, in reproducing the above tables of weather conditions and comparisons, I do not, of course, imagine that from a single series of such data inferences of any value can be drawn; but I am inclined to think that if similar figures could be regularly published and compared with systematic faunistic records, for any given locality during some considerable period, correspondences might be discovered of the utmost value in the solution of the problem in hand, a solution which it is obvious however interesting to the entomologist might be of still more economic and practical value to the agriculturalist.

Secondly, as regards the alteration of the environment by human agency. Unhappily, no more conspicuous example of this could be cited than the present condition of a large area of North-Eastern France. Far removed from such a catastrophic disturbance of natural conditions, but of the same origin, is the destruction of woodlands by systematic felling for purposes connected with the war which is now taking place in so many districts throughout this country. Here especially, in an area consisting largely of woods of Scots pine, the character of the land surface is being entirely altered, and the continual burnings of "topplings and loppings" entailed by the conversion of the trees into cut timber, adds a factor which probably has effects of a quite exceptional character on both fauna and flora.

Proceeding now to a more detailed although necessarily very imperfect consideration of what the changes in the character of the Coleopterous fauna of the district have been, I refer, firstly, to the Geodephaga, and find that probably the most noteworthy event connected with that group has been the surprising and rather mysterious emergence of the Carabid *Pterostichus angustatus* Duft., discovered here by Mr. Tomlin.* What the exact nature of the association of this beetle with burnt wood, if, indeed, any such real association exists, is at present unknown. Since its discovery in a very limited area in the spring of 1916, it has widely extended its range and has been taken this year in localities quite remote from its first haunt, but all containing burnt or charred timber.

It seems incredible *a priori* that *P. angustatus* should have been recently introduced from the Continent and suddenly appear in the interior of Berkshire; nor is it much less difficult to understand how so large and conspicuous a beetle, if it be a member of our indigenous fauna, should have hitherto eluded observation and capture.

My experience this and last year with regard to this species fully

* Ent. Mo. Mag. 1916, pp. 157-159.

confirms what Mr. Tomlin notes as to the remarkable asymmetry which the elytral sculpture so often exhibits, and I should estimate that less than 50% of the specimens so far taken have one elytron in exact correspondence with the other.*

But as regards the association of this and other Carabids with areas from which the vegetation has been burnt, the remarkable fact alluded to by Dr. Russel Wallace of the occasional appearance on scorched and devastated railway-banks of a flora quite dissimilar from that which originally clothed them and one containing plants not previously known in the district, caused, as no doubt it is, by the destruction of competitive and stronger forms, affords perhaps an analogy, but, of course, not an explanation of similar phenomena among insects.

Passing, however, to the *Agona*, we find that brilliant species *A. sexpunctatum*, as a note by Mr. Tomlin, which I can confirm by further evidence, shows, has considerably extended its range, and has been perhaps generally more abundant in 1917 than it was in 1916, the first year of its phenomenal epiphany here.

Another *Agonum*, *A. quadripunctatum*, which was taken here for the first time by the Rev. W. W. Fowler in 1915, is certainly dependent in some way directly on charred wood, for it seems to have almost deserted the small area where it was frequent in 1916, the charred wood being then comparatively fresh, for other localities where the felling and consequent burning of the "tops" was again only of the preceding year. No doubt as the ground over which this burnt wood occurs increases so will the range of *A. quadripunctatum*, but I doubt whether, normal conditions having been restored, this insect will ever become a constant member of our fauna.

I have ascertained that both these insects hibernate in the perfect state—*A. sexpunctatum* at the roots of grass and rushes, and I have also recently found it in the borings made by a Longicorn, probably *Rhagium* or *Asemum*, some distance beneath the surface, and *A. quadripunctatum* I have unearthed at least three inches deep among the charred débris of pine-needles, etc.

On the other hand, *Bembidion doris*, which, with *B. obliquum* and an occasional *Acupalpus brunripes*, occurred by the margin of one of the meres, have during the present year been very difficult to discover.

A beetle I saw for the first time alive in this district was *Cicindela sylvatica*, although, I believe, there are previous records by other observers.

* About half of the large number of specimens taken by myself at Woking during 1917 exhibit the same peculiarity.—G. C. C.

A feature of the present year was the extreme abundance of *Anisodactylus binotatus* and *Pterostichus coeruleescens* (*versicolor*) in the early spring and again in September.

A few specimens of the *Anisodactylus* var. *spurcaticornis*, as well as of *A. nemorivagus* with its var. *atricornis*, occurred in 1916, and still fewer this year. The *Acupalpi* have also been much less frequent during the present year, especially *A. brunripes*, although a dark form of *A. dorsalis* (var. *notatus* Muls.?) has been taken which might easily be mistaken for it. Among the *Amarae*, the occurrence of *A. famelica* is worth notice, although quite what might have been expected in a district so near and so similar to Woking.

Among the Water Beetles but little change has been noticed. *Coelambus 9-lineatus* has again appeared in one of the meres, swimming visibly in the clear sun-warmed water over a gravelly bottom. A single capture also of *Agabus unguicularis* perhaps deserves notice, as it had not been previously recorded from the district, but I have been unable to discover *Laccobius regularis* Rey again in the waters whence I took it in 1915.

This particular locality has never been remarkable for its *Brachelytra* and but few noteworthy records of the group exist. One of these, however, is Mr. Tomlin's capture in a heap of faggot-refuse of a single specimen of *Medon apicalis* in the spring of 1916. *Atheta villosula* and *Oligota apicata* may also be mentioned as some of the less frequent species of their genera. But to me a more interesting capture was that of *Staphylinus caesareus*, taken running on a pathway by a fence behind which was a strong nest of the ant *F. rufa*. Fowler states in his book that this beetle is more common in the south than the north of this country; my experience of it, however, is exactly the reverse, and I had never seen a living specimen since I found it in abundance many years ago on the banks of the Shannon.

The usual Myrmecophile species have occurred without much variation, except that I found *Notothecta anceps* abundant in a nest of *F. rufa* in January, and that *Quedius brevis* and *Myrmetes piceus* were much more abundant than usual, associated with the same ant in September 1916.

In the Clavicorn group, perhaps the most noticeable feature of this year has been the scarcity, compared with former years, of any species of *Liodes* (*Anisotoma*), especially of *L. scita* Er., of *Triarthron*, and of *Amphicyllis*, and the best capture undoubtedly that of *Henoticus serratus* by Mr. Tomlin from the same heap of faggot-refuse whence he took *Medon apicalis* and where *Stilicicus fragilis* was for a short period frequent.

Under the bark of the few felled oak logs which this district produces, *Silvanus unidentatus* has been rather common during the past autumn. The usual subcortical species of *Rhizophagus*, *Pityophagus*, *Glischrochilus* (*Ips*), *Epuraea*, and *Ditoma* seemed as abundant as in previous years, and *Tillus elongatus* was taken for the first time, so far as I am aware, off an old beech-stump.

As I have previously stated, all the Coprophagous species of *Lamellicornia*, except *Geotrupes typhoeus*, are singularly deficient in the district, owing probably to the absence of cattle.

The *Cetoniadae* are more frequent, and I took two and missed another on flight of the blue form of *Anomala aenea* (var. *cyanea* Torre), which, as I have never seen a "type" specimen of the species here, is perhaps further evidence that the blue variety is the predominant inland form of this *Anomala*. *Phyllopertha horticola* was for a few days only more abundant this year than I had ever previously seen it here, and *Cetonia aurata* was also in evidence.

Among the *Sternoxi* no new species have been observed nor any special disparity among those previously recorded.

As regards the *Malacodermata* and *Teredilia*, a point of interest was the excessive abundance of the ♂ *Lampyris noctiluca*, which for about a week in July flew into the lighted rooms in the evenings to such an extent as to become a distinct nuisance, while the ♀ of the same insect was not observed till late August and September. *Malthodes fuscus* Wat. (*pellucidus* Kies.) was frequent by sweeping in the woods, although not in such abundance as in former years, but the profusion of *Thanasimus formicarius* during the early spring in all the areas where the pines had been felled and the "topplings" left on the ground since the previous year was quite remarkable.

Ernobius mollis was, however, much less frequent than usual, but in 1916 I took a very small *Ernobius*, which Dr. Sharp states to be *E. oblitus*, a species which he had recently described as new.*

The *Longicornia* seem to have been generally rather well represented during the past summer. In this district our usual species, such as *Callidium violaceum*, *Rhagium*, etc., were common; *Asemum striatum* remarkably abundant, the variety *agreste* F. (which I should prefer to call a case of permanent immaturity) being also frequent. This was probably due to the number of more or less decayed pine-stumps left in the ground from the fellings of previous years.

Saperda populnea was also common wherever there were aspens,

* Ent. Mo. Mag. 1916, p. 179.

and a capture of *Caenoptera (Molorchus) minor* by Prof. Beare forms, if I am not mistaken, a new record for this particular district. The same may be said of *Tetropium gabrieli*, five or six of which occurred in one stump of Scots pine. It may be noted that of these, evidently all one species, the legs of some were clear red and of others almost black; but the fact that they were found in pine, not larch, and in a single stump close to a railway along which have been carried during the last two years very large quantities of timber from various parts of England, supports the presumption that the species was thus introduced from some other locality, and owing to the absence of larch, the proper larval food-tree, will not spread or perhaps even be maintained here.

Criocephalus polonicus, however, which appeared in some numbers during 1916, has been exceedingly rare this year; and another species, taken in 1916 but not seen this year, has been *Phytoecia cylindrica*.

Phytophagous beetles were generally remarkable during the past season for their early appearance and very brief life in the perfect state. Thus *Phytodecta viminalis* for about ten days swarmed wherever there was any aspen or sallow and *Melasoma populi* wherever white poplar occurred; *Cryptocephalus bipunctatus*, var. *lineola*, was much less frequent than usual, but *C. biguttatus* was again taken in July by Mr. Tomlin. *Luperus longicornis (rufipes)*, a species which usually occurs in the utmost profusion on the young birches during June and July, was this summer much less abundant than in previous years.

One of the most noteworthy captures among the *Rhynchophora* during the present year has been that of several specimens of *Rhinomacer attelaboides* by beating the loppings of the Scots pine. This beetle, like *Asemum striatum*, is probably an example of the spread southward during recent years of species formerly considered exclusively northern in range, made possible by the extension of the growth of the pine, and not, as in the case of *Agonum ericeti*, one of the most surprising of recent New Forest captures, a lingering vestige of a long-supplanted fauna. The *Rhynchophora* were, generally, perhaps below their average numbers this year except during June, when a few common forms were in great profusion. Among species not previously noticed were *Anthonomus pomorum*, *Dorytomus dejeani*, and, in September 1916, *Cryphalus abietis*, beaten from dead spruce-twigs.

In the *Heteromera*, *Anthicus floralis* was frequent in the unusual situation of beneath planks laid on the heaps of sawdust from the saw-mills now established in many places in the woods, and *Hypophloeus linearis* was taken in some numbers on the wing over heaps of pine-loppings one warm still evening in June.

And this brings to a close these incomplete notes on some of the more salient features of the Coleopterous fauna of a particularly interesting district. Without a doubt many other species occur here which the present writer has failed to detect. Other observers may have been more fortunate; for of no fact does a long experience of collecting beetles, or, indeed, any group of insects, convince one more than that our most assiduous efforts reveal to us only a small minority of what really exist, and that there are many species of whose presence we may remain entirely ignorant unless we are in the right place exactly at the right time.

“The Bungalow,” Crowthorne.
November 1917.

CHOLEVA ANGUSTATA F. AND ITS ALLIES.

BY H. BRITTEN, F.E.S.

A careful study of the insects belonging to the *angustata*-group of *Choleva* (excluding, of course, the very distinct *C. spadicea* and *C. agilis*) has convinced me that we possess five good species in Britain, *i. e.* two more than given in Fowler's “Col. Brit. Islands.” One of these cannot be identified from the continental literature, and it is necessary to give it a new name. They should be readily separated by the following table based on the structural characters of the two sexes in each case:—

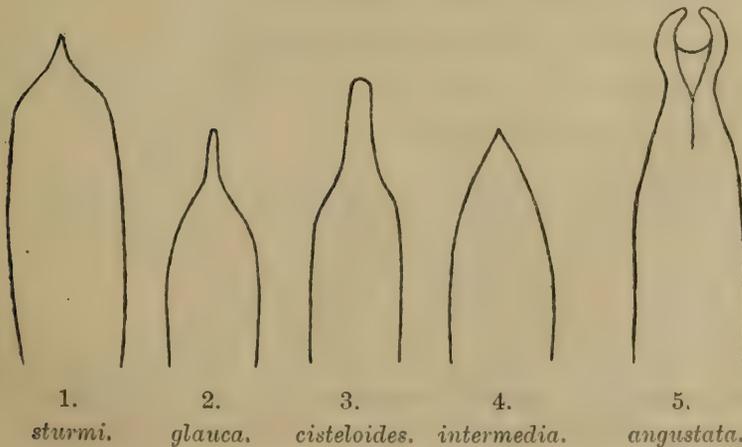
1. Posterior trochanters similar in the two sexes, simple; male with a small tooth on first third of posterior femora; female with apex of elytra toothed.
 - a.* Form narrower and shorter; thorax broadest near front, slightly broader than long, with posterior angles rounded; sculpture of upper surface finer and closer; posterior trochanters short and blunt. Male with second, third, and fourth ventral segments of abdomen impressed in centre, sixth simple at apex; median lobe of aedeagus (fig. 1) with a fine sharp tooth at apex. Female with apex of elytra sloping gradually to tooth*sturmi* Bris.
 - b.* Form broader and longer; thorax broadest near middle, as long as broad, posterior angles more evident; sculpture of upper surface coarser and not so close; posterior trochanters short and pointed. Male with third and fourth ventral segments of abdomen impressed in centre, sixth raised into a distinct ridge in middle, and with a triangular excision of apex; median lobe of aedeagus (fig. 5) divided into two curved teeth, the points turned inwards like the forceps of an earwig. Female with apex of elytra bluntly rounded to tooth*angustata* F.

2. Posterior trochanters not similar in the two sexes ; male without tooth on posterior femora ; female with apex of elytra simple.

a. Thorax broadest before middle, with margins distinct, flattened and slightly raised ; sculpture of upper surface fine, pubescence short, silky ; posterior femora narrow. Male with posterior trochanters short and blunt at apex, with a long, strong, straight tooth on outer side near tip ; fourth and fifth ventral segments deeply impressed in centre, sixth with a small triangular excision in middle of apex ; median lobe of aedeagus (fig. 2) sharply contracted at apical third, terminating in a long, narrow, fine point. Female with posterior trochanters short, obtuse at apex*glauca*, sp. n.

b. Thorax broadest before middle, with margins distinct but not flattened, slightly rounded from middle to base ; sculpture of upper surface strong, pubescence coarser and longer ; posterior femora thickened. Male with posterior trochanters longer, pointed at apex, with a long, strong, curved tooth on outer side near tip ; ventral segments with an impressed line extending the whole length of abdomen, sixth distinctly raised in centre of apex ; median lobe of aedeagus (fig. 3) contracted before apical third, terminating in a long, broad point. Female with posterior trochanters slightly longer and more pointed at apex*cisteloïdes* Fröl.

c. Thorax broadest before middle, with margins distinct and slightly flattened, contracted in an almost straight line from middle to base ; sculpture of upper surface moderately strong, pubescence long with distinct outstanding hairs intermixed ; posterior femora stout. Male with posterior trochanters long and gouge-shaped ; fourth and fifth ventral segments lightly impressed in centre, sixth with a slight triangular notch in middle of apex ; median lobe of aedeagus (fig. 4) conical. Female with posterior trochanters longer and sharply pointed*intermedia* Kraatz.



Drawings made to same scale, $\times 32$, and of the same portion of the median lobe in each case.

Fowler, following Reitter, when he published his "Coleoptera of the British Islands," sank *C. sturmi* Bris. as the male, or a variety of *C. angustata* F.; in fact, he was inclined to consider that it would be more correct to refer all four to one variable species.

Murray, in his Monograph of the genus *Catops* [Ann. & Mag. N. H. ser. 2, vol. xviii, pp. 12-25 (1856)], was of the same opinion, and the five forms now under consideration were all referred to one variable species; but he gave us a good account of the three which Kraatz considered to be distinct. From these descriptions we can be quite certain as to which insects are really referable to *C. cisteloides* Fröl. and *C. intermedia* Kraatz, and almost equally certain of *C. angustata* F., as he states that it has the thorax "broadest before middle, gently rounded at sides, gradually narrowed to base." Now in the allied form which I have considered to be *C. sturmi* Bris., the thorax is broadest nearer the front and is rather strongly narrowed from middle to base.

On turning to Cox's "Handbook of British Coleoptera," vol. i, p. 401, we find it stated that *C. angustata* has the posterior coxae short and pointed in the male, whilst *C. sturmi* has the posterior coxae short and simple. Of course, it is readily understood that what are termed the coxae here are in reality the trochanters.

Fowler no doubt had both forms under review when he said "posterior trochanters of male more or less produced into a point."

It is impossible for me to give any opinion on the synonymy of these insects as quoted by Ganglbauer 1899 and Reitter 1906. They use the name *elongata* Payk. for our *angustata* F., and *oblonga* Latr. for our *intermedia* Kraatz; otherwise their work seems to be very much in accord with that of British writers.

C. angustata F. is the largest insect, with the antennae and tarsi longer than in any of the other four species: the thorax is longer and broader at the base than in *C. sturmi* Bris., whilst the female has the elytra obtusely rounded at apex to the tooth at the sutural angle.

C. sturmi Bris. is readily distinguished by its smaller size, shorter antennae and tarsi, finer sculpture, more rounded thorax, and the elytra in female sloping more gradually to tooth at apex.

The following is a rather more detailed description of *C. glauca*, n. sp., in comparison with the closely-allied *C. cisteloides*, Fröl.:—Form narrower, head pitchy black, thorax dark with margins usually paler, margins distinctly flattened and slightly raised, posterior angles more evident; antennae more or less darkened towards apex; elytra

pale, with striae and sculpture much finer; legs longer and more slender; underside dark pitchy, with deeply impressed fourth and fifth abdominal segments in male.

The slender posterior femora in both sexes, the distinctly longer and less thickened tibiae, its fine surface-sculpture and silky pubescence, and the very evident bluish bloom with which it is covered when fresh makes this insect readily recognisable.

C. cisteloides Fröl. also has the underside dark; but its deeper striae, much coarser sculpture, and usually darker elytra, easily distinguish it.

C. intermedia Kraatz has the underside pale as in *C. sturmi* and *C. angustata*; its different shape, and the distinct outstanding hairs on the elytra, the gouge-shaped trochanters in male, and the simple apex to elytra in female, easily separate it from these species.

All five species have been found by me in moles' nests, although *C. intermedia* seems to be really attached to rabbit burrows, as I have dug it out on several occasions at a considerable depth in such places in midwinter, the beetles running about quite actively and usually in pairs. It is difficult to say anything at present as to the distribution of these insects, but I have taken them all in Cumberland and also in Oxfordshire, and have also had examples of all the species lent me by Commander Walker, from the Oxford District; whilst he also has *C. angustata* from the Isle of Sheppey and the neighbourhood of Chatham, and *C. intermedia* from the Isle of Sheppey and Campbeltown.

I am greatly indebted to Commander Walker for the loan of all his material, and also to Mr. G. C. Champion for looking up descriptions in works which I am unable to obtain.

Myrtle View, Windmill Road, Oxon.

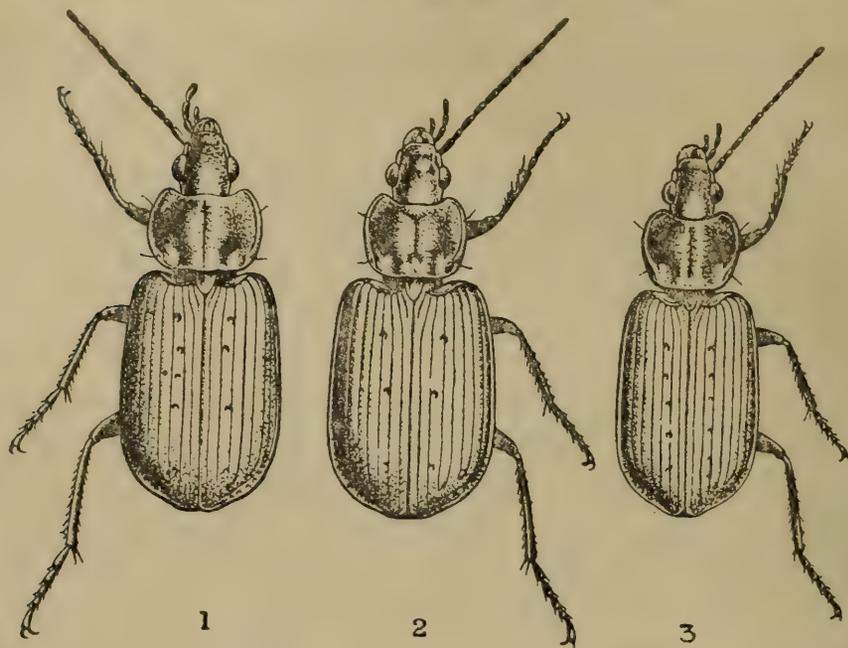
Jan. 11th, 1918.

RE-OCCURRENCE OF *ANCHOMENUS (AGONUM) SAHLBERGI* CHAUD.
IN SCOTLAND.

BY J. E. MURPHY.

In May 1909, while collecting *Coleoptera* in Renfrewshire (south side of the River Clyde), I bottled an *Anchomenus* as a unicolorous variety of *parumpunctatus* F. It was not until adding it to my series, some months later, that I noticed the difference, and the thought occurred to me that, not improbably, it might prove to be the long lost *sahlbergi*.

Naturally, I was anxious to "work up" this interesting find, but having to leave the district just about that time I was unable to do anything further. On my return in 1914 I succeeded in finding two female examples, under stones at a spot some distance from the river and quite a mile from where the first was procured. In each case the specimens were found in company with *parumpunctatus*, which, at first sight, is



so similar that it has prompted me to make drawings, placing *sahlbergi* (2) between *parumpunctatus* F. (1) and *ericeti* Panz. (3) for comparison.

Late in May, about 53 years ago, Mr. Bishop met with the insect in some numbers on the edge of a sandy bank on the north side of the Clyde a few yards west of Dunglass Castle. It was determined by the late Mr. Rye as a variety of *A. parumpunctatus*. A few specimens were subsequently taken by Mr. Henderson, and I understand they are now in Dr. Sharp's collection.

These appear to be the only occasions on which *A. sahlbergi* has been found in the British Isles previous to the present record.

I have to express my indebtedness to Mr. T. G. Bishop and Mr. G. C. Champion for their kind assistance in the identification of this species.

104 West Graham Street, Glasgow.

Nov. 17th, 1917.

NOTE ON THE CURCULIONID-GENUS *SYSCIOPHTHALMUS* HELLER,
WITH A DESCRIPTION OF A NEW SPECIES FROM TIERRA
DEL FUEGO.

BY G. C. CHAMPION, F.Z.S.

In the "Stettiner entomologische Zeitung" for 1906 Dr. K. M. Heller described and figured both sexes of a remarkable new Tanymericid-weevil from Santa Cruz, Argentina [Patagonia], under the name *Sysciophthalmus bruchi*. Four specimens (3 ♀ ♀, 1 ♂) of this insect were acquired by the British Museum in 1903, all from the Valle del Lago Blanco, Patagonia (*Koslowsky*), as well as a second species of the same genus from Useless Bay, Tierra del Fuego, in 1906. The eyes in the present genus are large and finely faceted, and placed beneath the rounded, lateral, ear-like expansions of the head, and completely invisible from above, and the vibrissae are long and numerous. *Sysciophthalmus* is an addition to Enderlein's list (1912) of the Coleoptera of Tierra del Fuego. It is related to *Anaemerus* Schönh., from Africa and Madagascar.

Sysciophthalmus crawshayi, n. sp.

♂. Moderately elongate, black, opaque, densely clothed with small, pale greyish, agglutinated, earthy-looking scales, variegated (the legs included) with whitish and velvety-black scales, the latter condensed on the elytra into a series of short oblique streaks along the suture and interrupted series of small spots on the disc, the whitish scales on the prothorax tending to form three faint lines on the disc, the median one continued on to the base of the suture; the surface also bearing very short, stiff, decumbent hairs (densely granulato-punctulate, when the vestiture is removed). Head with large, ear-like lateral processes, irregularly biseriato-tuberculate between them, appearing sulcate down the middle, the rostrum very broad, the two processes at the apex divergent and obliquely truncated at the tip; antennae short, the funiculus 5-jointed, joint 5 broader and stouter than 4, 6 and 7 apparently absorbed into the ovate club. Prothorax about as long as broad, trapezoidal, slightly wider than the head, feebly compressed at the base, interruptedly sexcostate. Elytra oval, not very much longer than the head and prothorax united, flattened and irregularly tuberculate on the disc, with interrupted series of coarse scattered punctures partly hidden by the vestiture, the fifth interstice produced into a conspicuous, angular, dentiform prominence at its point of termination, and the apices into a stout blunt tooth, the humeri broadly, obliquely truncate, the base sinuato-emarginate.

Length $5\frac{1}{4}$, breadth $2\frac{1}{4}$ mm.

Hab. TIERRA DEL FUEGO, Useless Bay (*R. Crawshay*).

One male, captured in Sept. 1904. Much smaller and less elongate than *S. bruchi*, the prothorax without projecting tubercles at the sides, simply trapezoidal, the elytra oval and much shorter, the funiculus 5- (instead of 7-) jointed, the two missing joints doubtless merged into the club.

Horsell, January 1918.

THE SYNONYMY OF *ANDRENA WILKELLA* K., AND ITS ALLIES, WITH
NOTES ON HABITS, AS CONFIRMING SPECIFIC DISTINCTIONS.

BY R. C. L. PERKINS, D.Sc., M.A., F.E.S.

Having been asked recently by an American Hymenopterist to supply him with specimens of *Andrena wilkella*, *A. convexiuscula*, and *A. xanthura*, which have been "determined through comparison with the types," since "one of the above species" appears to occur in New England, I have here attempted to give what I believe to be the correct synonymy of our three closely allied species of the *wilkella* group. From the examination that I have made of Kirby's and of F. Smith's collection I consider the three names cited by my correspondent to belong to a single species only, *A. wilkella* K. As the types of the three species were described in this country, I am not here concerned to deal with the synonymy of continental authors.

Those who adhere strictly to the law of priority, even to the adoption of a name scarcely mentioned during a hundred or more years, and practically unknown to working entomologists, rather than continue the use of one of those which is well known to all, and has under it the copious literature of a century, will, I believe, be correct in using the specific name placed at the head of each list of synonyms.

ANDRENA OVATULA Kirby.

Melitta ovatula Kirby, Mon. Ap. Angl. ii, p. 149, no. 89, ♂.

(N.B.) By an oversight Kirby describes his specimens as ♀ (*cf.* the case of *M. spinigera*, *op. cit.* p. 123) and the name is omitted in his Index.

Melitta fuscata Kirby, *op. cit.* p. 167, no. 107, ♀.

Melitta afzeliella Kirby, *op. cit.* p. 169, no. 108, ♀.

Andrena fuscata Smith, Cat. Brit. Hym. (*Apidae*) 1855, p. 100, ♀.

Andrena afzeliella Smith, *op. cit.* p. 101, ♀; the ♂ described was probably a *wilkella* K.

(N.B.) *M. contigua* K. is wrongly given as a synonym, being ♂ *fulvicrus* K.

Andrena fuscata Smith, Cat. Brit. Hym. (*Apidae*) 1876, p. 70, ♀.

Andrena afzeliella Smith, *op. cit.* p. 71, *partim*. In my opinion both sexes were partly described from *wilkella* K. In Smith's series of *A. afzeliella* the ♀ ♀ with "pale fulvous" anal fimbria are clearly *wilkella*.

Andrena afzeliella and var. *fuscata* E. Saunders, Tr. Ent. Soc. Lond. 1882, p. 281. The description of the ♀ at least was made from

true *afzeliella*, but the species was not distinguished from *wilkella* K. (*nec* E. S. *op. cit.*); *cf.* E. Saund. "Hym. Acul." under *A. wilkella*.

Andrena afzeliella and race *intermedia* Perkins, Ent. Mo. Mag. xxv, p. 128.

Andrena afzeliella var. *fuscata* race? *intermedia* E. Saunders, "Hym. Acul." (of British Islands) p. 268.

ANDRENA WILKELLA Kirby.

Melitta wilkella Kirby, Mon. Ap. Angl. ii, p. 145, no. 84, ♀.

Melitta barbatula Kirby, *op. cit.* p. 152, no. 92, ♂.

Melitta xanthura Kirby, *op. cit.* p. 164, no. 105, ♀ ♂.

Melitta convexiuscula Kirby, *op. cit.* p. 166, no. 106, ♀ var. stylopized.

Andrena convexiuscula Smith, Cat. Brit. Hym. (1855) p. 102, ♀ ♂ var. stylopized.

Andrena wilkella Smith, *op. cit.* p. 105, ♀.

Andrena xanthura Smith, *op. cit.* p. 106, *partim*. (The description of the ♂ was drawn up probably from an *afzeliella* mainly, and the ♀ from a *similis* Sm., but the true *wilkella* was included with these.)

Andrena convexiuscula Smith, Cat. Brit. Hym. (1876) p. 72, ♀ ♂ var. stylopized.

Andrena xanthura Smith, *op. cit.* p. 74, ♀ (*partim*) & ♂. (The females given to this species were both *wilkella* K. and *similis* Sm.; *barbatula* K. and *wilkella* K. are rightly cited as identical with it.)

Andrena afzeliella and var. *convexiuscula* E. Saunders, Tr. Ent. Soc. Lond. 1882, p. 281, ♂ ♀ *partim*. (At this time *afzeliella* K. and *xanthura* K. were considered one species by Saunders, and *wilkella* K. and *similis* Sm. were held to be identical.)

Andrena xanthura Perkins, Ent. Mo. Mag. xxv, p. 128.

Andrena wilkella E. Saunders, "Hym. Acul." p. 267.

ANDRENA SIMILIS Smith.

Andrena similis Smith, Zoologist, vii, Append. lx, ♂.

Andrena similis Smith, Cat. Brit. Hym. 1855, p. 63, ♂.

Andrena similis Smith, *op. cit.* 1876, p. 37, ♂.

Andrena wilkella E. Saunders, Tr. Ent. Soc. Lond. 1812, p. 282, ♂ ♀.

Andrena similis Perkins, Ent. Mo. Mag. xxv, p. 128.

Andrena similis E. Saunders, "Hym. Acul." p. 266.

With the exception of certain males of *A. ovatula* (*afzeliella*) and *wilkella* (*xanthura*) there is no difficulty in distinguishing each

of the three species with certainty, provided the examples examined are clean and in reasonably good condition. But it must be confessed that in the species named one does occasionally find examples of the male sex that at any rate need the most careful scrutiny before they can be correctly placed. Most of the examples can be determined off-hand, by anyone who has once mastered the slight distinctions between them. The difficulty is certainly caused by the variability of the double-brooded *ovatula*, this species being more unstable in its characters than its allies. These closely allied species have always been of particular interest to me, and it may be worth while to mention some of the reasons which confirm their specific distinction.

- (a) *Andrena ovatula* (*afzeliella*) is in the South generally double-brooded; the other two species are single-brooded, even in abnormal seasons, when they may appear as early in the Spring as *ovatula*. Usually the latter appears considerably earlier in the season, though later all will be found together.
- (b) *A. ovatula* is more variable and has in both broods a black-legged form of ♀, *fuscata* K., Sm. The hind tibiae of the other two are always pale, like the *afzeliella* form of *ovatula*.
- (c) *A. ovatula* is rarely attacked by *Stylops*, even in most localities in which it abounds, whereas *A. wilkella* is frequently found stylopized, where it is abundant, and examples changed by this parasite are the *convexiuscula* of Kirby and Smith. In Smith's collection the series of *convexiuscula* is made up almost wholly of stylopized *wilkella*, not of *ovatula*. Of *similis* Sm. I have never met with a stylopized example, though I have read that such are common in Germany.
- (d) *A. wilkella* (*xanthura*) is the natural host of *Nomada ochrostoma*, which often abounds at pure colonies of this *Andrena*. I have entirely failed to find it at pure colonies of either *ovatula* or *similis*. Where all three species of *Andrena* occur together, but *wilkella* much less numerous than the others, I have found the *Nomada*, though it was not then abundant, as one would have expected it to be, had it also attacked the other two species, which were extremely numerous, especially *ovatula*.
- (e) *A. wilkella* is extremely partial to gardens, meadowlands, and well-cultivated districts. "It frequents hedgerows and woodsides in preference to open heaths and sandy situations"—words used by Smith, not of the *Andrena*, but of its parasite, *N. ochrostoma*. Not that it is necessarily absent from such places, but both

itself and its *Nomada* sometimes literally swarm in localities on stiff clay and the heaviest soils, from which its allies are entirely absent.

Similarity in habits is shown by the liking of all three species for papilionaceous plants, the females gathering much pollen from these.

Paignton.

Dec. 26th, 1917.

The Association of Acari with Insects.—It may interest Mr. Morley (*cf. ante*, p. 19) and others to know that in Curtis's "Farm Insects," p. 199 & Plate G, figs. 48 & 49, *Uropoda umbilicata* is described and illustrated in connection with its attachment to *Elater* [*Agriotes*] *obscurus*. The mite is attached by its back to a tube (apparently) the other end of which it fastens to an elytron of the beetle for the purpose (?) of extracting nourishment from the latter.—C. NICHOLSON, Hale End, Chingford: Jan. 14th, 1918.

Staphylinus pubescens De G. in Essex.—I have taken two specimens of this insect in the Southend district—one at Hockley, in April, in horse dung, and one in September, at Hadleigh, also in dung. It has not, I believe, been recorded from these localities previously. Mr. C. E. Stoll has kindly verified my determination.—A. F. J. GEDYE, 2 Park Terrace, Westcliff-on-Sea, Essex: Jan. 16th, 1918.

Coleoptera at Mickleton (Glos.).—From Aug. 1st to Sept. 13th, 1917, I was "under canvas," working "on the land," near a small village in the north of Gloucestershire. This gave me opportunities in the evening, after work, for a little collecting. The following Coleoptera, amongst others, were noticed:—*Carabus violaceus*; *C. mouilis*, very common in the tents; *Amara familiaris* and *trivialis*, extremely abundant in an onion field; *Pterostichus vernalis* and *cupreus*, sparingly in the same field; *Stomis pumicatus*, under a stone; *Ilybius guttiger*, one example under a clod of earth in the onion field; *Astilbus canaliculatus*, three specimens in an ant's nest under a stone; *Hister cadaverinus* and *Dermestes murinus*, in a dead rabbit; *Mycetophagus 4-pustulatus*, in a boletus on an oak-tree; *Dorcus parallelepipedus*, ♂ and ♀, on ash logs; *Sinodendron cylindricum*, in ash log; *Chrysomela staphylea*, under moss; *Liophloeus nubilis*, one specimen.—GEORGE B. RYLE, 15 Madeira Place, Brighton: Dec. 27th, 1917.

The larva of Scymnus.—My attention has been called to the fact that in stating on p. 8, *ante*, that I believed no modern representation of a larva of this genus existed, I have overlooked a drawing of that of *S. arcuatus* by the Rev. J. F. Perry in Proc. Ent. Soc. Lond. 1915, Plate A (facing p. xcix). This is not strange, for by some extraordinary mischance that drawing is described at the foot of the plate as "Larva and pupa of *Aleurodes* parasitic on *Scymnus arcuatus*." *Aleurodes* is really the prey of the insect represented (there is no parasitism), and I am glad of the

opportunity of calling attention to this unfortunate error. A comparison of the figures of *Scymnus arcuatus* and *capitatus* shows a remarkable dissimilarity between them. The former is without the flocculent clothing and is described by Father Perry as white and glistening, but with a sticky secretion to which the waxy matter of the *Aleurodes* adheres.—GILBERT J. ARROW, 9 Rosedale Rd., Putney, S.W. : Jan. 15th, 1918.

Trigonogenius globulum Sol. in London.—Amongst some Ptinids recently sent me for determination by Mr. W. West there were several examples of this insect, supposed to be of Chilean origin, but now almost cosmopolitan in its distribution. These were found, with many others, during the present winter, in an old carpenter's shop in Upper Thames St., London, beneath a lot of timber, odd specimens of the insect having been seen crawling about in the same place amongst the wood-shavings on the floor for some time previously. *Ptinus tectus* occurred with it, and *Niptus hololeucus* was very common amongst the "sweepings."—G. C. CHAMPION, Horsell, Woking : Jan. 15th, 1918.

Halesus guttatipennis McLachl. and other Trichoptera and Neuroptera in Cumberland.—Among a number of insects of the above Orders recently named for me by Mr. Porritt are two specimens of this very local species, which were taken in September 1912 on the banks of the River Eden in Cumberland. Mr. Porritt tells me that the date is early—October and November being the time he has himself captured it. Several of the other species which Mr. Porritt has kindly determined appear to be also new to Cumberland, viz.:—*Chaetopteryx villosa*, R. Eden, *Isopteryx torrentium* and *Lasiocephalus basalis*, Keswick, *Mystacides azurea*, R. Petteril, *Sialis fuliginosa*, R. Caldew, and *Hemerobius marginatus*, Orton. In addition to these I have, at various times, taken *Anobolia nervosa*, *Leptocerus commutatus*, and *Osmylus chrysops* on the banks of the Petteril, near Carlisle, which I believe will also be new records for the county.—F. H. DAY, 26 Currock Terrace, Carlisle : Jan. 5th, 1918.

Obituary.

William Henry Harwood died at Sudbury, Suffolk, on Dec. 24th, 1917, after a long illness. He was born at Colchester on Feb. 25th, 1840, and from a very early age developed a taste for entomology. Educated at the Colchester Royal Grammar School, he was afterwards apprenticed to Messrs. Smith & Shenstone, Chemists, of Colchester. After completing his indentures, owing to indifferent health, he decided to take up an outdoor occupation, and this resulted in him devoting all his time to entomology. He was one of the first to practise the method of "sleeving" larvae on growing food-plants, and was successful in rearing many species, the earlier stages of which were previously unknown. On this subject he constantly corresponded with Messrs. Buckler, Hellins, and Harpur-Crewe, and his name is frequently mentioned throughout the first-named author's "Larvae of British Butterflies and Moths," as well as in the current Entomological Magazines. In the early "eighties" he took up the study of Coleoptera and Hymenoptera-Aculeata, and later on other Orders of British Insects, devoting much attention to species of economic

interest; but the Aculeata were always his favourite group, and he soon became as well known among those interested in the "Neglected Orders" as he already was among Lepidopterists. He married in 1875 Elizabeth, younger daughter of James Netherwood Dixon, who predeceased him in 1914. Of the four children, three survive him, two of the sons being active entomologists whose names are familiar to the readers of this Magazine. Harwood was responsible for the Insect Section of the "Victoria History of Essex," the bulk of the records, apart from Lepidoptera, being of species taken in the Colchester district, the High Woods in that neighbourhood, once famous for their luxuriant oaks, being his favourite hunting grounds. The Essex Field Club, in their early days, received a good deal of assistance from him, and he sometimes conducted their excursions to such places as West Meisea, St. Osyth, etc.

Society.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY :
 October 25th, 1917.—HY. J. TURNER, F.E.S., President, in the Chair.

The decease of a member, Mr. Archer (1914), was announced.

The President read a paper on "The *Pieridae*," dealing chiefly with the "lines of variation" in each of the species which breed in Britain usually, and illustrated his remarks with diagrams and the specimens contained in the Society's various collections. Mr. Leeds exhibited aberrations of *Pieris rapae*, ♂ without spots, ♂ large, ♂'s third brood small, ♀ deep yellow below; *P. brassicae*, ♀ blotched with bright green, ♀ pale blue below, ♀ very large; *P. napi*, ♂ third brood small. Mr. Moore, exotic Pierids to show that many species were not white: *Tachyris nero*, red; *Archonias critias*, nearly all black; *Appias celestina*, blue; *Nepheronia thalussina*, pale green; *Teracolus* sp., iridescent at apex; and *Leptophobia* sp., silvery lustre below. He also showed *Leucidia brephos*, the smallest Pierid known, and the much debated *Pseudopontia paradoxa*. Mr. West (Greenwich), the local Coleopteron *Cionus longicollis*, a series. Mr. Bunnett, the Coleopteron *Pinus tectus*, which had attacked some cayenne pepper.

November 8th, 1917.—The President in the Chair.

The decease of a Life-member, Mr. R. Standen (1873), was announced.

Mr. Leeds exhibited forms and aberrations of various British *Leucaniidae*, including *Leucania impura*, with ab. *punctina*, etc.; *L. pallens*, with ab. *ectypa*, ab. *arcuata*, etc.; *L. phragmitidis*, with ab. *rufescens*, etc.; *Coenobia rufa*; *Tapinostola fulva*; *Nonagria geminipuncta*, with ab. *unipuncta*, ab. *obsoleta*, etc.; *N. dissoluta*; *N. brevilinea*, with ab. *sinelinea*, etc. Mr. A. W. Buckstone, a series of a small race of *Aricia medon* (*astrarche*), from Wendover, May 1912, with Surrey series for comparison. Mr. Edwards, a number of species of *Pieridae*, and referred to the different odours which were emitted by the specialised scales in many species. Mr. Turner, examples of the Pierid, *Anthocharis crameri* (*belia*), from some twenty localities, and referred to the local and seasonal forms.

December 13th, 1917.—The President in the Chair.

ANNUAL EXHIBITION.—Mr. R. Adkin exhibited a *Pieris brassicae* with the apical blotches of the fore wings crossed by distinct yellow streaks on the veins. Mr. W. G. Sheldon, about 600 *Peronea cristana* and its various forms and his long series of *Leptogramma literana* in great variety. Mr. B. Adkin, a cabinet-drawer of *Noctua primulae* (*festiva*), and one of *Dianthoecia carpophaga*. The Rev. J. E. Tarbat, a *Pieris napi* having two small white patches centred with black on the underside of the right hind wing, and a *Mimas tiliæ* without the central band on the right fore wing. Mr. W. J. Ashdown, a varied series of *Ematurga atomaria*. Mr. Prideaux, living larvae of *Pararge megaera*, and read notes on the oviposition habits of the species. Mr. West, on behalf of the Society, several drawers of the "Freeman" collection of European butterflies. Mr. Bowman, specimens of *Cosymbria pendularia*, including various forms of the ab. *nigro-subroseata*, also *Tiliaceu* (*Xanthia*) *aurago* with reddish forms from Horsley. Mr. Brooks, series of *T. (X.) aurago* from Horsley, and representatives of various local races of *Ematurga atomaria*. Mr. Hammond, a perfectly symmetrical gynandromorph of *Polyommatus icarus* from Boscastle. Mr. Newman, for Mr. G. B. Oliver, a very long series of picked aberrations of *Agriades coridon* taken in 1917. Mr. Tonge, a bred series of *Ennomos quercinaria* (*angularia*), half being dark banded; males of *A. coridon* showing red scales on the margin of the hind wings, and an example of ab. *fowleri* from Surrey; and the Dipteron *Echinomyia grossa* bred from a larva of *Lasiocampa quercus* var. *callunae* from near Preston. Mr. A. J. Lawrence, a rare aberration of the female of the Australian race of *Hypolimnas bolina* from Rockhampton, almost uniformly black. Mr. L. W. Newman, long series of aberrations of *Abraxas grassulariata*, including forms of ab. *varleyata*, of ab. *lacticolor* and ab. *nigrosparsata*, etc.; long series of *Cosmotriche potatoria* from W. Sussex, many females approaching the rich dark males in coloration; a long series of hybrid *ocellatus* × *populi*, bred 1917, very uniform in marking, most were gynandromorphs; a number of brick-red *Mimas tiliæ*; bred series of *Boarmia roboraria*, extremely small although well fed; an extreme melanic *Boarmia consortaria* from Sutton Coldfield; large female *Cerura bicuspis* bred from Tilgate Forest; and black-banded *Agriopis aprilina* bred from pupae dug in Delamere Forest. Mr. W. J. Kaye, *Morpho perseus* from French Guiana, a polymorphic species spread over a considerable area of S. America. Mr. Hy. J. Turner, butterflies recently received from Sicily, including *Charaxes jasius*, *Gonepteryx cleopatra*, *Polygonia egea*, *Papilio podalirius*, *Rumiccia phlaeus* var. *eleus*, *Pieris manni* (?), a very dwarf *Aricia medon*, etc., and read notes on the exhibit. Mr. E. M. Gibb, salmon-coloured examples of *Zygaena filipendulae* from East Sussex. Mr. H. A. Leeds, a large number of aberrations of British butterflies taken in 1917, including *Agriades coridon*, pale ♂, ab. *semi-syngrapha*, varied ground in ♀ ♀, ab. *syngrapha* (Chiltern Hills), dwarf ♀; *Polyommatus icarus* ab. *icarinus*, underside aberrations; *Euchlœe cardamines*; *Pieris napi*, large black markings on fore wings; *Melanargia galathea*, much yellow developed; *Coenonympha pamphilus*, varied ground, ab. *lyllus*; etc. Mr. H. Moore, *Euvanessa antiopa* and *Pyroneis cardui*, examples from numerous localities over the whole of their areas of distribution. Mr. A. W. Buckstone, a series of *Spilosoma lubricipeda* var. *fasciata* the result of inbreed, a cross between type and *zatima*; and bleached forms of *Epinephele jurtima*. Mr. Edwards, Burmese moths and species of various Papilionine genera.—HY. J. TURNER (*Hon. Editor of Proceedings*).

NOTES ON VARIOUS SOUTH AMERICAN COLEOPTERA COLLECTED
BY CHARLES DARWIN DURING THE VOYAGE OF THE "BEAGLE,"
WITH DESCRIPTIONS OF NEW GENERA AND SPECIES.

BY G. C. CHAMPION, F.Z.S.

Darwin, as is well known, was a keen Coleopterist, as shown by the representative collection made by him of our British forms, still preserved in the University Museum at Cambridge. During the voyage of the "Beagle," 1832-1836, he captured beetles at every opportunity, and frequently mentions them in his published Journal. These insects were sent direct to specialists for determination, and most of them subsequently passed into the British Museum, the last instalment of his unnamed collections having been presented to that Institution by Mr. C. O. Waterhouse in 1885. The conspicuous South American *Carabidae*, *Dytiscidae*, *Tenebrionidae*, etc., were named or described long ago by Babington, G. R. Waterhouse, and others,* but the rest of the American beetles have remained untouched to this day amongst the "Accessions" in the Museum. The unnamed specimens, including many minute forms, have recently been examined by myself, and a few of those from the Tierra del Fuego and Chile are described in the present paper; the new species from the first-mentioned region are, of course, additions to Enderlein's Fuegian list (1912). Darwin's Falkland Coleoptera have been enumerated by me in the "Annals and Magazine of Natural History" for Feb. 1918, pp. 167-186.

List of New Species described.

<i>Bembidiomorphum</i> (n. g.) <i>convexum</i> (Carabidae).	<i>Aulonodera</i> (n. g.) <i>darwini</i> (Halticidae).
<i>Micragyrtes</i> (n. g.) <i>ocelligerus</i> (Silphidae).	<i>Listroderes</i> <i>quadrituberculatus</i> (Curculionidae).
<i>Hydnobius</i> <i>forticornis</i> (Silphidae).	<i>Listroderes</i> <i>katerensis</i> (Curculionidae).
<i>Philothermus</i> <i>cribricollis</i> (Colydiidae).	<i>Antarctobius</i> <i>rugirostris</i> „
<i>Elmis</i> <i>chiloensis</i> (Parnidae).	„ <i>laticauda</i> „
<i>Docemina</i> (n. g.) <i>crassipes</i> (Halticidae).	

CARABIDAE.

ANTARCTONOMUS Chaud.

Antarctonomus peroni Chaud.

Hab. TIERRA DEL FUEGO, Orange Bay (*type of Chaudoir*), Hardy Peninsula (*C. Darwin*), Navarin Isl. (*C. Darwin, Michaelson*), Hermite

* Note.—*Hyphodrus maculatus* Babington (1841), found by Darwin at St. Jago, Cape Verdes, was described by Wollaston from the same island in 1857, under the name *H. crassus*, the latter name, of course, falling as a synonym. In the "Munich Catalogue," ii, p. 428 (1868), the locality for *H. maculatus* is incorrectly given as "Brazil."

Isl. (*C. Darwin*); STRAITS OF MAGELLAN, Punta Arenas (*Delfin*); CHILE, Chiloe and Ynche Isls. (*C. Darwin*).

There are eight specimens of this species in the Museum, left unnamed by Waterhouse, seven of which were captured by Darwin. The ♂, unknown to Chaudoir (1861), has joints 1-4 of the anterior tarsi dilated, 2 being wider than the others, as in the same sex of *Brachycoelus virescens* G. R. Waterh. (*duponti* Chaud.).

TRECHUS Clairv.

Trechus hornensis Fairm.

Hab. TIERRA DEL FUEGO, Kater's Peak, Hermite Isl. (*C. Darwin*), Beagle Channel (*type of Fairmaire*); STRAITS OF MAGELLAN, Punta Arenas (*Michaelsen*).

Found in abundance by Darwin on Hermite Island, in 1832.

BEMBIDIOMORPHUM, n. gen.

Mentum feebly bidentate in the centre in front; [ligula injured in the specimen dissected]; paraglossae slender, curved, short; inner lobe of the maxillae hooked; terminal joint of the maxillary palpi twice the length of the preceding joint, conical, pointed at tip, that of labial palpi similar; antennae short; head with a single narrow, oblique, supra-orbital furrow placed close to the eyes, and a small juxta-ocular pore; eyes large; mandibles stout, curved inwards at tip; prothorax subcordate, sharply margined laterally; scutellum wanting; elytra oval, immarginate and truncate at base, obsoletely striate on disc, the sutural stria complete, not recurved at apex, a scutellary stria present, the margins not sinuate posteriorly, the epipleura rapidly narrowed towards apex, not reaching tip; anterior coxae separated by the truncated process of the prosternum; tibiae with short spurs, the excavated portion of the anterior pair preceded by a similar spur; tarsi smooth, the anterior pair simple, similar in the two sexes, set with short setae beneath; body convex, apterous, glabrous.

Type, *B. convexum*.

The type of this genus has the general facies of the Palaearctic *Bembidium nigricorne* Gyll., except that it is larger and more convex, and has a longer prothorax, approaching the Broscids and certain Pterostichids in this respect. The simple, inferiorly setose anterior tarsi in the two sexes, and the conical apical joint and comparatively short second joint of the maxillary palpi are its chief characters. *Bembidiomorphum* would perhaps be best placed near the southern Trechids, *Dormeyeria* Enderlein (Falklands), *Oopterus* Guérin (New Zealand), and *Merizodus* Solier (Chile, Falklands, and Tierra del Fuego). Bates, in 1882, in speaking of his Group "Bipalmati," calls attention to numerous connecting links between *Bembidium*, *Tachys*, and *Trechus*.

Bembidiomorphum convexum, n. sp.

Oblong, convex, brilliant cupreous with the disc of the prothorax and elytra slightly suffused with green, green with the base and apex of the prothorax and the sides of the elytra cupreous, or brassy black, the legs, mandibles, palpi, and antennae black or piceous, the under surface aeneous. Head almost smooth, bisulcate in front, the space between these sulci and the narrow supra-orbital groove appearing thickened; antennae rather stout, joint 3 slightly longer than 2, 5-10 not longer than broad. Prothorax large, wider than the head, broader than long, rounded at the sides anteriorly, and narrowed and sinuate posteriorly, the hind angles rectangular; sparsely, coarsely punctate at the base, and with a large deep fovea near the hind angles, the disc transversely wrinkled and with a narrow, sharp median sulcus, not quite reaching the base or apex. Elytra regularly oval, at the middle considerably wider than the prothorax, the humeri distinct, but obtuse; obsolete striate on the disc, the striae becoming evanescent towards the sides and apex, those near the suture conspicuously punctured, the interstices smooth, flat, without pores. Legs rather short, the tarsi comparatively stout.

Length $3\frac{4}{5}$ -4, breadth $1\frac{3}{5}$ - $1\frac{3}{4}$ mm.

Hab. TIERRA DEL FUEGO, Hardy Peninsula near Cape Horn, Navarin Isl. (*C. Darwin*); CHILE, Patch Cove, north part of Tres Montes (*C. Darwin*).

Five specimens, varying greatly in the colour of the upper surface, the one from Tres Montes (♀) having the prothorax and elytra brilliant green and cupreous. The general coloration is suggestive of that of *Cascellius nitidus* G. R. Waterh., a much larger, elongate Broscid also inhabiting Tierra del Fuego.

DYTISCIDAE.

MEGADYTES Sharp.

Megadytes glaucus Brullé.

Hab. ARGENTINA; URUGUAY, etc.

Sharp, in his important work on the *Dytiscidae* (1882), omitted to mention *Cybister biungulatus* Babington (1841), found by Darwin at Maldonado, Uruguay. It is correctly placed as a synonym of *M. glaucus* Brullé in the "Munich Catalogue" (1868), in which, however, the locality is wrongly given as "Patagonia." There are five specimens from Maldonado in the Museum, one of which must be the type.

STAPHYLINIDAE.

NORDENSKJÖLDELLA Enderlein.

Nordenskjöldella flavitarsis Enderlein.

Hab. TIERRA DEL FUEGO, Lapataia Channel (*type*), Navarin Isl. (*C. Darwin*).

Described from a single (♀) example captured on Oct. 9th, 1902, by the Swedish South Polar Expedition. Darwin found another on Navarin Island, in 1832 or 1833.

SILPHIDAE.

MICRAGYRITES, n. gen.

Head with two prominent ocelli; eyes finely faceted; apical joint of the maxillary palpi abruptly subulate, the narrow pointed apical portion very short; mandibles acute at tip, sharply toothed towards the base within; antennae 11-jointed, 1 and 2 stout, 8-10 strongly transverse, 8-11 dilated into a stout club, 11 divided into two portions by a distinct suture, the apical portion narrow; elytra truncate posteriorly, incompletely covering the abdomen, confusedly punctured; anterior coxae contiguous, without visible trochantin, the cavities widely open behind, closed by the raised edges of the two depressions in front of the mesosternum; mesothoracic episterna narrow, those of the metasternum not visible, covered by the rather broad inflexed margin of the elytra, which is rapidly narrowed posteriorly; metasternum long, truncate behind; intermediate coxae narrowly separated; posterior coxae contiguous, the rather long trochanters placed on the same axis; abdomen rapidly narrowed posteriorly, with five free ventral segments, 1-4 subequal in length, 5 narrow, triangular; legs rather slender; tibiae spinulose externally, the spurs minute; tarsi slender, 5-jointed, 4 simple; body oblong, convex, pubescent, winged.

Type, *M. ocelligerus*.

The remarkable little Silphid from which the above characters are taken has the general facies of an *Agyrtes*, except that the elytra are not striate. It has two conspicuous ocelli, which are present, but rudimentary, in the type of the genus *Pteroloma*,* *P. forstroemi* Gyll.; open anterior coxal cavities, truncate elytra, and five free ventral segments only, as in *Sphaerites*; and strongly clubbed antennae, as in *Colon*. The mouth-parts are injured in the ♀ specimen dissected, and fuller particulars of the oral organs cannot therefore be given. The possession of two ocelli is so seldom to be seen in Coleoptera that it requires special notice.

Micragyrtes ocelligerus, n. sp.

Oblong, convex, shining, finely, sparsely pubescent; nigro-piceous, the ocelli, basal margin of the prothorax, basal and apical margins and suture of the elytra, antennae, legs, and under surface testaceous, the antennal club and metasternum slightly infusate; above rather coarsely, closely punctate, the punctures separate one from another, the elytra obsoletely striate at the base,

* A genus at one time referred to *Carabidae*. The Mexican *P. sallaei* Matth., as stated by Ganglbauer, has no trace of ocelli, and also differs in other respects from the type, and it cannot really belong to *Pteroloma*. The Japanese *P. discicollis* Lewis should also be removed from the genus.

and with a shallow anteriorly evanescent sutural stria: metasternum closely, somewhat coarsely, the ventral segments very sparsely, minutely, punctate. Antennae reaching the base of the prothorax, joints 7-9 becoming progressively wider, 7 and 8 shorter and smaller than 9-11, the latter about equal in width. Prothorax convex, transverse, rounded at the sides, narrowed anteriorly, the angles obtuse. Scutellum small. Elytra oblong, a little wider than the prothorax, rounded at the sides anteriorly, broadly truncate at the tip. Posterior tibiae sinuously bowed inward towards the apex, and the basal joint of the anterior tarsi slightly thickened, in ♂.

Length $1\frac{1}{2}$, breadth $\frac{7}{8}$ mm. (♂ ♀.)

Hab. CHILE, Chiloe Island (*C. Darwin*).

One pair, numbered 2369 in Darwin's register. They were captured in 1834.

HYDNOBIUS Schmidt.

Hydnobius forticornis, n. sp.

Oblong-elliptic, convex, rufo-testaceous, shining. Head broad, impressed with a few minute scattered punctures; antennae with the 5-jointed club greatly developed, as long as the other joints united, 7, 9, and 10 strongly transverse, subequal. Prothorax gradually narrowed from the base, the sides almost straight, the anterior angles rounded, the hind angles obtuse; the base immarginate; very sparsely, minutely punctate. Elytra rapidly narrowing from a little below the humeri, obsoletely, irregularly, striato-punctate, the interstices flat, sparsely, very minutely punctate, and also faintly transversely strigose, the sutural stria deeply impressed. Tarsi slender.

Length $1\frac{3}{4}$ mm. (♀.)

Hab. CHILE, Chiloe Island (*C. Darwin*).

One specimen, numbered 2369, obviously ♀, the posterior femora being unarmed. This insect must be nearly related to *H. consobrinus* Fairm. et Germ. (1859), type ♂, from Concepcion, Chile; but the latter, to judge from the description, has the prothorax not so smooth and more rounded at the sides, and the elytra more coarsely punctate-striate, with the interstices transversely rugose. Compared with the European *H. strigosus* Schmidt the upper surface in *H. forticornis* is much smoother, the prothorax and elytra are less rounded at the sides, the prothorax wants the marginal groove at the base, and the antennal club is as strongly developed as in the allied holarctic genus *Triarthron*. The discovery of a second species of *Hydnobius* in Chile is interesting from the point of view of geographical distribution. It may be noted that typical representatives of the genera *Anisotoma*, *Cyrtusa*, *Colenis*, and *Colou* have been recorded from Central America, all unexpected additions to the fauna of that region.

COLYDIIDAE.

PHILOTHERMUS Aubé.

Philothermus cribricollis, n. sp.

Oblong, shining, nigro-piceous above, piceous beneath, the head, palpi, antennae, and legs ferruginous. Head somewhat closely, conspicuously punctate; antennae about reaching the base of the prothorax, 11-jointed, the club freely 2-jointed, 10 strongly transverse, joint 9 also transverse and considerably wider than 8. Prothorax convex, much broader than long, feebly rounded at the sides, gradually narrowing from a little before the base to the apex, the anterior angles prominent, the reflexed lateral margins narrow, the basal foveae deep; very coarsely, closely punctate. Elytra moderately long, slightly rounded at the sides, and at the middle wider than the prothorax, the margins without projecting carina, the humeri angulate; with rows of coarse subapproximate punctures placed in shallow striae, the interstices almost flat, sparsely punctate. Beneath sparsely, the prosternum and the sides of the metasternum coarsely, punctured; metasternum sulcate down the middle.

Length $2\frac{1}{2}$ –3 mm.

Hab. CHILE, Chiloe Island (*C. Darwin*).

Four specimens, numbered 2369 in Darwin's register. This species is larger and has a more coarsely punctate prothorax than any of the described members of the genus known to me. The antennae have a freely articulated 2-jointed club, as in *P. depressus* Sharp, from Japan, *P. cerylonoides* Reitt., from Brazil, etc. In the allied genus *Cerylon*, the antennae are 10-jointed and the club solid. The enlarged ninth antennal joint in *P. cribricollis* might, perhaps, be counted as belonging to the club.

BYRRHIDAE.

MORYCHASTES Fairm.

Morychastes australis Blanch.

Hab. TIERRA DEL FUEGO, Orange Bay, Perrier Isl.; STRAITS OF MAGELLAN, Port Famine.

Two examples found by Darwin agree with Enderlein's figure of *M. australis*, that of Blanchard being unsatisfactory. They are labelled "Bahia," possibly in error, the handwriting being different from that attached to the specimens mounted at an earlier date.

PARNIDAE.

ELMIS Latr.

Elmis chiloensis, n. sp.

Oval, very shining, black above, piceous beneath, the antennae, anterior margin of prothorax, and legs rufo-testaceous. Antennae very slender. Prothorax transversely convex, a little broader than long, feebly rounded at the

WATKINS & DONCASTER, Naturalists,

Keep in stock all Articles for Entomologists, Ornithologists, Botanists, &c.: Umbrella Net, 7/-; Folding Cane or Wire, 3/6, 4/-, 4/6; Plain Ring Net, 1/3, 2/-, 3/-; Pocket Boxes, 6d., 9d., 1/-, 1/6; Store Boxes, with Camphor Cells, 2/6, 3/6, 4/-, 5/-, 6/-; Zinc Pocket Boxes, 9d., 1/-, 1/6, 2/- Setting Boards, from 5d. to 1/10; Complete set of 14 boards, 10/6; Breeding Cages, 2/6, 4/-, 5/-, 7/6; Sugaring Tins, 1/6, 2/-; Sugaring Mixture, ready for use, 1/9 per tin; Setting Houses, 9/6, 11/6, 14/-; Glass Topped and Glass Bottomed Boxes, from 1/- per doz.; Zinc Killing Boxes, 9d., 1/-; Coleoptera Collecting Bottles, 1/6, 1/8; Collecting Box, containing 26 tubes (very useful for Coleopterists, Microscopists, &c.), 4/6; Brass Chloroform Bottle, 2/6.

Improved Pocket Pupa-digger in leather sheath (strongly recommended), 1/9; Steel Forceps, 1/6 to 3/- per pair; Pocket Lens, from 1/6 to 8/6.

Taxidermists' Companion, containing most necessary implements for skinning, 10/6; Scalpels, with ebony handles, 1/3; Fine Pointed Scissors, 2/- per pair; Brass Blow-pipes, 4d., 6d.; Egg Drills, 2d., 3d.; ditto, best quality, 9d. each; Botanical Vasculum, 1/6, 2/9, 3/6, 4/6; Label List of British Macro-Lepidoptera, with Latin and English Names, 1/6; List of British Lepidoptera (every species numbered), 1/-; or on one side for Labels, 2/6.

SILVER PINS FOR COLLECTORS OF MICRO-LEPIDOPTERA, &c.,

as well as minute insects of all other families.

We stock various sizes and lengths of these Silver Pins, which have certain advantages over the entomological pins usually employed.

For instance, insects liable to become greasy and verdigrisy, like Sesiidae, are best pinned on Silver pins, which will last much longer than the ordinary pins (whether enamelled black, or gilt, or silvered).

We shall be pleased to send pattern cards on application.

A large stock of British, European, and Exotic Lepidoptera, Coleoptera, and Birds' Eggs.

ENTOMOLOGICAL PINS.

The "DIXON" LAMP NET (invaluable for taking Moths off street lamps without climbing the lamp posts), 3s. 6d.

SHOW ROOM FOR CABINETS, &c.

36, STRAND, LONDON, W.C., ENGLAND.

Birds and Mammals, &c., Preserved & Mounted by first-class workmen.

Our New Price List (100 pp.) sent post free to any address on application.

FOR SALE.

16 NATURAL HISTORY CABINETS

BELONGING TO THE LATE DR. MASON,

ALSO

FOUR MICROSCOPICAL CABINETS,

Containing Microscopical Slides by G. R. VINE, of Sheffield.

ALSO

400 BRITISH BIRDS IN CASES.

Apply—MRS. MASON, TRENT HOUSE, BURTON-ON-TRENT.

ENTOMOLOGICAL NEWS.

A forty-eight page illustrated magazine, issued monthly, except in August and September, devoted to the study of INSECT LIFE. It contains a resumé of the proceedings of a number of Entomological Societies, and also articles by the leading Entomologists in the United States and Canada. Valuable information for the beginner, the economic entomologist, and the systemist. TWO DOLLARS a year in advance. Single copies, 25 cents. Address—

ENTOMOLOGICAL NEWS,
The Academy of Natural Sciences,
1900 RACE STREET, PHILADELPHIA, PA.

THE CANADIAN ENTOMOLOGIST.

A MONTHLY MAGAZINE DEVOTED TO THE STUDY OF SCIENTIFIC ENTOMOLOGY.

Volume 50 is now in course of publication. Back volumes can be supplied. It is the oldest established Magazine of the kind in America, and has a world-wide circulation. Subscription, \$2 per annum, payable in advance, which includes a copy of the Annual Report of the Entomological Society of Ontario to the Legislature. Editor, Dr. E. M. Walker, Biological Department, University of Toronto, Toronto, Canada.

Address: Entomological Society of Ontario, Guelph, Canada.

THE SIX COLOURED PLATES illustrating the articles on "SOME INTERESTING BRITISH INSECTS,"

with the accompanying text (issued in the Ent. Mo. Mag. for September, 1909, January and September, 1910, September, 1911, and August, 1913), are issued in a separate wrapper, price 2s.

APPLY TO THE PUBLISHERS.

For Covers for binding the 1917 Volume apply to the Publishers.

A SYNOPSIS OF THE BRITISH SIPHONAPTERA, by the
 Hon. N. CHARLES ROTHSCHILD, M.A., F.L.S., illustrated by Eight Plates
 (issued in the Ent. Mo. Mag. for March, 1915, pp. 49-112), price 1s. 6d. Apply to
 the publishers.

Scale of Charges for Advertisements.

Whole Page.....£3. Half Page.....£1 11s. 6d. Quarter Page.....17s.

Lowest charge, 7s. up to 5 lines; 1s. per line afterwards.

Repeated or continuous Advertisements per contract.

There is no charge for Lists of Duplicates and Desiderata.

All payments and applications for the above should be made to

R. W. LLOYD, I. 5, Albany, Piccadilly, W.

AUTHORS are requested to send their communications and proofs to either
J. J. WALKER, Aorangi, Lonsdale Road, Summertown, Oxford; or
G. C. CHAMPION, Broomhall Road, Horsell, Woking.

COLEOPTERA ILLUSTRATA.

CARABIDAE.

Vol. 1, No. 3.

CARABIDAE.

PRICE \$1.

C O N T E N T S .

PRICE \$1.

LEISTUS
ferrugineus Linn.

ELAPHRUS
aureus Mull.

LOBOCERA
pilicornis Fabr.

BROSCOSOMA
baldense Putz.

BEMBIDIUM
fasciolatum Duft.
articulatum Gyll.

CILLENUS
lateralis Sam.

THALASSOPHILUS
longicornis Sturm.

TRECHUS
discus Fabr.

ANOPHTHALMUS
hirtus Sturm.
v. rostratus Mots.

PTEROSTICHUS

lepidus Leske.

cupreus Linn.

infuscatus Dej.

puncticollis Dej.

crenatus Dej.

barbarus Dej.

carbonicolor Sole.

macer Marsh.

sterrimus Hrbst.

elongatus Duft.

oblongopunctatus Fabr.

angustatus Duft.

melanoscelis Chaud.

niger Schall.

vulgaris Linn.

nigritus Fabr.

minor Gyll.

interinctus Sturm.

negligens Sturm.

subsinuatus Dej.

brevis Duft.

caespina Men.

cognatus Dej.

aethiops Panz.

globosus Fabr.

PTEROSTICHUS

cylindricus Hrbst.

melas Creutz.

ABAX

ater Vill.

ovalis Duft.

schuppelii Pall.

v. rendschmidtii Germ.

corsicus Dej.

MYAS

chalybaeus Pall.

AMARA

ingenna Duft.

ZABRUS

chalcus Fald.

heros Fald.

seidlitzii Schaum.

graecus Dej.

blapoides Creutz.

ANISODACTYLUS

binotatus Dej.

signatus Panz.

**ACCURATE ENLARGED PEN DRAWINGS, UNIFORM IN SIZE,
 ONE TO A PAGE 8vo.**

COLEOPTERA ILLUSTRATA will be mailed upon receipt of price.

HOWARD NOTMAN, 136 JORALEMON STREET, BROOKLYN, N.Y., U.S.A.

Vol. I, Nos. 1 and 2, \$1 each.

CONTENTS.

	PAGE
Some further notes on the Coleoptera of Crowthorne (a Parish of Berkshire) (concluded).— <i>W. E. Sharp, F.E.S.</i>	25.
<i>Cholava angustata</i> F. and its Allies (with figures).— <i>H. Britten, F.E.S.</i>	30
Re-occurrence of <i>Anchomenus</i> (<i>Agonum</i>) <i>sahlbergi</i> Chaud. in Scotland (with figures).— <i>J. H. Murphy</i>	33
Note on the Curculionid-genus <i>Sysciophthalmus</i> Heller, with a description of a new species from Tierra del Fuego.— <i>G. C. Champion, F.Z.S.</i>	35
The synonymy of <i>Andrena wilkella</i> K., and its allies, with notes on habits, and confirming specific distinctions.— <i>B. C. L. Perkins, D.Sc., M.A., F.E.S.</i>	36
The Association of Acari with Insects.— <i>C. Nicholson, F.E.S.</i>	39
<i>Staphylinus pubescens</i> De G. in Essex.— <i>A. F. J. Geary</i>	39
Coleoptera at Mickleton (Glos.).— <i>G. B. Ryle</i>	39
The larva of <i>Scymnus</i> .— <i>G. J. Arrow, F.E.S.</i>	39
<i>Trigonogenius globulum</i> Sol. in London.— <i>G. C. Champion, F.Z.S.</i>	40
<i>Halesus guttatipennis</i> Melachl., and other Trichoptera and Neuroptera in Cumberland.— <i>F. H. Day, F.E.S.</i>	40
OBITUARY.— <i>W. H. Harwood</i>	40
SOCIETY.—South London Entomological Society	41
Notes on various South American Coleoptera collected by Charles Darwin during the Voyage of the "Beagle," with descriptions of new genera and species.— <i>G. C. Champion, F.Z.S.</i>	43

THE NATURALIST:

A MONTHLY ILLUSTRATED JOURNAL OF

NATURAL HISTORY FOR THE NORTH OF ENGLAND

EDITED BY

T. SHEPPARD, M.Sc., F.G.S., F.R.G.S., F.S.A.Scot.,
THE MUSEUM, HULL;

AND

T. W. WOODHEAD, Ph.D., M.Sc., F.L.S.,
TECHNICAL COLLEGE, HUDDERSFIELD;

WITH THE ASSISTANCE AS REFEREES IN SPECIAL DEPARTMENTS OF

J. GILBERT BAKER, F.R.S., F.L.S., **GEO. T. PORRITT, F.L.S., F.E.S.,**
Prof. P. F. KENDALL, M.Sc., F.G.S. - **JOHN W. TAYLOR, M.Sc.,**
RILEY FORTUNE, F.Z.S.

The Journal is one of the oldest Scientific Periodicals in the British Isles, dating back to 1833, and is circulated widely amongst the principal Naturalists of the country.

LONDON: A. BROWN AND SONS, LIMITED, 5, FARRINGTON AVENUE, E.C.

And at Hull and York.

PRICE, SIXPENCE NET. BY POST SEVENPENCE.

Prepaid Subscription, 6s. 6d. per annum, post free.

The Annual Subscription for 1918 is 9/-.

[See p. 2 of Wrapper.]

Third Series, No. 39.]
[No. 646.]

MARCH, 1918.

[PRICE 1/- NET.]

THE
ENTOMOLOGIST'S
MONTHLY MAGAZINE.

EDITED BY

G. C. CHAMPION, F.Z.S. J. E. COLLIN, F.E.S.

W. W. FOWLER, D.Sc., M.A., F.L.S.

B. W. LLOYD, F.E.S. G. T. PORRITT, F.L.S.

J. J. WALKER, M.A., R.N., F.L.S.

VOLUME LIV.

[THIRD SERIES—VOL. IV.]

"J'engage donc tous à éviter dans leurs écrits toute personnalité, toute allusion dépassant les limites de la discussion la plus sincère et la plus courtoise."—*Laboulbène*.

LONDON:

GURNEY & JACKSON (MR. VAN VOORST'S SUCCESSORS),

33, PATERNOSTER ROW, E.C. 4.

TAYLOR AND FRANCIS, RED LION COURT, FLEET STREET.



NOTICE.—Owing to the greatly increased cost of paper, printing, etc., the Editors of the Magazine are compelled to raise the subscription to 9s. per annum (post free). Subscriptions for the 1918 volume should be remitted as soon as possible to R. W. LLOYD, I. 5, Albany, Piccadilly, London, W. 1.

The price of a single ordinary number is 1s.

EXCHANGE.

Wanted—Pterophoridae (plume moths) of the United Kingdom, or those from any other part of the World, exchange or cash. *Duplicates*—Lepidoptera and Odonata from Japan and Formosa.—AKIO NOHIRA, Ichijoji, Ottagun, Kyoto, Japan

REDUCED PRICES FOR BACK VOLUMES.

FIRST SERIES.

This can only be obtained in complete Volumes (bound or unbound).

A limited number of sets, from Vol. x to Vol. xxv can still be obtained at £2 15s. per set net (in parts), or of five consecutive Vols. at £1 per set net (if bound, 1s. per Vol. extra).

Certain of the Vols. i to ix can be had separately at 10s. each.

SECOND SERIES.

Vols. i to xv. are now offered at £3 per set net (in parts), or £1 2s. 6d. for five consecutive Vols. (if bound, 1/- per Vol. extra).

THIRD SERIES.

Vol. li (Third Series, Vol. i) can be supplied by the Publishers at 7/6 (8/6 if bound) per copy. Cover for binding, 1/-.

Vol. li (1915) contains 23 Plates (one coloured), a complete Monograph of the British Siphonaptera, and numerous extra pages of text.

Apply to the Publishers.

MEETINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON, 11, Chandos Street, Cavendish Square, W.—Wednesday, March 6th, 20th, April 3rd.

The Chair will be taken at 8 o'clock in the evening precisely.

The Library is open daily from 9 a.m. to 6 p.m. (except on Saturdays, when it is closed at 2 p.m.), and until 10 p.m. on Meeting nights.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge. The Second & Fourth Thursdays in each month, at 7 p.m. The lantern will be at the disposal of Members for the exhibition of slides.

The Chair will be taken punctually at 8 o'clock.

THE LONDON NATURAL HISTORY SOCIETY, which meets at 7 p.m. on the 1st and 3rd Tuesdays in each month, at Room 20, Salisbury House, Finsbury Circus, E.C., will be glad to welcome at its Meetings any French or Belgian entomologists now staying in this country, and to give them the benefit of its library and collections. Communications should be addressed to the Secretary, Salisbury House, E.C.

Hon. Sec.: J. Ross, 18, Queen's Grove Road, Chingford, N.E.

Chingford Branch. The Chingford Local Branch meets at the Avenue Café, opposite Chingford Station, at 8 p.m., on the 2nd Monday in each month.

sides, not much narrower at the apex than at the base, the anterior angles prominent; finely, shallowly canaliculate down the middle, and with a conspicuous submarginal ridge running parallel with the raised margin, the disc with a few extremely minute scattered punctures. Elytra oval, rather short, somewhat acuminate at the tip, convex on the disc anteriorly; shallowly seriato-punctate towards the sides and apex, almost smooth on the convex portion of the disc, and with two submarginal carinae, the lower one in line with the raised margin of the prothorax. Pro- and metasternum and abdomen, with a broad, shining, smoother space down the middle, the anterior portion of the metasternum depressed between the intermediate coxae, and the depression limited on each side by an oblique ridge; ventral segment 5 not longer than 2-4 united. Legs rather slender, the intermediate and posterior tibiae sinuous within.

Length $1\frac{1}{3}$ - $1\frac{1}{2}$ mm.

Hab. CHILE, East coast of Island of Chiloe (*C. Darwin*: Dec. 1834).

Four specimens, labelled by Darwin as having been found under stones in a small stream, and numbered 2338 in his register. A minute, convex, very shining, black form, with reddish legs and antennae, related to *E. sulcicollis* Sharp, from the mountains of Chiriqui, and *E. laevigatus* Grouv., from Brazil, differing from both of them in having the prothorax less narrowed anteriorly and more finely canaliculate on the disc; *E. sulcicollis*, moreover, has a raised plica at the base of the elytra, which is wanting in the present insect. *E. chiloensis* could, perhaps, be included under the section or subgenus *Esolus* Muls. It cannot be identified with any of the five species of *Elmis*, described by Germain from Chile, three of which are from Quillota.

HALTICIDAE.

DOCEMINA, n. gen.

Antennae narrowly separated at the base, 11-jointed; terminal joint of maxillary palpi acuminate; prothorax margined laterally, without longitudinal impressions or transverse groove on the disc at the base; scutellum small, transverse; elytra striato-punctate; anterior coxae narrowly separated, the cavities closed behind; metasternum very short; ventral segments 1 and 5 subequal in length; legs stout; femora thickened, the posterior pair much stouter than the others; tibiae comparatively short, the posterior pair not reaching the apex of the elytra and without definite spur at the tip; tarsi with joints 1-3 spongy-pubescent beneath, 1 as long as 2 and 3 united, 2 transverse, 3 bilobed, 1 strongly dilated in ♂, the claws small, angularly dilated at the base; body oblong, apterous, metallic.

Type, *D. crassipes*.

The single species referred to this genus is not unlike *Docema* C. O.

Waterh.,* type *Haltica galapagoensis* G. R. Waterh., found by Darwin on Charles Island, Galapagos, in 1835; it wants, however, the transverse basal groove on the prothorax, and the anterior coxal cavities are closed behind. The stout legs, strongly bilobed third tarsal joint, closed coxal cavities, unarmed posterior tibiae, etc., separate *Docemina* from *Batophila*, and the non-foveate prothorax, stout legs, etc., distinguish it from *Mantura*. The type of the present genus is not unlike the European *M. chrysanthemi* Koch, except that the prothorax and elytra are more rounded at the sides. It seems strange that G. R. Waterhouse left this beetle undescribed, after naming many of Darwin's *Halticidae* from other localities, all of which were presumably in his possession at the time. The present insect is not included in Enderlein's list of Fuegian beetles, in which one species only of *Phytophaga* is enumerated.

Docemina crassipes, n. sp.

Oblong-ovate, convex, very shining, aeneous above, nigro-piceous beneath, the legs and antennae ferruginous, the apical joints of the latter slightly infusate. Head with an angulate impressed line between the eyes which is connected in front with a small V-shaped mark; antennae moderately long, joints 7-11 distinctly stouter than those preceding, 1 and 2 also thickened, 7-10 not longer than broad. Prothorax very convex, broader than long, rounded at the sides, slightly narrowed anteriorly; closely, rather coarsely punctate, transversely depressed on each side at the base above the obtuse hind angles. Elytra oblong-oval, about as wide as the prothorax in ♂, broader in ♀, rather coarsely striato-punctate to the apex, the interstices flat and almost smooth. Ventral segments very sparsely, finely punctate.

♂. Basal joint of anterior and intermediate tarsi broadly dilated and longer than in ♀, that of the posterior pair also widened; fifth ventral segment depressed down the middle posteriorly.

Length 2-2 $\frac{1}{10}$ mm.

Hab. TIERRA DEL FUEGO [♂ ♀, types] (*C. Darwin*); CHILE, East coast of Island of Chiloe [♂] (*C. Darwin*).

Described from three specimens. The label on the Chiloe male is not in the same handwriting and cleaner than that on the others, and it is just possible some mistake may have been made in ticketing the Chilean example?

AULONODERA, n. gen.

Antennae narrowly separated at the base, 11-jointed, long, slender; prothorax margined laterally, and with a deep, complete, transverse basal groove; scutellum not visible; elytra gibbous, cordate, and with a deep sutural stria; anterior coxal cavities imperfectly closed behind, the prothoracic epimera not

quite reaching the rather broad prosternal process; intermediate and posterior coxae somewhat distant; metasternum extremely short; ventral segment 1 about as long as 2-5 united, 2-4 short; legs elongate; posterior femora strongly incrassate; posterior tibiae long, extending to far beyond the apex of the elytra, armed with a minute spur at the tip; third tarsal joint narrowly bilobed, the basal joint of the posterior pair about as long as next two joints united; body apterous, convex, subovate.

Type, *A. darwini*.

The single species referred to this genus has the general facies of a small *Longitarsus*, from which it at once separated by the very deeply impressed, complete, transverse basal groove of the prothorax, the deep sutural stria of the elytra, the feeble spur to the posterior tibiae, etc. The anterior coxal cavities, so far as can be ascertained without detaching the prothorax from the rest of the body, appear to be incompletely closed behind by the inward extension of the epimera.

Aulonodera darwini, n. sp.

Very convex, shining, glabrous, almost smooth, reddish-brown, the elytra piceous to near the tip in one example, the antennae and legs testaceous. Antennae long, slender. Prothorax transversely obliquely widening from the base to the tuberculate anterior angles, the deep basal groove finely punctured. Elytra transversely gibbose anteriorly and subacuminate at the tip; obsolete striato-punctate, the fine scattered punctures distinctly traceable at the base.

Length $1\frac{1}{2}$ - $1\frac{3}{4}$ mm.

Hab. CHILE, Chiloe Isl. (*C. Darwin*).

Three examples, sex not ascertained, two of them numbered 2368 and one 2369, and to judge from the incomplete copy of Darwin's register at the Museum, all obtained by sweeping low bushes.

CURCULIONIDAE.

LISTRODERES Schönh.

Listroderes quadrituberculatus, n. sp.

Elongate, parallel-sided, flattened on the disc, piceous or reddish-brown, the antennae (the club excepted) ferruginous; opaque above, the rostrum and under surface somewhat shining; sparsely clothed with small, adpressed, brownish hairs, which are minute and inconspicuous on the elytra; densely, rugosely punctate, the head and prothorax subgranulate. Rostrum feebly curved, a little shorter than the prothorax, stout, widened outwards, not carinate, the scrobes becoming shallow towards the eyes; antennae slender, rather long, the scape reaching to about the middle of the eyes. Prothorax transversely subquadrate, gradually widening from the base to near the apex and then abruptly, obliquely narrowed; broadly excavate down the middle, and also hollowed on each side of this anteriorly, and with a more or less

distinct, incomplete, fine median carina. Scutellum triangular. Elytra elongate, much wider than the prothorax, laterally compressed, broadly flattened on the disc, parallel from a little below the oblique humeri to near the apex and then abruptly narrowed to the tip, the apices produced and conjointly rounded; coarsely punctato-striate, the interstices uneven, the third with a rather large oblique tubercle at some distance beyond the middle and a still larger conical tubercle before the apex, the latter connected with the swollen apical portion of the costiform sixth interstice by an oblique ridge. Beneath closely granulato-punctate; mesosternal process very narrow, terminating in a small tubercle; ventral segment 5 sulcate down the middle. Legs long, rather slender, tibiae strongly sinuate within, the anterior pair bowed inward at the apex.

Length (excl. head) $8\frac{1}{2}$ -9, breadth $3-3\frac{1}{4}$ mm.

Hab. TIERRA DEL FUEGO, Summit of Kater's Peak, an abrupt cone of greenstone, alt. 1700 ft., near Wigwam Cove, Hermite Island (C. Darwin).

Two specimens, assumed to be males, found under stones, in 1832. The broadly flattened, laterally compressed elytra give this species the general facies of the Tenebrionid-genus *Nosoderma*. It is very like *L. (Elytrogonus) varicosus* Blanch., his figure nearly agreeing with the insect before me, except that the tubercle on the third elytral interstice is wanting, and the prothorax is obviously longer; the rostrum, moreover, is said to be carinate. Blanchard's type, destroyed by his artist, was from Port Famine, on the northern side of the Straits of Magellan. One of Darwin's examples is labelled, "*quadrituberculatus*," apparently in G. R. Waterhouse's handwriting. Enderlein (1912) enumerated three species only of *Listroderes* from Tierra del Fuego, all described and figured by Fairmaire, and very different from the present insect. The Magellanic forms named by Germain and others are also dissimilar.

Listroderes katerensis, n. sp.

Elongate, oblong, rather broad, flattened on the disc, shining (when denuded), black, the antennae and tarsi rufescent; rather sparsely clothed with minute brownish hairs; densely, rugosely, the rostrum, head, and prothorax roughly, punctate. Rostrum very stout, shorter than the prothorax, slightly widened outwards, convex down the middle, and with an indication of feeble carina towards the sides; head foveate between the eyes; antennae rather long and slender. Prothorax broader than long, rounded at the sides, the latter obliquely converging anteriorly, and slightly sinuate and feebly convergent towards the base; broadly trifoveate on the disc (the two posterior foveae transversely placed), and also with an interrupted median sulcus. Elytra long, broad, subparallel for three-fourths of their length (the sides slightly rounded below the humeri and sinuate posteriorly), flattened on the disc, and laterally compressed, the apices somewhat oblique, conjointly rounded at the sutural angle; coarsely, interruptedly striato-punctate, the interstices

here and there raised and transversely confluent, the third with a large conical tubercle at the commencement of the apical declivity, the fifth and seventh subcostate, the fifth with a smaller tubercle before the tip, the ridge on the seventh terminating in a large subangular, laterally projecting prominence which is almost in a line with the tubercle on the third. Beneath rather coarsely, closely punctate; ventral segment 5 broadly excavate in the middle. Legs long; tibiae strongly sinuate within.

Length (excl. head) $7\frac{1}{2}$, breadth $3\frac{1}{2}$ mm. ($\sigma^?$)

Hab. TIERRA DEL FUEGO, Kater's Peak, Hermite Island (*C. Darwin*).

One specimen, found with the preceding. Less elongate than *L. 4-tuberculatus*, the rostrum rougher, stouter, and subcarinate; the prothorax sulcate and trifoveate, not carinate; the elytra shorter, broader, less parallel, and less flattened on the disc, with four large, transversely placed tubercles towards the apex, and two smaller tubercles between them and the tip.

ANTARCTOBIUS Fairm.

Antarctobius lacunosus Fairm.

Antarctobius lacunosus Fairm. Ann. Soc. Ent. Fr. 1885, p. 59; Miss. Scient. Cap Horn, vi, p. 56, t. 2, fig. 8 (1888).

Listroderes lacunosus Enderlein, Stett. ent. Zeit. 1907, p. 39, etc.

Hab. TIERRA DEL FUEGO, Orange Bay, Hardy Peninsula (*Fairmaire*), Kater's Peak, Hermite Island (*C. Darwin*); CHILE, Patch Cove, north part of Tres Montes (*C. Darwin*).

Three specimens from Kater's Peak (2 σ σ and 1 ♀) and one (σ) from Tres Montes agree very fairly with Fairmaire's description and figure; the deeply excavated metasternum and first ventral segment mentioned by the author are obviously σ -characters. The tarsi are densely pubescent beneath and the third joint bilobed. *Antarctobius* Fairm. has been sunk by various authors as a synonym of *Listroderes* Schönh.; but if I have correctly identified the present species, one of the three forms included in the genus by Fairmaire, the ocular lobes are entirely wanting, as in the two others here added. The genus *Amathynetes* Olliff (1891), from the Ecuador Andes, is rather like these southern insects, but it has distinct ocular lobes.

Antarctobius rugirostris, n. sp.]

Elongate-obovate, somewhat convex, moderately shining, piceous, the legs, antennae, and under surface reddish, clothed with rather long, fine, adpressed hairs; closely, finely, the elytra densely, rugulose punctate. Rostrum short

very stout, widened outwards, densely, rugosely punctate, feebly tricarinate; head deeply foveate between the eyes; antennae with joints 3-7 of funiculus transverse, becoming wider outwards. Prothorax transverse, rather convex, rounded at the sides, about equally narrowed towards the base and apex; the disc with an abbreviated, smooth median line terminating in a longitudinal impression at the base, and a transverse foveiform excavation on each side just behind the middle, the punctuation uniform. Elytra oblong-oval, somewhat acuminate behind, conjointly rounded at the apex, truncate at the base, the humeri rounded; rather coarsely punctato-striate, the interstices densely rugulose, uneven, here and there obliquely raised (appearing subareolate), 3, 5, and 7 interruptedly costate. Beneath sparsely punctate; metasternum and first ventral segment broadly excavate in the middle behind. Tibiae strongly sinuate within. Tarsi clothed with short pubescence beneath, joint 3 bilobed.

Length (excl. head) 5, breadth $2\frac{1}{5}$ mm.

Hab. TIERRA DEL FUEGO, Hardy Peninsula (*C. Darwin*).

One specimen, assumed to be ♂. This insect must be nearly related to *A. dissimilis* Fairm., ♂, from Choungougon, Orange Bay, to judge from the description; but it has a very rugose, tricarinate rostrum, densely rugulose, uneven elytral interstices, etc. There are no definite tubercles on the elytra and the prothorax is without trace of ocular lobes.

Antarctobius laticauda, n. sp.

Elongate-oval, moderately convex, shining, clothed with scattered minute hairs (mostly abraded); nigro-piceous above, piceous beneath, the antennae, the basal and apical margins of the prothorax, the suture and outer portion of the elytra, and legs rufescent. Head and rostrum densely, uniformly punctate, the latter short, stout, widened outwards, deeply sulcate down the middle; eyes depressed; antennae rather long and slender, the scape reaching to the posterior margin of the eye, joints 1 and 2 of the funiculus long, subequal, 3-7 short. Prothorax transverse, rounded at the sides, narrowed anteriorly and constricted behind, the base margined and slightly hollowed in the middle; closely punctate, and with a rather broad median sulcus which becomes deeper towards the base and apex. Elytra oblong-oval, much wider than the prothorax, conjointly produced at the apex into a broad, stout, caudiform, subtruncate process, which is slightly flattened towards the tip above; with ten rows of coarse punctures placed in shallow striae, the interstices sparsely, minutely punctate, the alternate ones more or less convex, the others feebly so towards the sides and apex. Ventral segments almost smooth, 2-4 subequal in length. Legs rather slender, the femora clavate; tibiae with a few setae on their inner edge, the anterior pair sinuous within, the others almost straight; tarsi sparsely clothed with long hairs beneath, joint 3 broad, laminate, feebly emarginate at the apex.

Length (excl. head) $6\frac{1}{5}$, breadth $2\frac{1}{10}$ mm. (♀.)

Hab. CHILE, Northern part of Tres Montes (*C. Darwin*).

One specimen, captured in 1834. This insect is not unlike *A. dissimilis* Fairm., the ♂ of which wants the caudiform process, from Orange Bay, Perrier Isl., and New Year's Sound, Tierra del Fuego; but differs from the corresponding sex of that species, figured by Fairmaire, in the non-excavate caudal process and other particulars. The tarsi are clothed with longer hairs than in *A. rugirostris*, and the laminate third joint is almost entire, instead of being deeply cleft.

Horsell.

January 1918.

CAENOCARA SUBGLOBOSA MULS., A SPECIES OF COLEOPTERA
NEW TO BRITAIN.

BY HORACE DONISTHORPE, F.Z.S.

"*Enneatoma subglobosa* Muls.—Subhémisphérique, hérissée d'une fine pubescence cendrée; très-brillante, d'un noir de poix, avec les élytres d'un rouge brun, les palpes, les tarsi, et les antennes d'un roux testacé, le 1^{er} article de celles-ci, les cuisses, et les tibias d'un roux ferrugineux. Tête et prothorax confusément, élytres subsérialemement ponctués. Front assez large; légèrement convexe. Prothorax fortement convexe, beaucoup plus étroit en avant; à côtés presque droits et très-étroitement rebordés, avec les angles antérieurs très aigus, les postérieurs subobtus et subélevés; largement bispinué à la base; assez fortement convexe, égal. Ecusson subsémicirculaire. Elytres courtement ovalaires, assez convexes, largement et obtusément arrondies au sommet, tristriées-sillonnées sur les côtés, parées, outre la pubescence, de poils sérialemement disposés. Tarsi courts, étroits. Long. 0^m,0012 (3/5)." Mulsant, Col. de France, Térédiles, pp. 377, 378, 1864.

There are only three species of this genus mentioned in the European catalogue, and Mulsant (*l. c.* p, 370) gives the following table by which they may be separated:—

- a. *Stries des élytres canaliculées.*
 - b. *Elytres* confusément ponctuées, à pubescence ordinaire et couchée.
..... *bovistae*.
 - bb. *Elytres* subsérialemement ponctuées, à pubescence en partie redressée et disposée en séries régulières *affinis*.
- aa. *Stries des élytres* sulciformes. *Elytres* subsérialemement ponctuées, à pubescence en partie redressée et disposée en séries régulières .. *subglobosa*.

Of these three species *C. subglobosa* is the smallest (*C. affinis* is the largest) and is very distinct from our only British species known up to now—*C. bovistae*. It may be known from the latter by its smaller size; shorter, subglobose shape; more golden (less grey) and less decumbent pubescence, the suberect hairs being arranged in more or less distinct rows, and more distinct and longer pubescence beneath; more shining

appearance; smaller and more widely separated puncturation, the spaces between the punctures being more shining; reddish-yellow legs, antennae and palpi, the first joint of the antennae and the femora and tibiae being of a deeper red; the thorax at the posterior angles evidently more separated from the base of elytra; the scutellum longer and narrower and distinctly punctured all over; the interstices between the three striae at the sides of the elytra being rounded (not flat as in *bovistae*), and the striae more uneven.

I have bred three specimens of *C. subglobosa* (♂ ♀ ♀) from a *Lycoperdon gemmatum* which I found at Barton Mills, on September 9th, 1917, and took home, as it contained a number of very small and medium-sized white coleopterous larvae. The puff-ball was kept in a tin with a little damp earth, and some muslin over the tin in place of the lid. From it I had already bred one *Lycoperdina succincta* and a few *Pocadius ferrugineus*. The larva of the *Caenocara* came out of the puff-ball, and made a small cell in the earth beneath. At first I thought it was a very small *Lycoperdina* larva, and that, having deserted its food, because it was dry and there was not enough left, it would probably die.

In the Ent. Mo. Mag. viii, p. 180 (1872), Sidebotham gives an interesting account of how he bred specimens of *C. bovistae* from larvae found "in small dry specimens of *Bovista plumbea* and other small fungi, on a sandy flat near Barmouth."

C. bovistae is sometimes taken by sweeping; I have taken it in this way at Battle.

C. subglobosa is found in lycoperdons in France and Germany; Europe, Central and South, and also Siberia, but appears to be rare.

I owe my best thanks to Miss Lorrain Smith of the Natural History Museum for kindly helping me to name the Lycoperdon.

Putney.

January 1918.

ON THE BRITISH SPECIES OF *NOTONECTA*.

BY JAMES EDWARDS, F.E.S.

The more one studies the various kinds of *Notonecta* found in Britain "as living things" the more difficult does it become to adopt the supposition of Fieber ("Rhynchotographien," pp. 49, 50, 1851) that *N. furcata* Fab. and *N. maculata* Fab. are varieties of *N. glauca* L., or as he calls it *N. fabricii*. If it were worth while to controvert this Fieberian dogma, one might inquire how it is that one does not find amongst our native Notonectae a number of obvious mongrels such as exists in the case of *Philaenus spumarius*. It does not appear that

there is any reason for assuming that the laws of heredity are suspended in the case of *Notonecta*; and there is no advantage in continuing to attribute to *N. glauca* a degree of variability that it does not possess, simply in deference to the opinion of any authority, however eminent, which there is no evidence to support.

These insects are so common that if *furcata* and *maculata* are the offspring of *glauca*, there ought to be no lack of intermediate specimens indicating the fact; but Kirkaldy, the reviser of the genus (Trans. Ent. Soc. Lond. 1897, pp. 397 *et seq.*), who may fairly be assumed to have had access to abundant and varied material, could find no intermediates between *glauca* and *furcata* from localities nearer than Persia and Kashmir. The only named form which appears to be a variety of *glauca* is *marmorea* Fab. as defined by Kirkaldy, which has the metanotum black, yellow-brown elytra with darker mottling, and the connexivum greenish-testaceous. According to Kirkaldy this variety has been confused with *maculata* Fab., and as regards the elytral pattern and colour some forms of *marmorea* and *maculata* are quite indistinguishable. Even so the latter may be known by its orange-yellow metanotum; but *marmorea* would only be separable from specimens of *glauca* with an excess of dark mottling on the elytra by the greenish-testaceous connexivum. Kirkaldy gives the connexivum of *glauca* as black, but I have invariably found it dull ochreous with the junction of the segments brown, as described by Douglas & Scott (Brit. Hem. p. 588). I have not seen any form of *glauca* to which the name *marmorea* could be applied, though it is evidently the insect referred to by Dale, as quoted by Douglas & Scott (*t. c.* p. 589) in the following passage:—"Some varieties of *N. glauca*, with the wings closed, do not show any great variation from *N. maculata*; . . .". Kuhlitz (in Brauer, Süßwasserfauna Deutschlands, Heft 7, p. 81, 1909) uses the name *marmorea* Fab. for the insect which is here called *maculata* Fab.; but I adopt the view of Oshanin (Verz. Pal. Hem. i, p. 975), who regards as representing *N. maculata* Fab. the figure of Herrich-Schäffer (Wanz. Ins. viii. p. 23, fig. 797), which, *teste* Douglas & Scott, *l. c.*, is a copy of that of Curtis (Brit. Ent. t. 10) and therefore represents our insect.

I am indebted to my esteemed colleague, Mr. E. A. Butler, for the opportunity of characterizing an additional native species of this genus which he found at Whitstable in April, 1912, associated with *Coelambus parallelogrammus*, and at Rye in March, 1913, in company with *Corixa selecta*. An example of this insect was sent some time since to Dr. Horvath, who could see in it nothing more than another variety of *N. glauca*.

N. halophila, n. sp.

Expanse 25 mm. ♂, 26·5 mm. ♀. Crown and pronotum greenish-white, hinder half of the latter blackish. Anterior angles of the pronotum produced in an acute equilateral triangle. Scutellum black. Elytra sordid greenish-white, inclining to yellowish in the female, costa with a row of irregular blackish spots from the base, inner apical angle of the corium with a blackish marking, which has a tendency to originate as a short thick black line and does not encroach on the apex of the clavus, in the inner angle of the cuneus some blackish mottling. Wings with a white reflection; apex narrowly fuscous; Sc blackish, Rs, r-m, and M dark brown. Metanotum and abdomen above, except the sides and apex of the latter, deep black. Abdomen beneath with the long hairs on the middle keel and on the inner edge of the connexivum black in the male, pale brown in the female. Length 13·5–15·5 mm.

This species, of which I have also seen a specimen, ex coll. Thouless, taken at Gravesend by Kirkaldy, 16.iv.1897, may be readily known by its smaller size, pale colour, and the sharp projecting front angles of the pronotum.

The distinctive characters of our native species are set out in the following table:—

- 1 (6) Metanotum black.
- 2 (5) Expanse not exceeding 27 mm.
- 3 (4) Expanse 26–27 mm. Front angles of pronotum in the lateral aspect right angles or obtuse. Elytra brownish-yellow with more or less of blackish mottling, which originates next the costa and exceptionally extends over the disc. Wings usually with a white reflection; concolorous at the apex; Sc at the apex, Rs, r-m, and M in its distal half, yellow, the remaining veins colourless. Abdomen beneath with the long hairs on the middle keel and on the inner edge of the connexivum pale brown in both sexes *glauca* L.
- 4 (3) Expanse 25–26·5 mm. Front angles of pronotum in the lateral aspect acute and projecting. Elytra sordid greenish-white with a row of irregular blackish spots from the base of the costa. Wings with a white reflection; narrowly fuscous at the apex; Sc blackish, Rs, r-m, and M dark brown. Abdomen beneath with the long hairs on the middle keel and on the inner edge of the connexivum black in the male, pale brown in the female *halophila*, n. sp.
- 5 (2) Expanse 31–33 mm. Elytra dark brown to black, with two yellow streaks at the base. Wings with a purplish-blue reflection; narrowly fuscous at the apex; Sc, Rs, r-m, and M dark brown, the remaining veins colourless. Abdomen beneath with the long hairs on the middle keel and on the inner edge of the connexivum brownish-yellow in the male, pale brown in the female.
..... *furcata* Fab.
- 6 (1) Metanotum orange-yellow with a black spot on each side of the base. Elytra brownish-yellow inclining to orange, closely mottled with blackish. Wings narrowly fuscous at the apex; reflection inclining to brownish-yellow; Sc almost to the apex, and R, pale, Sc at the apex, Rs, and M yellow-brown. Abdomen beneath with the long hairs on the middle keel and on the inner edge of the connexivum black in the male, pale brown in the female. Expanse 27–28 mm.
..... *maculata* Fab.

For those unfamiliar with the Comstock-Needham system of naming the wing-veins, it will suffice to say that the strong vein running along the front edge of the wing is black or dark brown in *halophila* and *furcata*, colourless in *glauca*, and yellow in *maculata*. In the male the distal edges of the penultimate and antepenultimate ventral segments of the abdomen have each a single deep indentation reaching from side to side, arcuate in the former, angular in the latter; in the female the corresponding parts are straight or feebly concave. The differences in the male genitalia are those of degree, and insufficient to afford distinctive characters.

The wing-veins in *Notonecta* conform very nearly to the type which Comstock and Needham from their studies of the tracheation (Amer. Naturalist, xxxii, pp. 249-252) regard as the most generalized condition in the Heteroptera, the principal difference being that in *Notonecta* M runs parallel to R, and Cu and a1 combine just before the termen. Sc is a strong vein, and in the basal two-thirds of the wing runs next the costa; near the apical third it curves downward to combine shortly with the apical part of Rs. R is a feeble colourless vein running close to Sc until it gives off Rs; the latter is a strong vein and curves downward in the direction of M as far as the short r-m, whence it curves upward to combine shortly with Sc. M is a moderately strong simple vein, somewhat more evident in its distal than in its proximal half; just beyond r-m it is joined to Cu by the colourless m-cu. Cu and a1 are both colourless simple veins; they anastomose for a short distance near the base and afterwards diverge and run parallel nearly to the termen, just before which they combine.

The most instructive specimens of *Notonecta* are those which are pinned and have the elytra and wings spread out.

Colesborne, Cheltenham.

January 15th, 1918.

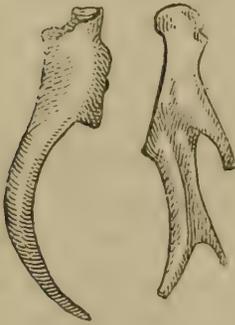
BRANCHED FORCEPS IN AN EARWIG.

BY H. H. BRINDLEY, M.A.

In the course of measuring many thousands of forceps of the Common Earwig (*Forficula auricularia* Linn.?) I have found only one instance of this organ being branched, so it is perhaps worth while to record it. The most common abnormality is one of the forceps of a pair in the male resembling, on the whole, the normal female forceps, in its being comparatively straight and slender and in lacking the inner shoulder

at its base which is characteristic of the male. As Dr. Malcolm Burr points out ("Fauna of British India: Dermaptera," 1910, p. 9), "Such cases are frequently recorded as hermaphrodites, but whenever the full complement of nine segments occurs together with one male branch, it is more probable that these are not gynandromorphic specimens, but merely that one branch has been unable to obtain full development." Mutilation or insufficient nourishment may account for retarding the normal development of a forceps, so that in the imago it presents the characters of a nymph's forceps, for, on the whole, these "female" forceps in males resemble those of nymphs as much as they do those of adult females.

The instance now described and illustrated is of a different kind, as it is one of the forceps (the right) bearing two branches on its outer side, which give it an antler-like appearance. Its length is 3.25 mm., while that of the left or normal forceps is 3.75 mm. Whether the difference in length and the bluntness of the extremity and branches of the right forceps were due to insufficient nourishment during development or to subsequent injury is, of course, uncertain, but it will be noticed that the organ is abnormal also in the elongated and non-serrated condition of the characteristic inner shoulder.



Brownsea ♂, 1911.

The specimen occurred among a batch of 353 adults of both sexes collected on Maryland Farm, Brownsea, the largest island in Poole Harbour, in 1911. Other collections from the same spot, made in 1910, 1912, and 1913, produced no abnormalities in forceps beyond the so-called "female" forceps of males which are met with in collections from any locality.

This antler-like forceps does not observe any rules of symmetry such as are set forth by Bateson ("Materials for the Study of Variation," 1894, chaps. xx-xxii) in dealing with duplicity and other forms of branching in the appendages of insects and crustaceans. The abnormal forceps seemed to have been no disadvantage to its possessor, which was of healthy appearance; and the same may be said, in general, of males with "female" forceps.

I am indebted to Miss Maud D. Haviland, H.M.B.O.U., for kindly making the above camera lucida drawing of the Brownsea specimen.

Zoological Laboratory, Cambridge.

February, 1918.

DESCRIPTIONS OF NEW SPECIES OF LEPIDOPTERA FROM
NEW ZEALAND.

BY G. V. HUDSON, F.E.S.

The following descriptions relate to new species of *Lepidoptera* which have recently come under my notice from various localities in the Dominion. Some of them are very distinct forms and of more than ordinary interest.

NOCTUIDAE.

Aletia empyrea, n. sp.

This large and handsome species was discovered by Mr. Charles E. Clarke in the Routeburn Valley at the head of Lake Wakatipu, at an altitude of about 2500 ft. above the sea-level. It has also occurred at Queenstown.

The expansion of the wings is about 2 inches. The fore wings of the male are rather bright bluish-grey with blackish markings; the basal line is distinct, strongly dentate; the first line has four strong projections; the claviform is very narrow, blackish-edged and pale centred; the orbicular is large, trapezoidal-ovate whitish; a conspicuous blackish triangular spot is situated between the orbicular and the reniform, the reniform itself being very indistinct; the second line is strongly dentate and bent outwards above the middle; there is a series of faint blackish triangular marks on the subterminal area, and the veins are irregularly marked in blackish. The hind wings are pale grey with a dark grey lunule and two cloudy-grey bands. The female is considerably paler than the male and the markings are much less distinct.

The perfect insect appears in December.

Described from specimens kindly lent to me by Mr. Clarke.

GEOMETRIDAE.

Xanthorhoe pseudostinaria, n. sp.

A single specimen of this very distinctly-marked insect was taken at Otira on the west coast of the South Island.

The expansion of the wings is $1\frac{1}{2}$ inches. The fore wings are rather broad with the apex very slightly projecting and the termen slightly bowed; *cream-coloured with bright brown markings*; there is a narrow line along the costa; a faint slightly curved line on the inner edge of the median band; a small blackish discal dot; *a straight, oblique, very strongly-marked line from near the apex to the dorsum at $\frac{3}{4}$* , and a very faint wavy subterminal line; a dark brown terminal line is situated below the apex, where the cilia are also dark brown. *The hind wings are cream-coloured with a conspicuous brown line across the middle* and very faint traces of one basal and two subterminal lines. Except as above indicated the cilia of all the wings are cream-coloured.

The perfect insect appears in December and frequents forest.

GRACILARIADAE.

Parectopa zorionella, n. sp.

This very distinct species was discovered in the Botanical Gardens at Wellington.

The expansion of the wings is $\frac{3}{8}$ inch. The fore wings are elongate-oblong with the costa strongly arched; very dark brownish-black *with very vivid steely-blue reflections; there is a large semicircular silvery-white spot on the costa a little beyond the middle; an oblique silvery-white bar beyond $\frac{3}{4}$ and two much smaller bars just before the apex; there are three minute silvery spots on the dorsum.* The hind wings are dull steely-grey. The cilia of the fore wings are black, of the hind wings dark grey tinged with bronze towards the body.

The perfect insect appears in November and is found amongst light scrub.

TINEIDAE.

Titanomis tetragona, n. sp.

With the exception of the extremely rare *Titanomis sisyrota* this handsome insect is the largest Tineid at present known in New Zealand. It was discovered on Mount Egmont in January 1917 at an altitude of about 3000 feet above the sea-level.

The expansion of the wings of the male is fully $2\frac{1}{4}$ inches. The fore wings are oblong with the costa strongly arched; *deep purplish-brown obscurely mottled with darker and with faint bronzy reflections; there is a large irregular patch of paler scales in the disc near the base; a large dull whitish triangular patch on the tornus, its apex almost reaching the costa; this patch is thickly streaked with grey; the terminal area is clouded with warm purplish-brown; there is a very conspicuous, almost square, pinkish-ochreous blotch on the costa immediately before the apex.* The hind wings are pale ochreous very heavily dappled with grey. All the cilia are ochreous with pale greyish-brown basal line and tips. The head is ochreous, the thorax pale purplish-brown and the abdomen dark greyish-ochreous.

The perfect insect appears in January and may be looked for in sub-alpine forests. It is attracted by light.

Described from the unique specimen kindly lent to me by Mr. Morris N. Watt.

MICROPTERYGIDAE.

Sabatinca aurella, n. sp.

This very brilliantly-coloured little insect was discovered by Mr. R. M. Sunley on the Tararua Mountains at an elevation of about 3000 ft. above the sea-level.

The expansion of the wings is $\frac{7}{8}$ inch. The fore wings, which have the costa very abruptly arched at the base and the termen very oblique, are *bright golden-ochreous with the veins well marked and deeply depressed; there is a large crimson-orange-metallic basal patch, purple on the costa; a curved transverse band at about $\frac{1}{3}$ deep crimson-purple-metallic on the costa, metallic-blue below the middle, and crimson on the dorsum; another narrower band at about $\frac{1}{2}$, deep purple on the costa, thence brilliant metallic-blue to the dorsum; two long costal bars beyond this, purple on the costa, pale metallic-blue towards the disc; an irregular confluent series of crimson and metallic-blue spots on the termen*; the cilia are golden-ochreous. The hind wings are blackish with strong purple reflections. The head and thorax are clothed with long rusty-orange hairs. The abdomen is blackish. The antennae are orange, black towards the apex.

Hillview, Karori,
Wellington, N.Z.
November 18th, 1917.

On the Introduction of Insect Aliens to the British Islands.—I see that Mr. W. E. Sharp (in the January number of this Magazine) takes me to task for expressing approval of the possible establishment in these islands of two exotic butterflies. As Mr. Sharp invites the opinion of biologists on the subject, I am tempted to state my views more fully. I must confess that, as a student of biology, I am in sympathy with his argument, and have myself experienced annoyance at certain heedless interferences with Nature's methods of populating a country. And yet there is another side of me (let us call it the æsthetic side) that would lead me to welcome the introduction of any object of beauty that might add to the interest and pleasure of the lives, not of entomologists only, but of the general community. I wonder if biologists (and entomologists in particular), constituting—as they do—such a minute percentage of the population of the world, are justified in setting their own inconvenience (for it is little more) against the harmless gratification of the æsthetic instincts of the majority. I do not wish for a moment to underrate the value of work that has been and is being effected by biologists all the world over, but are we not, perhaps, in danger of taking ourselves and the importance of our particular theories a little too seriously? Mr. Sharp complains of confusions that have arisen in the study of the distribution of the flora of this country, through the constantly repeated introduction of foreign plants; yet how dull would our gardens now be but for the untiring zeal of collectors who have ransacked the world for new flowering plants to add to the beauty and interest of our surroundings. Why should not lovers of insect life be allowed some such indulgence? As an Economic Entomologist by profession, I acknowledge that indiscriminate introductions might lead (and indeed have led) to disastrous results, and must be sternly discouraged. I need only instance the case of the Gypsy-moth plague in North America. Any experiments in this direction should be under close control and subject to the strictest regulations. They ought to be first submitted to some responsible

body (such as the Zoological Society) which should investigate all the circumstances and be empowered with authority to veto all species that might by any possibility become pests in the country of their proposed adoption, and permanent records should be kept of the circumstances under which others were admitted. With proper safeguards, I see no reason why our butterfly fauna might not be enriched by the addition of many beautiful exotic species.—E. ERNEST GREEN, Camberley: *Feb.* 1918.

Apion (Erythrapion) miniatum Germ. in Scotland.—Dr. Sharp's remark, in his paper on the "British Red Apions" (*antea*, p. 4) that he had not seen *A. miniatum* from Scotland, induced me to send him a "Clyde" specimen which I had standing in my collection under that name. He has examined it and finds it correctly identified. It was taken by me at Ardpeaton, east side of Loch Long, Dumbartonshire, on 27th June, 1910. The species does not appear to have been previously recorded from the Clyde area. I may add that on 21st September last I took a few specimens of *Chrysomela hyperici* Forst., from St. John's-wort on the shore near Ardpeaton.—WILLIAM EVANS, 38 Morningside Park, Edinburgh: 12th February, 1918.

Abundance of Anthrenus varius F. in Essex.—During last June, a feature of my garden, at Westcliff, was the excessive abundance of this little Dermestid on the blossoms of a certain white rose-tree. At the commencement of its occurrence the flowers appeared quite black, owing to the beetles being present in such large numbers, in company with *Meligethes*, *Olibrus*, and other flower-frequenting Clavicornes. After the first few days, however, they were not so numerous. About fifty specimens were secured, but many were partly divested of their elytral scales. I am indebted to Mr. G. J. Arrow for kindly determining the species. Another case of extraordinary abundance during the past June was that of *Attelabus curculionoides* L. on young oaks, as was also the case the preceding year.—A. F. J. GEDYE, 2 Park Terrace, Westcliff-on-Sea, Essex: *Feb.* 18th, 1918.

Sysciophthalmus crawshayi Champ.—*Synonymical note.*—The remarkable Curculionid from Useless Bay, Tierra del Fuego, described in the February No. of this Magazine, *antea* p. 35, under the above name, proves to be synonymous with *Anomophthalmus insolitus* Fairm. (1884), the type of which was from Santa Cruz, Patagonia, the reduced number of joints in the funiculus (5 instead of 7) separating *S. crawshayi* from *Sysciophthalmus* Heller. I am indebted to Dr. Sharp for calling my attention to Fairmaire's description of it, which was overlooked by me. He tells me that he has dissected males of *Sysciophthalmus* and *Anaemerus*, and finds that these genera are somewhat closely allied, *Tanymericus* (as represented by *T. palliatus* F.), on the other hand, being perhaps sufficiently different in ♂-structure to belong to a separate group. Amongst Capt. R. Crawshay's captures at Useless Bay, etc., in Tierra del Fuego, there are also specimens of a Carabid, *Anchomenus semistriatus* Fairm., type from Punta Arenas, not included in Enderlein's Fuegian list; Commander Walker sent me examples of it taken in the same Magellanic locality in Dec. 1880.—G. C. CHAMPION, Horsell: *Feb.* 11th, 1918.

Societies.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY:
November 22nd, 1917.—HY. J. TURNER, F.E.S., President, in the Chair.

Mr. Bowman exhibited several series of *Hemerophila abruptaria* bred in 1916 and 1917, spring and summer emergences, and gave details of the results, a wild typical male having been paired up each time with a melanic-bred female. Mr. Brooks, a fine aberration of *Lomaspilis marginata*, the dark markings confined to the costal area, almost ab. *pollutaria*, from Wicken in 1910. Mr. Edwards, a series of *Papilio nireus* and pointed out variation in the underside marking. Mr. B. Adkin, three aberrations of *Agriades coridon*, (1) ab. *suavis*, with red scales in margin of hind wing above, (2) ab. *semi-syngrapha*, both from Sussex, and (3) ab. *syngrapha* from Surrey. Mr. Hy. J. Turner, a series of *Satyrus statilius*, with its South European, larger form var. *allionia*, and the very large race from Sicily, var. *martiani*: they were from various localities from Spain to Asia Minor. Mr. Ashdown, a dark form of *Lophopteryx camelina* and a dwarf pale form from Oxshott, with *Pheosia dictaeoides* and *Himera pennaria* from Wimbledon. Mr. Newman, a living *Amorpha populi* bred Nov. 21st in a cold greenhouse.

January 10th, 1918.—The President in the Chair.

The decease of two members was announced—Mr. W. West (Sutton), a member of the Council, aged 71, and Mr. W. Manger (New Cross), aged 75.

Mr. Edwards exhibited three species of the N. Indian genus *Dodona*, viz. *D. adonira*, *D. dura*, and *D. ovida* of the *Nemeobiinae*. He also showed *Riodina lysippus*, *Mesene phareus*, *Apodemia glaphyra*, and *Echenais penthea*, belonging to the *Lemoniinae*, from S. America. Mr. B. Adkin, series of *Agriades coridon*, ab. *semi-syngrapha* and ab. *syngrapha*, with a graduated series of intermediates, and read notes on the exhibit. A short discussion took place on the naming of aberrations. Mr. Turner, series of the three species of the genus *Thais*, *T. rumina*, *T. polyxena*, and *T. cerisyi*, and read notes on their variation and distribution. Mr. Bowman, a bred example of *Aglais urticae* with curious leaden patches. The Reports of the Field Meetings and Visits were communicated to the Society by Messrs. Bowman and Turner.

January 24th, 1918.—The President in the Chair.

Annual Meeting.—The Balance Sheet and Report of the Council were received and adopted. The following members were elected as Officers and Council for 1918-19:—*President*, S. Edwards, F.L.S.; *Vice-Presidents*, R. Adkin, F.E.S., and H. J. Turner, F.E.S.; *Treasurer*, T. W. Hall, F.E.S.; *Librarian*, A. W. Dods; *Curator*, W. West; *Editor of Proceedings*, H. J. Turner, F.E.S.; *Secretaries*, S. Edwards, F.L.S., and Hy. J. Turner, F.E.S.; *Council*, W. J. Ashdown, K. G. Blair, B.Sc., G. Brooks, A. W. Dennis, F. W. Frohawk, F.E.S., M.B.O.U., Lachlan Gibb, F.E.S., C. W. Sperring, A. E. Tonge, F.E.S., and W. West, L.D.S. The President read the Annual Address.

Mr. Edwards took the Chair.

Votes of thanks were passed to the President, Officers, and Council.

Ordinary Meeting.—Mr. Dennis exhibited enlarged photographs of Mr. Adkin's *P. brassicae* with white bars on the apical black patch to show there was no absence of scaling. Mr. Turner, series of the beautiful *Catagramma sorana* from Paraguay. Mr. Edwards, species of the genus *Anaea* from S. America and spoke of their affinities and neuration.—HY. J. TURNER
Hon. Editor of Proceedings.

ENTOMOLOGICAL SOCIETY OF LONDON: *Wednesday, November 17th, 1917.*
—Dr. C. J. GAHAN, M.A., President, and afterwards Dr. G. B. LONGSTAFF, M.A., Vice-President, in the Chair.

Prof. T. D. A. Cockerell, of the University of Colorado, U.S.A., Miss D. J. Jackson, Swordale, Evanton, Ross-shire, and Mr. Jesse Johnson, 16 and 17 Marston Road, Stafford, were elected Fellows of the Society.

Dr. F. A. Dixey exhibited several pairs of Pierines captured by Dr. G. D. H. Carpenter, at Itigi, 150 miles east of Tabora, in what was German East Africa. Capt. E. B. Purefoy, a short series of *Lycuena arion* which had been bred up from the egg; after the 3rd moult they had been carried into the nests of *Myrmica laevinodis*. Prof. Poulton exhibited on the screen enlarged photographs of the parasites and hyperparasites bred from three species of *Aphididae* in the Oxford district by Mr. H. Britten of the Hope Department. Also a synaposematic series of 272 Lycid beetles of 9 species taken on one plant in one day by G. D. H. Carpenter, in (late) German East Africa. Also a spider and its prey, the fierce Ponerine ant *Megaponera foetens* F., taken at Itigi by Captain Carpenter on Aug. 21st, 1917. Prof. Poulton also read notes from various correspondents in Africa on entomological subjects of interest. The Rev. F. D. Morice exhibited a photograph of a young (living) larva of the sawfly *Lygaeonematus compressicornis* F., feeding in the middle of a poplar-leaf, and surrounded with a sort of "stockade," or rather circle, of glassy nearly equidistant "pillars," which are believed in some way to protect it. Dr. Chapman, some cocoons of *Dicranura vinula* that happened to show much more plainly than is usually the case the different and thinner texture where the moth is to emerge. Mr. Stanley Edwards asked the following questions:—
"Is the President aware that in the Collections at South Kensington the generic name *Tinea* of Linnaeus is employed for two different genera in two different families of the Lepidoptera? What steps does he propose to take as to this second usage in a new and unfamiliar sense of an ancient and well-known name whose application has been undoubted for generations?" The President, Mr. Bethune-Baker, and Mr. Neave spoke on the subject, and eventually it was resolved, on the motion of Mr. Bethune-Baker, seconded by Mr. Durrant, that Sir George Hampson should be invited to take part in the discussion of the question at the December meeting.

Wednesday, November 21st, 1917.—Dr. C. J. GAHAN, M.A., President, in the Chair.

The following Fellows were nominated as Officers and Members of Council for the ensuing year:—*President*, Dr. C. J. Gahan, M.A.; *Treasurer*, W. G. Sheldon; *Secretaries*, Comm. James J. Walker, M.A., R.N., F.L.S., Rev. George Wheeler, M.A., F.Z.S.; *Librarian*, George Charles Champion,

F.Z.S., A.L.S.; *Other Members of Council*, A. W. Bacot, E. C. Bedwell, K. G. Blair, Dr. T. A. Chapman, F.Z.S., W. C. Crawley, B.A., H. Willoughby Ellis, F.Z.S., Dr. H. Eltringham, M.A., F.Z.S., J. C. F. Fryer, M.A., A. Hugh Jones, Rev. F. D. Morice, M.A., S. A. Neave, M.A., B.Sc., F.Z.S., Herbert E. Page.

Messrs. Frederick Walter Cocks, 26 Crown Street, Reading, and William Gerald Harding, St. Hugh's School, Bickley, Kent, were elected Fellows of the Society.

Capt. Purefoy exhibited a series of British *Chrysophanus dispar*, var. *rutilus*, whose ancestors had come from the neighbourhood of Berlin before the War; they were now firmly established in a marsh in South Ireland, into which the food-plant, *Rumex hydrolapathum*, had also been introduced. Mr. H. Main exhibited with the epidiascope a series of photographs illustrating the pupation of *Dytiscus marginalis*.—GEO. WHEELER, *Hon. Secretary*.

SYNOPSIS OF BRITISH STREPSIPTERA OF THE GENERA *STYLOPS*
AND *HALICTOXENUS*.

BY R. C. L. PERKINS, M.A., D.Sc., F.Z.S.

(PLATE I.)

STYLOPS Kirby.

Since 1872, when S. S. Saunders published his "Monographia Stylopidarum" (Trans. Ent. Soc. Lond. pp. 1-48), very little attention has been paid to the specific characters of the species of *Stylops* found in this country. In 1909, Pierce, in his "Monographic Revision of the Strepsiptera," published by the Smithsonian Institution, dealt with five species, the types of which had been described originally in England, or at least collected here. Four of these he went so far as to include in a tabular key to the males of the genus—seven species in all being distinguished therein—trusting to the old figures and descriptions for the distinguishing characters! Most of these characters that he gives I believe to be erroneous. It can safely be said that the study of specific characters of *Stylopidae* is one of great difficulty and, in the genus *Stylops* at least, the main characters in the ♂♂ are to be found in the antennae and to some extent in the aedeagus. Dried specimens are subject to shrinking and distortion of most parts, and for really accurate determination of the antennal characters it will probably prove necessary to detach each joint and mount it separately in balsam in order that the true proportions may be rightly appreciated. The aedeagus, bent as it is in more than one direction, presents very different appearances in different aspects, as do the antennal joints and those mouth-parts which are

described as maxillae by some, and palpi by others. In addition to the difficulties caused hereby, one is also generally faced with great poverty of material to work at. Consequently nothing is known as to the variation of the species, but it is clear to me that size, infuscation of wings, and such-like characters are not always to be relied on.

Pierce has founded many new species on minute measurements of the ♀ cephalothorax, and under *Stylops cornii* he gives measurements for two individuals, "the difference" between which "is probably very near to the extreme variation in size." In some British species I have found greater variation than this. He assumes that a *Stylops* does not attack more than one host, and accepts the name *S. thwaiti* Saunders (undescribed) because the supposed host (*A. afzeliella*) was named. The description of *S. nassonowi* Pierce is made from Nasonow's figure of the ♀ and contains nothing by which the species could be identified. Presumably we have this *Stylops* in England, since I have several times taken the host bee (*A. carbonaria* = *pilipes*) stylitized. I do not think that the *Stylops* in each species of our affected *Andrenae* is itself a distinct species, but until the ♂♂ are secured, it is impossible to be certain of this. I cannot detect any good characters to distinguish some females of *Stylops* that have been taken from quite distinct bees. I have some doubt whether *S. thwaiti* was really from *A. afzeliella* at all, and not rather from *A. wilkella*. Smith, who was the leading authority on the determination of British bees for 40 years of the last century (after Kirby's time, but before 1880), made serious mistakes in his determinations. Often at fault in naming typical specimens, his naming of those altered by stylitization is still more open to suspicion. Even when bred from hosts belonging to quite distinct groups of the genus *Andrena*—I mean natural groups, not the artificial subgenera created by Robertson—the species of *Stylops* can be at least excessively closely allied and perhaps not even distinct at all.

The synopsis of the males which is here given is put forward with diffidence. I can only say that great numbers of sketches of the antennae of the species have been made in different aspects before arriving at any conclusion as to the real proportion of the joints to one another, but it may be repeated that to arrive at certainty in this respect, each joint should be detached and mounted flat in balsam. This I have not been able to do at present. Drawings of the antennae made without these precautions (unless living specimens of the insects are available) must not be considered absolutely correct owing to the flexure and curving of the joints. I regret that I am unable to include *S. dali* Curtis in this table, as I have seen no ♂ of this species.

Synopsis of males.

1. Aedeagus with two small but distinct angulations on its lower edge when projected (on the upper when it is reflexed in repose) . . 2.
Aedeagus without these angles 7.
2. Fourth joint of the antennae generally about twice the length of the fifth and always more than one and a half times this length . . 3.
Fourth joint not one and a half times the length of the fifth . . 6.
3. Fourth joint not shorter than the fifth and sixth together . 4.
Fourth joint rather shorter than the fifth and sixth together . 5.
4. Apex of the third joint only reaching a little beyond the tip of the fifth *melittae* Kirby.
Apex of third joint reaching as far as the middle of the sixth joint *thwaitesi*
(? *thwaitesi* S. Saunders).
5. A species apparently distinct from either of the preceding, the host supposed to be *A. wilkella*; the cephalothorax of the ♀ found in this bee is very similar to, if indeed distinguishable from that which is found in *A. afzeliella*, but the male parasite appears to have a distinctly shorter and broader fourth antennal joint *wilkellae*, sp. n.
6. Fifth and sixth joints of the antennae together much longer than the fourth. A smaller species with distinctly shorter wings than the preceding *hammella*, sp. n.
7. Third joint of the antennae extending back to the tip of the sixth or almost thus far, so that (at least with slight flexure) the fourth, fifth, and sixth joints rest in the concavity of the third *nevinsoni*, sp. n.
Sixth joint of the antennae extending far beyond the tip of the third 8.
8. Sixth joint considerably longer than the fifth and only a little shorter than the fourth *bimaculatae*, sp. n.
Sixth joint not much longer than the fifth, and less nearly equal to the fourth 9.
9. The largest species, length of wing from base to tip exceeding 3.75 mm. *spencii* Pickering.
Smaller, length of wing not exceeding 3.75 mm. *aterrima* Newport.

1.—*Stylops melittae* Kirby.

Through the kindness of Mr. A. H. Hamm I have been able to examine half a dozen comparatively recently-caught or bred examples of the ♂ of this species. In past years I have frequently bred it myself from *Andrena nigroaenea*. In F. Smith's collection of bees are two ♂ *Stylops* labelled as bred from *A. trimmerana*, but one of these is in my opinion *S. melittae*, though it is distinctly larger than any of Hamm's specimens. I suspect that Smith applied the wrong name to the hosts of his example, because in other cases I know that he identified ♂ *atriceps* stylopized as *trimmerana*, and he also confused *nigroaenea* and *atriceps*, both stylopized and healthy. In some examples

the tip of the third antennal joint appears only just to reach the apex of the fifth joint, but in others it evidently reaches slightly beyond it.

The ♀ *Stylops* is generally paler and more elongate than that of *S. aterrima*, but not always so. The dark basal band of the cephalothorax does not usually extend so far forward as the line of the spiracles (except sometimes along the margins), but there may be a more or less distinct median suffusion extending from the basal band to this line. The width across the spiracles is 1.2–1.3 mm. in the examples I have measured.

2.—*S. thwaitesi* S. Saund. ?

I have used this name for the parasite of *A. afzeliella*, since, wrongly spelt *thwaiti*, it had been used by Sir S. Saunders for the *Stylops* obtained by Dr. Thwaites at Bristol and supposed to be parasitic in that *Andrena*. As entomologists at that time did not properly distinguish between *A. afzeliella* and *A. wilkella*, and the latter is far more subject to stylopization, it becomes doubtful whether Thwaites's species was identical with the single example I have myself bred from true *afzeliella*. The ♂ is extremely close to that of *S. melittae*, but the females that I have examined are very easily distinguished by the fact that the basal black band of the cephalothorax extends forwards in front of the line of the spiracles, though it does not extend to the sides of this, the lateral parts being of the usual yellowish or brown colour right to the hind angles. The width across the spiracles is .9–1 mm.

3.—*S. wilkellae*, sp. n.

Since my determinations of *Stylops* were completed, I have received some specimens taken at Woking by Mr. G. C. Champion. They have been recorded under the name of *S. melittae* in this Magazine (*antea*, vol. xxxv, p. 144, xxxvi, p. 134, & xlvi, p. 137). Though extremely similar to *S. thwaitesi* and *S. melittae*, the three males that I have examined do not seem to agree in detail with either of these. The host is supposed to have been *A. wilkella*, which was taken at the same time in the garden, and contained female *Stylops*. The female of the *Stylops* in *A. wilkella* appears to me almost identical with that of *S. thwaitesi* and therefore very different from that of *S. melittae*, while the males seem somewhat intermediate between those of the species just named. Until one gets a good supply of these three forms for the dissection and mounting of parts in balsam, I do not think that their distinctness as species can be positively stated, for the amount of variation is not determinable in dry specimens, for reasons given at the beginning of this paper.

4.—*S. hammella*, sp. n.

Found by Mr. A. H. Hamm near Oxford, but very rarely. He has sent me for inspection the ♀ of *Andrena chrysoceles*, its host, which was figured in the paper by himself and Geoffrey Smith on "*Stylops* and Stylopization" (Quart. Journ. Micr. Science, 1914, pl. 35). Mr. Hamm has taken one or two other females of *chrysoceles*, stylopized, but these have not the clypeus yellow, as in the one he figured. At Newton Abbot, where in some seasons in one large meadow this *Andrena* occurs literally in thousands, stylopized examples are very rarely met with. In a stylopized female containing mature triungulins the basal black band of the cephalothorax is nearly straight and definite, but does not extend forward to the line of the spiracles, across which the thorax is .9 mm. wide. A less mature one is .78 mm. wide, but otherwise very similar. The wing of the ♂ removed and fastened down flat is $2\frac{4}{5}$ mm. long.

5.—*S. nevinsoni*, sp. n.

This is parasitic on *A. synadelpha* and it would be interesting to compare the ♂ with those from other species of the *varians* group, most of which are found stylopized, but unfortunately I have no material of male *Stylops* from these. The wing length (when this organ is removed and flattened) is about 3 mm. The ♀ cephalothorax is widely dark-banded basally, the dark band being straightly margined anteriorly, a little in front of the spiracles, and with a tendency to a median suffusion extending still further forwards. The width across the spiracles is .9-1 mm. Named after Mr. E. B. Nevinson, who has industriously studied the British Aculeata.

6.—*S. bimaculatae*, sp. n.

I have only obtained one ♂ of this species, and that not in good condition. *Andrena bimaculata* var. *vitrea* Sm. is not uncommonly found stylopized in S. Devon, but I have not yet observed stylopized specimens of its first brood (var. *conjuncta* Sm.). Mr. Hamm has taken a stylopized female (also of the second brood) at Wellington College, Berks.

7.—*S. spencii* Pickering.

Pickering's description appears to me to give no very useful character, and his figures, as described by Pierce, certainly do not at all agree with the *Stylops* I have procured from *A. tibialis* (*atriceps*). As a matter of fact, the description by Pierce from Pickering's figures of the antenna applies much more nearly to *S. melittae*, the parasite

of *A. nigroaenea*, than to those I have from *tibialis*! It is, of course, quite possible that the figures were made from *S. melittae*, since F. Smith confused the ♂♂ of *nigroaenea* with those of *tibialis* in normal specimens, and both sexes of these bees he mixed under the name of *A. picicornis*, when stylopized. In Smith's collection there were two or three specimens, which I take to be the parasite of *tibialis*. These had a label beneath them "bred from *Andr. nigrifrons*, April 1875." Presumably for *nigrifrons* (a synonym of Smith's own for *A. parvula* ♂) *atriceps* was intended! These large parasites could hardly have come from so minute a bee as *parvula*. If we accept *spencii* as a name for the parasite of *tibialis* and give to it the characters used in my table of species, it would appear to be extremely closely allied to *S. aterrima* Newport, possibly only a large variety of that species. A wing removed and mounted flat on a slide measures (from base of costa to tip) 4 mm.

The ♀ cephalothorax varies in colour in a manner similar to that of *S. aterrima*. It is 1.3–1.4 mm. in width across the spiracles. These, according to Pierce, are "dorsal, not reaching the lateral margin," as described from Nasonow's figure. In all that I have examined the spiracles are prominent on each side of the cephalothorax, except on one side only in one example, and such differences are not in this (nor in some other species that I have examined) of specific value, but accidents of position or preparation. The base of the cephalothorax is darkly infuscate, and this infuscation is continued rather widely along each side of the thorax to the line of the opening of the brood chamber. Following the basal dark band is a narrow pale one, then a broader dark one, generally darkest towards each side and lying between the spiracles, sometimes very faint or obsolete except towards the sides, and a little in front of this is a narrow sinuate band, sometimes broken in the middle, so as to form two curved lines. In some examples there are very faint traces of banding anterior to this. To avoid repetition I may say that the above description would perfectly fit some specimens of *S. aterrima* taken from *A. trimmerana*. The width of 5 examples of the latter *Stylops* is slightly less on the average, being from 1.2–1.4 mm.

8.—*S. aterrima* Newport.

I possess the fragmentary example actually described by Newport and the two figures of the antenna (fig. 1 *a*) were made from this. This specimen was gummed on a card-point, with the wings torn and partly detached and covered with gum. Amongst the fragments of wing I was fortunate in finding the detached aedeagus. It will be seen that the

WATKINS & DONCASTER, Naturalists,

Keep in stock all Articles for Entomologists, Ornithologists, Botanists, &c.: Umbrella Net, 7/-; Folding Cane or Wire, 3/6, 4/-, 4/6; Plain Ring Net, 1/3, 2/-, 3/-; Pocket Boxes, 6d., 9d., 1/-, 1/6; Store Boxes, with Camphor Cells, 2/6, 3/6, 4/-, 5/-, 6/-; Zinc Pocket Boxes, 9d., 1/-, 1/6, 2/- Setting Boards, from 5d. to 1/10; Complete set of 14 boards, 10/6; Breeding Cages, 2/6, 4/-, 5/-, 7/6; Sugaring Tins, 1/6, 2/-; Sugaring Mixture, ready for use, 1/9 per tin; Setting Houses, 9/6, 11/6, 14/-; Glass Topped and Glass Bottomed Boxes, from 1/- per doz.; Zinc Killing Boxes, 9d., 1/-; Coleoptera Collecting Bottles, 1/6, 1/8; Collecting Box, containing 26 tubes (very useful for Coleopterists, Microscopists, &c.), 4/6; Brass Chloroform Bottle, 2/6.

Improved Pocket Pupa-digger in leather sheath (strongly recommended), 1/9; Steel Forceps, 1/6 to 3/- per pair; Pocket Lens, from 1/6 to 8/6.

Taxidermists' Companion, containing most necessary implements for skinning, 10/6; Scalpels, with ebony handles, 1/3; Fine Pointed Scissors, 2/- per pair; Brass Blow-pipes, 4d., 6d.; Egg Drills, 2d., 3d.; ditto, best quality, 9d. each; Botanical Vasculum, 1/6, 2/9, 3/6, 4/6; Label List of British Macro-Lepidoptera, with Latin and English Names, 1/6; List of British Lepidoptera (every species numbered), 1/-; or on one side for Labels, 2/-.

SILVER PINS FOR COLLECTORS OF MICRO-LEPIDOPTERA, &c., as well as minute insects of all other families.

We stock various sizes and lengths of these Silver Pins, which have certain advantages over the entomological pins usually employed.

For instance, insects liable to become greasy and verdigrisy, like Sesiidae, are best pinned on Silver pins, which will last much longer than the ordinary pins (whether enamelled black, or gilt, or silvered).

We shall be pleased to send pattern cards on application.

A large stock of British, European, and Exotic Lepidoptera, Coleoptera, and Birds' Eggs.

ENTOMOLOGICAL PINS.

The "DIXON" LAMP NET (invaluable for taking Moths off street lamps without climbing the lamp posts), 3s. 6d.

SHOW ROOM FOR CABINETS, &c.

36, STRAND, LONDON, W.C., ENGLAND.

Birds and Mammals, &c., Preserved & Mounted by first-class workmen.

Our New Price List (100 pp.) sent post free to any address on application.

FOR SALE.

16 NATURAL HISTORY CABINETS

BELONGING TO THE LATE DR. MASON,

ALSO

FOUR MICROSCOPICAL CABINETS,

Containing Microscopical Slides by G. R. VINE, of Sheffield.

ALSO

400 BRITISH BIRDS IN CASES.

Apply—Mrs. MASON, TRENT HOUSE, BURTON-ON-TRENT.

STEVENS' AUCTION ROOMS. Estd. 1760.

TUESDAY, MARCH 12TH, AT 12.30 O'CLOCK.

NATURAL HISTORY SPECIMENS.

Mr. J. C. Stevens will Sell by Auction at his Rooms, 38 King Street, Covent Garden, London, W.C. 2,

Lepidoptera, including an unusually fine selection of *Abraaxas grossulariata*, from the Rev. G. H. Raynor, M.A., a small collection of British Lepidoptera, Coleoptera, etc. Two 40-drawer mahogany Insect Cabinets; also British, Palae-arctic, and Indian Eggs, the property of J. Wall-Row, Esq., F.I.S., M.B.O.U., with full data.

On view day prior and morning of Sale. Catalogues on application.

Scale of Charges for Advertisements.

Whole Page.....£3. Half Page£1 11s. 6d. Quarter Page.....17s.

Lowest charge, 7s. up to 5 lines; 1s. per line afterwards.

Repeated or continuous Advertisements per contract.

There is no charge for Lists of Duplicates and Desiderata.

All payments and applications for the above should be made to

R. W. LLOYD, I. 5, Albany, Piccadilly, W.

AUTHORS are requested to send their communications and proofs to either
J. J. WALKER, Aorangi, Lonsdale Road, Summertown, Oxford; or
G. C. CHAMPION, Broomhall Road, Horsell, Woking.

ENTOMOLOGICAL NEWS.

A forty-eight page illustrated magazine, issued monthly, except in August and September, devoted to the study of INSECT LIFE. It contains a resumé of the proceedings of a number of Entomological Societies, and also articles by the leading Entomologists in the United States and Canada. Valuable information for the beginner, the economic entomologist, and the systemist. TWO DOLLARS a year in advance. Single copies, 25 cents. Address—

ENTOMOLOGICAL NEWS,

The Academy of Natural Sciences,

1900 BACE STREET, PHILADELPHIA, PA.

THE CANADIAN ENTOMOLOGIST.

A MONTHLY MAGAZINE DEVOTED TO THE STUDY OF SCIENTIFIC ENTOMOLOGY.

Volume 50 is now in course of publication. Back volumes can be supplied. It is the oldest established Magazine of the kind in America, and has a world-wide circulation. Subscription, \$2 per annum, payable in advance, which includes a copy of the Annual Report of the Entomological Society of Ontario to the Legislature. Editor, Dr. E. M. Walker, Biological Department, University of Toronto, Toronto, Canada.

Address: Entomological Society of Ontario, Guelph, Canada.

THE SIX COLOURED PLATES illustrating the articles on
"SOME INTERESTING BRITISH INSECTS,"

with the accompanying text (issued in the Ent. Mo. Mag. for September, 1909, January and September, 1910, September, 1911, and August, 1913), are issued in a separate wrapper, price 2s.

APPLY TO THE PUBLISHERS.

CHANGE OF ADDRESS.

R. S. BAGNALL to Hydal Mount, Blaydon-on-Tyne, Co. Durham.

THE BIOLOGY OF DRAGONFLIES

(ODONATA or PARANEUROPTERA)

By R. J. TILLYARD, M.A., B.Sc., F.L.S., F.E.S.

Demy 8vo. pp. xii+398. With 4 plates and 188 text-figures. 15s net.

CAMBRIDGE ZOOLOGICAL SERIES.

"Never before has the group received such detailed and well-balanced treatment as Mr Tillyard has given. . . . Students of the anatomy and development of insects are much indebted to him for providing in this convenient form a trustworthy guide to the external and internal structure of dragonflies at various stages of their life-histories."—*Nature*

Prospectus on application

Cambridge University Press, Fetter Lane, London, E.C. 4, C. F. Clay, Manager

COLEOPTERA ILLUSTRATA,

CARABIDAE.

Vol. 1, No. 3.

CARABIDAE.

PRICE \$1.

CONTENTS.

PRICE \$1.

LEISTUS
ferrugineus Linn.

ELAPHRUS
aureus Mull.

LOROCERA
pilicornis Fabr.

BROSCOSOMA
baldense Putz.

BEMBIIDIUM
fasciolatum Duft.
articulatum Gyll.

CILLENUS
lateralis Sam.

THALASSOPHILUS
longicornis Sturm.

TRECHUS
discus Fabr.

ANOPHTHALMUS
hirtus Sturm.
v. rostratus Mots.

PTEROSTICHUS
lepidus Leske.
cupreus Linn.
infuscatus Dej.
puncticollis Dej.
crenatus Dej.
barbarus Dej.
carbonicolor Sols.
macer Marsh.
aterrimus Hrbst.
elongatus Duft.
oblongopunctatus Fabr.
angustatus Duft.
melanoscelis Chaud.
niger Schall.
vulgaris Linn.
nigritus Fabr.
minor Gyll.
interatinctus Sturm.
negligens Sturm.
subsinnatus Dej.
brevis Duft.
caspicus Men.
cognatus Dej.
sethiops Panz.
globosus Fabr.

PTEROSTICHUS
cylindricus Hrbst.
melas Creutz.

ABAX
ster Vill.
ovalis Duft.
schuppelii Pall.
v. rendschmidtii Germ.
corsicus Dej.

MYAS
chalybaeus Pall.

AMARA
ingenua Duft.

ZABRUS
chalceus Fald.
heros Fald.
seidlitzii Schaum.
graecus Dej.
blapoides Creutz.

ANISODACTYLUS
binotatus Dej.
signatus Panz.

ACCURATE ENLARGED PEN DRAWINGS, UNIFORM IN SIZE,

ONE TO A PAGE 8vo.

COLEOPTERA ILLUSTRATA will be mailed upon receipt of price.

HOWARD NOTMAN, 136 JOBLEMON STREET, BROOKLYN, N.Y., U.S.A.

Vol. I, Nos. 1 and 2, \$1 each.

CONTENTS.

	PAGE
Notes on various South American Coleoptera collected by Charles Darwin during the Voyage of the "Beagle," with descriptions of new genera and species (concluded).— <i>G. C. Champion, F.Z.S.</i>	49
<i>Caenocara subglobosa</i> Muls., a species of Coleoptera new to Britain.— <i>H. Donisthorpe, F.Z.S.</i>	55
On the British species of Notonecta.— <i>J. Edwards, F.E.S.</i>	56
Branched forceps in an Earwig (with figure).— <i>H. H. Brindley, M.A.</i>	59
Descriptions of new species of Lepidoptera from New Zealand.— <i>G. V. Hudson, F.E.S.</i>	61
On the introduction of Insect Aliens to the British Islands.— <i>E. E. Green, F.Z.S.</i>	63
<i>Apion</i> (<i>Erythrapion</i>) <i>miniatum</i> Germ. in Scotland.— <i>W. Evans</i>	64
Abundance of <i>Anthrenus varius</i> F. in Essex.— <i>A. F. J. Gedys</i>	64
<i>Sysciophthalmus crawshayi</i> Champ.—synonymical note— <i>G. C. Champion, F.Z.S.</i>	64
SOCIETIES.—South London Entomological Society	65
Entomological Society of London	66
Synopsis of British Strepsiptera of the genera <i>Stylops</i> and <i>Halictoxenus</i> .— <i>R. C. L. Perkins, M.A., D.Sc., F.Z.S.</i>	67

THE NATURALIST:

A MONTHLY ILLUSTRATED JOURNAL OF

NATURAL HISTORY FOR THE NORTH OF ENGLAND.

EDITED BY

T. SHEPPARD, M.Sc., F.G.S., F.R.G.S., F.S.A.Scot.,
THE MUSEUM, HULL;

AND

T. W. WOODHEAD, Ph.D., M.Sc., F.L.S.,
TECHNICAL COLLEGE, HUDDERSFIELD;

WITH THE ASSISTANCE AS REFERRES IN SPECIAL DEPARTMENTS OF

J. GILBERT BAKER, F.R.S., F.L.S., GEO. T. PORRITT, F.L.S., F.R.S.,
Prof. P. F. KENDALL, M.Sc., F.G.S. JOHN W. TAYLOR, M.Sc.,
RILEY FORTUNE, F.Z.S.

The Journal is one of the oldest Scientific Periodicals in the British Isles, dating back to 1833, and is circulated widely amongst the principal Naturalists of the country.

LONDON: A. BROWN AND SONS, LIMITED, 5, FARRINGTON AVENUE, E.C.
And at Hull and York.

PRICE, SIXPENCE NET. BY POST SEVENPENCE.

Prepaid Subscription, 6s. 6d. per annum, post free.

The Annual Subscription for 1918 is 9/-.

[See p. 2 of Wrapper.]

Third Series, No. 40.]
[No. 647.]

APRIL, 1918.

[PRICE 1/- NET.]

THE
ENTOMOLOGIST'S
MONTHLY MAGAZINE.

EDITED BY

G. C. CHAMPION, F.Z.S. J. E. COLLIN, F.E.S.

W. W. FOWLER, D.Sc., M.A., F.L.S.

R. W. LLOYD, F.E.S. G. T. PORRITT, F.L.S.

J. J. WALKER, M.A., R.N., F.L.S.

VOLUME LIV.

[THIRD SERIES—VOL. IV.]

"J'engage donc tous à éviter dans leurs écrits toute personnalité, toute allusion dépassant les limites de la discussion la plus sincère et la plus courtoise."—*Laboulbène.*

LONDON:

GURNEY & JACKSON (MR. VAN VOORST'S SUCCESSORS),

33, PATERNOSTER ROW, E.C. 4.

TAYLOR AND FRANCIS, RED LION COURT, FLEET STREET.

NOTICE.—Owing to the greatly increased cost of paper, printing, etc., the Editors of the Magazine are compelled to raise the subscription to 9s. per annum (post free). Subscriptions for the 1918 volume should be remitted as soon as possible to **R. W. LLOYD, I. 5, Albany, Piccadilly, London, W. 1.**

The price of a single ordinary number is 1s.

EXCHANGE.

Wanted—Pterophoridae (plume moths) of the United Kingdom, or those from any other part of the World, exchange or cash. *Duplicates*—Lepidoptera and Odonata from Japan and Formosa.—**AKIO NOHIRA, Ichijoji, Otagigun, Kyoto, Japan.**

REDUCED PRICES FOR BACK VOLUMES.

FIRST SERIES.

This can only be obtained in complete Volumes (bound or unbound).

A limited number of sets, from Vol. x to Vol. xv can still be obtained at £2 15s. per set net (in parts), or of five consecutive Vols. at £1 per set net (if bound, 1s. per Vol. extra).

Certain of the Vols. i to ix can be had separately at 10s. each.

SECOND SERIES.

Vols. i to xv. are now offered at £3 per set net (in parts), or £1 2s. 6d. for five consecutive Vols. (if bound, 1/- per Vol. extra).

THIRD SERIES.

Vol. li (Third Series, Vol. i) can be supplied by the Publishers at 7/6 (8/6 if bound) per copy. Cover for binding, 1/-.

Vol. li (1915) contains 23 Plates (one coloured), a complete Monograph of the British Siphonaptera, and numerous extra pages of text.

Apply to the Publishers.

MEETINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON, 11, Chandos Street, Cavendish Square, W.—Wednesday, May 1st, June 5th.

The Chair will be taken at 8 o'clock in the evening precisely.

The Library is open daily from 9 a.m. to 6 p.m. (except on Saturdays, when it is closed at 2 p.m.), and until 10 p.m. on Meeting nights.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge. The Second & Fourth Thursdays in each month, at 7 p.m. The lantern will be at the disposal of Members for the exhibition of slides.

The Chair will be taken punctually at 8 o'clock.

THE LONDON NATURAL HISTORY SOCIETY, which meets at 7 p.m. on the 1st and 3rd Tuesdays in each month, at Room 20, Salisbury House, Finsbury Circus, E.C., will be glad to welcome at its Meetings any French or Belgian entomologists now staying in this country, and to give them the benefit of its library and collections. Communications should be addressed to the Secretary, Salisbury House, E.C.

Hon. Sec.: J. Ross, 18, Queen's Grove Road, Chingford, N.E.

Chingford Branch. The Chingford Local Branch meets at the Avenue Café, opposite Chingford Station, at 8 p.m., on the 2nd Monday in each month.

figures made from Newport's type closely resemble those of *S. spencii*, allowing for differences of aspect, and also the same parts shown in the front view of a whole head of a specimen bred by me from *A. trimmerana* and preserved in alcohol. A female *Stylops* taken from *A. bucephala* may well be identical with that of *trimmerana*, and that which occurs in *spinigera* is likely to prove the same.

9.—*S. dalii* Curtis.

The description of Curtis, quoted in Pierce's work, is not sufficient for the identification of this species, but no doubt it is distinct from any of the preceding. The female cephalothorax is wide across the spiracles, being about 1.3–1.4 mm. at that point. I have only examined a single specimen and that from an *A. labialis* taken many years ago, for I have not recently met with stylopized examples. Consequently, the following characters may prove variable or even not quite correct. The basal dark band is straightly edged in front or only slightly curved and is followed by a narrow pale one, in front of which is a very faint, smoky, wide band not reaching the sides of the thorax, the front margin of this band having two darker streaks, one on each side of the middle, each of these enclosing a small pale spot. The width as given above is about 8 times as great as the distance between the mandibles.

10.—*S. analis*, sp. n.

The only specimens I have seen of this *Stylops* are two ♀ ♀ taken in the New Forest by A. H. Hamm. One of these I have extracted, and it certainly appears to be distinct from any described form, the width of the thorax at the spiracles being about 1 mm., or about 8–9 times as great as the width of the head between the mandibles. The length from the hind margin of the spiracle to the middle of the front margin of the head is .7 mm. Owing to its old (triungulin-producing) condition its colour is uncertain, but it appears to be broadly darker along the sides of the thorax and more yellow between this, the basal black band hardly reaching the line of the spiracles.

11.—*S. spreta*, sp. n.

I have examined a number of examples of the ♀ of this species, which is certainly distinct from the others by its minute size, the width at the spiracles being about .7 mm. only, or 6–7 times as wide as the mandibular space. There is a basal smoky-black band, somewhat variable even in examples taken from the same individual of the host, its front margin being either straight or slightly curved, or sometimes extended

forwards in the middle, but not reaching the line of the spiracles. There is no other dark banding or suffusion in my specimens. At present I have not examined the ♀ parasites from the very closely allied species, *A. minutula*, *moricella*, *subopaca*, and *falsifica*, but as I can see no difference between those from *A. spreta* and *saundersella* (*nana* auct. plur.) I think the others are likely to be the same. I have several times bred the ♂ of this little *Stylops*, but not recently, the last I secured being in 1898 or 1899 at Fordham, near Cambridge, but these and others I gave away to Coleopterists.

HALICTOXENUS Pierce.

This genus was formed by Pierce for American species of *Stylopidae* infesting the group of metallic *Halicti* (known sometimes as *Chloralictus*), and was placed by him in his family *Xenidae*, the species of which are mostly parasitic on wasps and fossorial wasps. A subgenus, *Halictophilus*, was made for two Asiatic species, while a second genus, *Halictostylops*, for the European species infesting *Halictus minutus* was erected on the strength of Nasonow's figure! I suspect that these genera will prove to be so intimately connected as to be inseparable, and I have used for the British species the first name used, *Halictoxenus*. I have myself frequently obtained female *Halictoxenus* in *H. nitidiusculus*, a species so closely allied to *H. minutus* that it is often confused with it in collections. This latter species has also been recorded as stylitized in England, but I should not depend on the true identification of the host by the recorders. Most likely, however, both have the same parasite. My specimens from *H. nitidiusculus* do not agree with Pierce's description taken from Nasonow's figure, but I attach no importance to the differences. Even recently some Hymenopterists have used the name *Halictophagus* for the stylopid parasites of *Halictus*, but as I pointed out in 1905, this name was an unfortunate creation by Curtis, who, probably at Dale's suggestion and on the feeblest kind of evidence, conjectured that *Halictus* was the host, while the true one was, no doubt, some Jassid in the Homoptera.

1.—*Halictoxenus spencii* Nasonow.

Local, but sometimes not rare in *Halictus nitidiusculus*. I have several times found the bee with the empty ♂ puparium, but have never been able to breed this sex. The specimens examined by me are approximately .9 mm. broad across the spiracles and .7 long from the hind margin of these to the middle of the front margin of the head, measured in a straight line. The basal dark band does not reach the line of the

spiracles, but nearly on a line with these, or a little anteriorly, are two small discal dark spots. In front of these is a conspicuous transverse line of 6 or 8 whitish spots on the middle third of the width of the thorax, these spots having an appearance of oil or fat drops. Whether they would always be present I do not know. There is a fuscous stain or vague band across the brood-chamber opening, from the ends of which two fuscous subparallel bands extend forward on to the head and backwards to the spiracles or to the basal black band. The width of the thorax across the spiracles is 7·5-8 times the distance between the inner edges of the mandibles.

2.—*H. cylindrici* sp. n.

This might perhaps be only a large variety of the preceding. Measured in the same manner, its width is 1·2 mm., the length from 9-1 mm., the width being 8 times the width between the mandibles. The pattern of marking is nearly the same as in the preceding, a faint smoky suffusion from the basal band to the small dark spots (which lie on or near the line joining the spiracles) is more distinct. The discal band of pale spots is much less distinct, the spots being smaller and less white, and therefore less easily distinguished from the ground-colour. This Stylopid is not common, seeing how abundant is its host, but it is widely distributed in the south of England. The stylopidized ♀ of *Halictus calceatus* (*cylindricus*) lives through the winter, and the *Halictoxenus* *triungulins* may be seen emerging from the parasite in early spring. I have never myself taken a bee from which the ♂ of this parasite had emerged. Smith recorded the very closely allied *H. albipes* as being stylopidized, but the specimens so named in his collection are *H. calceatus*.

3.—*H. tumulorum*, sp. n.

The width across the spiracles is 1 mm., the length from the hind margin of either of these to the middle of the front margin of the head 9 mm., the width being about 7·5 times the distance between the mandibles. The front half of the length of the cephalothorax is nearly wholly brown or fuscous, contrasting with the yellower hind part. On the latter, nearly in a line with the hind-angles of the thorax, are two very conspicuous round white spots (of the nature of the discal ones in *spencii*). They are distant from one another by about $\frac{1}{3}$ of the width of the thorax, and between them is a cluster of excessively minute pale dots.

In North Wiltshire in one piece of bank I found most of the ♂ *Halictus tumulorum* stylopidized in August of several years (1886-90),

and the bee was extremely common; but elsewhere in that district I took none stylopized. Since then I have only come across one or two parasitized examples, in Somerset and Kent. I regret that I no longer possess specimens of other Halicti that I have found stylopized, e. g., *H. xanthopus*.

I should be very glad to receive stylopized bees from any Hymenopterist who does not want them, in order to continue my studies of the *Stylopidae*. As mere specimens in a collection, stylopized bees are not of much value, now that the external features of stylopization have been so closely studied by Pérez and others. There is, however, need for a further study of the internal organs of such bees, but this cannot be done except from fresh specimens, or those preserved in liquid. For systematic study the extraction of large numbers of individuals and their proper preparation for microscopic examination is necessary in the case of female parasites. In conclusion it should be stated that the descriptions of the so-called female are made not from the female, but from the *puparium* of the female. It is easy enough for anyone with ordinary capacity for dissecting work to extract the true ♀ from her puparium.

EXPLANATION OF PLATE I.

Fig. 1. Head of *Stylops aterrima* viewed from the front to show the appendages, drawn from a specimen in alcohol.

The antennal joints (except the small 2nd) are numbered 1-6; the first and second joints of the so-called maxillae of some describers, the palpi of others, are lettered *a* and *b*. The narrow pointed mandibles overlie the suture between these joints.

1 *a*, antennal joints from Newport's type of *S. aterrima*.

1 *b*, aedeagus of the same specimen. Though broken at the base the parts are connected by the duct.

„ 2. Two views of the antenna of *S. spencii*.

2 *a*, aedeagus of the same.

„ 3. Antenna of *S. bimaculatae*.

3 *a*, aedeagus of the same.

„ 4. Antenna of *S. nevinsoni*.

4 *a*, aedeagus of the same.

„ 5. Antenna of *S. hammella*.

5 *a*, aedeagus of the same.

„ 6. Antenna of *S. melittae*.

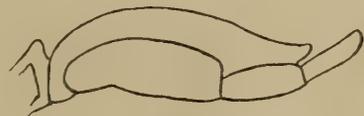
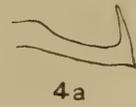
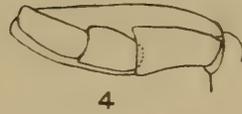
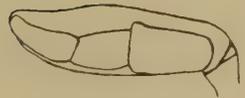
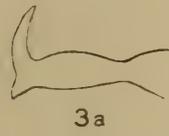
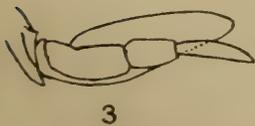
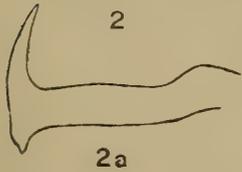
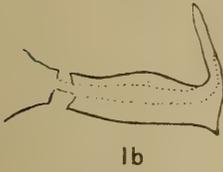
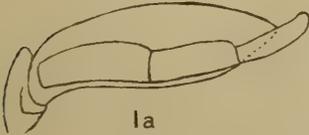
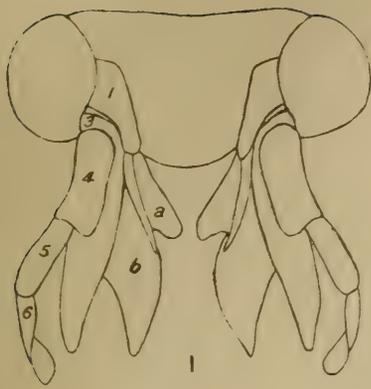
6 *a*, two views of aedeagus of the same.

„ 7. Antenna of *S. thwaiti*.

7 *a*, aedeagus of the same.

Paignton.

January, 1918.



R. C. L. Perkins del.

NOTES ON THE BRITISH SPECIES OF *SPHAERIESTES* STEPH

BY K. G. BLAIR, B.Sc., F.E.S.

The genus *Sphaeriestes* Steph. [= *Salpingus* Muls., Fowler, etc., *Salpingus* (pars) Gyll.] has long been a stumbling block to Coleopterists. Not only have British authors misidentified the species of Continental writers, but many of the latter have gone equally astray in the identification of described species, so that the synonymy of the genus has become almost hopelessly confused. The present paper is an attempt to reduce this confusion to some sort of order, at least so far as the British species are concerned.

The principal works dealing with them are: Stephens's "Illustrations of British Entomology" (1831, and App. 1835), summarized later in his "Manual of British Coleoptera" (1839), and Fowler's "Coleoptera of the British Islands," v (1891). Mulsant, "Coléoptères de France, Rostrifères (1859), has supplied us with a more detailed account of these insects, and a useful key to the European species is given by Reitter in his "Fauna Germanica," Coleoptera, iii, 1911. Unfortunately, as remarked above, these authorities do not always apply the same name to the same insect, so that their works must be used with caution. In this attempt to correlate them I have not only consulted, wherever possible, the original descriptions, and tried to ascertain what was actually the insect intended—not always an easy matter without the examination of actual type specimens—but I have endeavoured to make sure what each subsequent writer intended by his use of the name, and in this I have been enormously aided by the kindness of Mr. G. C. Champion, who has unreservedly placed at my disposal his own collection of the genus, including specimens determined by Abeille de Perrin, Reitter, Sahlberg, Seidlitz, and other Continental authorities. Without Mr. Champion's help, indeed, I should not have been able to arrive at the conclusions here set forth, or to pierce the mists of obscurity in which certain of the species were shrouded.

To Mr. E. A. Newbery also I am deeply indebted for his generous help, and for many valuable suggestions in the preparation of this paper. He had himself commenced to put together various notes on the same subject; but owing to the interruption of correspondence with the Continent, and to his being unable to obtain many of the books required, the work was not proceeded with. So far as his investigations went, however, Mr. Newbery had arrived at practically the same conclusions as mine as regards the number of our British species, and the variation

exhibited by them. He has placed his material in my hands and asked me to publish this paper. To Commander J. J. Walker and Messrs. O. E. Janson and W. J. Ashdown my thanks are also due for the loan of specimens.

Most of the species show very great variability in size, in the puncturation of the thorax and elytra, in the more or less marked depressions or foveae exhibited in these areas, and even in the general outline of the thorax, so that these characters are almost valueless for specific determination.

A structural peculiarity upon which much stress has been laid is the number of joints of the antennae that are enlarged, forming a more or less distinct club, but this character must be used with caution. There is usually at least one transitional joint, and much depends upon the aspect from which the antenna is viewed whether this slightly thickened joint should be classed with those forming the club or not, so that perhaps the method adopted by Reitter of quoting both numbers is the best, *e. g.* "last 3, or 4, joints forming the club."

The form of the front part of the head, and of the grooves at the sides in which the antennae are inserted, is of the utmost importance, as upon these the subgenera are to a great extent based.

Another valuable character is the form of the elytral epipleura. Around the shoulder, usually a little on the under side, will be observed a distinct ridge or carina. This is defined on its upper side by the outermost stria or row of punctures. If this stria be followed backwards, it will be seen in some species to continue sharply impressed almost to the apex, separating the outermost interval as a distinct marginal epipleuron. In others this stria loses its special character about halfway, so that in the posterior half of the elytra it does not differ markedly from its fellow; neither is the outermost interval different in form from that next to it (subgen. *Salpingellus* Reitt.).

The mature coloration of these insects apparently takes some time to develop, as immature specimens are frequent.

The following key includes, besides the British species, two names (enclosed in brackets) that have frequently figured in error on the British List, viz. *aeratus* Muls. and *virescens* Muls. (N.B. Though I have retained the various subgenera already proposed I do not consider that these serve any useful purpose. One might just as well claim that *aeratus* and *foveolatus* require new subgenera !)

1. Head more or less evenly narrowed from the eye to the front of the clypeus, lateral carina almost straight2.
Front of clypeus suddenly wider, lateral carina of head deeply emarginate above and in front of insertion of antenna.....3.
2. Last 3, or 4, joints of antennae thickened and darker, elytral epipleura not distinct beyond the middle, outermost interval in posterior half normal, plainly visible from above.....(Subgen. *Salpingellus* Reitt.).
Colour black or dark piceous, not or scarcely metallic, base of antennae and tibiae usually reddish*ater* Payk.
Last 4, or 5, joints of antennae thickened; elytral epipleura distinct almost to apex(Subgen. *Sphaeriestes* s.s.).
a. Colour castaneous brown, not or scarcely metallic; antennae and legs concolorous. Epipleura inflexed, so that the extreme margin of elytra is not visible from above. Anterior tarsi of ♂ normal*castaneus* Panz.
b. Colour brassy black, antennae and legs reddish testaceous. Epipleura not inflexed, extreme margin of elytra visible from above in posterior half. Anterior tarsi of ♂ expanded
.....(*aeratus* Muls.).
3. Lateral carina of head not reaching the eye, antennal groove terminated in front of the eye. Head markedly convex between the eyes. Labrum transverse(Subgen. *Colposis* Muls.).
Colour greenish brassy; antennae and legs testaceous; last 3, or 4, joints of antennae expanded(*virescens* Muls.).
Lateral carina of head meeting the eye, antennal groove terminated by the eye. Head shorter, almost flat between the eyes, labrum almost as long as wide(Subgen. *Rabocerus* Muls.).
a. Colour brassy black; clypeus simply punctate; last 5, or 6, joints of antennae thickened; thorax a little wider than the head, its greatest width at about $\frac{1}{4}$ of its length, rather finely and sparsely punctate (more so than in *ater* or *castaneus*); elytra rather strongly convex, with a transverse impression a little behind the base.....*mutilatus* Beck.
b. Colour blackish or piceous, scarcely metallic; clypeus punctate and transversely wrinkled; last 6 joints of antennae thickened; thorax about as wide as the head, its greatest width a little behind the anterior margin, very coarsely punctate, punctures almost contiguous, the anterior pair of impressions very strong, arcuate, almost meeting in the middle; elytra more elongate, with a transverse impression a little behind the base, and a second more feeble impression about the middle*foveolatus* Ljungh.

S. ater Payk.—This is certainly the most puzzling of our British representatives. It is excessively variable in size (length 2 to $3\frac{1}{2}$ mm.), in shape, and in sculpture, but after examining a large number of specimens from different localities, particularly a long series taken by Mr. Champion from burnt pines at Woking, I am unable to consider it as more than one species.

It is the *S. ater* of Stephens, according to specimens still extant in his collection (now in the British Museum), and is the *S. aeratus* and *S. ater* combined of Fowler. It is certainly identical with *S. reyi* Abeille, according to two examples from Sos, Lot et Garonne, the type locality, in Dr. Sharp's collection (also in the British Museum). Other specimens of *reyi* determined respectively by Abeille himself and by Reitter, in Mr. Champion's collection, confirm this identity. According to the figure and description, *S. piceae* Germar (Faun. Ins. Europ., fasc. x, 1825, No. 9) is also the same species; at any rate, it cannot be synonymous with *castaneus* Panz. as placed by Mulsant and the catalogues. Stephens introduced *S. piceae* as British in his "Manual," but there is no specimen in his collection. It is therefore not possible to determine positively what he intended, but probably it was a form of *ater*.

The species is widely distributed in Britain, and apparently equally variable wherever it occurs: *e. g.* of two specimens from Aviemore in Mr. Champion's collection, one is referred to by Fowler as being the only British specimen he had seen "that appeared to be related to the type of *ater*," *i. e.* a small form with black legs, and a narrow thorax, broadest close to the anterior margin, the other is normal "*aeratus*" (Fowler, *nee* Mulsant). Similarly, Mr. Champion has specimens from Gomshall, Surrey, of the normal aspect, though one has completely red legs and is of the form referred by him tentatively to *reyi* (Ent. Mo. Mag. 1909, p. 249). It is noteworthy, too, that the pair above referred to from Sos are comparable respectively with Mr. Champion's pair from Aviemore.

Two specimens of *ater* from Finland in Mr. Champion's collection, one identified by Sahlberg, and the other by Reitter, together with a third from Sweden in the British Museum collection, have the humeral carina particularly plainly visible from above, a character relied on by Reitter to separate *ater* from *reyi*; but I am unable to differentiate them otherwise from certain of the Woking examples. It is interesting to note also that Sahlberg finds *S. ater* in Finland abundant among burnt pines (Ent. Mo. Mag. 1916, p. 41), just as our form occurs at Woking and Brockenhurst. In fully mature specimens the under side is dark piceous like the upper, but very commonly it is considerably lighter in colour. The puncturation of the thorax is very variable, the punctures sometimes being almost crowded, usually they are fairly evenly spaced with distinct intervals between them; sometimes there is a median line free of punctures quite strongly developed. The punctures of the elytral striae vary in the same way: usually they are placed fairly

close together, but sometimes almost as far apart as the width of the intervals. In certain specimens the interstices on the posterior half are distinctly convex, but usually they are quite flat.

It is probable that *aeneus* Steph. (*nec* Oliv.) was an immature specimen of this species. The description is inadequate to make this identity certain, but the words "elytra not foveated" apply better to this species than to *mutilatus*, which it might otherwise be. Furthermore, its constant identification with *aeratus*, or rather with this species erroneously taken for *aeratus*, tends to confirm this view. Mr. Champion also has two immature specimens of *ater* from Germany, labelled *aeratus* Muls., though he does not remember from whom he received them.

S. castaneus Panz.—There is no difficulty about this species. It is the *S. immaculatus* of Stephens, the type species of his genus *Sphaeriestes*; but this name was omitted from Mulsant's synonymy and also from Reitter's European Catalogue (1906), though it appears correctly, as a synonym of *castaneus*, in Gemminger and Harold's Catalogue (1870).

The elytral epipleuron in *castaneus* is particularly well marked, and distinct almost to the apex. It is a little inflexed beneath, so as to be invisible, when the insect is viewed from above, throughout its length. In size and puncturation *castaneus* is almost as variable as *ater*; usually the striate punctures of the elytra form rather irregular wavy lines, and become very confused towards the base and at the sides; but sometimes these lines are much firmer and remain fairly distinct throughout. This form would appear to be *S. exsanguis* Abeille, according to a specimen in Mr. Champion's collection named by Abeille himself.

[N.B.—In suggesting *reyi* and *exsanguis* as possible British species (Ent. Mo. Mag. xxiii, 1886, p. 160), Mr. Champion has inadvertently allied the former to *castaneus* and the latter to *ater*, an error which was copied by Fowler: these names should be transposed.]

S. mutilatus Beck.—This is another species about which much confusion has arisen. I have not been able to consult the original description (Beitr. zur baier. Insekten, 1817, p. 19), but have little doubt that the species was correctly identified by Sahlberg, who redescribed it in "Medd. Soc. Fauna Fenn.," xxix, 1904, p. 40. This opinion is confirmed by specimens identified by Seidlitz, Reitter, etc., in Mr. Champion's collection.

The name is not quoted by Mulsant, but his description of *foveolatus* Ljungh is more applicable to this insect, which he has apparently confused with it. Many authors attempt to identify *mutilatus* with

virescens Muls., but its characters do not agree with those of Mulsant's subgenus *Colposis*. Abeille, who states that *mutilatus** was unknown to him, protested against the assumption of this identity (Bull. Soc. Hist. Nat. Toulouse, viii, 1874, p. 26), and later Pic has expressed disbelief in it (L'Echange, xix, 1903, p. 140), but without offering any explanation; it is doubtless the same error that accounts for Dr. Sharp allying *Colposis* with *Rabocerus* (Ent. Mo. Mag. 1909, p. 245), whereas the true *virescens* is a very different insect. Gerhardt, too, evidently follows Mulsant in his determination of this species as *foveolatus*, and consequently redescribes the latter as a new species, *gabrieli*. Lastly, Reitter, recognising Gerhardt's *foveolatus* and *gabrieli*, and assuming the identity of *mutilatus* (a specimen of which, correctly identified by him, is in Mr. Champion's collection) with *virescens*, which was apparently not known to him, tries to make the same species do duty both for *Colposis* and *Rabocerus*, according to the degree of development of its thoracic impressions. (In some specimens there is a pair of well-marked foveae near the middle line towards the base of the thorax, which in others is scarcely indicated. This is probably *mutilatus* var. *impressithorax* Pic.)

S. mutilatus was apparently unknown to Stephens, unless it can have been his *aeneus*, but the expression "elytra not foveated" seems to preclude this possibility. It was first identified as a British insect by Mr. Champion in 1886.

Rabocerus bishopi Sharp (*loc. cit.*) I am quite unable to recognise as specifically distinct from *S. mutilatus*, an opinion in which Seidlitz, Champion, Newbery, and others agree. Dr. Sharp himself states that had he only had one specimen he would have considered it a variety of *mutilatus*, and I fail to see why the mere fact of his having a series from one locality should make him grant it specific rank. *R. bishopi* was beaten from birch, while *mutilatus* seems usually to be attached to beech.

S. foveolatus Ljungh.—The original description of this insect is very detailed, though the figure is poor, but the only species known to me to which they can apply is that hitherto known by this name in our collections. Specimens still extant in Stephens's collection prove that he had the same insect, and it is correctly identified by Fowler. It is apparently a more northern species than most others of the genus, and not occurring in France was probably unknown to Mulsant, who seems to have mistaken our *mutilatus* for it. It is well known to Sahlberg, but some authors have undoubtedly followed Mulsant, so that Gerhardt was

* The *foveolatus* of Abeille was probably *mutilatus*.—K. G. B.

led into describing it as a new species under the name of *gabrieli* (Zeitschr. für Entom. Breslau, 1901, p. 18). Professor Hudson Beare, in proposing the substitution of the name *gabrieli* for *foveolatus* in our collections (Ent. Mo. Mag. 1916, p. 254), admittedly follows Reitter without questioning the soundness of his conclusions, which have been considered above.

In our islands *foveolatus* appears to be confined to Scotland and the north of England, whereas *mutilatus* is more widely distributed, with its headquarters in Surrey, Kent, Oxford, etc.

The names *S. aeratus* Muls. and *S. virescens* Muls. must both be removed from the British lists :

S. aeratus Muls.—There is a specimen of this species determined by Seidlitz, and which agrees with Mulsant's description, in Mr. Champion's collection. It is a metallic brassy insect, with the lateral carinae of the head straight, thus differing from *mutilatus*, and has the last 4, or 5, joints of the antennae thickened. The humeral stria of the elytra is strongly impressed, the outermost interstice being convex, but not inflexed as in *castaneus*; finally, the anterior tarsi are strongly expanded, distinctly wider than the tibiae. This feature, which is no doubt confined to the male, is not found in any other species of the genus. Mulsant does not mention the tarsi, but the character is indicated by his quoting "*tarsalis* Guillebeau, *in coll.*" as a synonym.

The species is probably correctly identified by Reitter, though the name is sunk by him as a synonym of *aeneus* Steph. (see *ater*, supra). It is strange that the peculiar tarsal structure should have been overlooked by this author.

S. virescens Muls.—A single specimen, labelled "Savoy" ex Coll. Sharp, must, I think, be this species. It agrees well with the description and is very different from any other *Sphaeriestes* known to me. The lateral carinae of the snout are sinuate, as in *Rabocerus*; but the head, excluding the mouth-parts, is longer, and more convex between the eyes, and the "scrobes" of the antennae, instead of abutting directly upon the eyes, are separately rounded off some little distance in front of them. It is this feature that is the distinguishing character of Mulsant's subgenus *Colposis*, making the head, exclusive of the mouth-parts, relatively more elongate and giving it, as he remarks, "une certaine analogie avec les *Rhinosimes*." In *virescens* the muzzle is not more the $1\frac{1}{2}$ times as wide at the apex as it is long from the front of the eyes to the front of the

clypeus; in *mutilatus* its width is at least twice this distance (cf. *foveolatus* Muls.), while in *foveolatus* it is fully three times as wide.

I have not included in this essay the consideration of *viridipennis* Latr., which should rather form the subject of a separate paper. Reitter has placed this species in a new subgenus, *Vincenzellus*; but whether this should be considered a subdivision of *Sphaeriestes* or of *Rhinosimus* as left by him is a point open to discussion.

The following is a brief synonymy of the species herein considered:—

Species correctly recorded as British:

1. *S. ater* Payk. Fauna Suecica, i, 1798, p. 298; Steph. Ill. Brit. Ent., Mandib. iv, 1831, p. 218; — Man. 1839, p. 339; Muls. Col. France, Rostrif. 1859, p. 32; Fowler, Col. Brit. Isl. v, 1891, p. 52 (*pars*); Reitt. Faun. Germ. Col. iii, 1911, p. 416.
piceae, Germ. Faun. Ins. Europ. fasc. x, 1825, No. 9.
? piceae, Steph. (Germ.) Man. p. 340.
? aeneus, Steph. (*nec* Oliv.) Ill. Brit. Ent., Mandib. v, 1835, p. 421.
reyi, Abeille, Bull. Soc. d'Hist. Nat. Toulouse, viii, 1874, p. 27.
aeratus, Fowler (*nec* Muls.), *loc. cit.*
2. *S. castaneus* Panz. Index Ent. 1813, p. 89 (Muls., Reitt., Fowler).
immaculatus, Steph. Ill. Brit. Ent., iv, p. 219.
3. *S. mutilatus* Beck, Beitr. Baier. Insekt. 1817, p. 9; Champion, Ent. Mo. Mag. xxiii, 1886, p. 160; Fowler, *loc. cit.*; Sahlberg, Medd. Soc. Fauna Fenn. xxix, 1904, p. 40; Reitter, *loc. cit.* (*pars*).
foveolatus Muls. (*nec* Ljungh), *loc. cit.*; Reitter, *loc. cit.* (*pars*).
var. bishopi, Sharp, Ent. Mo. Mag. 1909, p. 245; *op. cit.* 1910, pl. iv, fig. 1.
4. *S. foveolatus* Ljungh, Vet. Acad. Handl. Stockholm, 1824, p. 269, pl. iii (3), fig. 1; Steph. *loc. cit.* (1835) p. 421; Fowler, *loc. cit.*
gabrieli, Gerh. Zeitschr. für Entom. Breslau, 1901, p. 18; Reitt. *loc. cit.*; Hudson Beare, Ent. Mo. Mag. 1916, p. 254.

Species incorrectly recorded as British:

5. *S. aeratus*, Muls. (*nec* Fowler) *loc. cit.*
aeneus, Reitt. (*nec* Steph.) *loc. cit.*
6. *S. virescens*, Muls. *loc. cit.* (*nec mutilatus* = *virescens*, Champion, *loc. cit.*; Fowler, *loc. cit.*).

British Museum (Nat. Hist.), S.W. 7.

March 1918.

NOTES ON BRACONIDÆ. XII*.—ON THE LIOPHRONINÆ,
WITH DESCRIPTION OF A NEW BRITISH SPECIES.

BY CLAUDE MORLEY, F.Z.S., F.E.S.

Economic Coleopterists have not done their fair share in the elucidation of this interesting group, which is at once recognized from all other subfamilies of the *Braconidæ* by the strikingly convex and strongly shining abdomen, whereof the basal segment is very stout and subsessile, the second with its suture nearly wanting, and the apex in ♀ curiously deflexed and recurved, in such a manner that the terebra is directed below the venter towards the head, much as in female *Proctotrypes*-species. But our knowledge of its economy is entirely confined to a remark made by Haliday so long ago as 1835 (*Ent. Mag.* ii, p. 458): "larva speciei cujusdam in larva boletophaga Insecti Coleopteri vixerat," for no one has since that time bred material, and there is no evidence that he himself had done so. Upon this Marshall seems to have based his assertion (*Trans. Ent. Soc. Lond.* 1889, p. 176) that "the perfect insects frequent fungi, but their habits in the larval state are entirely unknown"; and, consequently, he adds (*Spp. Hym. Europ.* 1891, p. 200): "Pour éclaircir le mystère qui plane sur leurs premiers états, il faudrait élever en nombre les larves fongivores de tout ordre, dans l'espérance d'obtenir de ces parasites obscurs".† Thomson (*Opusc. Ent.* xx, 1895, p. 2219) refers to no economy; nor does Reinhard's paper (*Berl. Ent. Zeitschr.* vi, 1862, p. 321) help us at all. These are the main authorities upon this group.

Turning to the imagines, I have had for some years a little group of Braconids placed in juxtaposition, unknown and temporarily "perdu," till I sent one of them to Mr. G. T. Lyle for his opinion. This was that it probably belonged to the genus *Liophron*, though the species escaped him and he had seen nothing like it. A wrestle with Marshall's two works, referred to above, satisfied me that I had before me the male of *Liophron saxo* Reinh., a species not hitherto known in Britain. Thomson's extremely lucid diagnosis confirmed the determination; it is:—

L. saxo.—Niger, pedibus validis rufis, metathorace toto rugoso, abdomine petiolo latitudine apicali vix longiore, ore antennisque brunneis, maris nigris. ♂ ♀. Long. $2\frac{1}{4}$ – $2\frac{1}{2}$ lin.—Species magna, capite pone oculos et os versus subangustato, genis longis sulco impresso; metathorace toto rugoso; alis leniter fumatis; abdomine petiolo rugoso striato, latitudine apicali vix longiore,

* *Cf.* *Ent. Mo. Mag.* xlv, 1909, p. 209 et *Entom.* xlix, 1916, p. 83.

† *Cf.* also Gaulle, *Cat. Hym. de France*, 1908, p. 82, who gives no references.

feminae postice compresso piceo, terebrae valvis verticalibus, glabris, pedibus solito validioribus distincta.—Funnen i södra Sverige; hannen ej sällsynt, af honan har jag endast sett ett exemplar.

Otherwise it is known only from the environs of Dresden. My two males were taken (1) by Mr. E. A. Newbery at Clacton-on-Sea in Essex during June, 1913, and (2) by myself while sweeping low-marsh herbage on the banks of the River Lark, just outside the town of Mildenhall in N.W. Suffolk, on 14th June, 1899 (*cf.* note thereon, Ent. Mo. Mag. 1899, p. 190).

All the species of the *Liophroninae* are said to be of rare occurrence, both here and upon the Continent, but this is doubtless owing to nothing but our ignorance of their habits. The Palaearctic fauna comprises only seven species, and there are one or two more in Canada. Of the three genera, *Liophron* alone possesses mesonotal notauli; and *Centistes* Hal. has the first cubital discreted from the first discoidal cell, whereas they are confluent in *Syrrhizus*, which has been found by no one but Dr. Edward Capron in Surrey. The single exception to this general rarity is *Centistes lucidator* Nees (Hym. Mon. i, 1834, p. 50), who took the male as late as October; this is found over north-west Europe and extends to Russia. My little group showed a couple taken by Wilson Saunders at Greenings in Surrey in 1872, and one that I found on a reed in Wicken Fen, Cambs, on 16th June, 1908, far from fungi. The three remaining specimens in my collection proved to be a couple of *Liophron muricatus* Hal., captured by Mr. E. A. Newbery at Trefriw during August 1903, and by myself while sweeping at Hurst-hill in the New Forest on 11th July, 1909; and a single ♀ of *L. ater* Nees (*lib. cit.* p. 45) that I found in the marshes of the Shannon to the south of Limerick on 15th June, 1913. The last species was originally caught *in cop.* during the summer of 1814 in a Franconian garden. Marshall possessed only four females from St. Albans and Nunton in Wiltshire; in fact, so late as 1889 his collection comprised no more than fourteen specimens of the whole genus. Bignell, after long years of collecting in South Devon, records (Trans. Devon. Ass. Adv. Sc. xxxiii, 1901, p. 27) a single specimen of *L. ater* from Plym Bridge on 25th September.

Monk Soham House,
Framlingham, Suffolk,
January 1918.

TRYPETIDAE FROM THE OXFORD DISTRICT, WITH NOTES ON
THEIR TIME OF APPEARANCE AND FOOD-PLANTS.

BY A. H. HAMM, F.E.S.

It is long since any special reference to the time of appearance and the food-plants of the *Trypetidae* has been published in the pages of this Magazine,* and I think that a few notes on the Oxford species may be of some assistance to those who take a delight in these interesting and beautiful flies. Some of the species are to be had in abundance by sweeping or searching at the right time their respective food-plants; or again, the galls, leaves, etc., containing the larvae, may be gathered and the occupants bred in due course. Then, too, the interest taken in collecting or breeding the commoner species will inspire the naturalist to search for some at least of the rarer and little-known forms, and thus in time we may hope that the habits and food-plants of all our native species may be known and recorded. It is with this object in view that I am induced to write the following rough notes.

Nearly all the following species were taken within three to four miles from the centre of Oxford, some at least within the boundary of the City itself.

Aciura rotundiventris Fln.—This rare species was taken as long ago as June 23rd, 1832, by the Rev. A. Matthews, at Weston-on-the-Green, near Oxford. † I have not met with it so far.

Acidia cognata W.—A few taken in various years, always at the end of June, resting on the upper-side of alder-leaves, Hogley Bog, near Cowley, Oxon, and several in a garden on Shotover Hill, on lilac-leaves, July 1, 1917.

A. heraclei L.—This is the well-known parsnip and celery fly, but away from gardens it is not at all plentiful. It can, however, usually be swept from *Heracleum*. My friend Mr. H. Britten bred it in large numbers during July 1916, from the blotched leaves of parsnips growing in his garden at Headington. Similar blotched leaves were present in almost every patch of parsnips looked at in gardens and allotments all over the district, but I believe it does little or no harm to this useful vegetable.

Gonyglossum wiedemanni Mg.—I have only met with this species on two occasions, both on Shotover Hill, probably swept from *Heracleum*. ‡

* R. C. Bradley, *Ent. Mo. Mag.* 1901, p. 9.

† C. W. Dale, *Ent. Mo. Mag.* 1904, p. 212.

‡ *G. wiedemanni* is to be found occasionally in numbers on *Bryonia dioica*.—J. E. C.

The first was taken June 19th, 1915, the second on June 30th, 1917. Care should be taken that this species is not passed over for *A. heraclei*, which it closely resembles, especially in the net.

Spilographa zoë Mg.—Occurs sparingly, always on thistles, chiefly *Cnicus lanceolatus*, at various localities in the district, the University parks, Shotover Hill, and Headington Wick Copse. End of May and June.

S. artemisiae F.—Until last season (1917) this fly had only occurred very sparingly, probably because I had not hit upon the right time or place. On July 28th, in and around Hogley Bog, it was taken plentifully by sweeping mugwort (*Artemisia vulgaris*). My other dates extend from May to August.

Trypeta onotrophes Lw.—One individual was swept from the marsh thistle (*Cnicus palustris*), near Bayswater Mill, on July 14th, 1917.

T. cornuta F.—This species was extraordinarily abundant during the past season, and could have been obtained in hundreds during July by sweeping the large knapweed (*Centaurea Scabiosa*). It was especially common on and around Shotover Hill, but also occurred all over the district. The smaller black knapweed (*C. nigra*) was also swept whenever met with but did not yield the fly. This is a most beautiful insect when alive, of a lovely pale green colour, which soon fades after death.

T. tussilaginis F.—One specimen by sweeping in a rough clay-pit, Shotover Hill, August 11th, 1917. There was plenty of coltsfoot growing all over the pit, but I could not decide whether the specimen came off that plant, for persistent sweeping failed to yield another.

T. florescentiae L.—This elegant little fly is evidently attached to the marsh thistle (*Cnicus palustris*). A rough pasture-field on the north side of Shotover Hill is much overgrown with this tall thistle, the flower-heads of which, when swept on July 7th, 1917, yielded a fine series. Other species of thistle growing in the same field were also tried, but entirely without success. A week later, near Bayswater Mill, Headington, the marsh thistle was again tried and a few more examples taken.

T. colon Mg.—This species, so far, has proved rather scarce here. About a dozen specimens have been taken by sweeping the knapweed (*Centaurea Scabiosa*), during July, on Shotover Hill and Hogley Bog. Somewhat variable in colour.

T. serratulae L.—This, again, is not a plentiful species in the district. It has only been obtained by sweeping the musk thistle (*Carduus*

nutans) growing in fair abundance on Open Brasenose Common. A small series was the reward of sweeping for an hour or two on July 21st last.

T. acuticornis Lw.—I have only met with this species on one occasion, August 16th, 1916, when a nice series was boxed from the heads of the woolly-headed thistle (*Cnicus eriophorus*). A fine patch of this beautiful plant was growing in abundance in an old disused quarry, near Wood Farm, Cowley. I found that searching the heads of the thistle proved more effectual than sweeping. The flies were all boxed from the exterior of the woolly receptacle, the insects' pale colour aiding them considerably in their resemblance to the environment.

Urophora solstitialis L.—A good series of this beautiful fly was secured during July and August 1917 by regularly sweeping the musk thistle (*Carduus nutans*), on Brasenose Common and Hogley Bog. The best time was about the middle of July. This species, too, can be boxed from the thistles if searching be preferred to the more laborious method of sweeping.

U. stylata F.—The most abundant species of the genus, being found everywhere in the district, either by sweeping or searching the spear thistle (*Cnicus lanceolatus*), during June and July. It was especially abundant on Shotover Hill on July 7th, 1917. The hard, nut-like galls formed by the larvae of the fly in the abortive seed-head of the thistle are easily found during autumn, and these, if kept in a fairly cool place, not too dry, will readily emerge the following year, sometimes four or five flies appearing from a single gall. The wing-markings of this species vary considerably, even in individuals bred from the same gall.

U. aprica Fln.—Has been taken by my friend and colleague, Mr. J. Collins, near Islip.

U. quadrifasciata Mg.—Also obtained by Mr. Collins at Water Eaton. This and the preceding species have not, so far, been taken by the writer, and I do not know the plant or plants from which they were swept.

U. cardui L.—This curiously marked fly is not met with so often as one would expect, judging from the numbers of its well-known gall on the stems of the (all too common) creeping thistle (*Cnicus arvensis*). It seems somewhat local, but has been found throughout the district. The insect should be looked for in June. Those desirous of breeding it successfully should allow the galls to mature before being gathered (as the larvae pupate within the gall). Gathering should be deferred until late

autumn, and if the galls are kept as recommended for *U. stylata* the flies can be bred the following year.

Sphenella marginata Flm.—Not an abundant species. I have taken a few by sweeping various thistles and ragwort, chiefly in the neighbourhood of Shotover Hill, during July and August.

Carphotricha guttularis Mg.—Not uncommon in a piece of rough pasture, on Shotover Hill, during July 1916. Both Mr. Britten and myself endeavoured to determine the plant from which they were swept, but neither of us could come to any certain conclusion. Perhaps the flies came from ragwort more frequently than any other plant.

Ensina sonchi L.—This very small, pale Trypetid was exceedingly abundant all over the district last autumn (September and October), and obtained by sweeping various *Compositae*, such as dandelions, hawkweeds, fleabane, etc. It was not, however, swept from *Sonchus* after many attempts, in spite of its name. This small fly bears a striking resemblance in colour to the grass-seeds of many kinds that are so plentiful at this time, and mixed up together as they all are in the sweeping-net, the insects are hard to distinguish; but in a short time, the flies begin to crawl up the sides of the net and can then be readily boxed or tubed.

Tephritis miliaria Schrk.—Not uncommonly taken by sweeping the creeping thistle (*Cnicus arvensis*). It occurred locally throughout the district from June to August.

T. (Oxya) proboscidea Lw.—Taken by Mr. J. Collins, first at Wolvercote, June 15th, 1911, and again at Sunnymede, July 8th, 1915, on both occasions by sweeping low herbage.

T. (Oxya) absinthii F.—I have only taken this species once—near Brasenose Common, August 10th, 1915,—by sweeping a low bank with short herbage.

T. hyoscyami L.—Occurs both in spring and autumn. I have taken it plentifully by sweeping the spear thistle (*Cnicus lanceolatus*) in early June, and again in August, from the same patch of thistles. It also hibernates. Mr. Britten, after beating furze on Shotover Hill, March 4th, 1916, for *Coleoptera*, etc., gave me a sample of the various flies he had obtained, and among them was a specimen of this species. On April 1st we visited the same spot together, and by vigorous beating obtained a few more examples. Those who have never tried beating furze for Diptera during the winter months may be advised that many interesting species of hibernating flies can be obtained in this way.

T. vespertina Lw.—In my experience, undoubtedly the commonest species of Trypetid, to be found practically throughout the year, inasmuch as it hibernates like the preceding species. It was beaten from the furze-bushes in large numbers, at the same time and place as recorded for *T. hyoseyami*. *T. vespertina* may also occasionally be found on fences, etc., during warm days in mid-winter. In the summer it can be swept in abundance from *Compositae*.

T. bardanae Schrk.—Not a very common species in this district, but swept several times from the common burdock (*Arctium Lappa*), in June, at Hogley Bog and Headington Wick Copse.

Palloptera umbellatarum F.—Another fly, which has habits similar to those of a Trypetid, was constantly found in the sweeping-net in company with *U. stylata*. The females were often observed probing the flower-heads of the spear thistle with the extruded ovipositor. Whether the species breeds in the thistle-head or is parasitic on *U. stylata* I have not been able to ascertain.

My best thanks are due to Mr. J. E. Collin and Mr. C. G. Lamb for kindly naming or confirming the determination of doubtful species; also to my friend Mr. H. Britten, for his able assistance during our joint collecting excursions.

22 Southfield Road, Oxford.

March 1918.

Coccinella septempunctata L. parasitized by a Dipteron, *Phora fasciata* Fall.—M. Henri de Buysson (Bull. Soc. Ent. Fr. 1917, pp. 249, 250) states that out of 37 nymphs of *C. septempunctata* taken by him from leaves of potato in June, four were deformed, due to the attacks of the minute Dipteron, *Phora fasciata*, specimens of which emerged from the Coccinellid nymphs in the following month. A similar observation was recorded by Rondani in 1860.—EDS.

Coleoptera in the Plymouth District.—On looking through the *Coleoptera* which I have taken last year in the Plymouth district, I think there are a few species which it may be as well to note as having occurred here. Some of these appear to be new to this locality, and one or two have not, I believe, been, as yet, recorded from Devon; but there are very few rarities. They include *Medon obsoletus*, *Megarthus affinis* and *denticollis*, *Cercus pedicularius* and *rufilabris*, *Heterostomus pulicarius* (*Brachypterus gravidus*), *Soronia punctatissima*, *Micrurula melanocephala*, *Omosita depressa*, *colon* and *discoidea*, *Pria dulcamarae*, *Lasia globosa*, *Micraspis 16-punctata*, *Dryops* (*Parnus*) *algericus*, *Dermestes murinus*, *Anthrenus claviger*, *Ochina ptinoides* (*hederae*), *Lamprosoma concolor*

(fairly common). *Mantura chrysanthemi*. *M. rustica* var. *suturalis*, *Aphthona coerulea* (*nonstriata*) abundant, *Phyllotreta atra*, *P. nigripes*, etc. The following *Rhynchophora* were nearly all taken in the neighbourhood of Bere Alston, in August:—*Caenopsis waltoni*, *Strophosomus retusus*, *Coeliodes ruber*, *C. dryados* (*quercus*), *Ceuthorrhynchus viduatus*, *C. setosus*, *Orobitis cyaneus*, *Orchestes avellanæ*, *O. stigma*, *Rhamphus pulicarius*, *Gymnetron antirrhini* (fairly common), *Apion rubens*, *frumentarium*, *cruentatum*, *punctigerum*, *aethiops*, etc., *Attelabus nitens*, *Ips* (*Tomicus*) *laricis*. This last species, according to Fowler, is associated with larch, fir, and pine, but Mr. J. H. Keys and I secured a good series under the bark of a felled tree, apparently elm. One of my best "finds" was a single example of *Hypulus quercinus*, which I swept from a hedge at Bickleigh, 26.v.17.—A. V. MITCHELL, 90 Mount Gold Rd., Plymouth: Feb. 19th, 1918.

Vanessa antiopa in Cheshire.—The Rev. H. V. Aspinwall has shown me a "Camberwell Beauty" which was discovered in St. Peter's Church, Hale, Cheshire, in August 1917, the butterfly having presumably entered the building for the purpose of hibernation. This church appears to be a favourite hibernaculum for Vanessids, several *V. urticae* and *V. io* having been found there this year; Mr. Aspinwall also found a specimen of *Pieris rapae* which had emerged from the pupa some time prior to February 20th, probably owing to the combination of the warm weather and artificial heating.—T. A. COWARD, Bowdon, Cheshire: March 1918.

A combined instance of Protective Resemblance and Mimicry in a Locust Larva.—The following instance of what is now usually known as "camouflage" in insects has not apparently been noticed before and is worthy of record; it was observed by my friend, Mr. H. M. Wallis, of Reading, who is an excellent all-round naturalist. While travelling in North Africa he came across a species of locust in the larval state, which was very abundant on the "Stone Desert" between the Atlas Range and the true or "Sand Desert"; he does not know the species. The insect was of sub-angular form and of many shades of dull "khaki"-colour, some redder, some more isabelline, but all of one type; it has very short clavate antennae: the two anterior pairs of legs are normally quite hidden, and the large hind jumping-legs are tucked close against the body; in this position it exactly resembles the surrounding stones. If, however, its disguise is detected, it instantly springs up on its four anterior legs and, tilting its hinder part, throws up the large jumping-legs and curves them forward over the body, forming a very passable imitation of the dreaded scorpion: it even vibrates the recurved tarsi of the hind legs: moreover, it then displays, as a warning, its only spot of bright colour, which consists of broad bands of yellow and black on the inside of the hind femora. It is somewhat hard to describe the position, but an excellent sketch given me by Mr. Wallis shows how striking the mimicry is. Mr. Wallis adds:—"You will wonder what enemies it has to fear. I found that it is fed down by the Clot-Bey Lark (*Rhamphocorys clot-bey* Bonap.), an aberrant form of Lark with enormous toothed mandibles peculiar to this region, which was discovered by Clot Bey, a Frenchman in the Tunis Service."—W. W. FOWLER, Earley Vicarage, Reading: January 23rd, 1918.

Society.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY:
February 14th, 1918.—Mr STANLEY EDWARDS, F.L.S., President, in the Chair.

The death of Mr. G. Brooks, a member of the Council, was announced.

Mr. Bowman exhibited a series of female *Hibernia defoliaria* from Epping Forest in which the abdomen was jet black. Mr. Main, an observation-cage with the burrow of the beetle *Nebria brevicollis*, and remarked on the abundance of the small mounds of *débris* from such excavations after the last frost. Mr. Ashdown, a long series of aberrations of *Coccinella hieroglyphica* taken in Surrey in 1917, and a curious old book with coloured plates, entitled "Dialogues on Entomology," 1819. Mr. R. Adkin, a copy of Merritt's "Pinax," 1667, one of the first books on the whole of the British fauna. Mr. West, the locust *Schistocerca peregrina*, found on a ship from W. Africa. Mr. Hy. J. Turner, specimens of *Epinephela lycaon* form *lupinus* from Cyprus, with typical specimens from the French Alps for comparison. Mr. B. Adkin, a series of the males of *Agriades thetis* (*bellargus*) showing gradation in colour development, including a clouded example on which the patches seemed to be formed of scales curled up when it was looked at obliquely. The President, various species and forms of the *helenus* group of the genus *Papilio*, which Moore has called the subgenus *Charus*, including *P. chaon*, *P. helenus*, *P. fuscus* (*severus*), *P. iswara*, etc. A short discussion took place on the "Introduction of non-indigenous species into the country."

February 28th, 1918.—The President in the Chair.

Exhibition of lantern-slides. The President exhibited slides showing varied forms of antennae, wing venation, androconial scales, and other anatomical details of insect structure, and a slide illustrative of "Paedogenesis" in *Miastor*, a Cecidomyiid (Dipt.). Mr. Hy. J. Turner, a copy of Capt. Browne's "Butterflies, Sphinges, and Moths," 1832, and called attention to the crude shape and colour of the figures.—HY. J. TURNER, *Hon. Editor of Proceedings*.

NEW AND LITTLE-KNOWN SALTATORIAL DASCILLIDAE.

BY G. C. CHAMPION, F.Z.S.

The Central American Dascillidae were described by myself in 1897,* and since that time but little has been written on the exotic saltatorial forms, apart from "Descriptions abrégées," published from time to time by Pic, many of which are almost useless for the identification of closely allied insects. The numerous new species of *Scirtes* and its allies contained in the British Museum, including an interesting series from Borneo and Penang recently presented by Mr. G. E. Bryant, are described in the present paper, and additional localities, etc., given for

* A few Antillean *Scirtes*, etc., were added by me in Trans. Ent. Soc. Lond. 1897, and a very remarkable one from Nyasaland, in the Ent. Mo. Mag. for 1917.

some of those named by C. O. Waterhouse in 1880. Prof. Poulton has lent me the specimens captured by A. R. Wallace in Borneo, Batchian, Flores, and Ceram, belonging to the Oxford Museum, and Mr. H. E. Andrewes the short series from India named by Bourgeois in 1896.

In dealing with the Central American Dascillids, in 1897, the present writer called attention to the peculiar foveae or excavations near the apex of the elytra in the females only of certain species of *Scirtes* and *Cyphon*, a character now known to occur in various members of the genus *Ora*, this structure being almost homologous with that of the males of many Malachiids. The females of these insects seem to be more abundant than the males, and as the ovipositor (with its apical articulated palps) is often extruded in dried specimens, there can be no mistake as to the sex of the foveate examples. No male *Ora* or *Scirtes* has been detected by me with any sexual modification of the elytral surface.

The genus *Scirtes* is almost cosmopolitan in distribution, and probably 1000 species exist; the 100 enumerated in Pic's Catalogue (1914), to judge from the material before me, and the number of "uniques" (many of which are too imperfect for study), cannot represent more than a fraction of those actually living at the present time. So far as my own experience goes, they frequent marshy places, living upon *Salix*, etc. Their active jumping powers must often enable them to escape the ordinary collector, with whom they are not favourites, owing to their fragility. The resemblance of many of these insects to Coccinellids, Halticids, and even Cassididae, is well illustrated by the material now under examination.

PRIONOSCIRTES Champ.

1.—*Prionoscirtes reliquus*, n. sp.

Subhemispherical, convex, shining, closely pubescent; rufo-testaceous, the eyes and elytra (the apical margin excepted) black, the antennae and legs testaceous; the head rather sparsely, minutely, the prothorax and elytra more closely, finely punctate. Head very broad, the eyes convex; antennae thickly set with fine bristly hairs, long, very slender (the greatly dilated basal joint excepted), joint 3 about as long as 2, those from joint 4 onwards elongate, equal in length, parallel-sided, narrow at their base. Prothorax very broad and short, narrowed from the base, slightly hollowed in front opposite the eyes. Elytra transversely convex, rounded and narrowly margined at the sides. Posterior femora moderately incrassate, the tibiae almost straight, not much widened, carinate, the spurs slender, the longer one barely one-half the length of the first tarsal joint.

Length (excl. head) 3, breadth $2\frac{1}{10}$ mm. (♀?)

Hab. PENANG (*G. E. Bryant*: x.1913).

One specimen. This insect bears an extraordinary close relationship to *P. nigripennis* Champ. (♀ only known), from the Pacific slope of Guatemala, and is of the same size and colour, being separable therefrom by the following characters only: antennae longer and more slender, eyes a little smaller and more convex, tibiae straighter and narrower, and tarsi more elongate. The mandibles in the present species are curved, sharply pointed, and armed with two very short teeth towards the base within. The presence of such closely allied forms in very widely separated regions affords a good example of the difficulties encountered in dealing with geographical distribution. The three recorded species of the genus—two from Guatemala and one from the St. Vincent, in the Lesser Antilles*—are known from single examples only, and they therefore must be rare insects.

ORA Clark.

If the name *Ora* Clark is to be retained for the forms with simple posterior coxae (*i. e.* without angular plate extending over the inner basal portion, this plate being well developed in the type of *Scirtes*, *hemisphaericus* L.), his second species, *O. troberti* Guér. (= *chevrolati* Clark), must be taken as the type, the first species, *O. grayii* Clark (= *sexmaculatus* Pic), being a true *Scirtes*. This course was followed by myself in the "Biologia," in 1897, but at that time a detailed examination of *O. grayii* had not been made by me. The species are numerous in tropical regions generally, and some of them have broadly expanded margins to the elytra, suggestive of *Cassida*; and, as in *Scirtes*, very similar forms are found in widely-separated geographical regions. The bifoveate head is characteristic of many members of the present genus. The Bolivian *Scyrtes ligneus* Blanch. belongs to *Ora* as here recognized.

TROPICAL AMERICAN SPECIES.

1.—*Ora triradiata*, n. sp.

Elongate-oval, depressed, very shining, glabrous above (? abraded); the head, palpi, antennae (the rufo-piceous joints 1-3 excepted), and scutellum black, the prothorax testaceous; the elytra flavous, with a sinuous stripe near the inner margin (coalescent with the one on the opposite elytron towards the apex, and then continued narrowly along the suture to the apical margin) and three oblong, laterally-connected patches placed one behind the other near the outer margin, black; the under surface, the prothorax excepted, in great part piceous; the tibiae (the spurs excepted) and joints 1-4 of the tarsi nigropiceous or black, the femora and the rest of the legs testaceous; closely, finely

* Trans. Ent. Soc. Lond. 1897, p. 291.

punctate. Head rather broad, slightly depressed on each side anteriorly, the eyes large; antennae moderately long, not very slender, joints 2 and 3 short, equal, 4-11 slightly decreasing in length. Prothorax very short, rapidly narrowing from the base, bisinuate in front, the lateral margins explanate. Elytra long, compressed at the sides below the humeri, depressed along the suture to about the middle, rounded at the tip, and with flattened expanded margins. Posterior coxae without plate. Legs moderately long; posterior tibiae compressed, feebly curved, the long upper spur much shorter than the first tarsal joint.

Length (excl. head) $4\frac{1}{2}$, breadth $2\frac{1}{2}$ mm.

Hab. BRITISH GUIANA (*A. W. Bartlett*).

The single specimen seen, received by the Museum in 1909, has the prothorax crushed on the right side, but in other respects it is in good condition. An elongate, depressed, sharply maculate insect, bearing an extraordinary resemblance to various Tropical American Halticids. Its nearest known ally, *O. troberti* Guér. (= *chevrolati* Clark), from Mexico, etc.,* has a broader head and prothorax, and the head, antennae, elytra, and legs very differently coloured. In the present species the elytra have a broad, sinuate, exteriorly triradiate vitta on the disc, the outer margin, and suture in part, flavous and the rest of their surface black.

2.—*Ora complanata*.

? *Scyrtes complanatus* Guér. Rev. Zool. 1861, p. 544.

Ora complanata Pic, in Junk's Col. Cat. p. 39 (1914).

Broad, oval, depressed, shining, closely pubescent; testaceous, the eyes black, the antennae (joints 1-3 excepted) piceous, the elytra (except along the dilated margin) suffused with red to near the apex; densely, extremely minutely punctate, the prothorax much smoother, the elytra with distinct scattered coarser punctures intermixed. Head rather small, excavate on each side near the eyes anteriorly, the latter large; antennae moderately long, not very slender, joints 2 and 3 short, equal. Prothorax short, rapidly, obliquely narrowed from the base, explanate laterally, bisinuate in front, the anterior angles prominent. Elytra rounded at the sides and somewhat acuminate at the tip, distinctly striate near the suture, the margins explanate. Posterior coxae without plate. Posterior legs very long, the tibiae compressed and sharply carinate, the upper spur nearly as long as the elongated first tarsal joint.

Length 4, breadth $2\frac{4}{5}$ mm.

Hab. BRAZIL [type]; AMAZONS, Tunantins (*Trail*).

The above description is taken from the Tunantins specimen (received by the Museum in 1897), which is in very good condition. Guérin's

* There is an example of this species in the Museum labelled "Brazil," possibly in error.

WATKINS & DONCASTER, Naturalists,

Keep in stock all Articles for Entomologists, Ornithologists, Botanists, &c.: Umbrella Net, 7/-; Folding Cane or Wire, 3/6, 4/-, 4/6; Plain Ring Net, 1/3, 2/-, 3/-; Pocket Boxes, 6d., 9d., 1/-, 1/6; Store Boxes, with Camphor Cells, 2/6, 3/6, 4/-, 5/-, 6/-; Zinc Pocket Boxes, 9d., 1/-, 1/6, 2/- Setting Boards, from 5d. to 1/10; Complete set of 14 boards, 10/6; Breeding Cages, 2/6, 4/-, 5/-, 7/6; Sugaring Tins, 1/6, 2/-; Sugaring Mixture, ready for use, 1/9 per tin; Setting Houses, 9/6, 11/6, 14/-; Glass Topped and Glass Bottomed Boxes, from 1/- per doz.; Zinc Killing Boxes, 9d., 1/-; Coleoptera Collecting Bottles, 1/6, 1/8; Collecting Box, containing 26 tubes (very useful for Coleopterists, Microscopists, &c.), 4/6; Brass Chloroform Bottle, 2/6.

Improved Pocket Pupa-digger in leather sheath (strongly recommended), 1/9; Steel Forceps, 1/6 to 3/- per pair; Pocket Lens, from 1/6 to 8/6.

Taxidermists' Companion, containing most necessary implements for skinning, 10/6; Scalpels, with ebony handles, 1/3; Fine Pointed Scissors, 2/- per pair; Brass Blow-pipes, 4d., 6d.; Egg Drills, 2d., 3d.; ditto, best quality, 9d. each; Botanical Vasculum, 1/6, 2/9, 3/6, 4/6; Label List of British Macro-Lepidoptera, with Latin and English Names, 1/6; List of British Lepidoptera (every species numbered), 1/-; or on one side for Labels, 2/-.

SILVER PINS FOR COLLECTORS OF MICRO-LEPIDOPTERA, &c., as well as minute insects of all other families.

We stock various sizes and lengths of these Silver Pins, which have certain advantages over the entomological pins usually employed.

For instance, insects liable to become greasy and verdigrisy, like Sesiidae, are best pinned on Silver pins, which will last much longer than the ordinary pins (whether enamelled black, or gilt, or silvered).

We shall be pleased to send pattern cards on application.

A large stock of British, European, and Exotic Lepidoptera, Coleoptera, and Birds' Eggs.

ENTOMOLOGICAL PINS.

The "DIXON" LAMP NET (invaluable for taking Moths off street lamps without climbing the lamp posts), 3s. 6d.

SHOW ROOM FOR CABINETS, &c.

36, STRAND, LONDON, W.C., ENGLAND.

Birds and Mammals, &c., Preserved & Mounted by first-class workmen.

Our New Price List (100 pp.) sent post free to any address on application.

FOR SALE.

16 NATURAL HISTORY CABINETS

BELONGING TO THE LATE DR. MASON,

ALSO

FOUR MICROSCOPICAL CABINETS,

Containing Microscopical Slides by G. R. VINE, of Sheffield.

ALSO

400 BRITISH BIRDS IN CASES.

Apply—Mrs. MASON, TRENT HOUSE, BURTON-ON-TRENT.

A SYNOPSIS OF THE BRITISH SIPHONAPTERA, by the
Hon. N. CHARLES ROTHSCHILD, M.A., F.L.S., illustrated by Eight Plates
(issued in the Ent. Mo. Mag. for March, 1915, pp. 49-112), price 1s. 6d. Apply to
the publishers.

AUTHORS requiring separate copies of their papers (which can be supplied at
small cost) are requested to mark the number wanted on their MS.

Scale of Charges for Advertisements.

Whole Page.....£3. Half Page.....£1 11s. 6d. Quarter Page.....17s.

Lowest charge, 7s. up to 5 lines; 1s. per line afterwards.

Repeated or continuous Advertisements per contract.

There is no charge for Lists of Duplicates and Desiderata.

All payments and applications for the above should be made to

R. W. LLOYD, I. 5, Albany, Piccadilly, W.

AUTHORS are requested to send their communications and proofs to either
J. J. WALKER, Aorangi, Lonsdale Road, Summertown, Oxford; or
G. C. CHAMPION, Broomhall Road, Horsell, Woking.

ENTOMOLOGICAL NEWS.

A forty-eight page illustrated magazine, issued monthly, except in August and
September, devoted to the study of INSECT LIFE. It contains a resumé of the
proceedings of a number of Entomological Societies, and also articles by the leading
Entomologists in the United States and Canada. Valuable information for the
beginner, the economic entomologist, and the systemist. TWO DOLLARS a year
in advance. Single copies, 25 cents. Address—

ENTOMOLOGICAL NEWS,

The Academy of Natural Sciences,

1900 RACE STREET, PHILADELPHIA, PA.

THE CANADIAN ENTOMOLOGIST.

A MONTHLY MAGAZINE DEVOTED TO THE STUDY OF SCIENTIFIC ENTOMOLOGY.

Volume 50 is now in course of publication. Back volumes can be supplied.
It is the oldest established Magazine of the kind in America, and has a world-wide
circulation. Subscription, \$2 per annum, payable in advance, which includes a
copy of the Annual Report of the Entomological Society of Ontario to the
Legislature. Editor, Dr. E. M. Walker, Biological Department, University of
Toronto, Toronto, Canada.

Address: Entomological Society of Ontario, Guelph, Canada.

THE SIX COLOURED PLATES illustrating the articles on
"SOME INTERESTING BRITISH INSECTS,"

with the accompanying text (issued in the Ent. Mo. Mag. for September, 1909,
January and September, 1910, September, 1911, and August, 1913), are issued
in a separate wrapper, price 2s.

APPLY TO THE PUBLISHERS.

EXCHANGE.

MR. JOS. L. BEAULNE, of 3653 Notre Dame St. East, Montreal, Canada, would be glad to exchange specimens of any Order of insects for British or foreign beetles (especially Carabidae and Buprestidae).

THE BIOLOGY OF DRAGONFLIES

(ODONATA or PARANEUROPTERA)

By R. J. TILLYARD, M.A., B.Sc., F.L.S., F.E.S.

Demy 8vo. pp. xii+398. With 4 plates and 188 text-figures. 15s net.

CAMBRIDGE ZOOLOGICAL SERIES.

"Never before has the group received such detailed and well-balanced treatment as Mr Tillyard has given. . . . Students of the anatomy and development of insects are much indebted to him for providing in this convenient form a trustworthy guide to the external and internal structure of dragonflies at various stages of their life-histories."—*Nature*

Prospectus on application

Cambridge University Press, Fetter Lane, London, E.C. 4, C. F. Clay, Manager

COLEOPTERA ILLUSTRATA,

CARABIDAE.

Vol. 1, No. 3.

CARABIDAE.

PRICE \$1.

CONTENTS.

PRICE \$1.

LEISTUS
ferrugineus Linn.

BLAPHRUS
aureus Mull.

LOROCERA
pilicornia Fabr.

BROSCOSOMA
baldense Putz.

BEMBIIDUM
fasciolatum Duft.
articulatum Gyll.

CILLENUS
lateralis Sam.

THALASSOPHILUS
longicornis Sturm.

TRECHUS
discus Fabr.

ANOPHTHALMUS
hirtus Sturm.
v. rostratus Mots.

PTEROSTICHUS
lepidus Leske.
cupreus Linn.
infuscatus Dej.
puncticollis Dej.
crenatus Dej.
barbarus Dej.
carbonicolor Sols.
macer Marsh.
aterrimus Hrbst.
elongatus Duft.
oblongopunctatus Fabr.

angustatus Duft.
melanoscelis Chaud.
niger Schall.
vulgaris Linn.
nigritus Fabr.
minor Gyll.
interstinctus Sturm.
negligens Sturm.
subsinnuatus Dej.
brevis Duft.
caspius Men.
cognatus Dej.
aethiops Panz.
globosus Fabr.

PTEROSTICHUS
cylindricus Hrbst.
melas Creutz.

ABAX
ater Vill.
ovalis Duft.
schuppeli Pall.
v. rendschmidtii Germ.
corsicus Dej.

MYAS
chalybaeus Pall.

AMARA
ingenua Duft.

ZABRUS
chalceus Fald.
heros Fald.
seidlitzii Schaum.
graecus Dej.
blapoidea Creutz.

ANISODACTYLUS
bimotatus Dej.
signatus Panz.

ACCURATE ENLARGED PEN DRAWINGS, UNIFORM IN SIZE,
ONE TO A PAGE 8vo.

COLEOPTERA ILLUSTRATA will be mailed upon receipt of price.

HOWARD NOTMAN, 136 JERALEMON STREET, BROOKLYN, N.Y., U.S.A.

Vol. I, Nos. 1 and 2, \$1 each.

CONTENTS.

	PAGE
Synopsis of British Strepsiptera of the genera <i>Stylops</i> and <i>Halictorenus</i> (with Plate) (concluded).— <i>R. C. L. Perkins, M.A., D.Sc., F.Z.S.</i>	73
Notes on the British species of <i>Sphaeristes</i> Steph.— <i>K. G. Blair, B.Sc., F.E.S.</i> ..	77
Notes on Braconidae. XII.—On the <i>Liophroninae</i> . With description of a new British species.— <i>Claude Morley, F.Z.S.</i>	85
Trypetidae from the Oxford district, with notes on their time of appearance and food-plants.— <i>A. H. Hamm, F.E.S.</i>	87
<i>Coccinella septempunctata</i> L. parasitized by a Dipteron, <i>Phora fasciata</i> Fall.— <i>G. C. Champion, F.Z.S.</i>	91
Coleoptera in the Plymouth District.— <i>A. V. Mitchell.</i>	91
<i>Vanessa antiopa</i> in Cheshire.— <i>T. A. Coward, F.Z.S.</i>	92
A combined instance of Protective Resemblance and Mimicry in a Locust Larva.— <i>Rev. W. W. Fowler, M.A., D.Sc., F.L.S.</i>	92
SOCIETY—South London Entomological Society	93
New and little-known saltatorial <i>Dascillidae</i> .— <i>G. C. Champion, F.Z.S.</i>	93

THE NATURALIST:

A MONTHLY ILLUSTRATED JOURNAL OF

NATURAL HISTORY FOR THE NORTH OF ENGLAND

EDITED BY

T. SHEPPARD, M.Sc., F.G.S., F.R.G.S., F.S.A.Scot.,

THE MUSEUM, HULL;

AND

T. W. WOODHEAD, Ph.D., M.Sc., F.L.S.,

TECHNICAL COLLEGE, HUDDERSFIELD;

WITH THE ASSISTANCE AS REFEREES IN SPECIAL DEPARTMENTS OF

J. GILBERT BAKER, F.R.S., F.L.S., GEO. T. PORRITT, F.L.S., F.E.S.,

Prof. **P. F. KENDALL, M.Sc., F.G.S. JOHN W. TAYLOR, M.Sc.,**

RILEY FORTUNE, F.Z.S.

The Journal is one of the oldest Scientific Periodicals in the British Isles, dating back to 1833, and is circulated widely amongst the principal Naturalists of the country.

LONDON: A. BROWN AND SONS, LIMITED, 5, FARRINGTON AVENUE, E.C.

And at Hull and York.

PRICE, SIXPENCE NET. BY POST SEVENPENCE.

Prepaid Subscription, 6s. 6d. per annum, post free.

The Annual Subscription for 1918 is 9/-.

[See p. 2 of Wrapper.]

Third Series, No. 41.]
[No. 648.]

MAY, 1918.

[PRICE 1/- NET.]

THE
ENTOMOLOGIST'S
MONTHLY MAGAZINE.

EDITED BY

G. C. CHAMPION, F.Z.S. J. E. COLLIN, F.E.S.

W. W. FOWLER, D.Sc., M.A., F.L.S.

R. W. LLOYD, F.E.S. G. T. PORRITT, F.L.S.

J. J. WALKER, M.A., R.N., F.L.S.

VOLUME LIV.

[THIRD SERIES—VOL. IV.]

“J'engage donc tous à éviter dans leurs écrits toute personnalité, toute allusion dépassant les limites de la discussion la plus sincère et la plus courtoise.”—*Laboulbène*.

LONDON:

GURNEY & JACKSON (MR. VAN VOORST'S SUCCESSORS),
33, PATERNOSTER ROW, E.C. 4.

TAYLOR AND FRANCIS, RED LION COURT, FLEET STREET.

NOTICE.—Owing to the greatly increased cost of paper, printing, etc., the Editors of the Magazine are compelled to raise the subscription to 9s. per annum (post free). Subscriptions for the 1918 volume should be remitted as soon as possible to **B. W. LLOYD, I. 5, Albany, Piccadilly, London, W.1.**

The price of a single ordinary number is 1s.

EXCHANGE.

Wanted—Pterophoridae (plume moths) of the United Kingdom, or those from any other part of the World. exchange or cash. *Duplicates*—Lepidoptera and Odonata from Japan and Formosa.—**AKIO NOHRA, Ichijoji, Ottagun, Kyoto, Japan.**

REDUCED PRICES FOR BACK VOLUMES.

FIRST SERIES.

This can only be obtained in complete Volumes (bound or unbound).

A limited number of sets, from Vol. x to Vol. xiv can still be obtained at £2 15s. per set net (in parts), or of five consecutive Vols. at £1 per set net (if bound, 1s. per Vol. extra).

Certain of the Vols. i to ix can be had separately at 10s. each.

SECOND SERIES.

Vols. i to xv. are now offered at £3 per set net (in parts), or £1 2s. 6d. for five consecutive Vols. (if bound, 1/- per Vol. extra).

THIRD SERIES.

Vol. li (Third Series, Vol. i) can be supplied by the Publishers at 7/6 (8/6 if bound) per copy. Cover for binding, 1/-.

Vol. li (1915) contains 23 Plates (one coloured), a complete Monograph of the British Siphonaptera, and numerous extra pages of text.

Apply to the Publishers.

MEETINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON, 11, Chandos Street, Cavendish Square, W.—Wednesday, May 1st, June 5th.

The Chair will be taken at 8 o'clock in the evening precisely.

The Library is open daily from 9 a.m. to 6 p.m. (except on Saturdays, when it is closed at 2 p.m.), and until 10 p.m. on Meeting nights.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge. The Second & Fourth Thursdays in each month, at 7 p.m. The lantern will be at the disposal of Members for the exhibition of slides.

The Chair will be taken punctually at 8 o'clock.

THE LONDON NATURAL HISTORY SOCIETY, which meets at 7 p.m. on the 1st and 3rd Tuesdays in each month, at Room 20, Salisbury House, Finsbury Circus, E.C., will be glad to welcome at its Meetings any French or Belgian entomologists now staying in this country, and to give them the benefit of its library and collections. Communications should be addressed to the Secretary, Salisbury House, E.C.

Hon. Sec.: J. Ross, 18, Queen's Grove Road, Chingford, N.E.

Chingford Branch. The Chingford Local Branch meets at the Avenue Café, opposite Chingford Station, at 8 p.m., on the 2nd Monday in each month.

type was a little larger (length $4\frac{1}{2}$, breadth $3\frac{1}{3}$ mm.), but the other particulars given by him apply to the insect before me. The upper surface is smoother than in *O. marmorata* and the allied Central American forms, the puncturing of the elytra being extremely fine and dense, and that of the prothorax only visible under a high magnifying-power.

3.—*Ora marmorata*.

Ora marmorata Champ. Biol. Centr.-Am., Coleopt. iii, 1, p. 605 (1897).

Hab. PANAMA, Chiriqui [type]; TRINIDAD (*Mus. Roy. Belg.*); AMAZONS, Prainha (*Trail*); BRAZIL, Espirito Santo (*Schmidt, ex coll. Fry*).

Described from two specimens from Panama, three others from additional localities having since come under my notice. A very similar form was found in Batchian by A. R. Wallace, see *infra*, No. 15.

4.—*Ora gamma*, n. sp.

Elliptic, depressed, shining, thickly pubescent; testaceous, the eyes black, the elytra with the suture, outer margin in part, apex, and an interrupted post-median fascia (formed by a Y-shaped mark near the suture, a streak exterior to it, and an oblique lateral patch) flavous, the flavous markings preceded by a narrow, sharply angulate, piceous fascia and followed by four piceous streaks, the disc in front of the dark fascia to near the base slightly infuscate; the elytra densely, finely, rugosely punctate, with slightly coarser punctures intermixed, the rest of the upper surface smoother. Head small; antennae rather slender, long, joints 2 and 3 short, equal in length, the others long, filiform. Prothorax comparatively narrow, arcuately narrowing from the base, hollowed in front opposite the eyes, the anterior angles obtuse. Elytra long, rounded and explanate at the sides, somewhat acuminate at the tip, with a distinct sutural groove and indications of three feeble costae. Posterior coxae without plate. [Posterior legs wanting.]

Length $4\frac{1}{5}$, breadth $2\frac{3}{4}$ mm.

Hab. BRAZIL, Rio de Janeiro (*Fry*).

One specimen. Easily recognizable by the sharply-defined elytral markings, which consist of two interrupted, angulate, blackish, post-median fasciae, almost enclosing a flavous one, the latter formed by a Y-shaped streak near the suture and some oblique patches exterior to it. The Eastern *O. picta* and *O. atrosignata* (No. 17), the S. African *O. 20-guttata* (No. 12), and the Bolivian *O. (Scyrtes) lignea*, are somewhat similar sharply maculate insects.

5.—*Ora brevenotata*.

Scirtes brevenotatus Pic. Mélanges exot.-entom. xii. p. 6 (Jan. 1915).

Elliptic, broad, depressed, moderately shining, closely pubescent; testaceous, the upper surface (except along the elytral suture) more or less suffused or variegated with piceous, the elytra with several small spots near the base, a transverse mark at the sides below the humeri, an indistinct, angulate, oblique fascia beyond the middle, and a dull patch at or near the apex, flavous or testaceous (the elytra in one example, ♂, obscure testaceous, with some markings below the base, an outwardly-widened, oblique, angulate post-median fascia, and a trifurcate mark near the apex, piceous); densely, very finely punctate. Head rather small, hollowed or foveate on each side between the eyes anteriorly, the eyes large; antennae long, slender, joint 3 distinctly longer than 2, the others elongate, filiform. Prothorax uneven, very short, rapidly narrowed from the base, deeply hollowed in front opposite the eyes. Elytra long, broad, somewhat acuminate at the tip, feebly tricostate, and with a shallow groove along the suture, the margins explanate; in the ♀ depressed on the inner part of the disc below the base, and with a short, deep, longitudinal sulcus adjacent to the suture near the tip, and a large rounded fovea exterior to it. Posterior coxae without trace of plate. Posterior tibiae broad in ♂, narrower in ♀, the elongate upper spur nearly as long as the first tarsal joint.

Length 5-6, breadth 3-3½ mm. (♂ ♀.)

Hab. BRAZIL, Mendes [type]. Espirito Santo (*Fry*: ♂ ♀), Ilha Santa Amaro, near Santos (*G. E. Bryant*: ♀: 26.iii.1912).

The above description is taken from two females in good condition, and an imperfect male. These vary *inter se* in the development of the markings of the upper surface, and all are paler than Pic's type (presumably ♂), which is described as nigro-piceous above, the elytra with short testaceous macules near the base and at the sides. *O. (Scyrtes) lignea* Blanch., from Bolivia, which has more sharply maculate elytra, is doubtless an allied form.

6.—*Ora bituberculata*, n. sp.

♀. Oval, acuminate posteriorly, shining, rather coarsely flavo-pubescent; testaceous, the head between the eyes, the prothorax (except at the sides), and the elytra with a broad indeterminate space on the outer part of the disc extending for two-thirds of their length (and partly enclosing a short, curved, pallid humeral streak), infuscate or piceous; closely punctate, the punctures on the elytra rather coarse. Head broad, the eyes large; antennae moderately long, slender, joints 2 and 3 short, equal. Prothorax broad, arcuately narrowed from the base, deeply hollowed in front opposite the eyes. Elytra long, flattened on the disc anteriorly, and compressed and somewhat acuminate behind, sharply margined; each with a small depressed space near the suture towards the tip, in the centre of which is a small, oblong, tuberculiform plica.

Posterior coxae without plate. Posterior tibiae moderately widened, sharply carinate, the upper spur shorter than the first tarsal joint.

Length $4\frac{1}{2}$, breadth $2\frac{3}{4}$ mm.

Hab. BRAZIL, Alto da Sierra de Sao Paulo (*G. E. Bryant*: 12.iii.1912).

One specimen. Narrower than *O. (Scirtes) brevenotata* Pic, as here identified, the elytra less uneven, more coarsely punctate, and very differently marked, the subapical fovea in ♀ replaced by a small tuberculiform plica, a unique character in the group.

7.—*Ora cinnamomea*, n. sp.

Broad oval, acuminate behind, somewhat depressed, shining, pubescent; rufo-castaneous, the antennae, palpi, under surface and legs testaceous; closely, finely, the elytra more coarsely, punctate. Head rather small, without foveae: antennae slender, joints 2 and 3 short, equal. Prothorax arcuately narrowed from the base, deeply bisinuate in front, the anterior angles prominent. Elytra rapidly narrowed from the middle (thus appearing acuminate posteriorly), the margins rounded and broadly explanate in their basal half; the disc without trace of grooves, a faint sutural one excepted, or costae. Posterior coxae without plate. Posterior femora extremely broad, the tibiae widened, curved, and sharply carinate, the upper spur shorter than the first tarsal joint.

Length $4\frac{1}{4}$, breadth $2\frac{4}{5}$ mm. (♂?)

Hab. BRAZIL, Espirito Santo (*Schmidt, ex coll. Fry*).

One example. Less elongate and relatively broader than *O. bituberculata*, the elytra somewhat cordate, and with more rounded wider margins. The simple posterior coxae separate *O. cinnamomea* from one or two somewhat similar *Scirtes* from the same country.

8.—*Ora nigricornis*.

Ora nigricornis Champ. Biol. Centr.-Am., Coleopt. iii, 1, p. 606 (1897).

Hab. PANAMA, Bugaba [type]; BRAZIL, Rio de Janeiro (*Mus. Brit.*).

There are two examples of this species—recognizable by its oblong shape, testaceous body, black antennae, and partly infuscate legs—in the Museum, received from the "Entomological Society of London" in 1858. They are labelled "Rio." An unnamed allied form from Trinidad is contained in the Brussels Museum. It is quite possible that *O. nigricornis* is synonymous with *Scirtes (Cyphon) testaceus* F., from Tropical America, but till the types can be compared it would be unsafe to treat them as one species.

9.—*Ora calcarata*, n. sp.

Oblong oval, depressed, shining, finely pubescent; rufo-testaceous, the eyes black; closely, finely, the elytra much more distinctly, punctate. Head broad, the eyes moderately large; antennae very slender, joints 2 and 3 short, equal. Prothorax convex, very broad, gradually, arcuately narrowed from the base, bisinuate in front. Elytra feebly rounded and narrowly margined at the sides, rounded at the apex, with a shallow sutural groove. Posterior coxae without plate. Posterior femora moderately dilated, the tibiae long and but little widened, the upper spur strongly curved, quite slender, fully three times the length of the lower one, and shorter than the first tarsal joint.

Length $2\frac{1}{2}$, breadth $1\frac{1}{2}$ mm.

Hab. AMAZONS, between Para and Santarem (*H. H. Smith*).

One specimen, recognizable by the very slender, strongly curved, upper posterior tibial spur, and the unusually broad head and prothorax. An obscure, small, rufo-testaceous insect, with the general facies of a *Cyphon*.

AFRICAN SPECIES.

10.—*Ora cassidiformis*, n. sp.

Subhemispheric, depressed, explanate laterally, shining, pubescent; testaceous, the prothorax with some indistinct markings on the disc, and the elytra with a faint, interrupted, angulate fascia below the base and a transverse patch near the suture at about the middle, fuscous or piceous, the suture itself flavescent; closely, finely, the elytra more coarsely and subrugosely, punctate. Head small, hollowed on each side between the eyes; antennae long, slender, joints 2 and 3 short, equal, 4-11 elongate. Prothorax very short, rapidly narrowed from the base, deeply sinuate in front opposite the eyes, the disc obliquely depressed on each side anteriorly. Elytra with broadly explanate flattened margins, without grooves or costae on the disc. Posterior coxae without plate. Posterior legs very long, the tibiae widened, curved, compressed, sharply carinate, the upper spur elongate, curved at the tip, shorter than the first tarsal joint.

Length 4-4½, breadth 3-3½ mm.

Hab. CAMEROON MTS. (*C. Christy*); UGANDA, N.W. shores of Victoria Nyanza, alt. 3800-3900 ft. (*S. A. Neave*: ix. 1911).

Two imperfect examples, the Cameroon one taken as the type. The Uganda specimen is a little narrower, and wants the faint darker markings on the elytra, which may be partly due to discoloration in the type, the suture in both remaining flavescent. The subhemispherical shape, broadly explanate elytral margins, and dilute coloration give this insect the facies of a *Paropsis* (an Australian genus of Phytophaga), *Cassida*, or *Coccinella*. *Scirtes explanatus* Pic (1913), from Dahomey, and *S. cassidoides* Bourg. (1890), from Cochin China, are probably allied forms, and

almost certainly belong to *Ora*, as here understood. The Nigerian *O. macropus* is more elongate and has densely rugose, less explanate elytra.

11.—*Ora macropus*, n. sp.

Broad-oval, explanate laterally, moderately shining, thickly pubescent; obscure testaceous, the prothorax with several faint spots on the disc, the elytra with various irregular, longitudinally coalescent, streaks and angular markings extending from a little below the base to just beyond the middle (a triangular patch near the centre of the suture the most conspicuous), the antennae (joints 1-3 excepted), and the posterior femora in their outer half, black or piceous; very densely, finely, the elytra more distinctly, punctate, the punctures on the depressed basal portion of the latter coarser and transversely confluent. Head small, foveate on each side between the eyes; antennae long, slender, joints 2 and 3 short, equal, 4-11 elongate, filiform. Prothorax short, rapidly, arcuately narrowed from the base, deeply hollowed in front opposite the eyes, the anterior angles sharp and prominent. Elytra depressed along the suture anteriorly, somewhat acuminate at the apex, with a distinct sutural groove extending to beyond the middle, the margins very prominent. Posterior coxae without plate. Posterior legs very elongate, the tibiae curved, widened, and sharply carinate, the upper spur nearly as long as the elongated first tarsal joint, the latter much longer than the other joints united.

Length $5\frac{1}{2}$, breadth $3\frac{1}{2}$ mm. (♀.)

Hab. S. NIGERIA (*D. A. MacAlister*: 1902).

One specimen, certainly ♀, as shown by the depressed scutellar region of the elytra. Very like *O. rugipennis*, from Madagascar, but much larger, the elytra more broadly explanate, the two foveae on the head smaller, the puncturing of the prothorax denser and that of the elytra coarser, the posterior legs unusually elongate, the upper tibial spur also very long. *Scirtes explanatus* Pic (1913), length $3\frac{1}{2}$ mm., from Dahomey, must be a somewhat similar insect. *S. hieroglyphicus* Guér. and *S. scriptus* Cast., from Senegal, have maculate elytra, but differ in other respects from *O. macropus*.

12.—*Ora vigintiguttata*, n. sp.

Oval, shining, finely pubescent; testaceous, the eyes and palpi, the antennal joints 4-11, the base of the head, and the elytra black or piceous, the elytra each with ten sharply-defined spots or streaks—three at or near the base, transversely placed, three at about the basal third (the central one curved, the outer one oblique and extending forward laterally so as to nearly join the humeral spot), two at the apical third (the inner one oblique and reaching the suture, the outer one transverse), and two at or near the tip,—and the suture to beyond the middle, pale flavous; densely, somewhat rugosely, the head and prothorax very minutely, punctate. Head rather small, slightly hollowed on each side anteriorly; antennae moderately long, not very slender,

joints 2 and 3 short, equal. Prothorax very short, rapidly narrowed from the base, the anterior angles prominent. Elytra explanate and sharply margined at the sides, hollowed below the humeri, with faintly impressed lines on the disc, the one along the suture the most distinct. Posterior coxae without plate. [Posterior legs wanting.]

Length $3\frac{4}{5}$, breadth $2\frac{3}{4}$ mm.

Hab. MASHONALAND, Salisbury (*G. A. K. Marshall*).

One specimen, in very good condition, except that the posterior legs are wanting, as is often the case amongst preserved examples of these insects. The pallid elytral markings are very sharply defined. The nearest ally known to me is perhaps the Indian *O. picta* F.

13.—*Ora bifeveifrons*, n. sp.

Oblong-oval, somewhat depressed, moderately shining, closely pubescent, obscure testaceous; very densely, minutely, the prothorax less distinctly, punctate. Head rather small, with a deep fovea on each side near the eyes; antennae slender, comparatively short, joint 3 small, barely as long as 2, 4 moderately elongate. Prothorax rapidly narrowed from the base, the anterior angles prominent. Elytra depressed along the suture anteriorly, with an indication of raised lines on the disc, narrowly margined, the sides feebly rounded. Posterior coxae without plate. Posterior legs long, the tibiae widened, curved, carinate, the upper spur shorter than the first tarsal joint.

Length $3\frac{1}{2}$, breadth $2\frac{1}{10}$ mm.

Hab. W. AFRICA, Togoland (*Miller*).

One specimen, received by the Museum in 1901. This insect has the general facies of a *Cyphon*, and is distinguishable amongst its allies by the very densely, minutely punctured elytra, the bifeveate head, and the simple posterior coxae. It is just possible *O. bifeveifrons* may be synonymous with the imperfectly described *Scirtes donkieri* Pic (1913), type from the Congo; but this can only be ascertained when the two insects are compared.

(To be continued.)

139

NEW ORIENTAL STAPHYLINIDÆ (1).

BY MALCOLM CAMERON, M.B., R.N., F.E.S.

Platystethus robustus, n. sp.

Black, shining; elytra more or less fusco-testaceous at the shoulders and base; antennae reddish brown, 2nd, 3rd, and 4th joints reddish; legs pale testaceous; front of head armed with two short spines. Length 4.8-5.5 mm. A large robust species; larger and more robust than *P. spinosus* Er. Head large, transversely suborbicular and wider than the thorax, in the ♂ very

large; the front in both sexes furnished with two short stout spines; the vertex with a curved, impressed, transverse line posteriorly; eyes moderate, not prominent; puncturation fine, not very close, more sparing in front and on the temples: no visible ground-sculpture. Antennae with the 1st joint long and stout, blackish, the 3rd a little shorter than the 2nd, the 4th slightly transverse, the 5th to the 10th gradually increasing in breadth, the 11th about as long as the two preceding joints together. Thorax transverse, widest just behind the anterior angles, the sides strongly convergent and slightly sinuate before the obtuse posterior angles; the disc with a groove extending practically the whole length in the middle line, and with a small impression on each side behind and internal to the anterior angles; puncturation fine and sparse on the disc, coarser and closer laterally; median groove punctured; no visible ground-sculpture. Elytra fuscous-black, more or less dirty testaceous at the shoulders, widened behind, transverse; puncturation fine and very sparing and no ground-sculpture visible. Abdomen black, shining, almost impunctate.

♂. Seventh ventral segment with a broad shallow emargination at the posterior margin; 6th with a narrow shallow emargination at the posterior margin, which is sinuated on either side and with a slight impression before the emargination.

Hab. INDIA, Nilgiri Hills (*A. K. Weld Dowding*).

Stenus (s. str.) *confluens*, n. sp.

Bronze-black, shining, with slight aeneous reflection on the fore parts; antennae and legs black; elytra coarsely punctured, the punctures confluent postero-internally. Length 4 mm. About the size and build of *S. belli* Fauv., but in other respects quite different. Head narrower than the elytra, the vertex with a short shining carina posteriorly, the lateral impressions broad and shallow; coarsely punctured; pubescence white and scanty. Antennae slender, the 1st joint elongate, 2nd much shorter than the 3rd, 3rd to 8th elongate and slender, gradually decreasing in length, 9th to 11th shorter and broader than the preceding, forming a slender club. Maxillary palpi with the 1st joint reddish testaceous, the rest fuscous. Thorax a little longer than broad, widest at the middle, from thence obliquely narrowed anteriorly, the sides parallel posteriorly; disc with a shallow longitudinal impression posteriorly and a small, smooth, shining elevation on each side of the middle line; puncturation coarse, rugulose, more or less confluent. Elytra much longer and wider than the thorax, longer than broad, uneven; puncturation coarse, rugulose, notably confluent posteriorly near the suture. Abdomen gradually and distinctly narrowed posteriorly, bordered and without basal keels; rather closely and moderately coarsely punctured on the first two visible segments, gradually less coarsely and closely punctured towards the extremity. Tarsi long and slender, the first joint longer than the last.

♂. Sixth ventral segments broadly emarginate posteriorly, the 4th & 5th feebly impressed in the middle line throughout.

Hab. INDIA, Lebong, alt. 5000 feet (*H. M. Lefroy*).

Hesperus terminalis, n. sp.

Black, shining; the last two joints of the antennæ and a narrow band near the base of the tibiae pale testaceous, the 8th dorsal segment of the abdomen and the posterior margin of the 7th reddish testaceous. Length 11 mm. Remarkable on account of the irregular surface of the elytra. Head larger and transversely orbicular in ♂, orbicular in ♀, longitudinally impressed between the antennae, almost impunctate, except for a few large punctures near the eyes and one on either side of the disc posteriorly; sparingly and finely setose. Antennae long, black, the 10th and 11th joints pale testaceous, the 2nd joint shorter than the 3rd, the 4th to 9th all longer than broad, gradually decreasing in length, the 10th about as long as broad, the 11th short, about half as long again as the 10th. Mandibles and last joint of the maxillary palpi reddish testaceous, the rest pitchy black. Thorax about one-third longer than broad, scarcely as wide as the head in ♂; the sides but slightly rounded in front, convergent posteriorly in a straight line; disc with three large punctures on either side of the middle line, two smaller on either side of the anterior margin and two larger ones behind the anterior angles, apart from these and a few along the lateral and posterior margins, the surface is impunctate; sides setiferous. Scutellum impunctate at the base, the rest of the surface finely and densely punctured. Elytra longer than the thorax, irregular, from the suture being elevated, the humeral callus prominent and the presence of a large boss between this and the suture; postero-externally there are two or three smaller elevations; puncturation scarcely visible and exceedingly sparse; pubescence long and setiform. Abdomen black, the posterior margin of the 7th and the whole of the 8th dorsal segment reddish testaceous; punctures wanting, except for a scattered row at the bases of the first three segments; sides and dorsum with long setae; sixth ventral segment and posterior margin of the fifth reddish testaceous. Femora reddish-testaceous, tibia black, with a narrow pale testaceous ring below the knee, tarsi ferruginous.

♂. Sixth ventral segment with a minute notch in the middle of the posterior margin.

Hab. JAVA, Silabintanah (*G. E. Bryant*).

Staphylinus bryanti, n. sp.

Dark fusco-ferrugineous with aeneous reflection on the fore-parts; pubescence scarcely variegated; antennae and legs reddish testaceous. Length 13 mm. Allied to *S. aeneicollis* Bernh. and *suspectus* Fauv., but of narrower build than either of these species and also with differently-coloured antennae and legs. Head quadrate, not at all widened behind, of a dark brownish red colour, darker still at the temples, and with a slight greenish tinge; disc with a short, smooth line in the centre posteriorly; puncturation coarse and umbilicate; pubescence mixed fulvous and grey. Antennae reddish testaceous, the 2nd and 3rd joints of equal length, the 4th slightly, the 5th to the 10th gradually more strongly transverse, 11th nearly orbicular, notched below. Thorax narrower than, but of the same build as in *S. aeneicollis* even darker in colour than the head, but with all the margins of a dark brownish red; disc with a smooth elevated line posteriorly; puncturation as on the head;

pubescence mixed grey and fulvous, but not forming any definite pattern. Scutellum black, velvety. Elytra as long as broad, the disc dark, the margins all more or less brownish red; puncturation close, crateriform; pubescence black, grey, and fulvous, thicker at the postero-external angles, but not forming any definite variegated patterns. Abdomen with the first five segments with a golden fleck in the middle of the base of each, bounded on either side by a black velvety patch of pubescence and towards the sides each with a somewhat obscure patch of golden pubescence at the base; puncturation pretty close and not very fine; pubescence moderately close, black, grey, and yellow. Under surface iridescent, the posterior margins of the first two or three segments reddish.

Hab. CEYLON, Kandy (*G. E. Bryant*).

Females only obtained.

Rhynchocheilus andrewesi, n. sp.

So very similar to *R. aureus* F., that the following points will readily distinguish this species. The last joint of the antennae is black, only the 1st and 2nd being reddish testaceous; the labrum is bright orange-red; the ground-colour of the head and thorax is darker, and the pubescence on the 7th abdominal segment is golden; the femora are entirely black, except at the apex; the metasternum is in great part rufo-testaceous. In size and build, and in the arrangement and colour of the pubescence, the present species agrees with *R. aureus*.

Hab. INDIA, Nilgiri Hills (*H. L. Andrewes*).

Feb. 3rd, 1918.

NOTE ON *PHYLLOBIUS CALCARATUS* F.

BY JAMES EDWARDS, F.E.S.

The specimens of *Phyllobius calcaratus* fall naturally into three well-marked groups which owe their distinctive appearance mainly to the clothing of the elytra. Group 1 has the elytra irregularly parti-coloured in black patches alternating with patches of green or coppery scales. This is the prevalent form and comprises two distinct categories; one in which the black parts are actually bare, apparently as the result of abrasion, and the other in which they are clothed with short decumbent hairs similar to those in the striae-punctures. The latter, according to Schilsky, must be called *calcaratus* var. *pyri* F.; but since this is apt to lead to confusion with *pyri* L. it will be more convenient to refer to it as ab. *maculatus*. There is, as yet, no definite record of a male of this form; it is uncertain whether the black spots on the elytra of *atrovirens* Gyll., which is said to be based on the male sex, are clothed with short hairs or actually bare. Group 2 has the elytra yellow-green, blue-

green, coppery, or rarely grey, by reason that the clothing of coloured scales completely hides the black ground-colour. This form, which occurs in both sexes, is clearly *caesius* Marsh. (Ent. Brit. i, p. 318, 1802), as amplified by Stephens (Ill. Mand. iv, p. 147, 1831), and is the only form described by Fowler in his "Coleoptera of the British Islands." The scaling of the elytra is quite uniform in colour for any given example, but the specimens are not all alike in the nature of the scaling. In the greater number the majority of the scales are oat-shaped (lanceolate-attenuate), but there are here and there patches of linear scales little to much shorter than the former. In a comparatively few examples all the scales are large and oat-shaped, and to these it would appear that it was Schilsky's original intention to confine his name of ab. *densatus* (Deutsch. Ent. Zeitschr. 1886, p. 95). Group 3 has the elytra dull black, by reason that the clothing of short decumbent hairs, similar to those in the striae-punctures, is insufficient to obscure the black ground-colour. There are sometimes a very few coloured scales along the suture. This form, which is sometimes referred to as var. *nudus* Westhoff, is not mentioned in Cox's "Handbook of Coleoptera"; it occurs only in the female sex. The original description of *calcaratus* F. (Ent. Syst. i, 2, p. 485, 1792) fits this exactly, and presumably on that account it is sometimes called the stem-form; although it is a comparatively rare form confined to one sex only. Having regard to the distinctive appearance in the field of these dull black females (a specimen which is black by reason of complete abrasion is quite shiny, and is, moreover, very rarely met with), it seems hardly likely that they would be passed over by collectors as abraded examples and neglected in consequence, and an esteemed colleague, the extent of whose experience in the field is second to none, informs me that he has never met with this form. My own experience of it is as follows:—I have collected regularly in this district since 1892 in a manner which would give an approximately equal chance of taking it every year. My captures have been 1898, 1902, 1906, 1908, one example each year, 1909, 1916, two examples each year, 1917 twenty-one examples; in the three years following 1898, the three years following 1902, and in the six years following 1909 I did not meet with it at all. Ever since the capture in 1899 of ab. *caesius* and *calcaratus* in cop. I have had a great desire to know what the progeny of such a pairing might be like; but for a long time no reasonable ground for speculation on the subject presented itself. The due appreciation of the difference between ab. *maculatus* and partially abraded examples of ab. *caesius*, however, at once suggested a case of inheritance to some extent comparable with that of the Andalusian

fowl. I have had the advantage of discussing the matter with Dr. Heslop Harrison of the Zoological Department, Durham University, and he says, *in litt.*, "Your material thoroughly bears out your notion as to the similarity between it and the Andalusian fowl. Still that is by far the least important feature about it, for there are indications that it is also an interesting case of sex-limited inheritance, of which no case is known in Coleoptera." Specimens taken wild are always open to mis-interpretation, and experiment is absolutely necessary to put the subject on a firm basis, but the principles governing the case of the Andalusian fowl seem to go a long way towards accounting for the rarity of *calcaratus* as compared with *ab. caesius* and *ab. maculatus*. According to a note by Faust (Stett. Ent. Zeit. 1890, p. 110), the occurrence of an unsealed form amongst a sealed one is not uncommon in the genus *Phyllobius*; he mentions three extra-British species in which it occurs and says that the unsealed males appear less abundant than the females. *P. calcaratus* seems a fitting subject for further research, though breeding experiments must necessarily be attended with some difficulty.

Colesborne.

April 9th, 1918.

HALICTOXENUS ARNOLDI, AN UNDESCRIBED BRITISH STYLOPID.

BY R. C. L. PERKINS, M.A., D.Sc., F.Z.S.

Length of cephalothorax from the hind margin of the spiracle to the middle of the front margin of the head in a straight line .8-.9 mm.; width across the spiracles .9-1 mm. Width across the spiracles 9-10 times the width (where least) between the mandibles. Sides of cephalothorax notably sinuate inwardly on a line with the opening of the brood-chamber. Colour yellowish brown, palest, sometimes quite yellow, on an area just in front of the spiracles. Basal dark brown or blackish band extending in front of the thoracic constriction to a line distinctly in front of the spiracles on the two middle quarters of the width of the thorax; from each side of the apex of this dark area, a brownish vitta extends forward to the mouth of the brood-chamber, and there these are connected by a more or less evident transverse shade; the vittae gently converging from base to apex and enclosing at their base a transverse band of conspicuous pale spots.

The two specimens described were first examined *in situ* in their hosts and appeared different in various respects, the one having the spiracles situated just within the lateral outline of the cephalothorax, the other with the spiracles forming part of this outline. Subsequent treatment, before mounting them on slides, did not change them in this nor in other respects, and the differences observed were probably due to

different pressures sustained, when they were embedded in the host. There are also differences in details of colour and in the form of the mandibles similar to those which I have observed in other species of Stylopidae, and it is quite certain that minute characters in *Stylops* and *Halictoxenus* are not sufficient to separate species without the examination of more than single specimens of the ♀ or of the ♂ sex.

There are five tubes leading into the brood-chamber, as in all Halictine Stylopidae that I have seen.

The type was extracted from a specimen of *H. xanthopus* taken this year on March 24th, on a flower of *Ulex*, close to my house in Devon. This is an extremely early date for the hibernated bee to be abroad. The other was found in a bee captured last spring at a considerably later date and only recently examined. Both these female parasites contained ova very little developed, whereas usually the ♀ *Halictoxenus* examined in spring, after hibernation, contains fully developed triungulin larvae.

This species is named after Mr. G. Arnold, who was a most active collector and student of our Aculeata, before his departure abroad.

In my descriptions of *Halictoxenus* (*ante p. 74*) I find that I carelessly misread the numbers on the divided millimetre scale, by which the length and breadth of the cephalothorax was measured, so that in each case these measurements are about one-quarter of a millimetre too great. The following table of species will sufficiently correct the error:—

Halictoxenus ♀ ♀.

- 1 (2) Large species; width across the spiracles ·9-1 mm.; length from hind margin of spiracle to middle of front margin of head ·8-·9 mm. Dark brown or blackish basal area extending forwards beyond the line of the spiracles *arnoldi*.
- 2 (1) Smaller species, not reaching ·9 mm. in width.
- 3 (6) Pale discal spots are present between the line of the spiracles and the opening of the brood-chamber.
- 4 (5) Width about ·8, length about ·6 mm.; a dark suffusion extends from the base to about the line of the spiracles *cylindrici*.
- 5 (4) Width about ·6, length about ·45 mm.; the pale discal spots midway between the opening of the brood chamber and the line of the spiracles are more conspicuous than in the preceding . . . *spencii*.
- 6 (3) Pale spots situated near the base of the cephalothorax, behind the line of the spiracles. Width about ·66, length ·56 mm. *tumulorum*.

Paignton.

April 18th, 1918.

RECORDS AND DESCRIPTIONS OF SOME BRITISH *CAMPODEIDAE*.

BY RICHARD S. BAGNALL, F.L.S.

For some time I have been collecting material towards a monograph of the British *Campodeidae* and, as in present circumstances it is impossible to find the time to make the detailed studies and complete the necessary figures, I think it advisable to give some indications of the British species and brief descriptions of new forms. Altogether I know twelve or thirteen species, but three (or four) new forms are represented by but two or three poor examples, and I have therefore withheld describing them in the hopes that further material will come to hand.

I take this opportunity to issue a further appeal for material; in my first appeal I suggested reserving one tube for one specimen. Most species occur in little families or colonies, and I now suggest that *one tube should be reserved for the members of one little colony, or those from one particular habitat*. I particularly want examples from the South or South-West of England; from the coast and from the summits of our higher mountains.

I am particularly indebted to those friends whose names are inserted in brackets in the following records.

Section I.—MESONOTUM AND METANOTUM WITH THE LATERAL SUB-POSTERIOR MAJOR SETAE PRESENT.

1.—*Campodea fragilis* Meinert (fig. 3).

ENGLAND: Northumberland, on the coast at Hartley, 1912, and Whitley Bay, Mar. 1918; inland at Denton Burn, near Newcastle, Dec. 1912, and Corbridge-on-Tyne, Mar. 1918. Durham, on the coast at Whitburn, Aug. 1914. Hogley Bog, near Oxford, Feb. 1918 (*H. Britten*). Yorkshire, Weedley, 1915 (*T. Stainforth*).

SCOTLAND: Isle of May, May 1914 (*W. Evans*).

IRELAND: Ballycastle, Co. Antrim, Aug. 1915, and in the neighbourhood of Stewartstown, Co. Tyrone, Mar. 1918 (*N. H. Foster*).

2.—*Campodea lubbocki* Silvestri (fig. 4).

Described from specimens found at Berkhamsted (*Collinge*) and Oxford (*R. S. B.*); apparently somewhat rare.

NORTHUMBERLAND, Denton Burn, near Newcastle, Dec. 1912, and Leazes Park, Newcastle. DURHAM, Gibside and Fencehouses; rare. DORSETSHIRE, Swanage, the only species, and Studland, Apl. 1918.

3.—*Campodea silvestrii*, sp. n. (fig. 7 a).= *C. staphylinus* Silv., non Westwood.See remarks under description of *C. staphylinus*.

Silvestri examined British material from Dublin, and Leamside and Penshaw, Co. Durham. Curiously enough he did not receive specimens of our commonest British *Campodea*, which I now bring forward as the true *C. staphylinus*, falling into Section II.

ENGLAND: Lizard Pt., Cornwall, April 1915, and Swansea, Jan. 1916 (*P. A. Buxton*). Ringwood, Hants, Aug. to Dec. 1912 (*C. B. Williams*). I have only seen a few examples (all juvenile) from Northumberland and Durham, while *gardneri* and *staphylinus* are to be found everywhere.

IRELAND: Ballycastle, Co. Antrim, Aug. 1915 (*N. H. Foster*).

4.—*Campodea gardneri*, sp. n.* (figs. 5 & 7).

Length 1.9–2.3 mm. White. Minor setae elongated, pointed, simple; much as in *silvestrii*, but fewer and longer, being intermediate between that species and *redii* Silv. Major setae as in fig. 7. Antennae 19-segmented, about 0.4 the length of the body. Notum with all the major setae present. Tergites without submedian major setae: 5–9 with sublateral posterior, and lateral major setae. Cerci 8–10 segmented, very similar to the cerci of *C. silvestrii* var. *plusiochaeta* Silv., but noticeably stout basally, less than half the length of the insect, 8–10 segmented. Apical seta of style with a single branch near base, subapical seta branched towards middle, and the third main seta branched distally.

Apart from its small size this species differs from *silvestrii* (*staphylinus* Silv.) and its variety *plusiochaeta* very sharply in the character of the major setae and of the type of stylus. In size it more closely approaches *redii* Silv. (1.65 mm. long), but in that species both the major and minor setae are longer and, in the latter case, fewer, whilst the sublateral posterior major setae are found on tergites 4–9.

Hab. ENGLAND: Durham, in turf and with *C. staphylinus*, Hart, Gibside; Winlaton; Axwell. Northumberland, Newcastle, Matfen, Corbridge, Ovingham, Hartley, etc. Yorkshire, Hull (*T. Stainforth*). Lancashire, Grange-over-Sands. Northamptonshire, Kettering, in turf (*C. B. Williams*). Hampshire, in peat from Ringwood (*C. B. Williams*).

IRELAND: Ballycastle, Co. Antrim, Aug. 1915 (*N. H. Foster*).

5.—*Campodea lankesteri* Silvestri.

A large species, described from examples taken at Berkhamsted (*Collinge*).

* I find particular pleasure in dedicating this species to my friend Mr. John Gardner, F.E.S., of Hart, as a small mark of appreciation for the help and encouragement I have received at his hands since I first turned to Entomology.

NORTHUMBERLAND, Denton Burn, Newcastle, Dec. 1912. DURHAM, Gibside, Fencehouses, Lambton Park, Fatfield, Blackhall Rocks. YORKSHIRE, Hull and Lincolnshire, South Ferriby (*T. Stainforth*). SURREY, Merton, Sept. 1912 (*C. B. Williams*).

I have also taken this species at Oxford and in the Kew Gardens, London.

6.—*Campodea giardi* Silvestri.

In 1914 I found two examples which agreed perfectly with Silvestri's description, the chief character lying in the posterior position of the submedian macrochaeta on the abdominal tergites.

DURHAM, Gibside.

Section II.—AS IN SECTION I, BUT WITH THE MAJOR SETAE AT HIND ANGLES OF THE METANOTUM ABSENT.

7.—*Campodea staphylinus* Westwood (figs. 6 & 8.)

Length 3·9–4·6 mm. Metanotum *without* major setae at the hind angles. Tergites without submedian major setae; 6–9 with sublateral posterior and lateral major setae. Stylus as in *silvestrii*, *fragilis*, etc. Cerci short, about 0·4 the length of the insect (fig. 6).

Silvestri had not the opportunity of studying this insect, and had before him a much rarer, though very similar, species (falling into Section I) from the British Isles, which he naturally considered to be Westwood's *staphylinus* and described it as such. Both Westwood and Lubbock figured *Campodea staphylinus* without macrochaetae at the hind angles of the metanotum, and as our commonest species agrees in this particular I think there is no doubt that it is the same species as Westwood described. I find it in numbers everywhere and have had it sent to me from Ireland, Scotland, and many parts of England.

8.—*Campodea grassii* Silvestri.

This fine species seems to be distinctly variable. I have an example agreeing with Silvestri's description in the main particulars, but the incrassate minor setae of the posterior margins of the nota are shorter than in Italian examples. The species is known to vary as regards these minor setae. I hope more examples will turn up, as my unique example has passed through many vicissitudes and is now minus both antennae and cerci.

LANCASHIRE, Grange-over-Sands.

Section III.—MESONOTUM (AND METANOTUM) WITH THE LATERAL
SUBPOSTERIOR MAJOR SETAE ABSENT.

There are two divisions of this section, the first for species having submedian major setae on the abdominal tergites and the second where these submedian setae are absent.

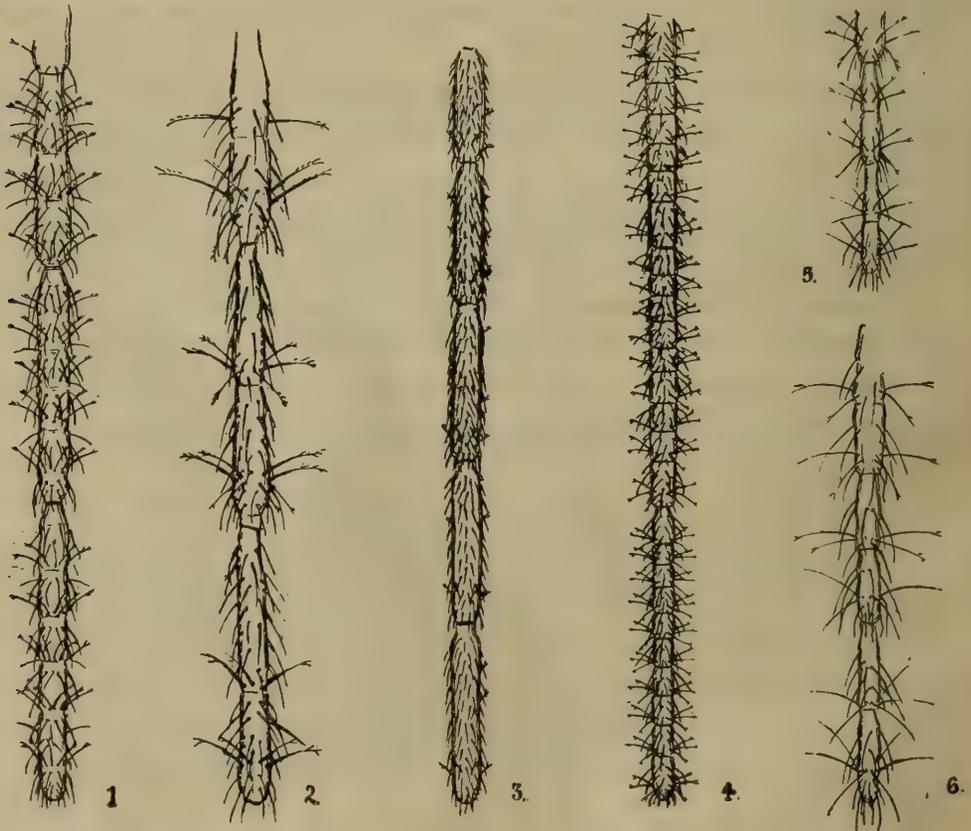
The species described below falls into the second division.

9.—*Campodea westwoodi*, sp. n. (figs. 1 & 9).

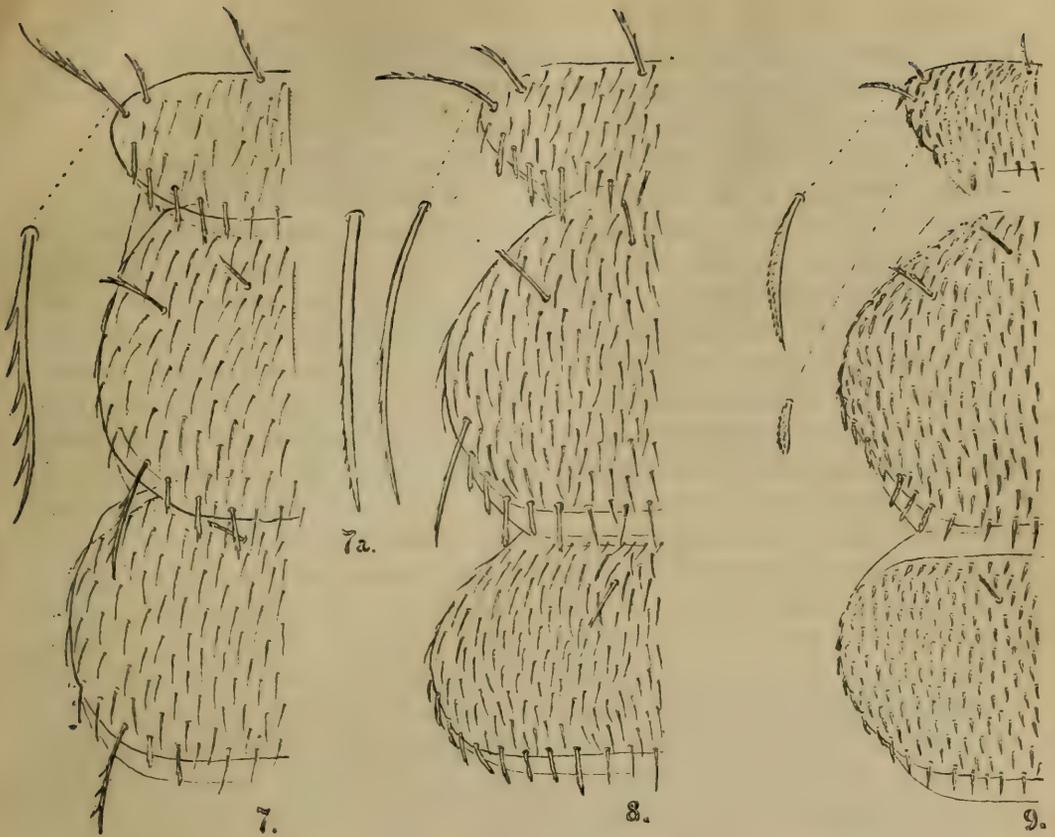
Length 3·5–5·0 mm. White. The minor dorsal setae of the body short, incrassate and pointed; the major setae (macrochaetae) short. Antennae about 0·4–0·45 the length of the total insect, 20–22 segmented. Mesonotum with both the anterior (submedium and sublateral) and the metanotum with the submedian major setae present. Tergites without submedian major setae; 6–9 with sublateral posterior and lateral major setae. Style of the same type as in *silvestrii*, *staphylinus*, and *fragilis*. Cerci longer than the antennae; 9–10 articulated (fig. 1); setae rather short, subequal, the outstanding ones arranged in 5–6 whorls.

A striking and distinctive species, related to *C. aristotelis* Silv.

Hab. A few examples taken by Mr. W. J. Lucas at Rhinefield Sandys, New Forest, in April 1912.



Figs. 1–6.—Distal end of cerci of 1, *C. westwoodi*; 2, *C. lankesteri*; 3, *C. fragilis*; 4, *C. lubbocki*; 5, *C. gardneri*; 6, *C. staphylinus*.



Figs. 7-9.—Left side of the pronotum, mesonotum, and metanotum of *Campoder gardneri* (Section I), *C. staphylinus* (Section II), and *C. westwoodi* (Section III), with more enlarged figures of the pronotal macrochaeta. 7a.—Pronotal macrochaeta of *C. silvestrii*.

Blaydon-on-Tyne.
April 2nd, 1918.

Aberration of Tanagra atrata.—On July 7th last year, when I was collecting in some meadows near Burnley, where *T. atrata* was exceedingly abundant, I noticed one very different from the rest. This was captured, and proved to be an aberration of a golden-brown tint, very distinct from the usual black colour of the species; it was in very good condition.—W. G. CLUTTEN, 132 Coal Clough Lane, Burnley, Lancashire: March 17th, 1918.

Abundance of Phigalia pilosaria at Burnley.—The weather seems to have been very favourable for *P. pilosaria* this winter, as nearly three hundred examples have been observed here. A careful note of melanic specimens has been made, and it is found that rather over 20 per cent. in this locality are now of the black form.—W. G. CLUTTEN.

Psylla sorbi L. in Britain.—The common *Psylla* of the Mountain Ash has occupied very little space in entomological literature. Linnaeus described it, quite as fully as could be expected from a naturalist of that date, in 1767.

Thomson in his "Öfversigt af Scandinaviens Chermes-arter" (Op. Ent. viii, 1877) includes *Chermes sorbi* L., but his description leaves it uncertain whether he was really referring to the Mountain Ash species or not. Although Reuter had already recorded from Mountain Ash a *Psylla* which he thought was *P. mali*, F. Löw (Verh. zool.-bot. Ges. Wien, xxxii, 1882, p. 250) says that no *Psylla* living on *Sorbus Aucuparia* had yet been found, and therefore it was very probable that the presence of Linne's *Chermes sorbi* on Mountain Ash was accidental. In the neighbourhood of Northwich, where Mountain Ash is a dominant tree, I found on the latter a pale *Psylla* commonly in August 1910 and with considerable doubt put away the specimens as *P. mali*. The next season I looked for a *Psylla* on Mountain Ash here and found it at once, both on trees undoubtedly native, of which there are very few, and on planted ones which had been brought in the young state from Scotland. It was now perfectly clear that notwithstanding the similarity of the green nymphs and of the male forceps, the Mountain Ash insect could easily be distinguished from *P. mali* which was living on Crab Apple a few yards away. The following particulars will serve for its recognition:—Upper fore-parts whitish-yellow inclining to orange and not to green; mesonotum with a pair of wide stripes on each side and a line down the middle lighter or darker yellow-brown. Dorsulum entirely brown. Antennae about half as long as the costa, the fourth and following joints ringed with black at the apex, last joint entirely black. Elytra hyaline, the veins becoming darker from the basal third onward, cell M well covered with tubercles throughout except on a well-defined marginal area, the latter very evident in the basal third of the cell, cell *a* 2 pale throughout. Length 3·5–4 mm. *P. mali*, which is a more robust insect, does not develop the dark line down the middle of the mesonotum and has cell M practically free from tubercles from its base as far as the fork of Cu. I have also seen *P. sorbi* from Hyde Heath, Bucks (*E. A. Butler*), and Great Salkeld, Cumberland (*Britten*).—J. EDWARDS, Colesborne: April 9th, 1918.

Note on Trioza velutina Förster.—Dr. Karel Sulc, whose writings on *Psyllina* are unequalled for completeness of morphological investigation, accuracy of description, and wealth of illustration, deals very fully (Mon. Gen. Trioza, Pt. iv, p. 88, t. 47, 48) with *T. galii* and *T. velutina* Förster; and as the result of his examination of the type-specimens, amongst others, he comes to the conclusion that they are one and the same species. But the facts which he demonstrates also prove most conclusively that we have to deal with two kinds which differ from one another in certain definite and well-marked particulars; namely, the tuberculation of the elytra and the form of the forceps; and since the researches of the learned doctor go to show that these are constant whilst the shape of the elytra and the shape and bulk of the face-cones, features on which he relies in support of his amalgamation of the two forms, are decidedly variable, it would appear better to retain the names as applied by Förster and call the form with no tubercles on the elytra except a few in the neighbourhood of the base of *a* 1, and the extreme tip of the forceps in the dorsal aspect sharply truncate, *galii*, and the form with the elytra well covered with tubercles except at the edges of the cells, and the extreme tip of the forceps in the dorsal aspect bluntly rounded, *velutina*. The

tuberculation of the elytra here mentioned is that of the upper surface; it is very minute and is most readily seen in dried specimens when the elytron is obliquely lighted; if the elytron be mounted in glycerine its examination by transmitted light is easy, though in this case care must be taken to distinguish the tuberculation of the upper surface from that of the under. *T. galii* is decidedly sporadic, but I have found it on the annual *Galium Aparine*, as well as on the perennial *G. cruciatum*, *G. palustre*, and *G. verum*. On June 2nd, 1908, I swept casually at Colesborne a single female which has the elytra proper to *velutina*; and amongst some Psyllids recently sent to me for names by Mr. Britten I find two males, taken by him from *Vaccinium Myrtillus* at Gamblesby Fell, Cumberland, 11. vii, 1909, at an altitude of over 2000 feet, in which the forceps and elytral tuberculation exactly resemble Sulc's figures of Förster's *velutina* (op. cit. Pt. i, t. 5). From what plant the Colesborne specimen came is unknown, but it was certainly not Bilberry.—J. EDWARDS, Colesborne: April 9th, 1918.

Society.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY:
March 14th, 1918.—MR. STANLEY EDWARDS, F.L.S., President, in the Chair.

Mr. Turner exhibited *Colias edusa* v. *helice* from Cyprus and Spain, including an intermediate form. Mr. Edwards, a long varied series of *Gnophos glaucinaria* from Macugnaga and several species of *Setina* (*Endrosu*), *S. irrorella*, *S. aurita*, and *S. kuhlweini*, some having confluent markings. Mr. Burnett, a short series of *Hyria muricata* from near Guildford, much lighter than the northern form. Mr. K. G. Blair, the larva of the Coleopteron *Nebria brevicollis* parasitized by a Proctotrupid. The larvae of the parasite were attached full fed for pupation along the back of the host by their tails.—H. J. TURNER, Hon. Editor of Proceedings.

FURTHER NOTES ON *STYLOPS* AND *STYLOPIZED* BEES.

BY R. C. L. PERKINS, M.A., D.Sc., F.Z.S.

The following list comprises, I believe, all the British *Andrena* that have at present been recorded as styloped. Where the species of *Stylops* has itself been described or named, this name is added after its host. In a few cases, where the records are very old, the authority for the record is given, and confirmation is desirable:—

<i>Andrena alfenella</i> Perkins	? <i>Stylops spreta</i> Perkins,
<i>apicata</i> Sm. (recorded as styloped under the name <i>lapponica</i> Zett.	by Theobald, Ent. Mo. Mag. 1892, pp. 40-42).
<i>bimaculata</i> K. Both broods	. . <i>Stylops bimaculatae</i> Perkins,
<i>bucephala</i> Sm. <i>S. aterrima</i> (?)

<i>Andrena carbonaria</i> L. (= <i>pilipes</i>). 1st brood	<i>S. nassonovi</i> Pierce.
<i>chrysoceles</i> K.	<i>S. hammella</i> Perkins.
<i>clarkella</i> K.	
<i>coitana</i> K.	
<i>falsifica</i> Perkins	? <i>S. spreta</i> Perkins.
<i>ferox</i> Sm.	
<i>flavipes</i> Panz. (= <i>fulvicrus</i> K.).	
<i>fucata</i> Sm.	
<i>fulva</i> Schr.	? <i>S. nevinsoni</i> Perkins.
<i>fuscipes</i> K. Pickering 1835. Shuckard records <i>rufitarsis</i> K. probably in error for ♀ <i>fuscipes</i> (<i>rufitarsis</i> K. = <i>tridentata</i> K.).	
<i>gravidata</i> Imh. (= <i>fasciata</i> Nyl.).	
<i>gwynana</i> K. Both spring and summer broods.	
<i>helvola</i> S.	
<i>labialis</i> K.	<i>S. dalii</i> Curtis.
<i>minutula</i> K. Both broods.	
<i>moriceella</i> Perk.	
<i>nigroaenea</i> K.	<i>S. melittae</i> Kirby.
<i>ovatula</i> K. (= <i>afzeliella</i> Auct.) ..	<i>S. thwaitesi</i> S. Saund.
<i>praecox</i> Scop.	
<i>proxima</i> K. Pickering 1835 with doubt. Commonly stylopized in Germany.	
<i>saundersella</i> Perk. (= <i>nana</i> , Sm., Saund.)	<i>S. spreta</i> Perkins.
<i>sericea</i> Chr. (= <i>albicus</i> K.) Curtis 1832. <i>Stylops dalii</i> . Very probably an error.	
<i>spinigera</i> K.	<i>S. aterrima</i> ?
<i>spreta</i> Pérez.	<i>S. spreta</i> Perkins.
<i>subopaca</i> Nyl.	? <i>S. spreta</i> Perkins.
<i>synadelpha</i> Perk. (= <i>ambigua</i> Perk.)	<i>S. nevinsoni</i> Perkins.
<i>tarsata</i> Nyl. (= <i>analis</i> Panz.) ..	<i>S. analis</i> Perkins.
<i>tibialis</i> K.	<i>S. spencii</i> Pickering.
<i>trimmerana</i> Auct.	<i>S. aterrima</i> Newport.
<i>varians</i> Rossi.	
<i>wilkella</i> K.	<i>S. wilkellae</i> Perkins.

The following species, which occur in England, are known to be stylopized, some of them commonly so, on the Continent, but I have not seen them recorded as being affected in this country:—*A. cineraria* L., *cingulata* F., *denticulata* K., *florea* F., *fulvescens* Sm. (*humilis*), *nitidiuscula* Sch. (*lucens* Imh.), *rosae* Panz., *thoracica* F., *similis* Sm.

The only stylopized species of *Halictus* that I have myself found are:—*H. xanthopus* K., *H. calceatus* Scop. (*cylindricus* F.), *H. nitidiusculus* K., and *H. tumulorum* L.

The following have been recorded, but the records may require

confirmation:—*H. rubicundus* Chr., *H. 4-notatus* K., *H. albipes* K., *H. longulus* Sm., *H. minutissimus* K., *H. minutus* K., and *H. morio* F., and I think also *H. leucozonius*.

The effect of stylopization on the internal reproductive organs of *Andrena* has been insufficiently studied in this country, and the accounts given by different workers are not in accord. It must be remembered, however, that each writer on the subject examined different species of *Andrena*, and it is possible that the effect of the parasite is not the same in the case of different hosts with different species of *Stylops*. My earliest investigations (Ent. Mo. Mag. 1892, p. 1) were made mainly on stylopized *A. wilkella* K. and *saundersella* Perk. (*nana* E. Saund.), while those of Theobald (*l. c.* p. 40) were on *A. apicata* Sm. (then wrongly known as *A. lapponica* Zett.) and his conclusions were very different from mine. Recently (Quart. Journ. Micr. Sci. 1914, p. 435), extensive work was done on *A. nigroaenea* K. by Geoffrey Smith and A. H. Hamm. It will be noted then that the *Andrena* mainly used by each writer belonged each to a quite distinct group of species in this large genus. The conclusions arrived at by the last-named authors agree very well with my own. It is true that they say that both "for male and female" my notes "tend to minimise the effect of the parasites on the internal organs." For reasons stated (*viz.* the fact that the female ovaries are often unripe in freshly emerged bees, while the ♂ genitalia are fully-developed at that period) my dissections were practically all made from males, as I was careful to point out, and the results obtained from an examination of these appear to me to exactly agree with those of Smith and Hamm. Thus of 15 ♂ *nigroaenea* examined (4 of which carried ♂ puparia and 10 female parasites, while one had a ♂ and ♀ parasite) they found that "it could not be observed that the presence of parasites in any case had exerted any effect on the development of the testes and ducts." Pérez in his classical work on the subject of stylopization records some cases of damage to one side of the testes as due to *Stylops*. This may be correct, but his account of the external changes caused by stylopization in some common *Andrenae* does not agree with the facts observed in British examples of these same species of *Andrena*, so far as we can see.

From Pérez's original observations and the recent ones of Smith and Hamm, it is certain that the ovaries of the ♀ bee are always or nearly always reduced in size or at least fail to produce ripe ova. It would be of great interest to compare the condition of these parts

in a stylopized bee that is carrying a good load of pollen (a very rare circumstance) and also in some species of *Andrena* in which, as hereafter mentioned, the polliniferous apparatus is less deteriorated by stylopization than in those hitherto worked at, with the condition that ordinarily results from the parasite.

Pairing of the sexes is beyond doubt frequent in stylopized bees. On the one day that I was able to make any observations last year, I took two pairs of *A. spreta* in cop. in which one of each pair was stylopized. In America, Crawford in the case of *Andrena crawfordi* noticed three cases in four days, and in one of these both ♂ and ♀ were stylopized. As comparatively few bees of the total number seen are stylopized and few also are taken *in copula*, it cannot be expected that one would very frequently notice such cases. We may conclude that though the female bee when stylopized is sterile except perhaps in very exceptional cases, not yet demonstrated, the ♂ is rarely if ever castrated. When very badly injured by the attack or emergence of ♂ *Stylops*, male bees may be so incapacitated as to be scarcely able to fly and are naturally incapable of pairing, but such cases are quite exceptional, and even in some of these I have found no appreciable alteration of the internal reproductive organs. In the case of one such ♂ of *A. trimmerana*, however, there was a disparity in size of the genital glands, but on both sides spermatozoa were perfectly produced. It may be that such disparity may also occur sometimes in non-stylopized examples.

The external changes due to stylopization are more or less well known to all collectors of bees, and an admirable summary of the chief or most conspicuous of these is given by Edward Saunders in his "Synopsis" of British Aculeata (Tr. Ent. Soc. Lond. 1882, pp. 228, 229). More minute details are considered by Pérez in his work already referred to, published in 1886 (Act. Soc. Linn. Bordeaux, xl, p. 21).

One may note in a general way that stylopization generally affects such external characters as are subject to more or less variability in healthy examples. Thus a decrease or increase in length or amount of clothing, change in the colour of the facial hair (*e. g.* from brown to black), variation in the size of the head, etc., may often occur in healthy bees. Change of colour of the white or yellow clypeus of the ♂ does not occur in non-stylopized bees in this country; but one of our species, *A. humilis* var. *fulvescens* Sm., is found with both white and black face on the Continent. The stylopized male of *A. chrysoseles* sometimes has the clypeus black also, and it is interesting to note that healthy

males of this bee may have not only the clypeus but an additional spot on each side of the face adjoining this, yellow.

The most important external change produced by *Stylops* in its host is, without doubt, the degeneration of the polliniferous apparatus of the hind legs. This, of course, affects the female bee only, and it is questionable whether—at any rate in most of the species subject to stylopization—any parasitized individual has these perfect. In fifty examples of *A. trimmerana* the scopae exhibit much difference in the degree of their degeneration, and even when at first sight they appear practically normal in size, it will be found on closer examination that the hairs which spring from the lower side of the tibiae do not exhibit that curvature upwards round its outer surface in so perfect a degree as in a healthy bee. This degeneration is no doubt strictly correlated with injury done to the ovaries and is never seen in non-stylopized examples; so also is the assumption of white or yellow facial markings in some females of *A. labialis*, *coitana*, *chrysoseles*, and probably of *tarsata* (*analis*). Whether a diminution or entire loss of such markings in the males of yellow-faced species is also correlated with injury to the genitalia appears to me much more doubtful.

Every one who has studied bees must have noticed that different individuals are very differently affected by *Stylops*, but it is much less easy to demonstrate, largely indeed for this very reason, that different species react differently to the attacks of the parasite in important respects (*e. g.* the deterioration of the polliniferous organs). This, however, appears to be the case, and cases will be given when the species are considered separately. E. Saunders speaks of the “assimilation of the sexes” caused by stylopization. This tendency to some similarity of appearance seems to me to be due to the following causes: Inflation of the abdomen, caused no doubt by pressure from the parasites, affects both sexes very commonly, and this causes the usually much more slender males to have more the appearance of the other sex. Both sexes are often similarly influenced as to the condition of the abdominal pubescence, this being either decreased or increased or changed in appearance in ♂ and ♀ alike. When the ♂ and ♀ are under normal circumstances unlike in this character, their general appearance when similarly altered by stylopization naturally becomes more close. The notable decrease in size of head of ♂ and ♀ sometimes causes some resemblance between the sexes in this respect.

In extreme cases of deterioration of the polliniferous organs the hind legs of the female, by the diminution of the scopae and their more slender tibiae, make some approach to the ♂ condition.

In no feature, except in certain cases in the white-marked face, does the ♀ acquire any positive ♂ character of importance. The antennae remain 12-jointed, and, in their structure, essentially characteristic of the ♀. Pérez found some slight variation in the length of the joints, and thought that they indicated an approach of ♂ and ♀ characters. I cannot find any noteworthy change in the large number of *A. trimmerana* that I have examined, nor any that one could imagine due to stylopization, as I have found slight variations in the antennae of healthy specimens. Pérez found changes in this species. Smith and Hamm found no change in the case of *A. nigroaenea*. In ♂ *A. fulva*, which is extraordinarily affected by *Stylops*, the antennae appear to be sometimes more or less affected. Where the male has quite special secondary sexual organs (*e. g.* the form of the mandibles, their armature, or that of the cheeks), no stylopized female has been found with these characters.

Nor do the males ever acquire any special female character, but the mandibles and antennae of parasitized examples remain those of the male, while polliniferous organs are never developed. Except the colour of the clypeus, they can hardly be said to lose any definite secondary sexual character. Even the small basal mandibular tooth characteristic of many ♂ ♂ of the *fulva* group does not appear to be lost, nor the genal spine in *A. spinigera*. This latter case is the more remarkable, since the male of the 2nd brood is normally without the spine or has it rudimentary.

If one places a large series of males by the side of another consisting of females, both formed of stylopized specimens, selecting some species in which the sexual dimorphism is notable—*e. g.* *A. trimmerana*—it must be acknowledged that very rarely, if ever, will there be found an example of one sex having such an assimilation to one of the other that it would not be detected at once, if it were misplaced.

1. *A. nigroaenea*.—There is a tendency in both sexes to a decrease in the size of the head, but this is not noticeable in all specimens. When the ♂ bee is parasitized by a ♂ *Stylops* the abdomen frequently assumes a deeper black colour, and the long hairs on the middle of the second segment become much shorter or sparser, or both short and sparse; the fourth segment and generally the third acquire a dense, appressed, apical band of pale hair, more or less distinct, so as to give the insect an appearance quite different from that of typical healthy examples. The colour of the hair on the face of *nigroaenea* ♂ is so

WATKINS & DONCASTER, Naturalists,

Keep in stock all Articles for Entomologists, Ornithologists, Botanists, &c.: Umbrella Net, 7/-; Folding Cane or Wire, 3/6, 4/-, 4/6; Plain Ring Net, 1/3, 2/-, 3/-; Pocket Boxes, 6d., 9d., 1/-, 1/6; Store Boxes, with Camphor Cells, 2/6, 3/6, 4/-, 5/-, 6/-; Zinc Pocket Boxes, 9d., 1/-, 1/6, 2/- Setting Boards, from 5d. to 1/10; Complete set of 14 boards, 10/6; Breeding Cages, 2/6, 4/-, 5/-, 7/6; Sugaring Tins, 1/6, 2/-; Sugaring Mixture, ready for use, 1/9 per tin; Setting Houses, 9/6, 11/6, 14/-; Glass Topped and Glass Bottomed Boxes, from 1/- per doz.; Zinc Killing Boxes, 9d., 1/-; Coleoptera Collecting Bottles, 1/6, 1/8; Collecting Box, containing 26 tubes (very useful for Coleopterists, Microscopists, &c.), 4/6; Brass Chloroform Bottle, 2/6.

Improved Pocket Pupa-digger in leather sheath (strongly recommended), 1/9; Steel Forceps, 1/6 to 3/- per pair; Pocket Lens, from 1/6 to 3/6.

Taxidermists' Companion, containing most necessary implements for skinning, 10/6; Scalpels, with ebony handles, 1/3; Fine Pointed Scissors, 2/- per pair; Brass Blow-pipes, 4d., 6d.; Egg Drills, 2d., 3d.; ditto, best quality, 9d. each; Botanical Vasculum, 1/6, 2/9, 3/6, 4/6; Label List of British Macro-Lepidoptera, with Latin and English Names, 1/6; List of British Lepidoptera (every species numbered), 1/-; or on one side for Labels, 2/-.

SILVER PINS FOR COLLECTORS OF MICRO-LEPIDOPTERA, &c., as well as minute insects of all other families.

We stock various sizes and lengths of these Silver Pins, which have certain advantages over the entomological pins usually employed.

For instance, insects liable to become greasy and verdigrisy, like Sesiidae, are best pinned on Silver pins, which will last much longer than the ordinary pins (whether enamelled black, or gilt, or silvered).

We shall be pleased to send pattern cards on application.

A large stock of British, European, and Exotic Lepidoptera, Coleoptera, and Birds' Eggs.

ENTOMOLOGICAL PINS.

The "DIXON" LAMP NET (invaluable for taking Moths off street lamps without climbing the lamp posts), 3s. 6d.

SHOW ROOM FOR CABINETS, &c.

36, STRAND, LONDON, W.C., ENGLAND.

Birds and Mammals, &c., Preserved & Mounted by first-class workmen.

Our New Price List (100 pp.) sent post free to any address on application.

FOR SALE.

16 NATURAL HISTORY CABINETS

BELONGING TO THE LATE DR. MASON,

ALSO

FOUR MICROSCOPICAL CABINETS,

Containing Microscopical Slides by G. R. VINE, of Sheffield.

ALSO

400 BRITISH BIRDS IN CASES.

Apply—MRS. MASON, TRENT HOUSE, BURTON-ON-TRENT.

STEVENS' AUCTION ROOMS. Estd. 1760.

TUESDAY, MAY 14TH, AT 12.30.

BRITISH AND EXOTIC LEPIDOPTERA, ETC.

Mr. J. C. Stevens will Sell by Auction at his Rooms, 38 King Street, Covent Garden,
London, W.C. 2,

The Collection of British Lepidoptera, formed by the late J. E. R. Allen, Esq., comprising good series of the rarer species, mostly bred with data, interesting varieties of *Euphrosyne*, *Selene*, *Artemis*, *Urticae*, *Tages*, etc., together with the mahogany Cabinets of 40 drawers, also rare varieties of Exotic Lepidoptera, etc.

On view day prior and morning of Sale. Catalogues on application.

Scale of Charges for Advertisements.

Whole Page.....£3. Half Page£1 11s. 6d. Quarter Page.....17s.

Lowest charge, 7s. up to 5 lines; 1s. per line afterwards.

Repeated or continuous Advertisements per contract.

There is no charge for Lists of Duplicates and Desiderata.

All payments and applications for the above should be made to

R. W. LLOYD, I. 5, Albany, Piccadilly, W.

AUTHORS are requested to send their communications and proofs to either
J. J. WALKER, Aorangi, Lonsdale Road, Summertown, Oxford; or
G. C. CHAMPION, Broomhall Road, Horsell, Woking.

ENTOMOLOGICAL NEWS.

A forty-eight page illustrated magazine, issued monthly, except in August and September, devoted to the study of INSECT LIFE. It contains a resumé of the proceedings of a number of Entomological Societies, and also articles by the leading Entomologists in the United States and Canada. Valuable information for the beginner, the economic entomologist, and the systemist. **TWO DOLLARS a year in advance.** Single copies, 25 cents. Address—

ENTOMOLOGICAL NEWS,

The Academy of Natural Sciences,

1900 RACE STREET, PHILADELPHIA, PA.

THE CANADIAN ENTOMOLOGIST.

A MONTHLY MAGAZINE DEVOTED TO THE STUDY OF SCIENTIFIC ENTOMOLOGY.

Volume 50 is now in course of publication. Back volumes can be supplied. It is the oldest established Magazine of the kind in America, and has a world-wide circulation. Subscription, \$2 per annum, payable in advance, which includes a copy of the Annual Report of the Entomological Society of Ontario to the Legislature. Editor, Dr. E. M. Walker, Biological Department, University of Toronto, Toronto, Canada.

Address: Entomological Society of Ontario, Guelph, Canada.

WICKEN FEN.—The Custodians, the National Trust, appeal to Entomologists for assistance towards the providing of the Watcher who guards the Fen against abuse. This expense, which is absolutely necessary, is provided by voluntary subscriptions, and I am desired to ask for Contributions, which will be gratefully received, however small.—W. G. SHELDON, Honorary Treasurer of the Wicken Fund, Youlgreave, South Croydon

Mr. JOS. L. BEAULNE, of 3653 Notre Dame St. East, Montreal, Canada, would be glad to exchange specimens of any Order of insects for British or foreign beetles (especially Carabidae and Buprestidae).

THE BIOLOGY OF DRAGONFLIES

(ODONATA or PARANEUROPTERA)

By B. J. TILLYARD, M.A., B.Sc., F.L.S., F.E.S.

Demy 8vo. pp. xii+398. With 4 plates and 168 text-figures. 15s. net.

CAMBRIDGE ZOOLOGICAL SERIES.

"Never before has the group received such detailed and well-balanced treatment as Mr Tillyard has given. . . . Students of the anatomy and development of insects are much indebted to him for providing in this convenient form a trustworthy guide to the external and internal structure of dragonflies at various stages of their life-histories."—*Nature*.

Prospectus on application

Cambridge University Press, Fetter Lane, London, E.C. 4. C. F. Clay, Manager

COLEOPTERA ILLUSTRATA,

CARABIDAE.

Vol. 1, No. 3.

CARABIDAE.

PRICE \$1.

CONTENTS.

PRICE \$1.

LEISTUS

ferrugineus Linn.

ELAPHRUS

aureus Mull.

LOROCERA

pilicornis Fabr.

BROSCOSOMA

baldense Putz.

BEMBIDUM

fasciolatum Duft.

articulatum Gyll.

CILLENUS

lateralis Sam.

THALASSOPHILUS

longicornis Sturm.

TRECHUS

discus Fabr.

ANOPHTHALMUS

hirtus Sturm.

v. rostratus Mots.

PTEROSTICHUS

lepidus Leske.

cupreus Linn.

infuscatus Dej.

puncticollis Dej.

crenatus Dej.

barbarus Dej.

carbonicolor Sol.

macer Marsh.

aterrimus Hrbst.

elongatus Duft.

oblongopunctatus Fabr.

angustatus Duft.

melanoscelis Chaud.

niger Schall.

vulgaris Linn.

nigritus Fabr.

minor Gyll.

interstinctus Sturm.

negligens Sturm.

subsinnatus Dej.

brevis Duft.

caspicus Men.

coenatus Dej.

aethiops Panz.

globosus Fabr.

PTEROSTICHUS

cylindricus Hrbst.

melas Creutz.

ABAX

ater Vill.

ovalis Duft.

schuppelii Pall.

v. rendschmidtii Germ.

corsicus Dej.

MYAS

chalybacus Pall.

AMARA

ingenua Duft.

ZABRUS

chalceus Fald.

heros Fald.

seidlitzii Schaum.

graecus Dej.

blapoides Creutz.

ANISODACTYLUS

binotatus Dej.

signatus Panz.

ACCURATE ENLARGED PEN DRAWINGS, UNIFORM IN SIZE,

ONE TO A PAGE 8vo.

COLEOPTERA ILLUSTRATA will be mailed upon receipt of price.

HOWARD NOTMAN, 136 JORALEMON STREET, BROOKLYN, N.Y., U.S.A

Vol. 1, Nos. 1 and 2, \$1 each.

CONTENTS.

	PAGE
New and little-known saltatorial Dascillidae (<i>continued</i>).— <i>G. C. Champion, F.Z.S.</i>	97
New Oriental Staphylinidae (1).— <i>M. Cameron, M.B., B.N., F.E.S.</i>	103
Note on <i>Phyllobius calcaratus</i> F.— <i>J. Edwards, F.E.S.</i>	105
<i>Halictoxenus arnoldi</i> , an undescribed British Stylopidae.— <i>R. C. L. Perkins, M.A., D.Sc., F.Z.S.</i>	107
Records and descriptions of some British Campodeidae (<i>with figures</i>).— <i>R. S. Bagnall, F.L.S.</i>	109
Aberration of <i>Tanagra atrata</i> .— <i>W. G. Clutton</i>	113
Abundance of <i>Phigalia pilosaria</i> at Burnley.— <i>Id.</i>	113
<i>Peylla corbi</i> L. in Britain.— <i>J. Edwards, F.E.S.</i>	113
Note on <i>Trioza velutina</i> Förster.— <i>Id.</i>	114
SOCIETY—South London Entomological Society	115
Further notes on <i>Stylops</i> and stylopized bees.— <i>R. C. L. Perkins, M.A., D.Sc., F.E.S.</i>	115

THE NATURALIST:

A MONTHLY ILLUSTRATED JOURNAL OF

NATURAL HISTORY FOR THE NORTH OF ENGLAND

EDITED BY

T. SHEPPARD, M.Sc., F.G.S., F.R.G.S., F.S.A.Scot.,

THE MUSEUM, HULL;

AND

T. W. WOODHEAD, Ph.D., M.Sc., F.L.S.,

TECHNICAL COLLEGE, HUDDERSFIELD;

WITH THE ASSISTANCE AS REFEREES IN SPECIAL DEPARTMENTS OF

J. GILBERT BAKER, F.R.S., F.L.S., GEO. T. PORRITT, F.L.S., F.E.S.,

Prof. P. F. KENDALL, M.Sc., F.G.S. JOHN W. TAYLOR, M.Sc.,

RILEY FORTUNE, F.Z.S.

The Journal is one of the oldest Scientific Periodicals in the British Isles, dating back to 1833, and is circulated widely amongst the principal Naturalists of the country.

LONDON: A. BROWN AND SONS, LIMITED, 5, FARRINGTON AVENUE, E.C.

And at Hull and York.

PRICE, SIXPENCE NET. BY POST SEVENPENCE.

Prepaid Subscription, 6s. 6d. per annum, post free.

The Annual Subscription for 1918 is 9/-.

[See p. 2 of Wrapper.]

Third Series, No. 42.]
[No. 649.]

JUNE, 1918.

[PRICE 1/- NET.]

THE
ENTOMOLOGIST'S
MONTHLY MAGAZINE.

EDITED BY

G. C. CHAMPION, F.Z.S. J. E. COLLIN, F.E.S.

W. W. FOWLER, D.Sc., M.A., F.L.S.

R. W. LLOYD, F.E.S. G. T. PORRITT, F.L.S.

J. J. WALKER, M.A., R.N., F.L.S.

VOLUME LIV.

[THIRD SERIES—VOL. IV.]

"J'engage donc tous à éviter dans leurs écrits toute personnalité, toute allusion dépassant les limites de la discussion la plus sincère et la plus courtoise."—*Laboulbène*.

LONDON:

GURNEY & JACKSON (MR. VAN VOORST'S SUCCESSORS),

33, PATERNOSTER ROW, E.C. 4.

TAYLOR AND FRANCIS, RED LION COURT, FLEET STREET.



NOTICE.—Owing to the greatly increased cost of paper, printing, etc., the Editors of the Magazine are compelled to raise the subscription to 9s. per annum (post free). Subscriptions for the 1918 volume should be remitted as soon as possible to R. W. LLOYD, I. 5, Albany, Piccadilly, London, W. 1.

The price of a single ordinary number is 1s.

EXCHANGE.

OVA—*S. carpini* and *C. vinula*—exchange for other ova or larvae.—GIBSON, Dentist, Hebden Bridge.

REDUCED PRICES FOR BACK VOLUMES.

FIRST SERIES.

This can only be obtained in complete Volumes (bound or unbound).

A limited number of sets, from Vol. x to Vol. xxv can still be obtained at £2 15s. per set net (in parts), or of five consecutive Vols. at £1 per set net (if bound, 1s. per Vol. extra).

Certain of the Vols. i to ix can be had separately at 10s. each.

SECOND SERIES.

Vols. i to xv. are now offered at £3 per set net (in parts), or £1 2s. 6d. for five consecutive Vols. (if bound, 1/- per Vol. extra).

THIRD SERIES.

Vol. li (Third Series, Vol. i) can be supplied by the Publishers at 7/6 (8/6 if bound) per copy. Cover for binding, 1/-.

Vol. li (1915) contains 23 Plates (one coloured), a complete Monograph of the British Siphonaptera, and numerous extra pages of text.

Apply to the Publishers.

MEETINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON, 11, Chandos Street, Cavendish Square, W.—Wednesday, June 5th, October 2nd, 16th, November 6th.

The Chair will be taken at 8 o'clock in the evening precisely.

The Library is open daily from 9 a.m. to 6 p.m. (except on Saturdays, when it is closed at 2 p.m.), and until 10 p.m. on Meeting nights.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge. The Second & Fourth Thursdays in each month, at 7 p.m. The lantern will be at the disposal of Members for the exhibition of slides.

The Chair will be taken punctually at 8 o'clock.

THE LONDON NATURAL HISTORY SOCIETY, which meets at 7 p.m. on the 1st and 3rd Tuesdays in each month, at Room 20, Salisbury House, Finsbury Circus, E.C., will be glad to welcome at its Meetings any French or Belgian entomologists now staying in this country, and to give them the benefit of its library and collections. Communications should be addressed to the Secretary, Salisbury House, E.C.

Hon. Sec.: J. Ross, 18, Queen's Grove Road, Chingford, N.E.

Chingford Branch. The Chingford Local Branch meets at the Avenue Café, opposite Chingford Station, at 8 p.m., on the 2nd Monday in each month.

variable, even in healthy examples, that an examination of this character in stylopized ones is not of much value. The surface of the 2nd abdominal segment of parasitized individuals is generally duller than in normal ones, this being apparently chiefly due to a change in the minute surface sculpture between the punctures. The male bee, attacked only by ♀ *Stylops*, is, in the material examined, generally less affected than those yielding ♂ parasites, and sometimes hardly differs from a healthy individual.

Female bees with male *Stylops* may have the abdominal pubescence greatly shortened or diminished on the second segment and excessively short on the following ones. In those bearing the female parasite the pubescence of the apical impressions of the segments often forms wider or more distinct pale bands there than in normal specimens, though more or less evident bands may generally be seen in the latter in some aspects.

The tibial scopa shows more or less degeneration in all the specimens that I have examined, though in some this degeneration is slight. In one certainly stylopized, though the *Stylops* itself is not visible (either having died as a larva or not developed sufficiently to push out its head through the intersegmental membrane), enough pollen remains in the scopa and in the femoral basket to show that this is no accidental collection. Another very old one with discoloured and tattered wings, the abdomen almost entirely denuded, and the head and thorax largely so, bears a single discoloured ♀ *Stylops*, which has probably produced its triungulins. It was caught during the first half of July 1911, so that its life must have been a long one. I have minutely examined about forty stylopized examples in making these notes and have seen very many others in past years. Both the external and internal changes caused by *Stylops* in this species have been detailed by Geoffrey Smith and Hamm in their paper already referred to.

2. *A. tibialis (atriceps)*.—The effect of stylopization is in general like that shown by *A. nigroaenea*, the ♂♂ of these two species being very similar superficially, but structurally remotely allied. The ♂ in healthy examples varies in the colour of the facial clothing, but in the ♀ normally the face is pale-haired, with whitish or whitish-fuscous hair below the line of the antennae. The latter sex has yellow or red hind tibiae.

In the worst affected males (*e. g.* one from which several ♂ *Stylops* have issued) the abdomen is shining and appears nearly glabrous to the

naked eye, the hair on the second segment is scanty and very short. The effect caused by the ♂ *Stylops* is evidently on the average greater than that resulting from the ♀ parasite, and in some examples, bearing only a single ♀ *Stylops*, the abdominal condition is normal, and were not the head of the *Stylops* exerted these might pass as healthy bees. No doubt there is every sort of intermediate between the extremes.

In the ♀ bee denudation of the abdomen similar to that described in the ♂ may result from infestation by the male *Stylops*, while others may hardly show any effect. The characteristic yellow hind tibiae become in some examples entirely dark, or dark with pale tips, the pale face beneath the antennal line becomes frequently entirely clothed with sooty-black hairs.

In a fine ♀ bee, affected by a single ♀ *Stylops*, the abdomen is well clothed all over with quite long erect hairs, those at the base pale, but on the apical impression of the 2nd and on all the others the general clothing is black, only the apical fringes showing an obscure paleness; the whole face also is clothed with black hairs. So far as the specimens examined are concerned the ♀ polliniferous organs in this species are much less deteriorated than in *trimmerana*; in fact, in many of them it requires close examination to detect any change at all. The head in stylopized specimens of either sex generally is evidently smaller than in healthy ones, often very conspicuously so. I have examined about thirty stylopized individuals in drawing up these details

3. *A. trimmerana* Auct. nec K.—Both sexes show an evident tendency towards decrease in the size of the head, but this is not always noticeable. In normal ♂ *trimmerana* in the South of England the face below the line of the antennae is clothed mainly with brown or yellowish-brown hairs, the abdomen has long pale hairs on the first segment, while those on the second are particularly long and noticeable towards the middle line, so as to form there a more or less evident tuft. The examples most altered by *Stylops* have the abdomen of a much deeper black than normal, and are very sparsely clothed; the tuft of the second segment is much reduced in the number or length of the hairs, or in both these respects, and indeed is sometimes all but wanting. The face below the clypeus is clothed altogether with black hairs or the clypeus has many sooty hairs mixed with the brown ones. Seven males that I have examined exhibit these characters, and all have carried one or more male *Stylops*.

A common effect of stylopization in the ♂ bee is the presence of a quite conspicuous apical band of appressed hairs on the third and

fourth abdominal segments or on one of these. Quite the opposite to the first mentioned specimens, in others the abdomen becomes actually more hairy than in normal ones, though in some cases the greater hairiness is only apparent and due to the decumbency and pale colour of the hairs on the third and following segments. Some of these examples have much black hair on the clypeus, while in others the clothing of this part is normal. It is doubtful whether in nearly 50 ♂ bees examined any one of these would be passed over as normal, were the *Stylops* or its puparium unseen, though some closely approach the normal condition.

In the females the tibial scopa is always more or less deficient, usually conspicuously so, in rare cases only very slightly so, and sometimes all the hairs of which it is composed are of a tawny colour, the black or dark fuscous ones of the normal scopa being entirely changed. Only rarely is the characteristic silvery hair of the pollen-brush beneath retained, *e. g.* in three out of twenty-four examples casually examined. The clothing of the abdomen often appears denser and more conspicuous than in healthy examples, the hairs being pale throughout and more depressed. Some examples—about one in ten of those examined—correspond in appearance to those males I have described above, as most altered, the abdominal pubescence being very deficient. One of these has the scopa greatly degenerated and fulvous in colour throughout, the abdomen being much distorted also, while another has the scopae hardly at all deficient! Both these examples have borne ♂ *Stylops*. In styloped females the inflation or abnormal convexity of the abdomen is usually conspicuous.

Styloped examples of *A. trimmerana* are numerous in many localities and I have, in drawing up the above notes, examined about 80 examples in various collections and from many localities.

4. *A. wilkella* K.—The result of the stylopedization varies greatly in different individuals, but in this species there is one feature which is almost constant, so far as I can gather from the examination of about 50 examples.

As in other species the greatest changes are usually the result of the ♂ parasite. In the most extreme forms the abdomen becomes more shining and the chitinous integument looks thinner than in normal specimens, the punctures being also less close. The pubescent bands of the abdomen may approach or be identical in appearance with those of the very closely allied species, *A. ovatula* (*afzeliella*). The hind tibiae of the ♀, the yellow colour of which is so constant in healthy

examples, are often more or less clouded with black, or may even be entirely black so as to resemble those of *A. ovatula* var. *fuscata*.

One most noticeable sexual difference between the ♂ and ♀ of *A. wilkella* is that the ♂ has a clothing of long pale hairs over the greater part of the 1st abdominal segment, while in the ♀ this segment is for the most part glabrous.

In all or nearly all stylopized males the clothing of this segment is much reduced so as to approximate to the female condition, and further, the short pale hairs at the middle of the base of the second segment are reduced to still further minuteness so as to be scarcely visible.

In female bees attacked by *Stylops* the segment that lies in front of the head of the *Stylops* itself has often a quite abnormally dense clothing of short, pale, appressed hairs. The effect produced by the ♀ *Stylops*, even when two parasites are present, is normally much less noticeable than that produced by the ♂.

The changes mentioned above in the clothing of the stylopized male are particularly interesting, seeing that it was in this species that my dissections showed, that the essential male genital organs were little or not at all affected by the parasite. On the contrary, the stylopized females have not assumed a condition of abdominal clothing comparable with that of the male.

5. *A. nitida* Fourcr.—If the *Stylops* that attacks this bee is *S. mellitae*, it is remarkable how rarely it is affected as compared with *A. nigroaenea*. A very fine stylopized example was taken near Paignton by my eldest son last year. It is a ♀ and bears three visible (and possibly one concealed) female parasites. The head is small, the scopae evidently deficient. The third segment is clothed with very short white hairs over most of its surface, as also is the fourth; on the apical impression the depressed hairs form a complete pale band. A small ♀ in F. Smith's collection is comparatively little changed from the normal. but it carries only a single ♀ *Stylops*.

6. *A. gwynana* K.—The few examples of each sex that I have examined belong to the second brood. Neither the females nor the males that bear female *Stylops* are greatly changed, but a ♂ from which ♂ *Stylops* has emerged (captured by A. H. Hamm at Tubney near Oxford) approaches somewhat in condition to that of badly-affected ♂ *nigroaenea*, as described above.

Westwood reported that he had taken this bee (presumably the

spring brood) in numbers at Oxford in a stylopized condition, but all the Devonshire examples that I have seen belong to the summer brood.

7. *A. grävada* Nyl. (*fasciata* Imh.).—The really remarkable specimen, which stood in F. Smith's collection as the sole exponent of Kirby's *mouffetella*, must, although captured in July, be referred to *grävada*, even though that species does not normally have a summer generation. It bears only a single ♀ *Stylops*, yet the changes produced by this are very great. The apical pubescent bands on the abdominal segments are dense, but not pure white as in normal females, and are formed of more erect hairs, having a tendency to curve; the surface of the 2nd segment has a very short pale pubescence (not bearing long hairs as in the ♀, nor being nude as in the normal ♀), while the next two are very densely clothed all over with short pale hairs, so that the apical fasciæ do not stand out conspicuously, as in *fasciata* and *fulvicrus*.

The puncturation is not much changed from the normal. The clothing of the thorax above, the white hairs of the face and underparts make it necessary to refer this bee to *grävada* rather than *fulvicrus*.

8. *A. bucephala* Sm.—I have only seen one small stylopized male bee and one female of this species, and neither were greatly changed by the parasites, which were females. The male had the head and mandibles quite similar to a healthy example of its own size.

9. *A. spinigera* K.—Three stylopized males of this species show no special effect from the parasite. The mandibles, and the spines on the cheeks—striking secondary sexual characters of this species—are quite normal.

10. *A. fulva* Schr.—The effect of the stylopization on the male of this species is of a most interesting character. The few stylopized examples that I have examined are none of large size, but the falcate mandibles and the basal mandibular teeth remain normal for small specimens. The head is considerably decreased in size in some cases, without effacing the secondary sexual characters just referred to. Normal male *fulva* has the first and middle of the second abdominal segment clothed with very long fulvous hairs; in stylopized examples the whole abdomen is clothed with equally long hairs, so that the condition approximates to that of the female. The colour of the clothing, however, remains much like that of healthy males and does not assume either on abdomen or thorax the deeper shade so characteristic of the

female. Of this insect I have not seen a stylopized example for many years, and the one or two I examined were, as it happened, not much affected by the parasite.

11. *A. sprata*, *minutula*, *saundersella*, etc.—I have seen many stylopized examples of these obscure and minute species, but owing to their small size and close relationship one to another, they are not very favourable material for working at. It should be said, however, that in no case have I seen stylopized examples which could not be referred to their proper species with certainty, in spite of alterations caused by the parasite.

Of other species I have examined only a few, or comparatively few, stylopized examples, but a few notes may be added on some of these.

12. *A. pilipes* F.—A few stylopized males have been examined; the *Stylops* itself has been named *nassonowi* by Pierce from Nassonow's figure. Nassonow himself considered the *Stylops* to be *melittae*. Whether my *S. bimaculatae* is different remains to be proved. I have only taken stylopized *A. pilipes* in the same locality as stylopized *bimaculata*. In one ♂ bee from which a ♂ *Stylops* had escaped, the long hairs of the base of the abdomen are much decreased in number, and the head is extremely small. One, bearing a female *Stylops*, is less altered. These stylopized *pilipes* I have taken belong to the first generation.

13. *A. bimaculata* K.—The male example of the *Stylops* and the females referred to were from the second (or summer) brood of the bee, but I find that I have a note of having collected a stylopized female of this bee in 1899 at Mildenhall, Suffolk. I have not examined any stylopized males, and the females are none of them very much altered by stylopization. One female, indeed, was collecting a heavy load of pollen from bramble blossom when captured. So far as I can judge, this bee, like its close ally *tibialis*, will be found, as a rule, to undergo less degeneration of its scopae than *trimmerana* or *nigroaenea* from the attack of the parasite.

14. *A. labialis* K.—In stylopized females, frequently either the clypeus, or both this and two spots on the sides of the face adjoining it, become yellow; in males the yellow facial markings are reduced in size. Smith and Hamm remark that Pérez's observations on the change of colour of the clypeus have not been confirmed since his publication of the fact, but this is not quite correct. F. Smith described the pale-

faced female of stylopedized *labialis* as *separata* Sm., but subsequently himself sunk it under the former name. Saunders specially mentions that he has eliminated species formed on stylopedized examples, and therefore *separata* Sm. does not appear in his "Synopsis," but he must have been well aware of such specimens, as they exist in many of the older collections. Similarly as to the reduction of the pale markings in stylopedized ♂♂, Chitty in 1902 (Ent. Mo. Mag. pp. 182-183) recorded a black-faced example of *A. chrysoceles*.

15. *A. chrysoceles* K.—A stylopedized female with yellow clypeus was taken by Mr. A. H. Hamm at Oxford, and one or two others unaltered. I have taken the ♂ with black clypeus (like that recorded by Chitty) at Newton Abbot.

16. *A. tarsata* Nyl. (*analis*).—Mr. Hamm has informed me that the two stylopedized females he possesses were from a much affected colony discovered by Arnold in the New Forest. These females have a normal black clypeus, and there are no stylopedized examples in Arnold's collection. No doubt males with black, and females with white, clypeus will be found. The hind tibiae are considerably suffused with black (cf. *A. tibialis* and *wilkella*).

17. *A. coitana* K.—A parasitized ♀ has a large yellow spot on the clypeus, and I have seen no other example of this species stylopedized.

The commonest position for the protrusion of the puparium of *Stylops* is through the intersegmental membrane that divides the fourth and fifth abdominal segments, more rarely between the one preceding or following this. In a few cases it is quite abnormal. Thus in the *A. coitana* mentioned above, the parasite appears to have escaped between the 1st and 2nd segments. In one example of *trimmerana* I noticed that the head of the ♀ puparium was so lateral in position that it was covered by the ventral sclerite, but such cases must be very rare.

Many collectors have witnessed the flight of the ♂ *Stylops* and on special occasions they have been seen in some numbers together, as by Thwaites, J. C. Dale, Champion, and Hamm. Often they fly at some height from the ground, but in Germany Friese took males flying about the burrows of *A. ovina*. The only reason why this sex of *Stylops* cannot easily be obtained in plenty is because, as a rule, it emerges from the host very soon after the bee issues from its burrow into the sunlight, so that most stylopedized bees, that do not contain female parasites, are found, when caught, to have only the lid-less, empty puparium of the ♂

remaining. Sunlight has a strong effect on Stylopidae other than *Stylops* itself in causing rapid emergence of the ♂. Thus I remember one dull day in Brisbane coming across a number of Delphacid Homoptera, which were heavily styloped. At noon the sun came out suddenly, and immediately the ♂ *Elenchi* began to emerge from the bodies of their hosts, which were resting on the stems of some rushes. I had several in the act of emergence at the same moment in full view.

Actual pairing of the sexes has not been observed in the Stylopidae, or at any rate the precise method of pairing is unknown. Smith and Hamm think that pairing does not take place at all, and that the female eggs cannot be fertilized owing to the nature of the female reproductive organs. Numerous observers have seen the ♂ Stylopid mount the host in which the female is imbedded, and Mr. E. B. Nevinson has informed me that he captured a bee with the ♂ *Stylops* so attached (presumably to the ♀) that it remained thus even in the killing bottle, and only became separated on removing it from this. That the eggs of the ♀ *Stylops* can develop parthenogenetically is quite certain; that they always do so seems to me very unlikely. If it were the case of useless males being produced in the case of only one species the fact would be surprising, but it must be remembered that now the Strepsiptera have been considered to consist of superfamilies, families, and subfamilies, and many genera, in all of which males are freely produced. In insects, when the parthenogenetic mode of reproduction becomes normal, the males always appear to be lost entirely or only to be produced at intervals. This may happen in the case of very closely allied species, the one being, so far as is known, entirely parthenogenetic, no males being ever produced; while its ally produces males and females in equal numbers, and pairing between these is regularly accomplished. That the Stylopidae in their parthenogenesis resemble other insects I should infer from the fact that in one species of *Halictoxenus* at least hundreds of females have been obtained, but no ♂ of the same species has ever been procured, nor any bee containing a ♂ puparium. It is clear that males are very rarely, if ever, developed in this case. There is no reason to doubt that the developing eggs of *Stylops melittae*, as described in Smith and Hamm's paper (Quart. Journ. Micr. Sci. 1914, p. 443), were developing parthenogenetically, but I think it highly probable that it will be found that sometimes the eggs are fertilized by the ♂. The "pick-axe" form of the male aedeagus, almost universal throughout the Strepsiptera, is so very remarkable as to suggest that it may be in some way adapted for breaking up the tissues, so as to allow access to some of the ova of the spermatozoa which are abundantly produced by the ♂ *Stylops*.

Those who wish to know some of the histological details of *Stylops* would do well to study the paper by Geoffrey Smith and A. H. Hamm, that I have frequently referred to. The first-named able zoologist is one of those whose loss at the front we have to deplore, he having been killed by shell-fire in 1916.

Park Hill House, Paignton.

April 11th, 1918.

THE ASSEMBLING AND PAIRING OF *STYLOPS*.

BY R. C. L. PERKINS, M.A., D.Sc., F.Z.S.

On April 21st I picked up two or three stylopized *Andrena trimmerana*, one of which contained an unhatched ♂ puparium, as well as a mature ♀. Early next morning, on placing the bee in bright sunshine, the ♂ *Stylops aterrima* emerged and soon afterwards paired with the female in the same host. I was able to kill this pair while still attached and make a *camera lucida* sketch, showing the aedeagus to be inserted into the opening of the brood chamber. When the bee and *Stylops* were both dry, the ♂ of the latter became detached, owing to the slight jerk caused in removing the insects to another box.

A day or two later, an assembly of ♂ *Stylops* was noticed settled on and hovering round a gorse-bush in the same spot, where the *A. trimmerana* had been taken. Several were secured at a single stroke, though some were able to escape through the rather coarse mesh of the net. Supposing at the time that these males also belonged to *S. aterrima*, one was placed in a glass-topped box with *A. trimmerana* containing ♀ *Stylops*. As no pairing took place, this ♂ was removed to another box containing *A. wilkella* stylopized, this bee having been found at the same time in this condition. Pairing was seen to take place between the ♂ and ♀ *Stylops*, but they became separated before the means to kill them *in situ* could be obtained.

On April 27th three instances of assembling of ♂ *Stylops wilkellae* were observed in the field. One of these assemblies was very remarkable, the individuals covering several inches of a stout, bare thorn-branch, so that it appeared quite white from the wings of the small creatures. Owing to the very thorny nature of the place chosen for assembling, only seven males were secured at the stroke, but not less than fifty must have been present in the cluster, many of which escaped through the opening and torn side of the net.

One lot of *Stylops* was attracted by the aid of a female in the middle of the same field, seven being secured, while others were carried off by

the rather strong gusts of wind. Many female *Stylops* entirely failed to attract any male, and it is evident that only certain individuals have or at any rate exert this power, this probably depending on their age or the state of development of the ovaries.

On May 4th I obtained a ♂ *S. wilkellae* firmly connected with the ♀, while the host was resting on a daisy, and my son took a similar pair in the same situation. His pair became separated in the net, but that taken by me not till long after capture, in fact not until both bee and ♂ *Stylops* were recovered from the anaesthetic, which had been used to allow of their close examination.

So far as stylopized *Andrena wilkella* is concerned, the following notes may be of interest. All the captures were made in one very long, but narrow, pasture-field, in which was a plentiful supply of flowers, buttercups, daisies and dandelions. A line of gorse bushes in bloom formed the front of one of the long hedges. Many of the stylopized bees were captured by my eldest boy.

Bees Captured.

Date of Capture.	Containing ♀ <i>Stylops</i> .	♂ Puparia (mostly hatched).	Healthy Bees.
April 24th	3	0	0
„ 27th	13	12	0
„ 28th	21	17	4♂
„ 29th	7	5	0
May 4th	23	43	12♂
	67	77	16♂

In some cases two or more ♀, or two or more ♂ *Stylops* were found in the same host, so that the number of parasites considerably exceeded the number of parasitized bees.

The well-known fact that stylopized bees appear abroad in general before the healthy ones is well shown. Thus healthy examples were only beginning to be common on May 4th, and up to this time not a single healthy ♀ was taken, that sex being as a whole later in appearance than the ♂.

Until April 27th all specimens taken were stylopized, while up to May 4th 90 per cent. were affected. If further investigations* were

* On May 7th a survey by my sons showed 30 per cent. parasitized, and another on the 11th less than 10 per cent. affected.

made, it would be found that the percentage of stylopization would become less and less, and probably by June 1st, when the female at least of *A. wilkella* is still abundant, few stylopized individuals would occur. Unless in a given area all the examples possible of a species are collected during its whole season, percentages of stylopization in bees are entirely misleading. Even then the percentage of stylopized examples will be overestimated on figures drawn from captures. Stylopized examples are, as a rule, extremely easy to capture and rarely fly far from the breeding-place. Thus, on May 4th most of the healthy male bees were flying in the wildest manner high up along the hedge and many, no doubt, were out of reach. Some stylopized males were behaving like these, but most were easily captured low down or on flowers. As the grass of the pasture becomes grazed down, the healthy female bees will go elsewhere for their pollen, for the gorse is already past its prime. The burrows of the bees are scattered here and there throughout the length of this large field, and the chance of intercepting any considerable proportion of the healthy females as they return to their nests is small. For these reasons it would be in vain to try to secure an approximately accurate percentage of the stylopization. One may learn, however, that while male *Stylops* is quite a common insect, under favourable conditions, it is much easier to secure it in numbers by actual capture than by breeding from caught specimens of the host, unless, indeed, the latter can be dug from the burrows, before the bees have ever flown. Although we were in the field before the *wilkella* were astir, in order that we might obtain them on their first appearance, yet so quickly, as a rule, does the *Stylops* emerge that only in one or two (accidental) cases was the puparium still occupied.

Paignton.

May 6th, 1918.

SCAPHIUM IMMACULATUM OLIV. AN ADDITIONAL GENUS AND
SPECIES TO OUR LIST OF BRITISH COLEOPTERA.

BY PHILIP HARWOOD, F.E.S.

It is with pleasure I have to record the capture of this striking addition to our fauna. I took a single specimen in moss on April 21st, near St. Margaret's Bay, Kent, and three others on May 4th, about twenty yards from the same spot.

Scaphium immaculatum Oliv., apart from its wholly black elytra, may be readily distinguished from *Scaphidium quadrimaculatum* Oliv. by the shorter basal joint of the posterior tarsi, the anteriorly contracted,

long, subcampanulate prothorax, the six rows of coarse punctures on the elytra exterior to the sutural stria, the anteriorly produced, cuneiform mesosternum, etc.; the ♂ has two teeth on the metasternum between the posterior coxae, and the intermediate and posterior tibiae very strongly curved. The two genera are each represented by a single species in the European fauna, the type of *Scaphium* Kirby, being the N. American *S. castanipes* of the same author. *S. immaculatum* occurs in France, Germany, Austria, Algeria, etc., and it is said to be found in fungi and under dead leaves in the autumn. Good figures of the insect have been given by Jacquelin Duval and Reitter, and a crude one by Olivier. I am indebted to Mr. Champion for the name of the species, and for giving me the above particulars as to its distribution, etc.*

5th Royal Fusiliers, Kingston-on-Thames.

May 9th, 1918.

ON THE ASSOCIATION BETWEEN THE HEMIPTERA-HETEROPTERA AND VEGETATION.

BY E. A. BUTLER, B.A., B.Sc., F.E.S.

Almost all Hemipterous insects have, in one way or other, a very close connexion with the vegetable world. It is true that many species are carnivorous and do not derive their sustenance directly from plants; but, even in such cases, there is commonly a plant-association, sometimes, probably, because the plant supports other living creatures,—insects, Arachnida, etc.—upon which the bug feeds, sometimes because it provides shelter, or a resting-place during hibernation, and sometimes that the plant may furnish a nidus for the eggs, even though the insect itself is not vegetarian. This last association is seen in such water-bugs as *Nepa* and *Ranatra*, which lay their eggs in leaves of *Alisma*; amongst the *Reduviidae*, too, Dr. Chapman has found the eggs of a species of *Nabis*, probably *N. lativentris*, in the stems of *Chlora perfoliata*, and I have eggs of *Coranus subapterus* deposited in captivity on *Calluna*.

In this paper I propose to confine my remarks to British members of the suborder Heteroptera, and I do this chiefly because I have lately been occupied in gathering information as to the plants that are known to be in any way connected with this particular group of insects, with a view to systematize and tabulate our knowledge under this head. This investigation has revealed a remarkable and hitherto unsuspected contrast in their attitude to certain divisions of the vegetable kingdom. To

* There is a good ♂ specimen of *S. immaculatum*, on an unmistakably "English" pin, in the Hope-Westwood collection of British Coleoptera in the Oxford University Museum. Unfortunately, beyond the label "Coll. Hope," it bears no record of its history.—J. J. W.

some groups of plants they manifest a strong partiality which contrasts very forcibly with their utter indifference to, or perhaps one should say, their entire avoidance of, others.

Looking at plants as a potential food-supply, we must remember, that, as the mouth-organs of the Heteroptera always consist of four fine and sharp-pointed setae, lodged in a trough-like labium, and used as a single piercing organ, the only food that can be taken is of a liquid nature, and must be reached by the penetration of the cuticle of the plant by the cibarial setae of the insect, so as to gain access to the juices that lie beneath. These setae are very flexible, and could not, even when combined, be used as a piercing organ, unless strengthened and guided by the more substantial labial trough, which does not itself, however, enter the perforation that is made. It is, therefore, only at its softer parts that the prey, whether animal or vegetable, can be successfully attacked. But as there can scarcely be any British plants that do not present somewhere or other over their surface a cuticle delicate enough to be pierced by the rostrum of even a weak bug, it would seem that the avoidance of certain species of plants cannot be due to any intractability in the material, or, in other words, to any mechanical difficulties involved in getting at the enclosed juices, but must be attributed to some distastefulness in the plants.

Nor does the selection, or the degree of popularity of the plant appear to be dependent upon the attractiveness of its appearance; in fact, very often the reverse is the case, for plants which are of insignificant aspect, and possess no showy colours, are often very much sought after, to the neglect of more conspicuous species, and in this category come mosses, grasses, and the *Umbelliferae*. The abundance or otherwise of a plant no doubt has some influence on the choice; but even this cannot always be the determining factor; *e. g.* there are few more abundant plants than the Dog's Mercury (*Mercurialis perennis*), and yet not a single bug is recorded from this plant. And, again, such common weeds as *Capsella* and *Cardamine pratensis* are entirely neglected.

Few of the existing records made by Hemipterists specify the particular part of the plant on which the bugs occur, whether stems, leaves, flowers, or fruit, though a distinction is commonly drawn between the upper parts and the neighbourhood of the roots. But, in my own experience, when the insect occurs on the upper parts, it is almost always on or under the leaves, except in the case of the *Umbelliferae*, when the flowers are preferred. One species of *Lygaeidae*, *Chilacis typhae*, appears to be found exclusively in the heads of the Reed-Mace (*Typha*). A few species take up their abode on the trunks of trees, hiding, or perhaps

lying in wait for prey, in the crevices of the bark. Spreading plants, which cover some unoccupied space beneath their foliage, provide an attractive shelter to several small species, especially of *Lygaeidae*.

Amongst flowering plants, there are several natural orders that are altogether avoided by our British Heteroptera, and the most noteworthy of these is the *Orchidaceae*. Amongst at least 2000 records which I have been able to collect from entomological literature, and from the unpublished observations of myself and other Hemipterists, I have not found a single one referring to any species belonging to this order. Not even as a casual occurrence has any connexion between an Orchid and a heteropterous bug been recorded in Britain; the whole order is entirely shunned. This is a remarkable exception, for the *Orchidaceae* are fairly numerous in species, upwards of 40 being included in the British list, and though some are rare, several are common or even abundant. The other natural orders which are entirely avoided are *Papaveraceae*, *Fumariaceae*, *Polygalaceae*, *Frankeniaceae*, *Portulacaceae*, *Elatinaceae*, *Linaceae*, *Droseraceae*, *Lythraceae*, *Valerianaceae*, *Monotropaceae*, *Apocynaceae*, *Gentianaceae*, *Polemoniaceae*, *Orobanchaceae*, *Verbenaceae*, *Thymeleaceae*, *Ceratophyllaceae*, *Hydrocharidaceae*, *Amaryllidaceae*, *Dioscoreaceae*, *Araceae*, *Eriocaulonaceae*. All of these orders have British representatives, though some contain no more than one species; but, on the other hand, the list includes many very well-known and widely distributed plants, such as Poppy, Fumitory, Milkwort, Flax, Loosestrife, Valerian, Periwinkle, Gentian, Vervain, Arum, etc. None of these has any heteropterous inhabitants.

The *Thalamiflorae*, as a whole, are much neglected, for even such extensive orders as the *Ranunculaceae*, *Cruciferae*, and *Caryophyllaceae*, have but very few adherents, and probably most of the records that are given (usually a solitary one in each instance) are merely casual occurrences. The best established connexions in these orders are those of *Eurydema oleraceum* with cabbages, *Beosus maritimus* with *Silene maritima*, *Dicyphus constrictus* and *D. globulifer* with *Lychnis dioica*, and *Orthotylus rubidus* and *Conostethus salinus* with *Arenaria*. The *Tiliaceae* and *Geraniaceae*, however, are more favoured. The lime-tree is regularly inhabited by several species, either on its leaves or on its trunk, the most noteworthy being *Lygus cervinus* on the leaves and *Microphysa elegantula* on the trunk, where it probably hunts other small insects. In the *Geraniaceae* the grand attraction is *Erodium*, and the species of *Pentatomidae*, *Coreidae*, and *Lygaeidae* that inhabit sandhills often take shelter under its wide-spreading leaves, if they do

not actually feed upon them. *Tilia* and *Erodium* are, in fact, practically the only *Thalamiflorae* that are generally attractive.

The *Calyciflorae* are much more popular, especially the orders *Leguminosae*, *Rosaceae*, and *Umbelliferae*. In the first mentioned order, *Ulex*, *Sarothamnus*, and *Ononis* are the special favourites. *Piezodorus lituratus*, *Dictyonota strichnocera*, *Asciodema obsoletum*, and various species of *Orthotylus* on *Ulex*, *Dictyonota fuliginosa*, *Anthocoris sarothamni*, various *Orthotylus*, and *Heterocordylus* on *Sarothamnus*, and the genus *Berytus*, *Metacanthus elegans*, *Calocoris lineolatus*, and *Macrotylus paykulli* on or under *Ononis*, are the most noteworthy examples of a very intimate association. In the *Rosaceae*, *Crataegus* is the chief favourite, 29 species having been recorded as occurring on it. *Prunus*, *Spiraea*, *Rubus*, *Pyrus*, and *Sorbus* are also attractive, chiefly to various species of *Capsidae*. The broad umbels of the *Umbelliferae* are enticing chiefly to *Capsidae*, but also to several species of *Pentatomidae*, notably *Eurydema dominulus*, but here it is not easy to single out any definite association, as Hemipterists usually do not specify the particular species of *Umbelliferae*, but mention the order as a whole. In the majority of cases, probably the plants referred to are *Angelica sylvestris*, *Heracleum sphondylium*, and *Pastinaca sativa*. Of definite food-plants, the *Onagraceae* furnish two well-known examples, *Epilobium hirsutum* for *Dicyphus epilobii* and *Circaea lute-tiana* for *Metatropis rufescens*.

Amongst Gamopetalous plants, the most frequented orders are the *Compositae* and the *Ericaceae*. In the former, *Achillea*, *Tanacetum*, *Artemisia*, *Senecio*, the thistles, and *Centaurea* are the most popular, while in the latter both *Calluna* and *Erica cinerea* have many votaries. The *Rubiaceae* are particularly associated with certain *Capsidae*, especially the genus *Poeciloscytus*. The ash-tree is fairly popular, with a record of 15 species. The *Scrophulariaceae* and *Labiatae* are hardly so attractive as might have been expected. *Verbascum* is by far the most popular in the former order, and in the latter *Thymus serpyllum* and *Stachys sylvatica*; next in popularity to these, but a long way behind them, are *Mentha*, *Origanum*, *Lamium*, and *Teucrium*.

Amongst the *Apetalae*, we find some extremely popular orders, and the *Amentaceae* are the prime favourites. Forest trees, such as Birch, Alder, Hazel, Oak, and Beech, are all very attractive, and oak easily heads the list with upwards of 70 species. The *Salicaceae*, again, with the various willows and poplars, harbour a great many species. Equally attractive are nettles and the common elm, while the *Chenopodiaceae* and *Euphorbiaceae* also have many associates.

Of Monocotyledons, it has already been pointed out that one of the most showy orders, the *Orchidaceae*, is altogether neglected, and the preference is given to those that possess no bright colours, such as the *Juncaceae* and the *Graminaceae*. These two orders, and especially the latter, are very much sought after, and grasses alone serve as support, in one way or other, to upwards of 100 species.

The *Pinaceae*, again, are very productive, and Juniper, Scotch Fir, Spruce, and Larch have numerous adherents; not only are they the food-plants of many species, but also, as evergreens, they often furnish a winter residence to such species as survive that season in the adult form, since they afford much better protection from the weather than the then leafless deciduous trees. Reuter (Charak. und Ent. Hemipt. Faun. Palaearct. Conif.) has recorded 190 species of Palaearctic Heteroptera as having occurred on Coniferous trees, and of these, 101 are inhabitants of Britain. These he classifies into three groups, according as (i) they depend upon deciduous trees or low plants for their food and resort to the *Coniferae* only for hibernation, or (ii) are found on both Conifers and deciduous trees or low plants even in summer-time, or (iii) occur exclusively on Coniferous trees.

Coming, finally, to the Cryptogamia, we find that ferns give support to a few species, amongst which may be specially mentioned *Monolocoris* and *Bryocoris*, our two solitary representatives of a section of the *Capsidae* which has many remarkable exponents in the Tropics. Foliaceous lichens and lichen-infested trees are attractive to a few, while mosses are extremely popular, especially amongst the smaller species, notably in the *Tingididae* and the smaller *Lygaeidae*; and also as a winter-resort for many of the larger species. The *Capsidae* almost entirely avoid this group of plants, which would, no doubt, be too moist for insects of such a delicate texture.

The habits of those species that are found in the British Islands do not always quite agree with what is recorded of them by Continental observers. Thus the Coreid bug, *Gonocerus acuteangulatus* with us, in the perfect state, is confined to box-trees, whereas on the Continent it has been recorded from oaks and *Rosa canina*, and the larva from *Rhamnus frangula*. Mr. E. C. Bedwell has found the latter also on yew, where it was attracted by the berries which it was seen to be sucking. One may say, in general, that there are but few species that are confined to a single species of plant.

14 Drylands Road, Hornsey, N. 8.

April 30th, 1918.

PIPUNCULIDAE AND STYLOPIDAE IN HOMOPTERA.

BY FREDERICK MUIR, F.E.S.

Few entomologists realize the number of Homoptera that are parasitized by *Pipunculidae* and *Stylopidae*. Dr. R. C. L. Perkins* has described a number from Australia and Hawaii, and I have found them equally numerous wherever I have looked for them. When in Scotland several years ago I swept over a small patch of grass for *Delphacidae* and found about thirty per cent. bearing *Stylops*, and when collecting *Delphacidae* in the Hawaiian Islands I have always noticed that a number of these insects were parasitized. In the Philippines, Java, and the Malayan Islands, Jassids and Fulgorids bearing these parasites are not uncommon. If careful search were made among British Homoptera it is highly probable that parasitic *Pipunculidae* or *Stylopidae* would be found to be not uncommon.

While studying the male armature of *Delphacidae* in the Hawaiian Islands, I have noticed that a number of parasitized hoppers had abortive genitalia. Upon dissecting such specimens it was always found that the parasites had injured or destroyed the testes. The abortion of, or alteration to, the genitalia was not confined to the aedeagus or penis, but was common to the armature of the anal segment, the aedeagus, the genital styles, and to the connecting-rods that co-ordinate the movements of these organs. This connexion between the testes and the external genitalia is of interest, as it may throw light upon the specific differences of these organs; for if an injury to the testes can cause such a large alteration to the genitalia, is it not possible that an alteration of the germ-plasm may account for the specific phallic differences?

Crofton, 4 St. Andrews Rd.,

W. Kensington.

April 1918.

Acanthocinus aedilis L. in N. Devon.—On September 1st, 1917, I was at Morteheo, N. Devon, and noticed that the shore from Croyde, along Woolacombe Sands and Morte Point to Rockham Bay, was thickly strewn with pit-props, which were being washed up from a vessel that had gone down off Hartland some days previously, and the sea continued to throw up logs in large numbers for a fortnight. A fine ♂ specimen of *Acanthocinus aedilis* was captured here by a lady, with the result that a search was made by my friend Mr. C. D. Heginbotham and myself amongst the pine-logs, which were about 10 feet long by from 3 to 12 inches diameter. A large proportion of those thrown up on the rocks were entirely stripped of bark through the rough treatment they had received, and a careful examination of them disclosed a not very

* Hawaiian Sugar Planters' Assoc. Experiment Station, Entomological Bull. i, pts. iii and iv (1905).

obvious small hole about $\frac{1}{4}$ inch long by $\frac{1}{8}$ to $\frac{3}{8}$ inch wide, parallel with the grain and closed with wood fibres. This hole proved to be the end of the larval cell, $\frac{1}{2}$ inch deep, running parallel with the grain for about two inches, half of it being filled with the woody fibre before mentioned, and in the outer space was found either the full-grown larva, the pupa exhibiting the wonderful way in which the long antennae were coiled round it, or the perfect beetle, which emerges from an oblong hole made by itself through the thin wall at the forward end of the cell made by the larva. In nearly every instance the pupa and beetle faced outwards towards the bark. Hundreds of cells were found, those logs attacked, in some cases, having perhaps two dozen cells; but though the majority of the insects were dead through long immersion in the sea-water, about fifty beetles were taken alive. The logs with bark still attached were more difficult to examine, needing stripping, but by September 17th the beetles were emerging, for several were found running over the logs. The beetle when disturbed makes a slight stridulating noise. The following species were also found: in small cells in the wood, *Pissodes pini*; and in the bark, *Thanasimus formicarius* and *Tomicus sexdentatus*, also others undetermined.—CHARLES BARTLETT, Morwenstow, Woodhill, Portishead, Somerset: April 29th, 1918.

Review.

REPORT OF THE PROCEEDINGS OF THE SECOND ENTOMOLOGICAL MEETING HELD AT PUSA on the 5th to 12th February, 1917, edited by T. Bainbrigge Fletcher, R.N., F.L.S., etc. Pp. xii & 340, pls. 34: Calcutta, 1917. Price Rs. 3, or 4s. 6d.

This Report, as stated by the Editor, is practically an abstract of our current knowledge of Indian Crop-pests, illustrated by numerous coloured plates. The Editor's own book, "Some South Indian Insects," issued at Madras in 1914, containing figures of many common species, has been freely quoted throughout, and a number of coloured plates recently printed and issued at Pusa, have also been included, to make the references as complete as possible. The various subjects are arranged under the following headings:—Hill Crops (tea, coffee, rubber, cinchona, etc.), Miscellaneous, Leguminous Field Crops, Oil-seeds, Malvaceae, Non-Malvaceous Fibre Plants, Sugar-cane, Paddy and other Cereals, Grasses and Fodder Crops, Fruit-trees, Palms, Garden Plants, Drugs and Dyes, Cruciferous Crops, Other Vegetables and Condiments, and Insect Pests of Stored Products. Of the 34 plates, six are devoted to Coleoptera (Curculionidae, Galerucidae, and Hispididae), three each to Hemiptera-Heteroptera and Orthoptera, one each to Hymenoptera and Diptera, and the rest to Lepidoptera. The last-mentioned Order of insects would thus appear to be the most destructive, but this can scarcely be the case. The present compilation should be of great assistance to all who are interested in tropical agriculture, not only in India but elsewhere, the Editor having brought together such a quantity of useful information on the subject, and illustrated it with so many excellent plates. The only criticism we venture to make is, that the plates themselves should have been numbered for facility of reference. The date given on the title page is 1917, but the copy sent us for review was not received till April 1918.

NEW AND LITTLE-KNOWN SALTATORIAL DASCILLIDAE.

BY G. C. CHAMPION, F.Z.S.

(Continued from p. 102.)

MADAGASCAR SPECIES.

14.—*Ora rugipennis*, n. sp.

Broad-oval, moderately shining, pubescent; testaceous, the prothorax with an irregular *x*-shaped mark on the disc, and the elytra with various scattered spots and streaks (an oblique mark near the suture at about the middle the most conspicuous), black, the posterior femora also nigro-variegate, the tibiae and tarsi testaceous; closely, minutely, the elytra densely, rugosely punctate. Head rather narrow, with two broad foveae between the eyes, the latter large [antennae wanting]. Prothorax very short, comparatively small, obliquely narrowed from the base, deeply hollowed in front opposite the eyes, with an indication of a median groove. Elytra broad-oval, explanate and sharply margined laterally, flattened on the disc anteriorly, excavate for some distance at the sides below the shoulder, and with several faint costae on the disc. Posterior coxae without plate. Posterior femora very broad, the tibiae long, curved widened, the upper spur a little shorter than the first tarsal joint.

Length $3\frac{1}{4}$, breadth $2\frac{1}{2}$ mm. (σ ?)*Hab.* MADAGASCAR (*Gerrard, ex coll. Fry*).

One example, in mutilated condition, but so different from the known forms as to be worth naming. The strongly bifoveate head and the rugose, explanate, nigro-variegate elytra bring *O. rugipennis* near the Indian and Malayan *O. nigropunctata* Motsch. (= *irregularis* Waterh.), which has the elytral surface still more uneven. Compared with *O. rugosissima*, from Perak and Borneo, which is hemispherical in shape, the elytra are more depressed on the disc and less rugose.

ASIATIC SPECIES.

15.—*Ora antiqua*, n. sp.

Broad-oval, depressed, somewhat acuminate behind, moderately shining, pubescent: testaceous, the upper surface (except the sides of the elytra anteriorly and the base of the latter) and femora mottled with piceous; the elytra very densely, minutely punctate, with larger punctures intermixed, the rest of the surface much smoother. Head small, bifoveate, the eyes not very large; antennae slender, feebly subserrate, rather short, joint 3 much smaller than 2. Prothorax very short, feebly developed, arcuately narrowed from the base, deeply hollowed opposite the eyes in front, the angles somewhat obtuse. Elytra broadly arcuato-explanate at the sides, with a distinct sutural groove and an indication of three obsolete costae on the disc; the right elytron compressed and longitudinally raised near the suture just before the tip, the apices thus appearing dehiscent. Posterior coxae without plate. Posterior legs

moderately elongate, the tibiae curved, widened, and strongly compressed, the outer carina conspicuous, the upper spur nearly as long as the first tarsal joint.

Length 4, breadth $2\frac{3}{4}$ mm. (♀?)

Hab. BATCHIAN (*A. R. Wallace, in Mus. Oxon.*).

One specimen, in very good condition. This insect bears an extremely close resemblance to the Tropical American *O. marmorata* Champ. (1897), and it is only separable therefrom by the less developed head and prothorax, the smaller eyes, the shorter and more slender antennae, the more acuminate elytra, and the shorter posterior legs. The confused mottling on the elytra does not tend to form definite spots as in *O. marmorata*. The asymmetrically formed apices of the elytra are probably natural, and the structure may be indicative of the female? *O. antiqua*, like *Prionoscirtes reliquus* from Penang, each of which is reproduced as it were in Tropical America, is perhaps a survival of a primitive Dascillid?

16.—*Ora picta*.

Galleruca picta Fabr. Syst. Ent. i, 2, p. 26.

Scirtes pictus Guér. Sp. et Icon. i, 3, p. 4; Bourg. Bull. Soc. Ent. Fr. 1896, p. 120.

Ora picta Champ. Biol. Centr.-Am., Coleopt. iii, 1, p. 603, nota (1897); Pic, in Junk's Col. Cat. 58, p. 40 (1914).

Hab. INDIA, Tranquebar [type], Belgaum, Chapra in Bengal, Bassein Fort, Bombay (*H. E. Andrewes*), Podanur (*Downing*); CEYLON, Dondra (*C. B. Fletcher*: 4. xii. 1907).

Mr. Andrewes has been kind enough to lend me his specimens of this species, from Belgaum, Bombay, etc., recorded by Bourgeois in 1896, and there are others from "S. India," etc., in the British Museum, including one with the black spots on the elytra reduced to four in number, thus approaching the var. *obliterata* Bourg., in which they are wanting altogether. The posterior coxae are without angular plate at the base. The head is excavate on each side between the eyes, as in various other species of *Ora*. The elytra are without foveae in ♀.

17.—*Ora atrosignata*, n. sp.

Elliptic, broad, shining, thickly, rather coarsely pubescent; testaceous, the elytra with various angulate, more or less confluent markings (not reaching the base, and mainly condensed into two irregular fasciae, which are connected near the suture, one submedian, the other subapical), the eyes, and the abdomen and posterior femora in part, black or piceous; densely, minutely, the

elytra more coarsely, punctate, the latter with finer punctures intermixed. Head rather small, foveate on each side near the eyes, the latter large; antennae moderately long, joints 2 and 3 short, equal, the others elongate, not very slender. Prothorax rapidly narrowed from the base, deeply hollowed in front opposite the eyes, the anterior angles prominent. Elytra rather convex, flattened on the disc, strongly rounded and sharply margined laterally, without raised lines or grooves. Posterior coxae without plate. Posterior tibiae rather broad, carinate.

Length $3\frac{1}{10}$, breadth $2\frac{1}{3}$ mm.

Hab. ASSAM, Patkai Mts. (*Doherty, ex coll. Fry*).

Two specimens, sex not ascertained. Smaller than the Indian *O. (Galleruca) picta* F., the elytra more rounded at the sides, the sharply-defined irregular markings mainly restricted to the apical half, and partly condensed into two, common, angulate fasciae. The punctures on the elytra are unequal in size, and here and there transversely confluent, in both species. *Scirtes nigronotatus* Pic (1913), from Sumbawa (compared by him with *S. difficilis* Waterh.), may be an allied form?

18.—*Ora nigropunctata*.

Scirtes (?) *nigropunctatus* Motsch. Bull. Mosc. 1863, 1, p. 484¹.

Scirtes irregularis Waterh. Cist. Ent. ii, p. 569 (1880)².

Hab. CEYLON, Colombo¹; JAVA²; SUMATRA, Merang (*Doherty*); BORNEO, Kuching (*J. E. A. Lewis*), Kina Balu (*ex coll. Fry*); PENANG (*H. N. Ridley*).

Motschulsky's lengthy diagnosis applies well to the insect subsequently described by Waterhouse. There are seven specimens of this species in the Museum, including the type of *S. irregularis*, which is a ♀, the males having the elytra less dilated at the middle. The two examples from Kina Balu have the markings (five rows of scattered minute dots in the typical form) more extended on the disc of the elytra and partly confluent. The elytral surface is feebly tricostate and here and there raised or swollen, thus appearing very uneven. The posterior coxae are without angular plate. The two dark spots on the head, mentioned by both authors, each arise from a deep fovea. *O. nigropunctata* is evidently a widely-distributed form in the Malayan region.

19.—*Ora rugosissima*, n. sp.

♀. Hemispherical, convex, moderately shining, thickly cinereo-pubescent; the antennae (joints 1 and 2 excepted), upper surface, and the legs in part, piceous, the under surface (the elytral epipleura excepted), two short, oblique, coalescent streaks at the base of each elytron, and the posterior tibiae and tarsi,

testaceous; the entire upper surface very densely, the elytra rugosely, punctate, the punctures on the latter rather coarse and transversely confluent (the surface thus appearing very rugose, especially in the depressed post-scutellar area), the under surface densely, extremely minutely punctate. Head excavate on each side anteriorly, the eyes large; antennae long, pilose, joints 2 and 3 short, equal. 4-11 elongate, filiform, rather slender. Prothorax very short, uneven, deeply hollowed in front opposite the eyes, arcuately narrowed from the base, the anterior angles prominent, rounded, the hind angles obtuse, the disc canaliculate anteriorly. Scutellum somewhat convex. Elytra broadly arcuato-explanate at the sides, transversely depressed behind the scutellum, and with the suture gibbous before the middle; each elytron with three incomplete costae on the disc, the apices unimpressed. Posterior coxae without angular plate at the base. Posterior femora extremely broad, the tibiae long, curved, broad, and strongly compressed, the outer carina conspicuous, the upper spur nearly as long as the first tarsal joint.

Length $4\frac{2}{5}$, breadth $3\frac{4}{5}$ mm.

Hab. PERAK (*Doherty, ex coll. Fry: type*); BORNEO, Sarawak (*A. R. Wallace, in Mus. Oxon.*).

Two females, precisely similar, each with the ovipositor extruded. A very peculiar insect, resembling a rugose, hairy Coccinellid. The species may come near the Javan forms placed by Pic under *Exochomoscirtes* (1916), which, however, is said to have very prominent anterior angles to the prothorax.

20.—*Ora gibbosa*, n. sp.

♀. Extremely like *O. rugosissima* from Borneo and Perak: piceous above, the lateral and basal margins of the prothorax, several small, scattered, indistinct spots on the basal half of the elytra (one on the suture below the base the most conspicuous, the two oblique basal streaks altogether wanting), the outer margins of the latter anteriorly, and the posterior tibiae and tarsi, testaceous; antennae more slender, slightly infusate, joints 1-3 excepted, 3 very small; prothorax uneven, without trace of median groove; elytra with the punctures separate one from another, and slightly coarser, the common post-basal depression large and deep, the space behind it gibbous, the apices with a smooth, shallow, rather large fovea near the suture before the tip (of which there is no trace in *O. rugosissima*, ♀), the disc with four feeble costae, the suture also thickened; posterior coxae without plate; upper posterior tibial spur shorter than the first tarsal joint.

Length $3\frac{2}{5}$, breadth 3 mm.

Hab. BORNEO, Sarawak (*A. R. Wallace, in Mus. Oxon.*).

One specimen, probably captured at Sadong. Easily separable from *O. rugosissima*, ♀, by its much less rugose, obscurely flavo-punctate elytra, with foveate apex, and the more slender antennae.

21.—*Ora compressa*, n. sp.

♀. Broad-oval, somewhat convex, thickly, rather coarsely pubescent, the pubescence here and there clustered into denser patches (thus appearing fasciculate); testaceous, variegated with piceous above (leaving the base, suture, outer margin, and various indefinite markings on the disc, testaceous), the antennae (joints 1-3 excepted) and an annulus towards the apex of the posterior femora also infuscate; densely, very finely punctate. Head slightly depressed on each side between the eyes, the latter moderately large; antennae rather slender, not very elongate, joint 3 small, barely as long as 2. Prothorax uneven, very short, rapidly arcuately narrowed from the base, deeply hollowed in front opposite the eyes. Scutellum somewhat convex. Elytra explanate and sharply margined laterally, compressed and deeply excavate at the sides beneath the prominent humeral callus, hollowed along the suture anteriorly, distinctly gibbous behind this, and with a shallow sutural groove and indications of four feeble incomplete costae. Posterior coxae without plate. Posterior legs long, the tibiae broad, compressed, curved, and sharply carinate, the upper spur about as long as the first tarsal joint.

Length $3\frac{1}{2}$ - $3\frac{3}{4}$, breadth $2\frac{1}{2}$ mm.

Hab. CEYLON, Dikoya [type] (*G. Lewis*: 27.xii.1881), Kandy (*G. Lewis*: 22.ii.1882).

Described from a female in very good condition. An abraded, paler example (♂?), with longer, entirely testaceous antennae, and the dark markings on the elytra reduced to a general suffusion on the disc, must belong to the same species. The fasciculate or subfasciate arrangement of the pubescence on the elytra may be partly due to abrasion. *O. compressa* can be placed near the Bornean *O. gibbosa*.

22.—*Ora coronata*, n. sp.

Hemispherical, shining, thickly cinereo-pubescent; testaceous, the head, prothorax, and scutellum piceous in one example, the elytra (except along the thickened sutural margin) mottled with the same colour, the apical excavations of ♀ also infuscate; densely, finely, the elytra more coarsely, punctate. Head broad, excavate on each side between the eyes, the latter large; antennae long, slender, joint 3 very small. Prothorax very short, explanate laterally, and deeply hollowed in front opposite the eyes, arcuately narrowed from the base, the angles obtuse, the anterior ones prominent, the surface uneven. Elytra arcuately explanate laterally, depressed behind the scutellum, with four faint incomplete costae on the disc and the suture thickened, the apices somewhat acuminate in ♂ and very obtuse in ♀; the ♀ with a common, broad, deep, antero-laterally furcate excavation before the tip, formed by a common angular depression on the suture and an oblique, short, broad sulcus exterior to it on each elytron, the depressions separated by an oblique plica.

Length $3\frac{1}{10}$ - $3\frac{1}{3}$, breadth 3 mm. (♂ ♀.)

Hab. BORNEO, Sarawak (*A. R. Wallace*, in *Mus. Oron.*).

Two examples in fragmentary condition, assumed to be sexes of

the same species, the elytra of ♀ with a broad, common, very deep, coroniform excavation before the tip, suggestive of similar ♂-characters in many Malachiids. The ♀ (with ovipositor extruded) has the elytra less coarsely punctate than in the supposed ♂. The apical excavation is more developed than in any other species of the group known to me, and for this reason it is advisable to name the insect. *O. coronata* is less gibbous than *O. gibbosa*, and has very different ♀-characters. Westwood examined the two specimens, and labelled them "*Eubria?*"

23.—*Ora fouqueti*.

Scirtes fouqueti Pic, Mélanges exot.-entom. xii. p. 5 (Jan. 1915).

Oblong-oval, depressed, finely pubescent, black, piceous beneath, the antennal joints 2 and 3 and the tibial spurs reddish or testaceous; densely, finely, the elytra more coarsely, punctate, the puncturing of the latter becoming more diffuse towards the tip. Antennae with joints 2 and 3 short, equal, 4-11 elongate, rather slender, filiform. Prothorax rapidly, arcuately narrowed from the base, hollowed in front opposite the eyes. Elytra long, feebly rounded and sharply margined at the sides, with an indication of a sutural stria. Posterior coxae without angulate plate at the base. Posterior legs elongate, the tibiae widened, feebly curved, sharply carinate, the upper spur about as long as the first tarsal joint, the latter stout and very little longer than the other joints united.

Length $3-3\frac{1}{3}$, breadth $1\frac{4}{5}-2$ mm.

Hab. COCHIN CHINA, Saigon (*J. E. A. Lewis*: 4.vii.1909).

Four specimens from Saigon in the British Museum (and one without locality in the Oxford Museum) seem to be referable to *S. fouqueti* Pic, the type of which was from the same place. The description consists of eleven words, and it is therefore impossible to identify the species with any certainty. It is said to be less elongate than the Japanese *S. ovatulus* Lewis (though described as "oblong"), the reverse being the case, if the insect has been correctly named by me. Two at least of the examples seen are females, indicating that the elytra are without foveae in that sex. The posterior coxae are without lamella, and *S. fouqueti* is in consequence here placed under *Ora*; the general facies, however, is that of many typical *Scirtes*.

Since the preceding pages have been in type, Mr. O. E. Janson has given me the following interesting Tropical American insect for description:—

24.—*Ora angularis*, n. sp.

Oval, depressed, shining, closely, finely pubescent; flavous, sharply variegated with piceous or nigro-piceous, the dark markings on the head condensed into two small spots between the eyes anteriorly and a space across the base,

WATKINS & DONCASTER, Naturalists,

Keep in stock all Articles for Entomologists, Ornithologists, Botanists, &c.: Umbrella Net, 7/-; Folding Cane or Wire, 2/6, 4/-, 4/6; Plain Ring Net, 1/3, 2/-, 3/-; Pocket Boxes, 6d., 9d., 1/-, 1/6; Store Boxes, with Camphor Cells, 2/6, 3/6, 4/-, 5/-, 6/-; Zinc Pocket Boxes, 9d., 1/-, 1/6, 2/- Setting Boards, from 5d. to 1/10; Complete set of 14 boards, 10/6; Breeding Cages, 2/6, 4/-, 5/-, 7/6; Sugaring Tins, 1/6, 2/-; Sugaring Mixture, ready for use, 1/9 per tin; Setting Houses, 9/6, 11/6, 14/-; Glass Topped and Glass Bottomed Boxes, from 1/- per doz.; Zinc Killing Boxes, 9d., 1/-; Coleoptera Collecting Bottles, 1/6, 1/8; Collecting Box, containing 26 tubes (very useful for Coleopterists, Microscopists, &c.), 4/6; Brass Chloroform Bottle, 2/6.

Improved Pocket Pupa-digger in leather sheath (strongly recommended), 1/9; Steel Forceps, 1/6 to 3/- per pair; Pocket Lens, from 1/6 to 8/6.

Taxidermists' Companion, containing most necessary implements for skinning, 10/6; Scalpels, with ebony handles, 1/3; Fine Pointed Scissors, 2/- per pair; Brass Blow-pipes, 4d., 6d.; Egg Drills, 2d., 3d.; ditto, best quality, 9d. each; Botanical Vasculum, 1/6, 2/9, 3/6, 4/6; Label List of British Macro-Lepidoptera, with Latin and English Names, 1/6; List of British Lepidoptera (every species numbered), 1/-; or on one side for Labels, 2/-.

SILVER PINS FOR COLLECTORS OF MICRO-LEPIDOPTERA, &c.,

as well as minute insects of all other families.

We stock various sizes and lengths of these Silver Pins, which have certain advantages over the entomological pins usually employed.

For instance, insects liable to become greasy and verdigrisy, like Sesiidae, are best pinned on Silver pins, which will last much longer than the ordinary pins (whether enamelled black, or gilt, or silvered).

We shall be pleased to send pattern cards on application.

A large stock of British, European, and Exotic Lepidoptera, Coleoptera, and Birds' Eggs.

ENTOMOLOGICAL PINS.

The "DIXON" LAMP NET (invaluable for taking Moths off street lamps without climbing the lamp posts), 3s. 6d.

SHOW ROOM FOR CABINETS, &c.

36, STRAND, LONDON, W.C., ENGLAND.

Birds and Mammals, &c., Preserved & Mounted by first-class workmen.

Our New Price List (100 pp.) sent post free to any address on application.

FOR SALE.

16 NATURAL HISTORY CABINETS

BELONGING TO THE LATE DR. MASON,

ALSO

FOUR MICROSCOPICAL CABINETS,

Containing Microscopical Slides by G. R. VINE, of Sheffield.

ALSO

400 BRITISH BIRDS IN CASES.

Apply—Mrs. MASON, TRENT HOUSE, BURTON-ON-TRENT.

THE SIX COLOURED PLATES illustrating the articles on
"SOME INTERESTING BRITISH INSECTS,"

with the accompanying text (issued in the Ent. Mo. Mag. for September, 1909, January and September, 1910, September, 1911, and August, 1913), are issued in a separate wrapper, price 2s.

APPLY TO THE PUBLISHERS.

Scale of Charges for Advertisements

Whole Page.....£3. Half Page ...£1 11s. 3d. Quarter Page.....17s.

Lowest charge, 7s up to 5 lines; 1s. per line afterwards.

Repeated or continuous Advertisements per contract.

There is no charge for Lists of Duplicates and Desiderata.

All payments and applications for the above should be made to

R. W. LLOYD, I. 5, Albany, Piccadilly, W.

AUTHORS are requested to send their communications and proofs to either
J. J. WALKER, Aorangi, Lonsdale Road, Summertown, Oxford; or
G. C. CHAMPION, Broomhall Road, Horsell, Woking.

AUTHORS requiring separate copies of their papers (which can be supplied at small cost) are requested to mark the number wanted on their MS.

ENTOMOLOGICAL NEWS.

A forty-eight page illustrated magazine, issued monthly, except in August and September, devoted to the study of INSECT LIFE. It contains a resumé of the proceedings of a number of Entomological Societies, and also articles by the leading Entomologists in the United States and Canada. Valuable information for the beginner, the economic entomologist, and the systemist. TWO DOLLARS a year in advance. Single copies, 25 cents. Address—

ENTOMOLOGICAL NEWS,

The Academy of Natural Sciences,

1900 RACE STREET, PHILADELPHIA, PA.

THE CANADIAN ENTOMOLOGIST.

A MONTHLY MAGAZINE DEVOTED TO THE STUDY OF SCIENTIFIC ENTOMOLOGY.

Volume 50 is now in course of publication. Back volumes can be supplied. It is the oldest established Magazine of the kind in America, and has a world-wide circulation. Subscription, \$2 per annum, payable in advance, which includes a copy of the Annual Report of the Entomological Society of Ontario to the Legislature. Editor, Dr. E. M. Walker, Biological Department, University of Toronto, Toronto, Canada.

Address: Entomological Society of Ontario, Guelph, Canada.

WICKEN FEN.—The Custodians, the National Trust, appeal to Entomologists for assistance towards the providing of the Watcher who guards the Fen against abuse. This expense, which is absolutely necessary, is provided by voluntary subscriptions, and I am desired to ask for Contributions, which will be gratefully received, however small.—W. G. SHELDON, Honorary Treasurer of the Wicken Fund, Youlgreave, South Croydon.

A SYNOPSIS OF THE BRITISH SIPHONAPTERA, by the
 Hon. N. CHARLES ROTHSCHILD, M.A., F.L.S., illustrated by Eight Plates
 (issued in the Ent. Mo. Mag. for March, 1915, pp. 49-112), price 1s. 6d. Apply to
 the publishers.

THE BIOLOGY OF DRAGONFLIES

(ODONATA or PARANEUROPTERA)

By R. J. TILLYARD, M.A., B.Sc., F.L.S., F.E.S.

Demy 8vo. pp. xii+398. With 4 plates and 188 text-figures. 15s net.

CAMBRIDGE ZOOLOGICAL SERIES.

"Never before has the group received such detailed and well-balanced treatment as Mr Tillyard has given. . . . Students of the anatomy and development of insects are much indebted to him for providing in this convenient form a trustworthy guide to the external and internal structure of dragonflies at various stages of their life-histories."—*Nature*

Prospectus on application

Cambridge University Press, Fetter Lane, London, E.C.4, C. F. Clay, Manager

COLEOPTERA ILLUSTRATA,

CARABIDÆ.

Vol. 1, No. 3.

CARABIDÆ.

PRICE \$1.

CONTENTS.

PRICE \$1.

LEISTUS
feruginens Linn.

ELAPHRUS
aureus Mull.

LOROCERA
pilicornis Fabr.

BROSCOSOMA
baldense Pütz.

HEMIDIUM
fasciolatum Duft.
articulatum Gyll.

GILLENUS
lateralis Sam.

THALASSOPHILUS
longicornis Sturm.

TRECHUS
discus Fabr.

ANOPHTHALMUS
hirtus Sturm.
v. rostratus Mots.

PTEROSTICHUS
lepidus Leske.
cuprens Linn.
infuscatus Dej.
puncticollis Dej.
crenatus Dej.
barbatus Dej.
carbonicolor Sols.
macer Marsh.
aterrimus Hrbst.
elongatus Duft.
oblongopunctatus Fabr.
angustatus Duft.
melanocephalus Chaud.
niger Schall.
vulgaris Linn.
nigritus Fabr.
minor Gyll.
interstinctus Sturm.
negligens Sturm.
subsinuatus Dej.
brevis Duft.
caspius Men.
cognatus Dej.
aethiops Panz.
glebosus Fabr.

PTEROSTICHUS
cylindricus Hrbst.
melas Grentz.

ABAX
ater Vill.
ovalis Duft.
schuppeli Pall.
v. reidtschmidti Germ.
corsicus Dej.

MYAS
chalybaeus Pall.

AMARA
ingenua Duft.

ZABRUS
chalcus Fald.
heros Fald.
seidlitzii Schaum.
græcus Dej.
blapoides Grentz.

ANISODACTYLUS
binotatus Dej.
signatus Panz.

ACCURATE ENLARGED PEN DRAWINGS, UNIFORM IN SIZE,
 ONE TO A PAGE 8vo.

COLEOPTERA ILLUSTRATA will be mailed upon receipt of price.
 HOWARD NOTMAN, 136 JORALEMON STREET, BROOKLYN, N.Y., U.S.A.
 Vol. I, Nos. 1 and 2, 61 each.

CONTENTS.

	PAGE
Further notes on Stylops and stylopiated bees (<i>concluded</i>).—R. C. L. Perkins, M.A., D.Sc., F.E.S.	121
The assembling and pairing of Stylops.— <i>Id.</i>	129
Scaphium immaculatum Oliv., an additional genus and species to our List of British Coleoptera.—P. Harwood, F.E.S.	131
On the association between the Hemiptera-Heteroptera and vegetation.—E. A. Buller, B.A., B.Sc., F.E.S.	132
Pipunculidae and Stylopidae in Homoptera—F. Muir, F.E.S.	137
Acanthocinus sedilis L. in North Devon.—C. Bartlett	137
REVIEW.—Report of the Proceedings of the Second Entomological Meeting held at Pusa on the 5th to 12th February, 1917, edited by T. Bainbrigge Fletcher, B.N., F.L.S., etc.	138
New and little-known saltatorial Dascillidae (<i>continued</i>).—G. C. Champion F.Z.S.	139

THE NATURALIST:

A MONTHLY ILLUSTRATED JOURNAL OF

NATURAL HISTORY FOR THE NORTH OF ENGLAND

EDITED BY

T. SHEPPARD, M.Sc., F.G.S., F.R.G.S., F.S.A.Scot.,
THE MUSEUM, HULL;

AND

T. W. WOODHEAD, Ph.D., M.Sc., F.L.S.,
TECHNICAL COLLEGE, HUDDERSFIELD;

WITH THE ASSISTANCE AS REFEREES IN SPECIAL DEPARTMENTS OF

J. GILBERT BAKER, F.R.S., F.L.S., GEO. T. PORRITT, F.L.S., F.E.S.,
Prof. P. F. KENDALL, M.Sc., F.G.S. JOHN W. TAYLOR, M.Sc.,
RILEY FORTUNE, F.Z.S.

*The Journal is one of the oldest Scientific Periodicals in the British Isles, dating
back to 1833, and is circulated widely amongst the principal Naturalists of the country.*

LONDON: A. BROWN AND SONS, LIMITED, 5, FABRINGTON AVENUE, E.C.
And at Hull and York.

PRICE, SIXPENCE NET. BY POST SEVENPENCE.

Prepaid Subscription, 6s. 6d. per annum, post free.

The Annual Subscription for 1918 is 9/-
[See p. 2 of Wrapper.]

Third Series, No. 43.]
[No. 650.]

JULY, 1918.

[PRICE 1/- NET.]

THE
ENTOMOLOGIST'S
MONTHLY MAGAZINE.

EDITED BY

G. C. CHAMPION, F.Z.S. J. E. COLLIN, F.E.S.

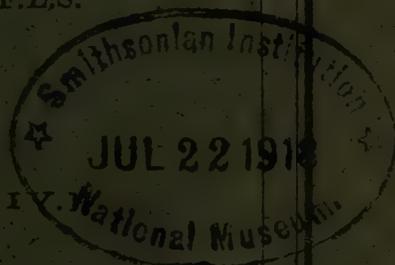
W. W. FOWLER, D.Sc., M.A., F.L.S.

R. W. LLOYD, F.E.S. G. T. PORRITT, F.L.S.

J. J. WALKER, M.A., R.N., F.L.S.

VOLUME LIV.

[THIRD SERIES—VOL. IV.]



"J'engage donc tous à éviter dans leurs écrits toute personnalité, toute allusion dépassant les limites de la discussion la plus sincère et la plus courtoise."—*Laboulbène.*

LONDON:

GURNEY & JACKSON (MR. VAN VOORST'S SUCCESSORS),

33, PATERNOSTER ROW, E.C. 4.

TAYLOR AND FRANCIS, RED LION COURT, FLEET STREET.

NOTICE.—Owing to the greatly increased cost of paper, printing, etc., the Editors of the Magazine are compelled to raise the subscription to 9s. per annum (post free). Subscriptions for the 1918 volume should be remitted as soon as possible to R. W. LLOYD, I. 5, Albany, Piccadilly, London, W.1.

The price of a single ordinary number is 1s.

EXCHANGE.

OVA—*S. carpini* and *C. vinula*—exchange for other ova or larvae.—GIBSON, Dentist, Hebden Bridge.

REDUCED PRICES FOR BACK VOLUMES.

FIRST SERIES.

This can only be obtained in complete Volumes (bound or unbound).

A limited number of sets, from Vol. x to Vol. xiv can still be obtained at £2 15s. per set net (in parts), or of five consecutive Vols. at £1 per set net (if bound, 1s. per Vol. extra).

Certain of the Vols. i to ix can be had separately at 10s. each.

SECOND SERIES.

Vols. i to xv. are now offered at £3 per set net (in parts), or £1 2s. 6d. for five consecutive Vols. (if bound, 1/- per Vol. extra).

THIRD SERIES.

Vol. li (Third Series, Vol. i) can be supplied by the Publishers at 7/6 (8/6 if bound) per copy. Cover for binding, 1/-.

Vol. li (1915) contains 23 Plates (one coloured), a complete Monograph of the British Siphonaptera, and numerous extra pages of text.

Apply to the Publishers.

MEETINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON, 11, Chandos Street, Cavendish Square, W.—Wednesday, October 2nd, 16th, November 6th.

The Chair will be taken at 8 o'clock in the evening precisely.

The Library is open daily from 9 a.m. to 6 p.m. (except on Saturdays, when it is closed at 2 p.m.), and until 10 p.m. on Meeting nights.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge. The Second & Fourth Thursdays in each month, at 7 p.m. The lantern will be at the disposal of Members for the exhibition of slides.

The Chair will be taken punctually at 8 o'clock.

THE LONDON NATURAL HISTORY SOCIETY, which meets at 7 p.m. on the 1st and 3rd Tuesdays in each month, at Room 20, Salisbury House, Finsbury Circus, E.C., will be glad to welcome at its Meetings any French or Belgian entomologists now staying in this country, and to give them the benefit of its library and collections. Communications should be addressed to the Secretary, Salisbury House, E.C.

Hon. Sec.: J. ROSS, 18, Queen's Grove Road, Chingford, N.E.

Chingford Branch. The Chingford Local Branch meets at the Avenue Café, opposite Chingford Station, at 8 p.m., on the 2nd Monday in each month.

those on the prothorax into various spots and streaks, and those on the elytra mainly into three irregular angulated fasciae (the median one enclosing several small pallid spots and extending to the outer margin, but not reaching the suture) and an angular apical patch; the eyes black, the antennal joints 1-4, legs (the infusate outer portion of the posterior femora excepted), and under surface testaceous; densely, very finely, the prothorax minutely punctate. Head small, bifoveate between the eyes; antennae moderately long, rather slender, joint 3 small, short, narrower than 2. Prothorax very short, obliquely narrowed from the base, the anterior angles sharp and prominent. Elytra rounded and explanate laterally, somewhat acuminate at the tip, with a faint sutural stria. Posterior coxae without definite plate. Posterior legs long, the femora very stout, the tibiae curved, the upper spur a little shorter than the first tarsal joint.

Length 3, breadth 2 mm.

Hab. BRAZIL, Minas Geraes (*Mus. Brit.*).

Two examples, assumed to be sexes, the supposed ♂ having stouter antennae than the other. Near *O. mixta* and *O. marmorata* Champ., the sharply defined elytral markings very similar to those of the Eastern *O. nigropunctata* Motsch. (= *irregularis* Waterh.), an insect extremely like the present species, except that it has the elytra uneven and with a double system of puncturing.

SCIRTES Illiger.

TROPICAL AMERICAN SPECIES.*

Elytra sharply maculate	Nos. 1- 4.
Elytra not maculate (the base, suture, and outer margin paler in No. 12)	Nos. 5-17.

1.—*Scirtes grayi*.

Ora grayii Clark, Journ. Ent. ii, p. 385 (1865)¹; Champ. Biol. Centr.-Am., Coleopt. iii, 1, p. 603 (1897)².

Scirtes sexmaculatus Pic, Mélanges exot.-entom. xii, p. 5 (1915)³.

Hab. BRAZIL², Constancia¹, Rio de Janeiro (*Gray, Fry*), Itatiaya³ (*Gounelle*).

The type of *O. grayii* has two broad interrupted black stripes on each elytron, and the rest of their surface flavous, that of *S. sexmaculatus* has the black stripes each divided into three oblong patches, the connecting transverse flavous lines between these patches being clearly

* Twenty-one species of *Scirtes* from Central America were recorded by myself in 1897, and about the same number have been catalogued from the Southern Continent, a totally inadequate representation for such a vast region. *S. 4-fossulatus* Pic, from French Guiana (Mélanges exot.-entom. xx, p. 5, July 1916), a species unknown to me, the type of which must be ♀, has the elytra foveate as in the same sex of various Asiatic forms here described.

visible even in Clark's type, though he omitted to notice this in his description. The posterior coxae have a rectangular plate at the base within, as in the type of *Scirtes*, *S. hemisphaericus* L., and the present insect therefore does not accord with the description and figure of the genus *Ora* Clark, taken from *O. troberti* Guér., given by me in the "Biologia," the last-named species wanting the coxal lamella.

2.—*Scirtes flavomaculatus*, n. sp.

Broad-oval, rather convex, very shining, rather sparsely pubescent; nigropiceous, the sides of the prothorax broadly, and six spots on each elytron—one adjacent to the scutellum, two transversely placed at about the basal third (the outer one transverse and reaching the lateral margin, the inner one smaller and near the suture), two others below these (obsolete in one specimen), and one near the apex,—flavous, the antennae, palpi, and legs, the under surface in part, and a triangular mark on the front of the head (wanting in one example) testaceous; the elytra closely, rather coarsely, the rest of the upper surface much more finely, punctate. Head broad; antennae long, slender, joints 2 and 3 short, equal. Prothorax rapidly, arcuately narrowed from the base, hollowed in front opposite the eyes. Elytra with an indication of a faintly impressed sutural groove, rounded at the apex, sharply margined. Posterior coxal plates subquadrate. Posterior legs long, the tibiae feebly curved, the upper spur much shorter than the first tarsal joint.

Var. The prothorax wholly infusate, the flavous elytral markings reduced to a narrow interrupted fascia below the base. (♀.)

Length $4-4\frac{1}{10}$, breadth $2\frac{3}{4}-3$ mm.

Hab. BRAZIL, Rio de Janeiro (*Fry*).

Three examples, varying in the development of the flavous markings on the elytra, the one (♀) with six sharply-defined spots on each wing-case taken as the type. Very near *S. grayi*, but with a different system of coloration, and the elytra less rounded at the sides. The present species might easily be mistaken for a Coccinellid. *S. variegatus* Guér., from Cayenne?, seems to be a somewhat similar insect.

3.—*Scirtes multiguttatus*, n. sp.

Oval, shining, finely pubescent; piceous, the head with an oblong patch on each side in front, the prothorax (a transverse piceous fascia on the disc excepted), and the suture and nine sharply defined spots or streaks on each elytron—two, oblique, on the disc near the base, a humeral streak curving inwards posteriorly, an oval spot below this near the suture, three spots arranged in a curved fascia beyond the middle, and two, transversely confluent, near the apex—yellow; the basal joints of the antennae, and the legs in part, testaceous; closely, minutely, the elytra conspicuously, punctate. Head rather small; antennae moderately long, rather slender, joint 3 minute, shorter than 2, 4-10 gradually decreasing in length. Prothorax arcuately narrowed from the base, hollowed in front opposite the eyes. Elytra rather convex, without

trace of grooves or costae, narrowly margined. Posterior coxal plates small, angular, hollowed behind. [Posterior legs wanting.]

Length 3, breadth 2 mm. ($\sigma^?$)

Hab. BRAZIL, Iguarassu (*G. A. Ramage*).

One specimen, received by the Museum in 1896, and subsequently placed in their "Accessions" amongst the *Halticidae*, which it closely resembles. *S. multiguttatus* must be placed near the Brazilian *O. grayi* Clark (= *sexmaculatus* Pic). The flavous elytral markings are more sharply defined than in any other *Scirtes* known to me.

4.—*Scirtes cincticollis*, n. sp.

♀. Elliptic, rather convex, very shining, finely pubescent; piceous, the sides of the head broadly, the prothorax with the lateral, basal, and apical margins (leaving a sharply-defined, slightly curved, piceous fascia on the disc), and the elytra with the suture to about the middle, the base, and outer margin to below the humeri (the marginal stripe curving inwards and dilated at its point of termination), flavous, the apical third of the elytra, and the antennae, legs, and abdomen, testaceous; closely, very finely punctate. Head broad, with a minute shallow fovea on each side near the eyes; antennae very slender, moderately long, joint 3 very small, barely as long as 2. Prothorax convex, rapidly narrowed from the base, bisinuate in front, the anterior angles somewhat obtuse. Elytra with an indication of a shallow sutural groove, rounded at the tip, narrowly margined. Posterior coxal plates small, angular. Posterior legs long, the tibiae distinctly carinate, the spurs curved, the long upper one much shorter than the first tarsal joint.

Length $2\frac{2}{3}$, breadth 2 mm.

Hab. AMAZONS, Prainha (*Trail*, xi-xii.1875).

One specimen. A convex, very shining insect, elliptic in shape, with a flavo-maculate head, fusco-fasciate prothorax, and the elytra of a dilute piceous colour, with the suture and outer margin anteriorly, as well as the base narrowly, flavous. The vittate head and general facies are suggestive of the much larger and more robust *Scirtes vittifrons*, from Sierra Leone *infra*.

5.—*Scirtes cayennensis*.

Scyrtes cayennensis Guér. Rev. Zool. 1861, p. 545.

♀. Oblong-oval, broad, depressed, moderately shining, thickly, coarsely, pubescent; rufo-testaceous, the elytra in great part (except along the base, suture, and outer margin) reddish brown, the apices of the latter, the antennae (the slightly infusate joints 9-11 excepted), and legs, testaceous; densely, finely, the elytra a little more coarsely and rugosely, punctate. Head rather small, the eyes not very large; antennae long, slender, joints 2 and 3 short, equal. Prothorax rapidly, arcuately narrowing from the base, hollowed in front opposite the eyes,

the anterior angles rounded. Elytra long, broad, subparallel anteriorly, somewhat acuminate at the tip, sharply margined, with just an indication of faint costae and a sutural groove in certain lights. Posterior coxal plates angular. Posterior legs comparatively short, the femora broad, the tibiae sharply carinate, moderately widened, the upper spur much shorter than the first tarsal joint.

Length $5\frac{1}{2}$, breadth $3\frac{1}{2}$ mm.

Hab. GUIANA, Cayenne [type]; BRAZIL, Rio de Janeiro (*Fry*).

The above description is taken from a fully mature ♀ in good condition, from the Fry collection. This example agrees so nearly with Guérin's brief diagnosis of *S. cayennensis*, except in its slightly larger size (Guérin gives, length $4\frac{1}{2}$, breadth $2\frac{1}{2}$ mm.) and darker colour, that it can be provisionally referred to that species, which is said by him to be extremely like *Helodes livida*. The resemblance to this genus, or rather to *Microcara*, under which *livida* is now placed, is certainly very striking, as is the case in *S. costulatus* Waterh., from Penang,

6.—*Scirtes lutens*, n. sp.

♀. Oblong, shining, closely flavo-pubescent; luteous, the suture paler, the eyes black; densely, very finely, the elytra more distinctly, punctate. Head rather small, the eyes moderately large; antennae slender, joints 2 and 3 short, equal, those following elongate. Prothorax convex, ample, rapidly, arcuately narrowing from the base, deeply sinuate opposite the eyes in front. Elytra long, feebly rounded and sharply margined at the sides, with an indication of a sutural groove, the apices somewhat acuminate and depressed near the suture within. Posterior coxal plates subrectangular. Posterior legs comparatively short, the tibiae curved, moderately widened, and sharply carinate, the spurs short, curved, stout, the upper one not much longer than the lower one, and much shorter than the first tarsal joint.

Length $4\frac{1}{2}$, breadth $2\frac{3}{4}$ mm.

Hab. BRAZIL, Rio de Janeiro (*Fry*).

One female. An oblong, luteous, finely-punctured insect, resembling a large *Cyphon*, with the posterior tibial spurs shorter than usual in the genus *Scirtes*. It is narrower and much less rugose than the insect here referred to *S. cayennensis* Guér., and larger and more elongate than *S. championi* Picado, from Costa Rica.

7.—*Scirtes buckleyi*, n. sp.

♀. Oblong-oval, convex, very shining, sparsely, finely pubescent; black, the head and prothorax rufo-testaceous, the anterior and intermediate femora (except at the tip) testaceous, the tibiae and tarsi piceous; sparsely, minutely, the elytra somewhat coarsely, punctate, the punctures on the latter becoming finer towards the apex. Head moderately broad, the eyes large [joints 3-11 of antennae wanting]. Prothorax short, convex, rapidly, arcuately narrowing

from the base, hollowed in front opposite the eyes. Elytra long, flattened near the suture anteriorly, somewhat produced at the apex, sharply margined and feebly rounded at the sides, without grooves or costae. Posterior coxal plates rectangular. Posterior legs elongate, the tibiae moderately widened, the upper spur comparatively short, barely one-half the length of the long first tarsal joint.

Length $4\frac{1}{2}$, breadth $2\frac{1}{2}$ mm.

Hab. ECUADOR (*C. Buckley*).

One specimen, acquired by the Museum in 1872. Distinguishable by the rufo-testaceous head and prothorax, black elytra, and dark legs, the short tibial spurs, and the sparse puncturing of the upper surface, the punctures on the elytra coarse, compared with those on the prothorax. The general facies is that of an *Helodes*. *S. gounellei* Pic (1915), from Caraca, Brazil, is a somewhat similarly coloured, oval, larger insect (length 5 mm.), with the scutellum and knees rufescent.

(To be continued.)

188

A REMARKABLE NEW GENUS OF *TENEBRIONIDAE* (COLEOPTERA)
FROM TROPICAL AFRICA.

BY K. G. BLAIR, B.Sc., F.E.S.

(Published by permission of the Trustees of the British Museum.)

A single specimen of the remarkable beetle here described was presented to the Museum some few years ago by Dr. G. A. K. Marshall. It was quite unlike any Tenebrionid known to me, and I was much puzzled to know even where to place it in the family. Two further specimens having been since obtained by Mr. S. A. Neave, and my efforts to find a published description of the insect being still fruitless, I now venture to describe it as new.

CATOBLEPS, gen. nov.

Oblong-ovate, plano-convex; head deflexed, completely concealed beneath the prothorax; face ventral, flat, strangulated in front, the clypeal suture running directly across the narrowest part; clypeus widely emarginate; labrum transverse; maxillary palpi stout, the last joint elongate, subcylindrical, truncate at apex; eyes long, narrow, arcuate round base of antennae, moderately approximate above. Antennae stout, the basal joint large and distinct, the rest very compact, transverse (except the 3rd joint and the apical one), without constrictions between them. Thorax evenly convex from side to side, broadly and evenly rounded in front, without a trace of anterior angles, sharply truncate at the base, which slightly overlaps the base of the elytra; the sides and front with a fine marginal line, beneath which the edge is

strongly thickened, this thickening gradually decreasing towards the posterior angles. Scutellum rather elongate, triangular, its sutures very fine and not easily discernible. Elytra subparallel, evenly convex from side to side broadly rounded behind; epipleura complete to apex, invisible from above. Wings well developed. All the coxae narrowly separated; prosternal process lanceolate, projecting a little beyond the coxae. Femora broad and flat, bean-shaped, deeply excavate beneath in the distal half for the reception of the proximal half of the tibiae; tibiae stout, slightly compressed, apical spurs well developed. Tarsi stout, their joints closely compact, without constrictions between them, more or less tapering from base to apex.

Type, *C. blattoides*, sp. n.

A highly aberrant genus. In many respects it furnishes a curious parallel with the Australian genus *Adelotopus* (fam. *Carabidae*), and in all probability like this is myrmecophilous or termitophilous in habit. The species of both genera have the same elongate plano-convex form, so that the insect on contracting its limbs and "sitting tight" presents an absolutely unassailable front, or rather back, to its enemies; in both of them the antennae and tarsi exhibit the same compact build, without constrictions between the joints. In other respects they attain the same result by different means, *e. g.* in *Catobleps* the head is completely hidden beneath the carapace of the prothorax, but in *Adelotopus* it forms the anterior part of the general shield, fitting accurately into the prothorax. In *Catobleps* each side of the femur is produced into a plate-like expansion which receive the tibia between them, like the blade of a clasp-knife into its handle; but in *Adelotopus* only the outer side is so produced, the dorsal side, *i. e.* that which lies against the body, being quite normal. The American Carabid genus *Pseudomorpha*, allied to *Adelotopus*, exhibits somewhat similar adaptations, but to a less degree.

The most evident clue to the affinities of *Catobleps* is furnished by the genus *Stemmoderus* Spin., which links it with the termitophilous subfamily *Rhysopaussinae* of the *Tenebrionidae*, particularly with the genus *Gonocnemis* Thomson (= *Acastus* Péring.). The structure of the antennae and tarsi in both is very similar, and the cephalic structure of *Catobleps* is an evident modification of that of *Stemmoderus*.*

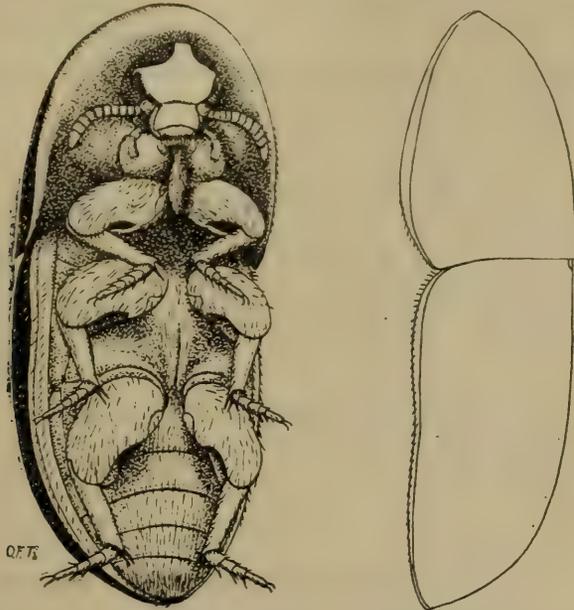
The elytral sculpture is peculiar. The striae appear to be completely wanting, but fine raised lines represent the median carinae of the intervals; these, though well developed in *C. chatanayi*, are scarcely indicated in *C. blattoides*. Successive stages in this degeneration of

* *S. singularis* Spin., the only known species of this genus, has a wide range in Tropical Africa. It was originally described from Senegal, and I have recorded its capture at Salisbury, Mashonaland, by Dr. G. A. K. Marshall [Ann. & Mag. Nat. Hist. (8) xi, 1913, p. 305]; another specimen has lately been received from Dr. G. D. H. Carpenter from Lulunguru, near Tabora, East Africa.

the striae are furnished by the genera *Gonocnemis*, *Stemmoderus*, and *Catobleps*.

Catobleps blattoides, sp. n.

Dark reddish piceous, nitid, dorsal surface without hairs or punctures. Front of the head flat, glabrous, and nitid, almost semicircular above the clypeal suture, which is not at all impressed; clypeus transversely cordate; eyes moderately approximate above. Thorax about as long as wide, feebly arcuate at the sides, the base broadly but feebly emarginate; the latero-anterior carina completely marginal, the thickened edge beneath it most developed in



Catobleps blattoides, oblique ventral and lateral views, enlarged.

front and gradually diminishing towards the posterior angles. Elytra about $1\frac{1}{2}$ times as long as broad, feebly tapering towards the bluntly rounded apex, convex, nitid, without punctures or striae, except for a faint raised line visible for a short distance near the suture about the top of the declivity; under a moderately high magnification the whole surface is seen to be covered with minute transverse, anastomosing scratches or rugulosities; the humeri broadly rounded; there is a fringe of short stiff hairs immediately beneath the lateral carina, and a similar row of hairs along the middle of the epipleuron. Legs and underside clothed with a not very dense reddish pubescence; the femora moderate strongly, asperately punctured, the tibiae almost impunctate.

Length 7, breadth 3 mm.

Hab. NYASALAND, Mlanje (*S. A. Neave*: 24.ii.1913); MASHONALAND, Salisbury (*G. A. K. Marshall*: at light).

The deflexed head with the horizontal and flattened face, together with the colour and shining appearance of the insect, is curiously suggestive of a Blattid.

Catobleps chatanayi, sp. n.

Shorter and more robust than *C. blattoides*, the whole surface asperately punctate, and clothed with moderately dense, long, reddish pubescence. The thorax is slightly broader than long, with the base truncate, feebly narrowed from the base forwards; the lateral line is thrown on to the dorsal surface from the posterior angles until close to the middle of the anterior margin. The elytral costae take the form of fine raised lines, the intervals being flat, each with three regular rows of setigerous asperate punctures; humeri obtuse, but distinctly angulate. Eyes almost contiguous above, the front of the head more uneven, with a broad transverse impression across the clypeal constriction, which extends upwards towards the eyes in the middle line; this depressed area, and the part in front of the eyes, strongly asperately punctate, leaving a broad, smooth area above the insertion of each antenna. The anterior femora are rather more slender than the others.

Length $5\frac{1}{2}$, breadth $2\frac{1}{2}$ mm.

Hab. ? (type in *Mus. Brit. ex coll. Bakewell, without locality*).

This species is named in honour of the late J. Chatanay, who fell in action at Vermelles on October 15th, 1914. He was one of the younger French entomologists, and had accomplished much sound and useful work on this family of Coleoptera.

British Museum (Nat. Hist.), S.W. 7.

May 1918.

A NOTE ON THE SYSTEMATIC POSITION OF THE GENUS

TRETOTHORAX LEA (COLEOPTERA).

BY K. G. BLAIR, B.Sc., F.E.S.

(Published by permission of the Trustees of the British Museum.)

In describing *Tretothorax cleistostoma* Lea (Proc. R. Soc. Victoria, xxii, 1911, p. 211, pl. xxv, fig. 13), its author, being unable to include it in any existing family of Coleoptera, was compelled to erect for it a new family, *Tretothoracidae*, which he considered intermediate between the *Colydiidae* and the *Rhysodidae*.

Dr. Gestro, judging only from the description and figure, and from its termitophilous habits, has assigned the genus to the *Rhysopaussidae* (Ann. Mus. Genova, xlv, 1911-13, p. 5, fig.); but with this family (= *Tenebrionidae*, subfam. *Rhysopaussinæ* of Gebien in Junk's "Coleopterorum Catalogus," 1911) *Tretothorax* certainly has no connexion.

The heteromerous tarsi and closed anterior coxal cavities assign it to the *Tenebrionidae*; but the lack of visible connecting membranes between the posterior abdominal segments, and of visible trochantins to the

intermediate coxae, together with the large mentum filling the gular cavity, place it among the early groups of this family far removed from the *Rhysopaussinae*. The anterior coxal cavities are placed very far back and are almost contiguous, being separated by a very narrow partition, which is sunk between the coxae and scarcely visible without dissection; and the antennae are apparently 10-jointed, the 11th joint being sunk within the 10th. In these features, as well as in the deeply-excavated thorax, *Tretothorax* agrees very closely with the American genus *Dacoderus* Lec. In the latter the anterior coxal cavities are described as contiguous, but having no specimen to spare for dissection I am unable to satisfy myself whether this is really so, or whether there is not a narrow sunken division between them. In either case *Tretothorax* undoubtedly finds its nearest described ally in *Dacoderus*, and may well be included with it in the subfamily *Dacoderinae*. An affinity between two such specialized genera, each so isolated in its peculiar fauna, is somewhat surprising, but the resemblance between them, extending even to such superficial details as the character of the elytral sculpture, is really remarkable.

Dacoderus striaticeps is described as living under bark, nothing being said of its having any association with ants or termites, though it is not improbable that such may exist.

There are three described species of *Dacoderus*—one from California and N. Mexico, one from Texas, and one from San Domingo. The British Museum possesses a fourth and very distinct species from Colombia, viz. :—

Dacoderus acanthomma, sp. n.

Elongate, reddish castaneous, nitid; genae not produced behind the eyes, but enclosing them beneath, and visible from above as a narrow external border, which is produced opposite the posterior part of the eye into a tooth directed a little forwards. Front of head deeply excavate between the antennary bosses, the vertex strongly, longitudinally sulcate. Thorax strongly sulcate before the transverse excavation, the median furrow in this area not strongly pronounced. Elytra elongate ovate, flat on the disc, the sides perpendicular, separated from the disc by a carina, which is strongly pronounced on the shoulders, but obsolete towards the apex; suture raised; the first stria distinct, its interval uniseriately punctate, the rest of the elytral surface with irregularly disposed elongate punctures.

Length 4 mm.

Hab. COLOMBIA (*ex coll. Fry*).

One example. Closely allied to *D. striaticeps* Lec., next to which it comes in Horn's synopsis of the genus (Trans. Amer. Ent. Soc. xx,

1893, p. 139). It is smaller, and may readily be separated by the genal spine outside the eyes, as well as by the carinate junction of the flat discal portion of the elytra with the vertical sides. In this species, as in *D. striaticeps*, the eye is invisible from below, being almost horizontal in position on the dorsal surface of a lateral projection of the gena; in *D. dominicensis* Horn, and presumably in *D. laevipennis* Horn, which is unknown to me, it is completely lateral and almost circular in outline, with a considerable interval between it and the neck.

British Museum (Nat. Hist.), S.W. 7.

May 1918.

ON GYNARCHY IN COLEOPTERA.

BY D. SHARP, M.A., F.R.S.

The predominance of the female sex is well known and thoroughly ascertained in some of the Orders of Insects, though particulars as to its extent are still much wanted. In *Hymenoptera* the phenomenon is specially well known, and we need only mention, to illustrate this, the cases of the *Hymenoptera Phytophaga* and *Parasitica*, as well as the peculiar cases that occur in the *Aculeata*. But in *Coleoptera*, so far as I know, but little attention has yet been given to the subject; it may therefore be of some value for me to record some observations I have made: for though limited in extent, they may interest others, and induce them to give us the benefit of their experience.

Rhynchophora.—Some years ago the Russian entomologist, Silantjev, discovered that *Otiorrhynchus turca* is parthenogenetic, and to such an extent that 1000 specimens proved when examined to be all females, and since then it has been found that *O. ligustici* and *O. cribricollis* are both gynarchic (*cf.* Marshall, Faun. Brit. India, p. 25). I have no experience of these species, but I have examined a fair number of specimens of *O. picipes* during the last three years, and have not yet been able to find a male. I have tried some of the largest and some of the smallest specimens, but all are alike in the sexual characters. The spermatheca of the female is very easily discovered and recognizable, and it is well to observe it, because the ♀ spiculum and ovipositor may give rise to some misconception as to the sex of the individual.

Strophosomus coryli.—This in Britain is one of the most abundant of the *Rhynchophora*. Three years ago I attempted to find a male, but without success, and since then I have dissected about one hundred specimens, and all of them have proved to be females.

Chrysomelidae.—The genus *Haltica* presents a very interesting field of inquiry. The difficulty of discriminating species in it is well known, so that recourse to the male structures has frequently been made. In Britain, however, males are often rare. *H. ericeti* is a species to which I have paid particular attention, and though it is rare, I have been able to examine about 100 specimens, all of which are females. In the species we call *palustris* Weise, I have not been able to obtain a male for my collection. In *H. britteni* the male is rare in comparison with the female, and this is the case, I believe, with some other species of the genus.

Staphylinidae.—*Amischa analis* is one of the most abundant of the *Coleoptera* in Britain. Some years ago I wished to examine the male characters, so I went to my collection, and found that the individual I made the type of the male sex, when I described the British species of *Homalota*, fifty years ago, bore a label querying its sex. When I became doubtful as to this point I cannot now recall; but I set to work to examine specimens to settle the point, but all *A. analis*, and the other species of that group of *Amischa*, prove to be females. Males are readily found in the *cavifrons* group (where the species are all rare), but in the profusely abundant *analis* all are females, the specimens with a larger notch on the penultimate dorsal plate being all females of other species which are passing among us as males of *H. analis*! The spermatheca of the female is easily found in this genus, and as I have dissected some hundreds of specimens I have no doubt as to the gynarchy of this section of the genus *Amischa*.

These notes, it will be observed, refer to some of the most abundant species of British *Coleoptera*, and it would therefore appear that parthenogenesis is, in the long run, favourable to a species. Why, then, do males exist? An answer to this question cannot be given till much more is known of the physiology of sex than is at present the case.

Brockenhurst.

June 17th, 1918.

ATOMARIA ZETTERSTEDTI ZETT. (= *SALICICOLA* KRAATZ), A BRITISH INSECT.

BY G. C. CHAMPION, F.Z.S.

Mr. J. Collins, of the Hope Department of the University Museum at Oxford, has recently sent me for determination a number of examples of an *Atomaria* found in sallow catkins in that district, calling attention to the well-marked characters of the male. The insect is undoubtedly

referable to *A. zetterstedti* (Schönh.) Zett. (= *salicicola* Kraatz), as might be suspected from the specific name given by the last named author; but I should have hesitated to identify it with Zetterstedt's species in the absence of Continental examples for comparison. Fortunately, a male from E. Finland, received from Dr. J. Sahlberg, agreeing with the Oxford specimens of the same sex, is contained in my own collection, and the difficulty is thus solved. *A. zetterstedti* has been described at some length by Zetterstedt (under the generic name *Cryptophagus*), Kraatz, Thomson (under *Anchicera*), Ganglbauer, and Reitter; but they do not give the sexual characters, which are more pronounced than in any other species of the genus known to me. The insect is uniformly testaceous or rufo-testaceous in colour (the black eyes excepted), and separable from pallid examples of the closely allied *A. fuscata* Schönh. by the more rounded sides of the prothorax (which is relatively wider at the middle), the finer puncturing of the entire upper surface, and the broader ninth and tenth joints of the antennae; the anterior tibiae are curved in both sexes, strongly so in ♂ (almost straight in *A. fuscata*), armed with a small tooth at the inner apical angle in ♂, and in well-developed examples of that sex they are slightly widened in their apical fourth, appearing angulate on their inner edge at the commencement of the dilatation; and the metasternum bears a small compressed tubercle before the middle.

Mr. Collins first met with *A. zetterstedti* at Weston-on-the-Green, Oxon, in April 1914, when beating willows for *Acalyptus rufipennis*; subsequently, he took it at Yarnton, in May 1916, from willow catkins, and again, in some numbers, in the same place, on May 15th, 1918, by beating the ripe cottony or downy seed-heads of ♀ willows which were breaking up and ready to fall. The insect is recorded from Finland, Germany (Cassel) etc.; but though its occurrence in willow-blossom is mentioned by nearly all the Continental writers, it does not appear to have been taken very frequently, and the ♂ may thus have escaped their observation.

Horsell.

June 13th, 1918.

CHORTOPHILA PILIPYGA VILLENEUVE IN BRITAIN.

BY PERCY H. GRIMSHAW, F.R.S.E., F.E.S.

Among the number of *Anthomyiidae* recently sent to me for determination by Professor J. W. Carr, M.A., of University College, Nottingham, I was pleased to find two male examples of *Chortophila*

pilipyga, a species described as new by Dr. J. Villeneuve just about a year ago (*Parasitology*, vol. ix, No. 3, May 1917, p. 440). The only specimens hitherto known are two males taken in France (at Rambouillet and near Bordeaux respectively) and a female, presumably of the same species, taken under the same circumstances as the Bordeaux male. Professor Carr's examples were taken at Warsop, Notts, 28.viii.1915, and Bulwell Park, Nottingham, 7.vi.1916, respectively, and he has very kindly agreed to my suggestion that the occurrence of the species in Nottinghamshire should be published without delay.

The following brief description, founded upon that of Villeneuve, may serve to distinguish *C. pilipyga* from *C. brassicae* Bouché, with which it may be easily confounded.

Size less than that of *C. brassicae* (length 6 mm.), general form and chaetotaxy identical; coloration lighter, of a clearer ashy-grey, with the three longitudinal thoracic stripes of a *pale brown*; face whitish with dark reflections. Abdomen with a narrow blackish median longitudinal stripe, but the incisures not or scarcely darkened, while the bristles at the margins of the segments are not quite so long; the lobes of the 5th ventral segment are narrow, adpressed to the ventral surface and slightly projecting when seen in profile, and *furnished with long vertical hairs* whose appearance is quite characteristic of the male of this species. The hind tarsi are appreciably longer than the corresponding tibiae, while the latter are furnished on their anterior sides (antero-ventral as well as postero-ventral) with a series of erect rigid setae, which, however, are decidedly less numerous than in *C. brassicae*. Lastly, the hind femora are clothed with *short hairs* beneath, without the tufted appearance so characteristic of *C. brassicae*.

Royal Scottish Museum, Edinburgh.

May 1st, 1918.

ON TWO NEW SPECIES OF *CAMPODEA*.

BY RICHARD S. BAGNALL, F.L.S.

Since publishing my notes on the British species of this genus I have had the opportunity of examining two more new species which may now be briefly diagnosed. They both fall into Section I, though the macrochaeta at each hind angle of the metanotum in *C. meinerti* may be regarded by some as an abnormally-developed minor seta, in which case it would fall into Section II. For all practical purposes it should be regarded as falling in the first section.

Campodea meinerti, sp. n.*

Length 3.5-4.2 mm. Antennae 22-23 segmented, about 0.5 the length of body. Cerci 9-11 segmented, about 0.6 the length of body; somewhat as

* Dedicated to the distinguished Danish zoologist the late Dr. Fr. Meinert.

in *C. westwoodi*, the longer distal joints being furnished with 3 whorls of upstanding specialized setae; the outer setae basally are strongly feathered, but on the inner side they are modified, and are more or less clavate, with a minute tooth near apex. The longer macrochaetae of pronotum, mesonotum "feathered" with a double row of "points." The macrochaetae of anterior margin of pronotum only about 0.3 the length of those at each angle; the anterior macrochaetae of mesonotum 0.45-0.5 the length of the one at each hind angle; the macrochaeta at each hind angle of the metanotum short and stout, seemingly a well-developed pair of the modified minor setae of the posterior margin. Abdominal tergites 1-7 each furnished with a pair of anterior, and 8 and 9 with a pair of more widely separated posterior, submedian macrochaetae; 5-7 with lateral, and 5-9 with posterior, sublateral macrochaetae present. Stylus much as in *C. staphylinus*, etc. Minor setae slightly longer and not so stout as in *lubbocki*.

Hab. I first detected this interesting insect in a small batch collected by Miss Evans at Fallowfield, Manchester, in April 1918, but later I rediscovered some of my older material containing the same species from Gibside, Co. Durham, June 1916, and a single example from the shore at Grange-over-Sands. Swanage, Dorsetshire, May 1918.

This species comes nearest to *C. lubbocki*, from which it differs in the large macrochaetae at each hind angle of mesonotum, the smaller anterior submedian (found on 1-7 only), and the larger and differently formed lateral macrochaetae of the tergites, the form of stylus, etc., and chiefly in the very different type of cerci, the distal joints each having the appearance of being composed of 3 subsegments.

The larvae described as that of *C. lubbocki* by Silvestri is referable to this species.

Campodea wallacei, sp. n.*

This species closely resembles *C. giardi* Silv., and a detailed description is unnecessary. The macrochaetae at hind angles of both meso- and metanotum are longer (and more slender) compared with the postero-marginal series of minor setae. The most careful research fails to show the presence of either anterior or posterior submedian setae on the abdominal tergites. The apical seta of stylus is furnished with 2-4 branches on the inner margin, and the subapical seta is branched near middle. The long macrochaetae of the prothorax and abdomen are much more regularly "feathered." Cerci with the distal joints longer and more slender, about 0.7 as long as the body.

Hab. Heaton, near Newcastle-on-Tyne, May 1918 (*H. S. Wallace* and *R. S. B.*). Mr. Wallace suggested that the species was associated

* I have pleasure in naming this species after my friend Mr. H. S. Wallace, F.E.S., who discovered the first example and who has of late made many interesting Arthropod "finds."

with dead beech-leaves, and at the moment of writing I have discovered quite a colony of *C. wallacei* under stones lying in amongst dead and fallen beech-leaves at Fenham, near Newcastle, 21.v.18.

Rydal Mount, Blaydon-on-Tyne.

May 21st, 1918.

Some notes on Suffolk Coleoptera.—The publication by Mr. Claude Morley in 1915 of his first supplement to "The Coleoptera of Suffolk" caused me to look up my notes of such captures as I have made in the County at various times. I had no opportunity of embodying them in the supplement, as I was not aware of Mr. Morley's intention until immediately before publication. The following belated records may be of some little interest if read in conjunction with the original list and supplement. The species marked with a star (*) are additions to the County list.

Amara anthobia Villa: the specimens standing in my collection above the label *A. familiaris* Duft. are referable to the first-named insect; they were taken in the vicinity of Oulton Broad in 1898; I also met with it at Corton in 1904. *Bembidium normannum* Dej. is apparently not a common Suffolk species, but in June 1909 it was abundant on the muddy banks of Lake Lothing. *Dromius sigma* Rossi: since my original capture in 1898 I have taken over sixty specimens of this species; it is extremely local, and may be found by pressing down the dead sedge at the edge of a ditch and then removing the pressure, when the beetles run swiftly up the stems. *Pelobius tardus* Herbst is not uncommon in a roadside pond at Somerleyton. *Noterus clavicornis* De G. is a very common species in the ditches below Oulton Church, and in my experience is generally common throughout the Broad districts. *Hydroporus umbrosus* Gyll and *H. angustatus* Sturm: both occur at Oulton Broad. *Hydrophilus piceus* L. appears to be very scarce in Suffolk, judging by the lack of records, but in April 1903 I found it in profusion in one particular ditch at Barnby Broad. *Laccobius minutus* L.: I captured a single specimen of this insect at Oulton Broad on August 31st, 1905, thus confirming Stephens's record; the species is omitted from Mr. Morley's original list though he refers in a footnote to the above record. *Cercyon littoralis* Gyll., abundant on the banks of Lake Lothing. *C. obsoletus* Gyll., two specimens at Oulton Broad in February 1899. *C. terminatus* Marsh., Oulton Broad, June 1909, with *C. nigriceps* Marsh.

Aleochara algarum Fauv., common on the banks of Lake Lothing. *Thamiaræu cinnamomea* Grav., not uncommon in *Cossus* borings in the Lowestoft district and usually accompanied by *Atheta euryptera* Steph., *A. vestitu* Grav., and *A. halobrectha* Sharp, abundant under débris on the banks of Lake Lothing. **A. monticola* Thoms. at Oulton Broad, August 1905. **A. paradoxu* Rey, in a mole's nest at Barnby Broad in March 1907. **A. exilis* Er., Oulton Broad, December 1907. **A. subsinuata* Er., Corton, June 1907. *Myrmecopora uvida* Er., in large numbers under pieces of board and an old sack on the edge of Lake Lothing. *Autalia rivularis* Grav., not

uncommon at Brandon in June 1906, and Oulton Broad, 1909. **Silusa rubiginosa* Er., Oulton Broad, one specimen in a *Cossus* burrow, December 1908. *Megacronus cingulatus* Mann., Barnby Broad, February 1907, and subsequently sparingly. **Heterothops nigra* Kr., abundant in moles' nests in the Lovestoft district. *Philonthus trossulus* Nordm.: in view of Dr. Sharp's revision of the *Gabrius* group I think it well to record this somewhat scarce species, of which I took a single example at Oulton Broad in March 1907. Morley records the insect as common throughout the county, having probably failed to distinguish it from *P. nigrifolius* Gr. **P. pennatus* Sharp also occurred at the same place in 1898. *P. proximus* Kr. was found in *Cossus* burrow in an alder on Oulton Marshes in August 1902, and *P. longicornis* Kr. in sedge refuse at the same place in July 1905. *P. quisquiliarius* Gyll. was not uncommon at Oulton Broad, August 1905, and Herringfleet, June 1909. *Lathrobium fulvipenne* Grav. turned up on the Corton cliffs in June 1909, and *L. quadratum* Payk. at Oulton Broad in February 1909, thus confirming another of Stephens's records for the County. *Cryptobium glaberrimum* Herbst I first found at Benacre Broad in 1899, and subsequently at Oulton and Barnby Broads in abundance. *Evaesthetus scaber* Grav. was not uncommon at Barnby Broad in September 1911, by carefully sifting sedge-refuse at the edge of a ditch; the species does not appear to have been recorded for the County since Spence's record in 1809. *Stenus guttula* Muls. is not uncommon in damp spots on the Corton cliffs, and *S. subaeneus* Er. occurred sparingly with it in June 1909. Three specimens of *S. ater* Mann. were taken from reed-refuse at Oulton Broad in December 1903, and *S. incrassatus* Er. at Herringfleet in 1909. *Bledius opacus* Block, an uncommon Suffolk species, occurred at Brandon in June 1906. *Platystethus cornutus* Gyll. was common at Corton and Herringfleet in 1904 and 1909. *Trogophloeus foveolatus* Sahlb. was unearthed from a reed-bed at Benacre Broad in September 1906, and *T. elongatulus* Er. was not uncommon at Oulton Broad in flood-refuse in December 1907. *Coprophilus striatulus* F.: this insect, though often common enough in London streets, is apparently a rarity in Suffolk, the only two specimens I have seen in the County having been found by myself at Oulton Broad in March 1900. *Philorhinum sordidum* Steph. was abundant on furze-bushes at Brandon in June 1906. *Homalium excavatum* Steph. turned up on the Corton cliffs in June 1909. *H. punctipenne* Thoms. was found under fir-bark at Herringfleet in September 1906, and *H. vile* Er. at Oulton Broad under oak-bark in June 1909.

Bythinus puncticollis Denny was fairly numerous at Barnby Broad on various occasions, but very local; no specimens with incrassate femora were, however, to be found. *Bryaxis helferi* Schmidt occurred in profusion at Benacre Broad, where also a single specimen of *B. haematica* Reich. was found in September 1906. **Neuraphes minutus* Chaud.: two examples of this little rarity put in a very welcome appearance at Barnby Broad on September 18th, 1911, by sweeping at dusk. *Choleva intermedia* Kr., Barnby and Oulton Broads, in moles' nests, in 1907, and *C. nigricans* Spence at the same places in 1901 and 1908. *C. morio* F. at Oulton Broad in 1902 and 1903. *C. grandicollis* Er., also at Oulton Broad in September 1898. **C. fuliginosa* Er. at Barnby Broad 1901, Corton 1904, and Oulton Broad 1908. *Ptomaphagus sericatus* Chaud., under a dead fish on the banks of Lake Lothing in June 1909. *Sericoderus lateralis* Gyll., Oulton Broad, September

1906. *Phalacrus hybridus* Flach, Oulton Broad, August 1902, and Herringfleet, September 1906. **Scymnus testaceus* Mots., three specimens in haystack-refuse at Oulton Broad in December 1903. *Olibrus bicolor* F., Benacre Broad August 1902, Oulton Broad April 1903, and Corton June 1904. *Cryptarcha strigata* F. and *C. imperialis* F., not uncommon in a *Cossus*-infested oak at Herringfleet in 1906. *Tenebroides mauritanicus* L., in a Lowestoft flour-mill, August 1905. *Orthocerus nuticus* L., Brandon and Herringfleet in 1906. *Psammoechus bipunctatus* F. common in sedge at Oulton Broad. *Monotoma picipes* Herbst, Barnby Broad, April 1900. *Cartodere ruficollis* Marsh., in large numbers in a stack of marsh-hay at Oulton Broad in 1901 and 1911, with *C. elongata* Curt. and *Corticaria elongata* Gyll. *Cryptophagus cellaris* Scop. fairly common in a Lowestoft flour-mill. *Aphodius scybalarius* F., Oulton Broad, December 1903. *Oxyomus porcatus* F., common at Brandon in June 1906. *Corymbites tessellatus* F., in sphagnum on Flixton Marshes. *Telephorus oralis* Germ. at Oulton Broad in June and July 1898. *Rhizopertha pusilla* F. not uncommon in a Lowestoft flour-mill. *Cis alni* Gyll., abundant in fungus and boring in the wood of a dead, uprooted elder-bush on Kessingland beach in September 1906, also at Herringfleet. *Rhagium bifasciatum* F.: this species appears to be uncommon in Suffolk, but in December 1901 I found a number of dead specimens and living larvae in fir logs and stumps at Barnby Broad.

Donacia braccata Scop. is not uncommon at Oulton Broad by sweeping reeds. *Lema cyanella* L., one specimen by sweeping on the river-wall at Oulton in September 1900. *Phyllotreta tetrastigma* Com., Oulton Broad, 1898, and Barnby Broad, 1901. *Mantura chrysanthemi* Koch, abundant at Herringfleet in September 1906. *Hippuriphila modeeri* L., by sweeping *Equisetum* at Flixton Decoy in August 1915. *Psylliodes marcida* Ill., Kessingland, 1902. and abundant on *Cakile maritima* at the foot of the Corton Cliffs in 1906 and 1915. **Palorus ratzeburgi* Wiss. and **P. subdepressus* F., sparingly in a flour-mill at Lowestoft. *Tetratoma fungorum* F., abundant in fungi on alders at Barnby Broad.

Apion viciae Payk., abundant at Oulton Broad and Cove near Beccles in 1911 and 1915. *A. difforme* Germ., Oulton Broad, 1906. *A. trifolii* L., Oulton Broad, 1902, and Corton 1915, by sweeping clover. *A. dissimile* Germ. and *A. livescerum* Gyll. at Herringfleet, September 1908. **A. minimum* Herbst, Oulton and Barnby Broads, 1911. *A. spencei* Kirby, Oulton Broad, September 1906. *Sitones griseus* F., Herringfleet under *Erodium*, September 1906, with *Hypera fasciculata* Herbst. *Tychius tibialis* Boh., Brandon, June 1906, and *T. pygmaeus* Bris., Herringfleet, September 1906. *Sibinia primita* Herbst, Kessingland sandhills, April 1900. *Gymnetron villosulus* Gyll., Oulton Broad, September 1900. *G. labilis* Herbst, Brandon, June 1906. *Orthochaetes setiger* Beck., not uncommon at Herringfleet in September 1906. *Acalles ptinoides*, Marsh., Brandon, 1906. *Ceuthorhynchidius pyrrhorhynchus* Marsh., Oulton Broad, 1900. *C. horridus* F., two specimens on flowers in my father's garden at Lowestoft on September 1st, 1906. *Amalus haemorrhous* Herbst, Brandon, June 1908. *Phytobius quadrituberculatus* F., Oulton Broad, September 1900. *Codiosoma spadix* Herbst, not uncommon in timber of breakwater at Corton in June 1907. *Hylastinus obscurus* Marsh., abundant in the dead stems of old broom-bushes at Oulton in August 1915; the insect is usually to be found in large numbers

just below the ground-line. *Phloeophthorus rhododactylus* Marsh. occurred sparingly with the last named.—E. C. BEDWELL, Bruggen, Brighton Road, Coulsdon, Surrey: May 1918.

Silpha nigrata Creutz. in Co. Durham.—On April 27th a single specimen of this beetle was captured walking on a pathway by the side of the River Derwent, and a second example was turned up from grass-roots. The insect had previously been recorded by Bold ("Transactions of the Tyneside Naturalists' Field Club," i, p. 80) as the commonest species of the genus, although I have by no means found it so. However, on the 4th and the 18th of May, the beetle occurred in fair numbers, accompanied by one or two *S. granulata* Thunb. Without exception, all were taken running on paths, frequently hauling at dead insects or devouring dried-up worms, on the bodies of dead bees (*Andrena*, *Halictus*), oil beetles (*Meloë proscarabaeus* Linn.), or even of members of their own species. Not a single specimen occurred in the carcasses of two dogs, which nevertheless contained numbers of *Thanatophilus rugosus* Linn., as well as of *Hister cadaverinus* Hoffm., *H. striola* Sahlb., and *Creophilus maxillosus* Linn., both type and variety *ciliaris* Steph.—GEO. B. WALSH, 166 Bede Burn Road, Jarrow-on-Tyne: June 7th, 1918.

The embryonic period of Meloë proscarabaeus Linn.—On April 27th this beetle occurred in large numbers on the banks of the Derwent, copulation readily taking place in the brilliant sunshine. A few pairs were taken home and placed in a large glass trough containing damp soil and some growing plants; this was kept in a warm sunny place without any covering. No further copulation was observed to take place, but during the night of April 30th–May 1st three large batches of yellow sausage-shaped eggs were laid in small cavities, about the size of a filbert, at a depth of one inch. The parents were then removed, and the plants were, for ease of observation, replaced by a number of upright sticks. The eggs gradually showed signs of development, and on May 31st all the triangulin larvae emerged, thus giving a period of embryonic development of thirty-one days. At first the larvae remained huddled together, but after a while they became extremely active, crawling up the sticks in enormous numbers and forming large yellow masses at the top. While I was removing specimens for preservation and microscopic preparation, numbers crawled up my hands and wandered over my anatomy, giving me for some time a kind of imitation "trench feeling." The specimens left alive remained active for five days, after which I saw no more of them. Their bodies were at first packed with oil globules which showed up clearly under the microscope, this doubtless serving as a supply of food during the long period a larva must often have to wait before a bee comes within reach.—G. B. WALSH.

Iophocateres pusillus Klug, a cosmopolitan beetle, in London.—The above-named insect, not previously recorded, I believe, as having been found here, has occurred in several samples of the butter-beans of commerce, in company with other destructive beetles. The infested beans may be known by a minute hole in or near the hilum. The other species found were *Lasioderma serricornis*

Fab. and *Tribolium nuxale* Fab. The last European Catalogue (1906) gives the following synonymy: *L. pusillus* Klug = *yrani* Allib. = *africanus* Motsch., and places the insect in the *Ostomidae* immediately before *Thymalus*, a genus to which it bears no resemblance.—E. A. NEWBERY, 13 Oppidans Road, London, N.W. 3: May 13th, 1918.

Corticaria eppelsheimi Reitt. at Gomshall, Surrey.—There are but few records of this species from Britain.* It is therefore worth while to note the capture of it in some numbers at Gomshall on June 1st. The insect was detected in a curious way. While resting from the heat of the sun in the middle of the day, in a very shady spot beneath some lofty pines and beeches, I amused myself by watching a small patch of ground, perhaps a yard square, illuminated by a penetrating gleam of sunshine, and to my astonishment a specimen of *O. eppelsheimi* was soon seen running amongst the thin layer of fallen beech blossoms, etc., at the foot of a pine. Other examples kept on appearing from time to time, till the ray of sunshine shifted from the spot, but from whence they came I was unable to ascertain. The insect used to occur freely in the Woking district, in powdery fungus on pine-stumps, with *Sphindus dubius*, but only odd specimens have been seen here during recent years.—G. C. CHAMPION, Horsell, Woking: June 1918.

Hoplocampa alpina Zett. (*pallida* Steph.) on *Pyrus aria*.—Cameron records the capture of this small pallid sawfly on *Pyrus* (*Sorbus*) *aucuparia*, and Enslin mentions it as being found on *Crataegus* in Germany. On June 1st I noticed it in some numbers flying round the flowers of *Pyrus aria*, on the Chalk Downs above Gomshall. This capture is recorded mainly to call the attention of Coleopterists to the "possibilities" of the white-beam tree, when in flower, though the only beetles seen on it on the present occasion were of the commonest species. On the Continent, in such places as Brides, in the French Alps, I have beaten a great variety of Coleoptera from the flowers, certain Omaliids (*Amphichroum hirtellum*, *Anthobium* spp., etc.), Telephorids, Longicornes, etc., evidently having a special liking for *Pyrus aria*. The tree is common enough on the North Downs and elsewhere in the south of England, but the flowers are not always within reach. The Rev. F. D. Morice has kindly determined the Tenthredinid for me.—G. C. CHAMPION.

Parasites of the hawthorn Trichiosoma.—Dr. T. A. Chapman has at length settled a moot point. In my "Ichneumonologica Britannica," iii, 1908, p. 93, doubt is expressed respecting the parasitism of the large and common Ichneumon, *Pimpla instigator* Fab.,† upon aught but Lepidoptera, from the larger kinds of which it is constantly bred throughout the more temperate parts of the Old World. This was in spite of two records by competent

* Cf. Ent. Mo. Mag. xlv, p. 125, xlv, p. 249.

† The var. *poesia* Cam. of this species, which has the scutellum maculate, is not unlikely to occur in Britain, and should be looked for here, since it has been recently redescribed as new in Prussia. Its synonymy is:—*Pimpla poesia* Cameron, Mem. Manchester Phil. Soc. xliii, 1899, p. 176, ♀; *P. instigator* var. *scutellaris* Ulbricht, Mitt. Ver. Natk. Krefeld, 1909, p. 20; *P. instigator* var. *poesia* Morley, Faun. India, Hym. Ichn. i, 1913, p. 156, ♂ ♀. The known distribution is: Germany, India, Assam, and Ceylon.—C.M.

observers: Ratzeburg, in 1852, bred a small male, 3 mm. in length, from *Nematus (Pteronius) salicis* Linn. (Ichn. d. Forst. iii, p. 99), and Brischke raised it from *N. (P.) perspicillaris (dimidiatus* Lep.) (Schr. Nat. Ges. Dantzig, 1880, p. 111). I have to-day received a fine, live female, 16 mm. in length, from Dr. Chapman, just emerged from the cocoon of *Trichiosoma "tibiale"*--Mr. Morice has not yet cleared up the synonymy of this sawfly. Its exit had been effected through a small and irregularly oval hole, entirely bitten away and very unlike the neat circular cap excised by the emerging sawfly itself. Inside the parasitic larva had, as is always the case when within sufficient shelter, simply pupated in the indurated skin of its host-larva, whence it had emerged through the capital extremity. While examining this cocoon I discovered, in a small separate cocoon of its own construction near the capital extremity of the host and firmly affixed thereto, another Ichneumon. This was an isolated ♂ of the Cryptid, *Panargyrops claviger* Tasch., by no means a common species here or upon the Continent, though known to attack the sawflies, *Lophyrus pini* and *Emphytus cinctus*. This is a small and fragile insect; and, I think, we may suppose our single ♂ to be the survival of the fittest: *i. e.* that the remainder of the brood—for Cryptids are usually gregarious—had met an untimely death through starvation owing to the exigent appetite of the great *Pimpla* larva.—CLAUDE MORLEY, Monk Soham House, Framlingham, Suffolk: *May 7th*, 1918.

Odontomyia argentata F. at Oxford.—As so few records of this Stratiomyid fly have been made for many years,* its occurrence here in some numbers may be of interest to other Dipterists. On the 4th of the present month I was sweeping, during the late afternoon and evening, the old and partially dried-up stems of last season's *Juncus* in Hogley Bog, and to my surprise found a ♀ *O. argentata* in the net. This capture acting as a stimulus, I continued to sweep for an hour or more, and eventually secured two ♂ specimens in addition. On May 11th I again visited the same locality and by patient and persistent sweeping of the *Juncus* as before, succeeded on this occasion in taking three ♂ and two ♀ examples all from the partially dried stems of the plant. One ♂ was disturbed in sweeping and was netted on the wing, when the glistening silvery pubescence was seen to perfection, making it a beautiful object in the sunshine and reminding one of the Dolichopodid *Argyra argentina*, but more conspicuous owing to its larger size.—A. H. HAMM, 22 Southfield Road, Oxford: *May 17th*, 1918.

Societies.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *March 28th*, 1918.—Mr. STANLEY EDWARDS, F.L.S., President, in the Chair.

Mr. Ashdown exhibited Lister's edition of Goedartius "De Insectis," 1685. Mr. Newman, a very long fine series of *Cosymbia pendularia* var. *decoraria (subroseata)*, bred from ova in January and February, including almost all combinations and permutations of the dark grey and rosy areas. Mr. H. J.

* "British Flies," Verrall, 1909, vol. v, p. 131, and Kirkpatrick, Ent. Mo. Mag. 1914, p. 244.

Turner, a series of *Phigalia pedaria* (*pilosaria*) from Sherwood Forest, with a series from other localities for comparison. He pointed out seven phases of variation in the specimens exhibited. Mr. S. Edwards, *Papilio nox* with its forms *noctis* and *noctula*, *P. paradoxa* v. *caunus*, a mimic of a *Euploea* sp., *P. ilioneus* v. *amyntor*, and *P. encelades*, all from the Malayan region. Reports were made as to the numbers of *Gonepteryx rhamni*, *Vanessa io*, *Aglais urticae*, *Pieris rapae*, and *Diurnea fagella* seen during the fine and warm weather of the past week. Larvae of *Arctia caja* were reported as abnormally abundant, those of *A. villica* very scarce. *Brephos parthenias* was in profusion.

April 11th, 1918.—The President in the Chair.

An exhibition and discussion of the genus *Spilosoma*. The President made some general remarks on the distribution of the genus in the Palaearctic Region. Mr. Ashdown's exhibit included an example of the rare *unicolor* form of *S. lubricipeda* with only one slight dot on the costa, from the Wye Valley. Mr. R. Adkin, series of various local races of the species and series of crossings between the type and var. *zatima* of *S. lubricipeda*, very fine, smoky, and heavily spotted *S. menthastri*, etc. Mr. Mera, bred series of the species, including many var. *radiata* and intermediates, some fine var. *fasciata* and aberrations with dark bodies, of *S. lubricipeda*. He said that the *zatima* form was originally bred from Lincolnshire larvae. Messrs. Kaye, Sperring, Leeds, Turner, and Edwards also showed series. Mr. B. W. Adkin then exhibited his long series and read a paper, "The Genus *Spilosoma*."

April 28th, 1918.—The President in the Chair.

Mr. Ashdown exhibited Lepidoptera bred this year indoors, including *Diaphora mendica*, *Amphidasys betularia*, *Amorpha populi*, *Hylophila prasinana* etc. Mr. H. Moore, the S. American Nymphalids *Catonephele acontius* and *C. batesii*, pointing out their extreme sexual dimorphism. Mr. Edwards, living larvae of *Heptamelus humuli* and of a species of *Geotrupes* (Coleopt.), both dug up at Blackheath. Mr. Main, living larvae of *Timarcha tenebricosa* (Coleopt.) Mr. Turner, series of *Teras contaminana*, with var. *ciliana*, var. *rhombana*, var. *dimidiata*, and a much less common form recently pointed out by Mr. Sich (Ent. Record). Mr. Bunnett, a photograph of a raid of locusts approaching a farm in S. Africa. Messrs. Edwards, Leeds, Frohawk, and others reported on the season: *Vanessa io* and *Gonepteryx rhamni* were in abundance, and *Euvanessa antiopa* had occurred in Aberdeenshire.

May 9th.—The President in the Chair.

Mr. E. E. Green, F.E.S., of Bearsted, Kent, was elected a member.

Annual Exhibition of Orders other than Lepidoptera.—Mr. Ashdown, a large number of Coleoptera taken in Surrey and Hants, 1917, including *Leptura nigra*, *L. sexguttata*, *Conopalpus testaceus*, *Orsodacna cerasi*, *Limonium minutus*, *Cychnus rostratus*, *Serica brunnea*, etc. Mr. Frisby, two cases of Exotic Hymenoptera, one with large species of Solitary, Fossorial, and other Wasps, the other with Bees from many parts of the world, including a large *Megachile*,

which burrows in the mounds of Termites in S. Africa. Mr. West, his collection of British *Dytiscidae*, *Gyrinidae*, and *Hydrophilidae* (Coleopt.), with nearly all the species represented, including the rare *Spercheus emarginatus* from W. Ham. He also showed his British Orthoptera, including *Platyceles roeselii*, and *Nemobius sylvestris* from the New Forest. Mr. Main, a living larva of *Cicindela campestris* (Coleopt.), from Epping, in its burrow, and the burrow and aerial tube of the British trap-door spider *Atypus affinis*. Mr. Moore, a number of species of Orthoptera, and read notes on the colours found in the Order. Mr. Buckstone, a collection of Hymenoptera, Orthoptera, and Coleoptera made on a voyage to Australia some years ago. Mr. Talbot, living examples of *Pediculus humanus*, which carried the bacillus of trench fever, and *Stegomyia fasciata*, the carrier of yellow fever, and showed the ova of the latter hatching. Mr. Edwards, large species of Exotic Coleoptera. Mr. West, for the Society, drawers of British Odonata, Hemiptera, Hymenoptera, Diptera, and *Carabidae* (Coleopt.)—HY. J. TURNER, *Hon. Editor of Proceedings*.

ENTOMOLOGICAL SOCIETY OF LONDON: The Annual Meeting took place on *Wednesday, January 16th, 1918*, Dr. C. J. GAHAN, M.A., President, being in the Chair.

Mr. W. G. Sheldon, one of the Auditors, read the Treasurer's statement of Accounts, which was adopted on the motion of Mr. Stanley Edwards, seconded by Mr. Frisby. The Rev. G. Wheeler, one of the Secretaries, then read the Report of the Council, which was adopted on the motion of Mr. O. E. Janson, seconded by the Rev. F. D. Morice. No other nominations in addition to those of the Council having been received, the President declared the Fellows to have been duly elected as Officers and Members of Council for the ensuing year as printed in our March number, pp. 66-67. The President then delivered an Address, after which Mr. Simes proposed a vote of thanks to him, which was seconded by Dr. Eltringham; the President, in returning thanks, spoke of the neglect of the biological sciences on the part of the Government. Mr. Collin then proposed a vote of thanks to the Officers, which was seconded by Mr. Donisthorpe, both of whom made special allusion to the regret felt by the Society at the retirement of Mr. Jones from the Treasurership after so long a period of very efficient work in the Society's interests. The two Secretaries said a few words of thanks, the Treasurer and the Librarian being absent.

Wednesday, February 6th, 1918.—The President in the Chair.

The President nominated Dr. Eltringham, Mr. A. H. Jones, and Mr. S. A. Neave as Vice-Presidents for the ensuing year.

Dr. John Adams Comstock, Curator of the South-Western Museum, 1275 Bellevue Avenue, Los Angeles, California, U.S.A., and Mr. James W. Munro, Lieut. R.A.M.C., 2nd Sanitary Coy., Duke of York's Headquarters, Chelsea, S.W., were elected Fellows of the Society.

Mr. Donisthorpe exhibited a ♂ and ♀ of *Caenocara subglobosa* Muls., a beetle new to Britain, which he had bred from a "puff-ball" (*Lycoperdon*

gemmatum) found at Barton Mills, Suffolk, on September 9th, 1917, together with a specimen (♀) of *Cuenocara bovistae* Hoffm.; also specimens of *Cryptophagus lœvendali* Ganglb., which he had found in large numbers in a nest of *Vespa germanica* in a tree in Richmond Park on November 20th, 1917, a species of which only two specimens had been taken in Britain before. Mr. E. A. Butler, ova of the following species of Hemiptera: two species of *Pentatomidae*, *Piezodorus lituratus* Fabr. and *Pentatoma rufipes* L.; *Chorosoma schillingi* Schml., a Coreid bug; two species of *Berytus*; three Reduviids, *Coranus subapterus* L., *Nabis major* Costa, and *N. rugosus* L.; a Capsid bug, *Miris laerigatus*; and three water bugs, *Naucoris cimicoides* L., *Notonecta glauca* L., and *Nepa cinerea* L. Mr. Kaye, from Mr. Joicey's collection, series of the two *Catogramma* species *pastazza* and *excelsior*, with races and forms of each, pointing out that the two groups of insects were at once separable by the differences in the tips to the antennae; also a new species of *Dynamine* (*D. agatha*) from Bolivia. Lord Rothschild, a series of *Pseudacraeas*, in illustration of a paper on the mimetic associations of these butterflies. Prof. Poulton, a new form of *Pseudacraea poggei* Dew., mimicking the *dorippus* Klug form of *Danaïda chrysippus* L., in ex-German East Africa; also examples of 66 males and 80 females of *Musca autumnalis*, captured December 14th, 1917, in the cistern-loft of St. Helen's Cottage, St. Helens, Isle of Wight. The loft had not been examined in the winter since January 4th, 1915, when far greater numbers of the flies were present. Prof. Poulton said that he owed to Mr. J. J. Joicey the opportunity of exhibiting the type of the West African *E. urania*, from the collection of the late Mr. H. Grose-Smith, and of comparing it with the series of *posthumus* in the British Museum. He read extracts on the habits of Ethiopian species of *Sarangesa* and other *Hesperidae* from a letter written by the Rev. K. St. Aubyn Rogers, from Kongwa, in ex-German East Africa. Prof. Poulton said that he wished to draw attention to an unfortunate misconception in the recently issued part of Mr. Charles Oberthür's beautiful work, "Études de Lépidoptérologie comparée," Fasc. xiv, 1917, since the *Sesias* are mimics and not models of the Hymenoptera. He also said that he had just received a letter from Mr. C. O. Farquharson, dated December 13th, 1917, from Ibadan, describing *Harpagomyia* and other Diptera being fed by *Cremastogaster* ants in S. Nigeria.

Wednesday, March 6th, 1918.—The President in the Chair.

Col. Wilfrid Wm. Ogilvy Beveridge, R.A.M.C., C.B., D.S.O. (on active service), c/o J. H. Durrant, Esq., Natural History Museum, S. Kensington, S.W., and Messrs. Patrick Aubrey Hugh Smith, Sconner House, St. German's, Cornwall, and 28 Bruton Street, Berkeley Square, W., and Lionel Julian Walford, The Cavalry Club, Piccadilly, W., were elected Fellows of the Society.

Prof. Poulton exhibited the Myrmecophile Diptera and the Culicid Toxorhynchites referred to in Mr. Farquharson's notes communicated to the last meeting of the Society and received at a later date. He said that he had recently received a letter from Dr. G. Arnold, in Bulawayo, correcting the statement that he had bred *Osmia aurulenta* from whelk-shells, on the Wallasey sand-hills; the shells were a species of *Helix*, probably *nemoralis*.

He also drew attention to "Observations on Protective Adaptations and Habits, mainly in Marine Animals," published in English, as one of the papers on Dr. Th. Mortensen's Pacific Expedition, 1914-16 (Vidensk. Medd. fra. Dansk naturhist. Foren., Bd. 69, pp. 57-96, pl. i), and especially the "Observations on Insects" (p. 83). Mr. W. J. Kaye exhibited, on behalf of Mr. J. J. Joicey, an apparently very rare Diopiid moth, *Diopis pellucida* Warr., and contributed notes on its mimetic association with a group of small Ithomiine species. Mr. Frisby, an ant's nest, and also three cells of *Zethus cyanopterus*, a wasp of the family *Eumenidae*, sent by Mrs. M. E. Walsh, F.E.S., from Soekaboemi, Java, and read notes. The President, a Coleopterous larva, together with the box in and on which it had been living for some years; he said that it was the larva of a Longicorn beetle, but was unable to state the species, and observed that similar instances of longevity were on record. Dr. Turner read a note on Mr. Tillyard's discovery of the jugo-frenate wing structure in certain Australian *Micropterygidae*.

Wednesday, March 20th, 1918.—Dr. T. A. CHAPMAN, F.Z.S., in the Chair.

2nd Lieut. William Proctor Smith, F.Z.S., Haddon House, Ashton-on-Mersey, and Messrs. John Henry Watson, 70 Ashton Road, Withington, Manchester, and Ronald Senior White, Suduganga Estate, Matale, of the Board of Agriculture, Ceylon, were elected Fellows of the Society. Dr. Paul Marchal, President of the Entomological Society of France, 89 Rue du Cherche-Midi, Paris, was elected an Honorary Fellow of the Society.

Dr. A. J. Turner gave an abstract of his paper, entitled "Observations on the Lepidopterous Family *Cossidae*, and on the Classification of the Lepidoptera," illustrated by drawings of neuration, shown in the epidiascope.

Wednesday, April 3rd, 1918.—The President in the Chair.

Dr. Allan Chilcott Parsons, M.R.C.S., L.R.C.P., D.P.H., Sanitary Officer West African Medical Staff, and Temp. Capt. R.A.M.C., School of Army Sanitation, Aldershot, was elected a Fellow of the Society.

On behalf of Mr. Prideaux, the Secretary exhibited two black and two green living pupae of *P. megaera*, and read notes. Mr. Bacot gave an account of experiments as to the distribution of trench fever by lice. The Rev. F. D. Morice inquired whether androconial scales were known in insects other than Lepidoptera; he thought that he had discovered them among the Sawflies in the Australian genus *Perga*. The President said that he had found Kirby's authority for the "tapping" of *Anobium striatum* with its mandibles, but suspected an error in the identification of the species; also that the Danish naturalist Jensen Haarup spoke of *A. pertinax* as tapping most vigorously before a storm and being regarded in Jutland as a weather prophet. As this was described as taking place specially in autumn and winter, the President considered it probable that the tapping was really made by the book-louse. Comm. Walker felt sure that he had heard *A. striatum* tapping where no *X. tessellatum* were present.—GEO. WHEELER, *Hon. Secretary*.

WATKINS & DONCASTER, Naturalists.

Keep in stock all Articles for Entomologists, Ornithologists, Botanists, &c.: Umbrella Net, 7/-; Folding Cane or Wire, 3/6, 4/-, 4/6; Plain Ring Net, 1/3, 2/-, 3/-; Pocket Boxes, 6d., 9d., 1/-, 1/6; Store Boxes, with Camphor Cells, 2/6, 3/6, 4/-, 5/-, 6/-; Zinc Pocket Boxes, 9d., 1/-, 1/6, 2/- Setting Boards, from 5d. to 1/10; Complete set of 14 boards, 10/6; Breeding Cages, 2/6, 4/-, 5/-, 7/6; Sugaring Tins, 1/6, 2/-; Sugaring Mixture, ready for use, 1/9 per tin; Setting Houses, 9/6, 11/6, 14/-; Glass Topped and Glass Bottomed Boxes, from 1/- per doz.; Zinc Killing Boxes, 9d., 1/-; Coleoptera Collecting Bottles, 1/6, 1/8; Collecting Box, containing 26 tubes (very useful for Coleopterists, Microscopists, &c.), 4/6; Brass Chloroform Bottle, 2/6.

Improved Pocket Pupa-digger in leather sheath (strongly recommended), 1/9; Steel Forceps, 1/6 to 3/- per pair; Pocket Lens, from 1/6 to 8/6.

Taxidermists' Companion, containing most necessary implements for skinning, 10/6; Scalpels, with ebony handles, 1/3; Fine Pointed Scissors, 2/- per pair; Brass Blow-pipes, 4d., 6d.; Egg Drills, 2d., 3d.; ditto, best quality, 9d. each; Botanical Vasculum, 1/6, 2/9, 3/6, 4/6; Label List of British Macro-Lepidoptera, with Latin and English Names, 1/6; List of British Lepidoptera (every species numbered), 1/-; or on one side for Labels, 2/-.

SILVER PINS FOR COLLECTORS OF MICRO-LEPIDOPTERA, &c., as well as minute insects of all other families.

We stock various sizes and lengths of these Silver Pins, which have certain advantages over the entomological pins usually employed.

For instance, insects liable to become greasy and verdigrisy, like Sesiidae, are best pinned on Silver pins, which will last much longer than the ordinary pins (whether enamelled black, or gilt, or silvered).

We shall be pleased to send pattern cards on application.

A large stock of British, European, and Exotic Lepidoptera, Coleoptera, and Birds' Eggs.

ENTOMOLOGICAL PINS.

The "DIXON" LAMP NET (invaluable for taking Moths off street lamps without climbing the lamp posts), 3s. 6d.

SHOW ROOM FOR CABINETS, &c.

36, STRAND, LONDON, W.C., ENGLAND.

Birds and Mammals, &c., Preserved & Mounted by first-class workmen.

Our New Price List (100 pp.) sent post free to any address on application.

FOR SALE.

16 NATURAL HISTORY CABINETS

BELONGING TO THE LATE DR. MASON,

ALSO

FOUR MICROSCOPICAL CABINETS,

Containing Microscopical Slides by G. R. VINE, of Sheffield.

ALSO

400 BRITISH BIRDS IN CASES.

Apply—Mrs. MASON, TRENT HOUSE, BURTON-ON-TRENT.

THE SIX COLOURED PLATES illustrating the articles on
"SOME INTERESTING BRITISH INSECTS,"

with the accompanying text (issued in the Ent. Mo. Mag. for September, 1909, January and September, 1910, September, 1911, and August, 1913), are issued in a separate wrapper, price 2s.

APPLY TO THE PUBLISHERS.

Scale of Charges for Advertisements

Whole Page.....£3. . Half Page . . .£1 11s. 6d. . Quarter Page.....17s.

Lowest charge, 7s. up to 5 lines; 1s. per line afterwards.

Repeated or continuous Advertisements per contract.

There is no charge for Lists of Duplicates and Desiderata.

All payments and applications for the above should be made to

R. W. LLOYD, I. 5, Albany, Piccadilly, W.

AUTHORS are requested to send their communications and proofs to either
J. J. WALKER, Aorangi, Lonsdale Road, Summertown, Oxford; or
G. C. CHAMPION, Broomhall Road, Horsell, Woking.

AUTHORS requiring separate copies of their papers (which can be supplied at small cost) are requested to mark the number wanted on their MS.

ENTOMOLOGICAL NEWS.

A forty-eight page illustrated magazine, issued monthly, except in August and September, devoted to the study of INSECT LIFE. It contains a resumé of the proceedings of a number of Entomological Societies, and also articles by the leading Entomologists in the United States and Canada. Valuable information for the beginner, the economic entomologist, and the systemist. **TWO DOLLARS a year in advance.** Single copies, 25 cents. Address—

ENTOMOLOGICAL NEWS,

The Academy of Natural Sciences,

1900 RACE STREET, PHILADELPHIA, PA.

THE CANADIAN ENTOMOLOGIST.

A MONTHLY MAGAZINE DEVOTED TO THE STUDY OF SCIENTIFIC ENTOMOLOGY.

Volume 50 is now in course of publication. Back volumes can be supplied. It is the oldest established Magazine of the kind in America, and has a world-wide circulation. Subscription, \$2 per annum, payable in advance, which includes a copy of the Annual Report of the Entomological Society of Ontario to the Legislature. Editor, Dr. E. M. Walker, Biological Department, University of Toronto, Toronto, Canada.

Address: Entomological Society of Ontario, Guelph, Canada.

WICKEN FEN.—The Custodians, the National Trust, appeal to Entomologists for assistance towards the providing of the Watcher who guards the Fen against abuse. This expense, which is absolutely necessary, is provided by voluntary subscriptions, and I am desired to ask for Contributions, which will be gratefully received, however small.—**W. G. SHELDON**, Honorary Treasurer of the Wicken Fund, Youlgreave, South Croydon.

A SYNOPSIS OF THE BRITISH SIPHONAPTERA, by the
 Hon. N. CHARLES ROTHSCHILD, M.A., F.L.S., illustrated by Eight Plates
 (issued in the Ent. Mo. Mag. for March, 1915, pp. 49-112), price 1s. 6d. Apply to
 the publishers.

THE BIOLOGY OF DRAGONFLIES

(ODONATA or PARANEUROPTERA)

By R. J. TILLYARD, M.A., B.Sc., F.L.S., F.E.S.

Demy 8vo. pp. xii+398. With 4 plates and 188 text-figures. 15s net.

CAMBRIDGE ZOOLOGICAL SERIES.

"Never before has the group received such detailed and well-balanced treatment as Mr Tillyard has given. . . . Students of the anatomy and development of insects are much indebted to him for providing in this convenient form a trustworthy guide to the external and internal structure of dragonflies at various stages of their life-histories."—*Nature*

Prospectus on application

Cambridge University Press, Fetter Lane, London, E.C. 4, C. F. Clay, Manager

COLEOPTERA ILLUSTRATA,

CARABIDAE.

Vol. 1, No. 3.

CARABIDAE.

PRICE \$1.

CONTENTS.

PRICE \$1.

LEISTUS

ferrugineus Linn.

ELAPHRUS

aureus Mull.

LOBOCERA

pilicornis Fabr.

BROSCOSOMA

baldense Putz.

BEMBIDIUM

fasciolatum Duft.

articulatum Gyll.

CILLENUS

lateralis Sam.

THALASSOPHILUS

longicornis Sturm.

TRECHUS

discus Fabr.

ANOPHTHALMUS

hirtus Sturm.

v. rostratus Mots.

PTEROSTICHUS

lepidus Leske.

cupreus Linn.

infuscatus Dej.

puncticollis Dej.

crenatus Dej.

barbarus Dej.

carbonicolor Sols.

macer Marsh.

aterrimus Hrbst.

elongatus Duft.

oblongopunctatus Fabr.

angustatus Duft.

melanoseelis Chand.

niger Schall.

vulgaris Linn.

nigrinus Fabr.

minor Gyll.

interstinctus Sturm.

negligens Sturm.

subsiniatus Dej.

brevis Duft.

caspicus Men.

cognatus Dej.

aethiops Panz.

globosus Fabr.

PTEROSTICHUS

cylindricus Hrbst.

melas Creutz.

ABAX

ater Vill.

cyalis Duft.

schuppelii Pall.

v. rendschmidtii Germ.

corsicus Dej.

MYAS

chalybaeus Pall.

AMARA

ingenua Duft.

ZABRUS

chalcus Fald.

heros Fald.

seidlitzii Schaum.

graecus Dej.

blapoides Creutz.

ANISODACTYLUS

binotatus Dej.

signatus Panz.

ACCURATE ENLARGED PEN DRAWINGS, UNIFORM IN SIZE,

ONE TO A PAGE 8vo.

COLEOPTERA ILLUSTRATA will be mailed upon receipt of price.

HOWARD NOTMAN, 136 JOBALEMON STREET, BROOKLYN, N.Y., U.S.A

Vol. I, Nos. 1 and 2, \$1 each.

CONTENTS.

	PAGE
New and little-known saltatorial Dascillidae (<i>continued</i>).— <i>G. C. Champion</i> , F.Z.S.	143
A remarkable new genus of Tenebrionidae (Coleoptera) from Tropical Africa (<i>with figure</i>).— <i>K. G. Blair</i> , B.Sc., F.E.S.	149
A note on the systematic position of the genus <i>Tretothorax</i> Lea (Coleoptera).— <i>Id.</i>	152
On Gynarchy in Coleoptera.— <i>D. Sharp</i> , M.A., F.R.S.	154
<i>Atomaria zetterstedti</i> Zett. (= <i>saliciola</i> Kraatz), a British insect.— <i>G. C.</i> <i>Champion</i> , F.Z.S.	155
<i>Chortophila pilipyga</i> Villeneuve in Britain.— <i>P. H. Grimshaw</i> , F.R.S.E., F.E.S.	156
On two new species of Campodea.— <i>R. S. Bagnall</i> , F.L.S.	157
Some notes on Suffolk Coleoptera.— <i>E. C. Beddell</i> , F.E.S.	159
<i>Silpha nigrita</i> Creutz. in Co. Durham.— <i>G. B. Walsh</i> , B.Sc.	162
The embryonic period of <i>Meloë proscarabaeus</i> Linn.— <i>Id.</i>	162
<i>Lophocateres pusillus</i> Klug, a cosmopolitan beetle, in London.— <i>E. A. Newbery</i> .	162
<i>Corticaria eppelsheimi</i> Reitt. at Gomshall, Surrey.— <i>G. C. Champion</i> , F.Z.S.	163
<i>Hoplocampa alpina</i> Zett. (<i>pallidus</i> Steph.) on <i>Pyrus aria</i> .— <i>Id.</i>	163
Parasites of the hawthorn <i>Trichiosoma</i> .— <i>Claude Morley</i> , F.Z.S.	163
<i>Odontomyia argentata</i> F. at Oxford.— <i>A. H. Hamm</i> , F.E.S.	164
SOCIETIES—South London Entomological Society	164
Entomological Society of London	166

THE NATURALIST:

A MONTHLY ILLUSTRATED JOURNAL OF

NATURAL HISTORY FOR THE NORTH OF ENGLAND

EDITED BY

T. SHEPPARD, M.Sc., F.G.S., F.R.G.S., F.S.A.Scot.,

THE MUSEUM, HULL;

AND

T. W. WOODHEAD, Ph.D., M.Sc., F.L.S.,

TECHNICAL COLLEGE, HUDDERSFIELD;

WITH THE ASSISTANCE AS REFEREES IN SPECIAL DEPARTMENTS OF

J. GILBERT BAKER, F.R.S., F.L.S., GEO. T. PORRITT, F.L.S., F.E.S.,

Prof. P. F. KENDALL, M.Sc., F.G.S. JOHN W. TAYLOR, M.Sc.,

RILEY FORTUNE, F.Z.S.

*The Journal is one of the oldest Scientific Periodicals in the British Isles, dating
back to 1833, and is circulated widely amongst the principal Naturalists of the country.*

LONDON: A. BROWN AND SONS, LIMITED, 5, FARRINGTON AVENUE, E.C.

And at Hull and York.

PRICE, SIXPENCE NET. BY POST SEVENPENCE.

Propaid Subscription, 6s. 6d. per annum, post free.

The Annual Subscription for 1918 is 9/-.

[See p. 2 of Wrapper.]

Third Series, No. 44.]
[No. 651.]

AUGUST, 1918

[PRICE 1/- NET.]

THE
ENTOMOLOGIST'S
MONTHLY MAGAZINE.

EDITED BY

G. C. CHAMPION, F.Z.S. J. E. COLLIN, F.E.S.

W. W. FOWLER, D.Sc., M.A., F.L.S.

R. W. LLOYD, F.E.S. G. T. PORRITT, F.L.S.

J. J. WALKER, M.A., R.N., F.L.S.

VOLUME LIV.

[THIRD SERIES—VOL. IV.]

—♦—
"J'engage donc tous à éviter dans leurs écrits toute personnalité,
toute allusion dépassant les limites de la discussion la plus sincère et la
plus courtoise." —Lacaze de Mijoux.

—♦—
LONDON:

GURNEY & JACKSON (MR. VAN VOORST'S SUCCESSORS),

33, PATERNOSTER ROW, E.C. 4.

TAYLOR AND FRANCIS, RED LION COURT, FLEET STREET.

NOTICE.—Owing to the greatly increased cost of paper, printing, etc., the Editors of the Magazine are compelled to raise the subscription to 9s. per annum (post free). Subscriptions for the 1918 volume should be remitted as soon as possible to **R. W. LLOYD, I. 5, Albany, Piccadilly, London, W.1.**

The price of a single ordinary number is 1s.

EXCHANGE.

OVA—*S. carpini* and *C. vinula*—exchange for other ova or larvae.—**GIBSON, Dentist, Healden Bridge.**

REDUCED PRICES FOR BACK VOLUMES.

FIRST SERIES.

This can only be obtained in complete Volumes (bound or unbound).

A limited number of sets, from Vol. x to Vol. xxv can still be obtained at £2 15s. per set net (in parts), or of five consecutive Vols. at £1 per set net (if bound, 1s. per Vol. extra).

Certain of the Vols. i to ix can be had separately at 10s. each.

SECOND SERIES.

Vols. i to xv. are now offered at £3 per set net (in parts), or £1 2s. 6d. for five consecutive Vols. (if bound, 1/- per Vol. extra).

THIRD SERIES.

Vol. li (Third Series, Vol. i) can be supplied by the Publishers at 7/6 (8/6 if bound) per copy. Cover for binding, 1/-.

Vol. li (1915) contains 23 Plates (one coloured), a complete Monograph of the British Siphonaptera, and numerous extra pages of text.

Apply to the Publishers.

MEETINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON, 11, Chandos Street, Cavendish Square, W.—Wednesday, October 2nd, 16th, November 6th.

The Chair will be taken at 8 o'clock in the evening precisely.

The Library is open daily from 9 a.m. to 6 p.m. (except on Saturdays, when it is closed at 2 p.m.), and until 10 p.m. on Meeting nights.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge. The Second & Fourth Thursdays in each month, at 7 p.m. The lantern will be at the disposal of Members for the exhibition of slides.

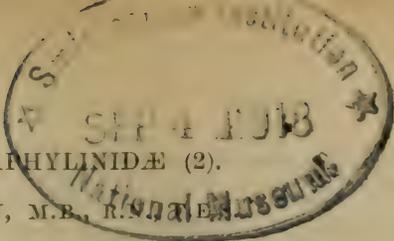
The Chair will be taken punctually at 8 o'clock.

THE LONDON NATURAL HISTORY SOCIETY, which meets at 7 p.m. on the 1st and 3rd Tuesdays in each month, at Room 20, Salisbury House, Finsbury Circus, E.C., will be glad to welcome at its Meetings any French or Belgian entomologists now staying in this country, and to give them the benefit of its library and collections. Communications should be addressed to the Secretary, Salisbury House, E.C.

Hon. Sec.: **J. Ross, 18, Queen's Grove Road, Chingford, N.E.**

Chingford Branch. The Chingford Local Branch meets at the Avenue Café, opposite Chingford Station, at 8 p.m., on the 2nd Monday in each month.

NEW ORIENTAL STAPHYLINIDÆ (2).

BY MALCOLM CAMERON, M.B., National Museum*Thoracochirus umbilicatus*, n. sp.

Black, shining; thorax strongly transverse, uneven; sculpture coarse and umbilicate; elytra square, puncturation crateriform; antennae, legs, and last abdominal segment pitchy-red. Length 6.5 mm. Very near *T. variolosus* Fauv., from Burma, from which it differs in the following respects: it is rather larger and more robust, the front of the head is less wrinkled, the thorax has on either side of the middle line a rather large impression and parallel with the side-margin is another impression, the surface thus appears uneven, and this is further accentuated by the presence of irregular, more or less indeterminate and fine plications towards the sides. Head subtriangular, transverse, eyes very prominent; front sparingly wrinkled, the sides and front broadly rounded; vertex with a rather broad and deep furrow, the sides of the disc with a few fine umbilicate punctures; antennal tuberosities rounded, elevated, reddish; mouth-parts reddish-testaceous. Antennae rather long, reddish, the 2nd joint considerably shorter than the 3rd, the 4th to the 8th joints longer than broad, gradually decreasing in length, the 9th and 10th as long as broad, the 11th oval. Thorax strongly transverse, the middle of the disc with a deep longitudinal groove extending from the anterior margin to a deep transverse groove in front of the posterior margin in which it ends; on either side of the middle is a rounded impression, and parallel to the lateral margin a longitudinal, somewhat obsolete, groove; the surface covered, except in the impressions and grooves, with large umbilicate punctures, the sides crenulate and setiferous. Scutellum sparingly and finely punctured centrally. Elytra square; sculpture crateriform, giving a very rough surface and causing the sides when seen from above to appear crenulate: there is no appreciable difference to be detected between it and that of *T. variolosus*. Abdomen, except for a more or less obsolete row of punctures in front of the posterior margin of each segment, almost impunctate; pubescence scanty, long, and stiff.

Hab. BORNEO, Mt. Matang, W. Sarawak (*G. E. Bryant*).

Thoracochirus exasperatus, n. sp.

Black or pitchy-black, moderately shining; antennal tubercles, antennae, mouth-parts, legs, and anus reddish-testaceous; head (except the front), thorax, and elytra uniformly sculptured with crateriform puncturation; abdomen finely, uniformly, but not closely, punctured. Length 4 mm. From the description this species would appear to be closely related to *T. aspericollis* Fauv., but to differ from it in the following points: the smaller size, the uniform close puncturation of the vertex of the head and the thorax, and the much less sparing abdominal puncturation, which is well marked in this species. Head subtriangular, transverse; eyes very prominent; the front depressed declivous, without visible sculpture; the clypeus truncate in front, with a short elevated ridge on either side; the vertex without groove or impression, closely and uniformly covered with crateriform puncturation: pubescence rather long, yellowish. Antennae moderately long, the 1st joint elongate gradually

thickened towards the apex, which is notched, the 2nd a little shorter than the 3rd, the 4th and 5th scarcely longer than broad, the 6th to the 10th transverse, gradually increasing in width, the 11th elongate, oval, as long as the two preceding joints together. Thorax strongly transverse, a little broader than the head (including the eyes), the anterior margin sinuate on either side, the sides rounded and contracted from the anterior angles to the base, in which they merge evenly; the disc with a deep narrow groove extending from the anterior margin in the middle line to just in front of the posterior margin; puncturation crateriform, moderately coarse and rather close; pubescence stiff, yellowish; the sides viewed from above present posteriorly one or two crenulations. Scutellum impunctate. Elytra broader than and about twice as long as the thorax, square, closely covered with puncturation and pubescence of a similar character to that of the thorax. Abdomen finely, evenly, and sparingly punctured throughout (excepting the last segment, which is very sparingly punctured), the punctures being of the same character as those on the head and prothorax, but much finer; pubescence as on the fore-parts.

Hab. BORNEO, Mt. Matang, W. Sarawak (*G. E. Bryant*).

Philonthus rufiventris, n. sp.

Black, shining, the thorax, base, suture, and apex of the elytra, and abdomen (except the 7th and 8th segments), red; thorax with a dorsal row of 5 punctures (Erichson's notation) on either side of the middle line; the first three and last two joints of the antennae and the legs reddish-testaceous. Length 5.5 mm. Of the build of *P. crassicornis* Fauv., to which group it belongs, but at once distinguished by the coloration. Head black or pitchy-black, quadrate; the eyes rather small, their diameter about the length of the temples, which are very slightly convergent to the rounded posterior angles; the median intra-ocular punctures widely separated from each other and close to the lateral ones; the disc with two punctures posteriorly, one on either side of the middle line, and two or three near the posterior margin of each eye. Antennae short and stout, the penultimate joints less transverse than in *P. crassicornis*; the 3rd joint a little shorter than the 2nd, the 4th a little longer than broad, the 5th square, the 6th to the 10th transverse, but not increasing in width, the 11th short-oval. Palpi reddish-testaceous. Thorax red, a little longer than broad, the sides nearly parallel, the disc on either side with a row of five medium-sized punctures, the sides with three or four others; no visible ground-sculpture present, as on the head. Scutellum triangular, pitchy, with about a dozen rather large punctures. Elytra about as long as the thorax, quadrate, the base broadly rufous, the suture and apex narrowly reddish-testaceous; very finely and sparingly punctured; pubescence rather long and sparing. Abdomen, with the exception of the greater part of the 7th and the whole of the 8th dorsal segments (which are pitchy), red, with a very few fine punctures; pubescence rather long, stiff, and scanty. First joint of the posterior tarsi as long as the last.

♂. Head broader, anterior tarsi more dilated; sixth ventral segment with an acute triangular impression, the sides of which are bounded by a fine raised line, and the base (which corresponds to the posterior margin of the segment) obtusely emarginate.

Hab. CEYLON, Kandy (*G. E. Bryant*).

I am indebted to Mr. Bryant for examples of this and many other species of *Staphylinidae*.

Leucitus rufipennis, n. sp.

Black, shining; elytra bright reddish-testaceous; abdomen with the first two visible segments reddish-testaceous, with a large black iridescent spot in the centre of each, the 3rd entirely reddish-testaceous, the 4th, 5th, and 6th black, iridescent, the 4th and 5th narrowly rufo-testaceous along the apical margin; thorax with a dorsal row of four punctures on either side of the disc; antennae with the 1st, the base of the 2nd, and the 10th and 11th joints testaceous; legs testaceous. Length 15 mm. Head black, shining, transversely quadrate, the eyes large, their diameter much greater than the length of the temples, which are slightly convergent to the rounded posterior angles; impressed on either side between the eye and the base of the antenna; front sometimes with a pair of setiferous punctures, the rest of the sculpture consisting of three or four juxta-ocular punctures, one on either side of the posterior part of the disc and two or three small temporal punctures, all of which carry the usual setae. Antennae rather stout, the 2nd joint a little shorter than the 3rd, the 4th scarcely longer than broad, the 5th as long as broad, the 6th to the 10th transverse, gradually increasing in breadth, the 11th short, oval, emarginate. Palpi testaceous. Thorax scarcely longer than broad, widest at the anterior angles, which are deflexed, the sides gradually convergent in a nearly straight line to the broadly rounded posterior angles; the disc on either side with a row of four moderately large punctures, the sides with four or five others behind the anterior angles, the lateral and basal margins also present a few small punctures. Scutellum triangular, reddish-testaceous, closely and not very finely punctured in its centre. Elytra a little longer and broader than the thorax, bright reddish-testaceous, not very finely or very closely punctured (about as coarsely as in *L. albertisi* Fauv., but not so closely); pubescence long, yellow, much of it erect. Abdomen of the colour described above, the first three visible segments very sparingly, the last three much more closely and uniformly, punctured; pubescence long, yellowish.

Var. First two, half the third, and last three joints of the antennae testaceous.

♂. Sixth ventral segment with a semicircular emargination at the posterior border.

Hab. BORNEO, Quop, W. Sarawak (*G. E. Bryant*); E. JAVA, Mt. Tengger.

The variety occurs at Bedagei, Sumatra. It is probable that the specimens with two punctures on the forehead are males.

Quedius (Raphirus) tapobanus, n. sp.

Head black; thorax pitchy-red, with two large punctures on either side of the middle line; elytra brown, the apex and lateral margins testaceous-yellow,

a large spot occupying the whole sutural region reddish-testaceous; legs testaceous. Length 9.5 mm. Of the build of *Q. rufipes* Grav., but in other respects entirely different. Head black and of the same shape as in *Q. rufipes*, with large eyes occupying nearly the whole of the sides, impunctate, except for two punctures near the inner margin of the eye anteriorly and three posteriorly, and one on either side of the neck on the posterior margin. Antennae shorter and stouter than in *Q. rufipes*, the first three joints testaceous, the last two or three reddish, the intermediate joints infusate; the 2nd and 3rd joints are of equal length, the 4th a little longer than broad; the 5th scarcely, the 6th to the 10th distinctly transverse, but not increasing in width, the 11th oblong-oval. Mandibles pitchy, palpi reddish-testaceous. Thorax with two punctures on either side of the middle line, another lateral, and one at the anterior angles; ground-sculpture finely strigose, as on the head. Scutellum pitchy, sparingly and superficially punctured, sparsely pubescent. Elytra brown, the apex and the reflexed lateral margins yellow-testaceous, a large oval sutural spot extending from the scutellum to the posterior margins reddish-testaceous; sculpture consisting of an oblique row of moderately large but superficial punctures, three or four in number, extending from the humeral angles towards the posterior margins, external to the sutural spot, and a pair on either side of the suture, and exceedingly fine and rather close general puncturation; pubescence sparing. Abdomen pitchy-red, the margins of the segments reddish-testaceous, finely and sparingly punctured; pubescence scanty, yellow.

Hab. CEYLON, Kandy (*G. E. Bryant*).

Females only obtained.

Acylophorus longiceps, n. sp.

Black, shining, abdomen iridescent; head narrow; thorax with two large punctures on either side of the middle of the disc; antennae and legs pitchy. Length 7 mm. More robust than *A. glaberrimus* Herbst, of Europe, with much narrower head, more slender antennae, more rounded sides to the thorax, and more rugulose puncturation of the elytra. Head narrow, oval, longer than broad, the eyes large, not prominent; puncturation very fine and sparse; no visible ground-sculpture. Antennae with 1st joint very long and gently curved, the 2nd to the 8th longer than broad, gradually decreasing in length, 9th as long as broad, the 10th scarcely transverse, the 11th short, oval. Thorax transverse, the anterior angles obtusely rounded, the posterior angles obsolete, the strongly rounded sides passing insensibly into the base; disc with two rather large punctures on either side of the middle and one or two very small ones behind the anterior angles, otherwise impunctate and without ground-sculpture. Scutellum punctured and pubescent. Elytra transverse, scarcely as long as the thorax (measured along the suture), coarsely, closely, rugosely punctured; pubescence long and greyish. Abdomen moderately coarsely, but not very closely, punctured; pubescence long and stiff; anal styles pitchy.

Hab. BORNEO, Mt. Merinjak, Sarawak (*G. E. Bryant*).

NOTES ON THE *DERBIDAE* IN THE BRITISH MUSEUM
COLLECTION.—I. *ZORAIDINAE*.

BY FREDERICK MUIR, F.E.S.

Elsewhere* I have made tentative and partial attempts to classify the *Derbidae*, based upon Oriental and Malayan forms. Through the courtesy of the authorities of the British Museum and the Imperial Bureau of Entomology, I have been able to examine a number of genera and species hitherto unknown to me, except through inadequate descriptions, among them species from Africa and South America. This has enabled me to correct some errors in my former work, and to commence the preparation of a more satisfactory classification of the genera of the family. The following is a list of genera of the *Zoraidinae*, followed by a list of species of that subfamily in the British Museum collection, and some remarks and descriptions of new species and genera.

ZORAIDINAE.

Tegmina long and narrow; wings very small or not more than half the length of the tegmina, narrow, costal and posterior margins subparallel or converging to a pointed apex, the cubital and claval areas greatly reduced with the cubital and claval veins missing or greatly reduced, the posterior basal area proportionally large and corrugated and used as a stridulating organ; shoulder keels and subantennal processes absent or very small. (*Zoraidinae*.)

List of Genera.

- a*¹. Eyes in front not reaching to the base of clypeus; subcostal cell long, sometimes very narrow(*ZORAIDINI*).
- b*¹. Antennae shorter than face, ovate, clavate or subclavate, arista apical; 1 to 3 cubital veins reaching the hind margin; female genital styles abortive.
- c*¹. None of the median sectors furcate.
- d*¹. Head as wide as thorax or wider.....*DIOSPOLIS*.
- d*². Head narrower than thorax.
- e*¹. Basal median cell narrow; wings about half the length of the tegmina, apex rounded*PROUTISTA*.
- e*². Basal median cell broad; wings considerably less than half the length of tegmina, apex acute.
- f*¹. Mesonotum with three distinct carinae.
.....*CAMMA*.
- f*². Mesonotum without carinae, or carinae very indistinct.
.....*DIOSTROMBUS*.
- c*². Third median sector, sometimes apparently the second, furcate.
- g*¹. Face in profile round, not greatly produced between the eyes.
.....*PAMENDANGA*.
- g*². Face in profile conically produced*HELCITA*.

* Hawaiian Sugar Planters' Experiment Station, Entomological Bull. 12 (1913); Philippine Journ. Sci. D, xii, 2, pp. 49-104 (1917).

- b*². Antennae as long as face or longer, cylindrical or flattened, arista sub-apical; 4 to 6 cubital veins reaching the hind margin; female genital styles normal.
- h*¹. Vertex quadrate, broader than long; face wide; antennae large, flatMINDANA.
- h*². Vertex not broader than wide; face narrow or linear.
- k*¹. Hind margin of tegmen angularly produced between the apex of clavus and the cubital veins.
- l*. Hind margin of tegmen serrate.....LOSBANOSIA.
- l*. Hind margin of tegmen not serrate ..ZORAIDOIDES.
- k*². Hind margin of tegmen not angularly produced between the apex of clavus and cubital veins.
- m*¹. Costal margin produced on the basal fourth.
.....PEGGIA.
- m*². Costal margin not produced on basal fourth.
- n*¹. Face in profile produced conically between the eyes.
.....PSEUDOHELCITA, g. n.
- n*². Face in profile round, not produced conically.
- o*¹. Hind margin of pronotum straight, not emarginate.
.....NEODIOSTROMBUS, g. n.
- o*². Hind margin of pronotum angularly emarginate.
.....ZORAIDA.
- a*². Eyes in front reaching to the base of the clypeus; subcostal cell very short or absent; female genital styles abortive ... (SIKAIANINI).
- p*¹. Cubitus arising from the base of the tegmen, basal median cell present.
- q*¹. Basal median cell broad and short, not reaching half-way along tegmen.
- r*¹. Antennae much shorter than thorax and head together, cylindrical, slightly constricted about middle ..SIKAIANA.
- r*². Antennae as long as head and thorax together, or nearly so.
.....MUIRIA.
- q*². Basal median cell very narrow, reaching to about middle of tegmen.
.....LEOMELICHARIA.
- p*². Cubitus arising from media some distance from base.
.....DISTANTINIA.

List of Species in the British Museum Collection.

- DIOSPOLIS Westwood = *Philadelphia* Kirkaldy.
D. (*Cicada*)* *elongata* Fabr. = *P. pandani* Kirk.; *D. annetti*, sp. n.
- PROUTISTA Kirkaldy = *Afakia* Kirkaldy = *Arfaka* Distant.
P. (*Derbe*) *fritillaris* Boh.; *P.* (*Phenice*) *australis* Dist.;
P. (*Arfaka*) *decisa* Dist.; *P. pseudodecisa*, sp. n.; *P.* (*Phenice*) *moesta* Westw. = *Thracia albipes* Walk. = *Derbe maculata* Westw.

* The generic names within brackets indicate the genus the species was originally described under

3. CAMMA Distant.

C. (Phenice) abdominalis Dist.; *C. (Thracia) biclavata* Westw.; *C. (Phenice) lunulata* Dist.; *C. (Thracia) dilatata* Westw.

4. DIOSTROMBUS Uhler = *Drona* Distant.

D. (Derbe) carnosa Westw.; *D. (Drona) pennata* Dist.; *D. (Drona) grahami* Dist.; *D. (Derbe) lanius* Stål; *D. (Drona) gowdeyi* Dist.

5. PAMENDANGA Distant = *Paraproutista* Muir.

P. (Phenice) majuscula Dist.; *P. (Phenice) nealei* Dist.; *P. (Phenice) superba* Dist.; *P. (Derbe) punctativentris* Kirby; *P. (Phenice) pullata* Dist.; *P. (Phenice) ferruginea* Dist.; *P. rubilinea* Dist.; *P. (Thracia) fasciata* Walk.; *P. (Thracia) abscissa* Walk.; *P. pseudoabscissa*, sp. n.; *P. distanti*, sp. n.; *P. grahami*, sp. n.

6. HELCITA Stål = *Jada* Distant.

H. wahlbergi Stål; *H. (Derbe) nitagalensis* Kirby.

7. LOSBANOSIA Muir.

L. (Zoraida) villeti Dist.

8. ZORAIDOIDES Distant.

Z. malabarensis Dist.

9. PSEUDOHELICITA, gen. n.

P. (Zoraida) walkeri Dist.

10. NEODIOSTROMBUS, gen. n.

N. (Thracia) basalis Walk.

11. ZARAIDA Kirkaldy.

*a*¹. Six cubital veins reaching the hind margin of the tegmina.

.....Subgenus *Neozoraida* nov.

Z. ugandensis Dist.; *Z. motschoulskyi* Dist.; *Z. gilva* Dist.; *Z. (Thracia) obsoleta* Kirby; *Z. fletcheri* Dist.;

*a*². Four cubital veins reaching hind margin of the tegmina.

*b*¹. Antennae flat and thinSubgenus *Peggiopsis* Muir.

Z. (Thracia) punctipennis Walk.; *Z. (Thracia) nivifera* Walk.; *Z. (Thracia) rufifinis* Walk.; *Z. spectra* Dist.; *Z. singaporensis*, sp. n.;

*b*². Antennae cylindrical or only slightly flattened, not thin.

.....Subgenus *Zoraida* Kirk.

*c*¹. Wings one-third to one-half the length of tegmina.

Z. nyasensis Dist.; *Z. distanti*, sp. n.; *Z. (Derbe) sinuata* Boh.; *Z. (Thracia) pterophoroides* Westw.; *Z. picturata* Dist.;

Z. eransi Dist.; *Z. (Thracia) costalis* Walk.; *Z. (Thracia) scutellaris* Walk.; *Z. (Thracia) senotata* Walk. = *Z. cydista* Dist.; *Z. borneensis* Dist.; *Z. erythraetis* Dist.; *Z. cyanoptera* Dist.; *Z. eupocila* Dist.; *Z. consanguinea* Dist.; *Z. (Thracia) fuscipennis* Walk.; *Z. rufirena* Dist.; *Z. ridleyi*, sp. n.; *Z. kirkaldyi*, sp. n.; *Z. (Thracia) cumulata* Walk.; *Z. insulicola* Kirk.; *Z. pattersoni* Dist.; *Z. (Thracia) varipennis* Walk.; *Z. aburiensis*, sp. n.; *Z. (Thracia) essingtonia* Westw.; *Z. (Thracia) albida* Walk.;

c². Wings one-seventh to one-tenth the length of the tegmina.

Z. ceylonica Dist.; *Z. lankana* Dist.; *Z. (Thracia) ephemeralis* Walk.; *Z. histrionica* Dist.; *Z. (Thracia) limnobiaalis* Walk.; *Z. flavocostata* Dist.; *Z. picta* Dist.

12. SIKAIANA Distant = *Iguvium* Distant.

S. (Iguvium) albomaculata Dist.

DIOSPOLIS Westwood.

I have examined the two female specimens of *Cicada elongata* Fabr., one of them without a head, in the Banks collection in the British Museum, upon which Westwood founded this genus, and they are synonymous with *Philadelphia pandani* Kirkaldy. On the right tegmen of one specimen and the left tegmen of the other there is an aberration of the neuriation, forming a small cell at the base of the fourth median sector; this has been figured by Westwood in both tegmina. The head and eyes are not figured wide enough.

D. annetti, sp. n.

Quite typical in structure, the face being slightly broader, especially the apical portion; wings one-third the length of the tegmina.

Bright yellow over clypeus between the carinae, face, vertex, middle of pronotum, and mesonotum; a broad mark down abdominal dorsum, over the lateral portions of abdominal tergites, and hind margin of abdominal sternites; lighter yellow over the antennae, lateral portions of pronotum, and legs; dark brown over rostrum, lateral portions of clypeus, genae, eyes, medio-lateral marks on pronotum, and lateral portions of mesonotum; black on basal portion of abdominal sternites, pregenital plates, and two broad medio-lateral bands down dorsum with a few small yellow spots in them. Tegmina light fuscous, darker over radial cell; seven dark spots in costal and subcostal apical cells; subcosta and radius light brown or yellowish; media and sectors, cubital and claval veins brown; wings slightly fuscous with brown veins.

Anal segment very short, anal style long, narrow; pregenital plate about as long as broad, in profile slightly concave, hind margin produced on lateral fourth, truncate in middle half; genital styles abortive.

Length 4·5 mm. ; tegmen 8 mm.

Hab. NIGERIA (*Dr. Annett, 1903*).

One female, in the B.M. coll. This is the second species of the genus, the type being Australian.

PROUTISTA Kirkaldy.

This genus is quite distinct from *Phenice* Westw. ; the latter does not belong to the *Zoraidinae*.

P. pseudodecisa, sp. n.

Light stramineous, red on clypeus and middle of pronotum, fuscous on apex of rostrum and tarsi ; abdominal dorsum light fuscous and slightly mottled with light marks. Tegmina and wings hyaline, veins brown.

The medio-ventral process of the pygofer forming a small, acute spine, the lateral edges angular beside the anal segment and produced into an acute point ; genital styles with the ventral edge entire, convex on the apical half, apex produced into a long point curved inward, dorsal edge produced into a small curved spine on the basal half, roundly produced in the middle and strongly concave to the apex.

Length 4·5 mm. ; tegmen 7·8 mm.

Hab. AUSTRALIA, Stapleton, N.T. (*G. F. Hill, x. 1913*).

Three males, including the type, in the B.M. coll.

(*To be continued.*)

ON SOME CYNIPID OAK-GALLS NEW TO THE BRITISH FAUNA.

BY RICHARD S. BAGNALL, F.L.S., AND J. W. H. HARRISON, D.Sc.

Our Cecidological researches have naturally led us to pay some attention to the gall-wasps of the British Oaks, but, believing that the *Cynipidae* had been so well worked in comparison with other gall-causers, such as the *Cecidomyiidae* or *Eriophyidae*, we must plead guilty to having somewhat neglected this branch in the past few years. It did not seem to us that many discoveries remained to be made in the gall-wasps, nor did we realize that one generation or another of those exhibiting that most peculiar phenomenon, an alternation of generations, remained to be discovered or proved. For instance, the placing together of *Andricus rhyzomae* and *A. nodifex* as the generations of one species in the following notes has yet to be proved: we have taken this step because of the analogies of *A. rhyzomae* with the other bark galls

radicis and *sieboldi* on the one side, and of *A. nodifex* with *trilineatus* and *testaceipes* (the known sexual forms of *radicis* and *sieboldi*) on the other.

We now realize that much interesting work remains to be done as regards our Oak gall-wasps, and much may be achieved by those who have but little spare time, so long as they reside within easy reach of oak woods or shrubberies.

In the following notes we bring forward 11 forms previously unknown, so far as we are aware, as British. One, however, is the sexual generation of a common British species previously only known from the agamous form.

1.—*Cynips corruptrix* Schlecht.

Schlechtendal, Stett. ent. Zeit. xxxi, p. 339 (1870); Dalla Torre & Kieffer, Cynipidae in "Das Tierreich," xxiv, p. 422 (1910).

A small and somewhat variable mammillated twig-gall, which is well illustrated by Houard and Dalla Torre & Kieffer.

Hab. DURHAM, Team Valley (*J. W. H. H.*).

Previously known from Germany, Hungary, Serbia, Italy, Asia Minor, and North Africa.

2.—*Andricus xanthopsis* Schlecht.

Schlechtendal, Jahresber. Ver. Zwickau, 1882, p. 1 (1883); Dalla Torre & Kieffer, Cynipidae in "Das Tierreich," xxiv, p. 518 (1910).

A glabrous yellow catkin-gall, somewhat like that of *A. amenti*, terminated by a conical point of a duller colour, a close examination showing two pads formed by the parts of the anther.

Hab. DURHAM, Bewick Main, June (*J. W. H. H.*); NORTHUMB-
BERLAND, Ovingham (*R. S. B.*).

Recorded by Houard from Austria and France.

3.—*Andricus occultus* Tschek.

Tschek, Verh. zool.-bot. Ges. Wien, xxi, p. 797 (1871); Dalla Torre & Kieffer, Cynipidae in "Das Tierreich," xxiv, p. 517 (1910).

This is of the sexual generation and the gall occurs on the flower. It is somewhat intermediate between the galls of *A. nudus* and *A. pilosus*, being larger than *nudus*, with the hairs (which are confined to the anterior half) long.

Hab. DURHAM, Gibside, May 1915 (*R. S. B.*), Winlaton Mill (*R. S. B.*) and Bewick Main, June 1918 (*J. W. H. H.*); NORTHUMB-
BERLAND, Ovingham (*R. S. B.*).

It is recorded by Houard from Central Europe and by Dalla Torre & Kieffer from Lower Austria and Portugal.

4.—*Andricus trotteri* Kieffer.

Kieffer, Bull. Soc. Ent. France, 1898, p. 143; Dalla Torre & Kieffer, Cynipidae in "Das Tierreich," xxiv, p. 505 (1910).

This is a Cynipid of the agamous generation, producing a gall of most distinctive position, type, and coloration. It reaches 2–3 mm. in length, is more or less ellipsoidal, and may be longer than broad or broader than long in its longitudinal axis, and, being furnished with a basal piece, it has the appearance of an egg lying on its side or end (as the case may be) upon a pedestal. It lies at right angles to the twig upon which it is situated, and the colour is dark reddish-brown with at least one white or yellowish-white transverse band.

Hab. DURHAM, Ravensworth Woods near Lamesley, June 1918 (*R. S. B.*).

The discovery of this species in the north of England is most unexpected, being previously known from Verona in Italy only.

5.—*Andricus sufflator* Mayr.

G. Mayr, Eur. Arten gallenbew. Cynip. p. 22 (1882); Kieffer in André, Spec. Hym. Eur. vii, p. 401 (1899); Dalla Torre & Kieffer, Cynipidae in "Das Tierreich," xxiv, p. 507 (1910).

This gall belongs to a Cynipid of the sexual generation and takes the form of a pustule of about 3·0 mm. diam. in the leaf, differing from the gall of *Neuroterus vesicator* in that the two faces of the gall are alike, the upper being without the pointed centre and the radial striations. When the gall is opened a small internal gall is found, as in *Andricus curvator*.

It is suggested by Dalla Torre & Kieffer that the *Andricus gallae-urnaeformis* of Fonscolombe may be the corresponding agamous form.

Hab. SOMERSET, two old examples of the gall from the neighbourhood of Bath, Nov. 1917 (*R. S. B.*).

Abroad the species is known from Central Europe, France, Italy, and the Balkan Peninsula.

6.—*Andricus rhyzomae* (Hartig).

Cynips rhyzomae (*lapsus*?) T. Hartig in Germar's Zeitschr. Ent. iv, p. 405 (1843); *Andricus rhyzomae* Dalla Torre & Kieffer, Cynipidae in "Das Tierreich," xxiv, p. 495, fig. 246 (1910).

This gall belongs to a Cynipid of the agamous generation, and somewhat resembles that of *A. sieboldi* with the apex cut off (see Houard, 1292, fig. 395). It is the *A. rhizomatis* of Dalla Torre (Cat. Hym. ii, p. 97 (1893)), and, according to Houard, it would seem to be well distributed throughout Europe.

Hab. DURHAM, Lambton (*J. W. H. H.*), Fatfield and Gibside (*R. S. B.*).

7.—*Andricus nodifex* Kieff.

A. testaceipes var. *nodifex* Kieffer in André, Spec. Hym. Eur. vii, p. 436, pl. 25, fig. 7 (1900-01); *A. testaceipes nodifex* Dalla Torre & Kieffer, Cynipidae in "Das Tierreich," xxiv, p. 474, fig. 206 (1910).

An elliptical gall on the mid-rib or petiole of leaf, previously known from Lorraine and France. Probably the sexual generation of *A. rhyzomae*, a probability strengthened by the fact that we have discovered both forms associated in this country.

Hab. DURHAM, Lamesley and Beamish (*J. W. H. H.*), Fatfield and Gibside (*R. S. B.*); NORTHUMBERLAND, Corbridge-on-Tyne (*J. W. H. H.*).

8.—*Andricus furunculus* Beyerinck.

Neuroterus furunculus Beyerinck, Verh. Ak. Amsterdam, xxii, p. 37 (1882); *Andricus ostrea* Sex. Gen., Dalla Torre & Kieffer, Cynipidae in "Das Tierreich," xxiv, p. 480 (1910).

This is the sexual generation of *A. ostrea*, but the gall is not nearly so well known as that of *A. ostrea*. It is somewhat like the gall of *Neuroterus albipes*, but is situated on the twig.

Hab. DURHAM, Winlaton Mill (*R. S. B.*); NORTHUMBERLAND, Corbridge-on-Tyne (*R. S. B.* & *J. W. H. H.*), Ovingham (*R. S. B.*).

9.—*Trigonaspis synaspis* (Hartig).

Apophyllus synaspis T. Hartig in Germar's Zeitschr. Ent. iii, p. 340 (1841); *T. synaspis* Dalla Torre & Kieffer, Cynipidae in "Das Tierreich," xxiv, p. 395 (1910).

The sexual generation of this species is *T. megapterosis* Wriese, and both the imago and gall are barely distinguishable from those of *T. megaptera* (Panz.). It has only been detected in Holland.

The agamous form, however, is very different from *T. renum* (the agamous form of *megaptera*), and is known from Sweden, Germany, Austria, Italy, Portugal, and Asia Minor, or, according to Houard, throughout Europe excepting Spain. The gall is of the same type as that of *Dryophanta folii* and other species of that genus, closely resembling *folii*, but appreciably smaller (5–7 mm., as compared with 10–20 mm., in diam.) and with the surface always smooth (see Houard, 1321, figs. 447 & 448).

Hab. DURHAM, Team Valley (*J. W. H. H.*), Fatfield and Gibside (*R. S. B.*).

10.—*Diplolepis quercus* Fourc. (= *Dryophanta pubescentis* Mayr).

Diplolepis quercus Foureroy, Ent. Paris, p. 391 (1785); Dalla Torre & Kieffer, Cynipidae in "Das Tierreich," xxiv, p. 351 (1910).

This is the *Dryophanta pubescentis* of Mayr, Kieffer, and Houard, whilst it was redescribed under the name *Dryophanta ilicis* by Kieffer in 1896.

The gall is of the agamous generation and of the same type as that of *D. folii*, from 8–10 mm. in diameter, with the surface dull yellowish-brown, usually ornamented with minute flat warts, but sometimes quite smooth.

This form is so like *D. folii* that we hesitated to bring *D. quercus* forward when we discovered it a few years ago. The discovery of the very distinctive gall of the sexual generation, however, now enables us to make this record.

Hab. Co. DURHAM, from the Derwent Valley in the autumn of 1914, Winlaton, July 1918 (*R. S. B.*).

Recorded from Italy, Sicily, Southern France, Spain, Portugal, North Africa, Lower Austria, Hungary, Bulgaria, Montenegro, and Asia by Dalla Torre & Kieffer, whilst Houard says it occurs throughout Europe, excepting Norway.

11.—*Diplolepis flosculi* Giraud.

Spathegaster flosculi Giraud in Ann. Soc. Ent. France, ser. 4, viii, Bull. p. 54 (1868); *D. quercus* Sex. gen., Dalla Torre & Kieffer, Cynipidae in "Das Tierreich," xxiv, p. 351 (1910).

This is the sexual generation of *D. quercus* and is the same species as the *Spathegaster giraudi* Tschek (1869).

The gall is very characteristic in its pilosity and colour, and is

situated on the small axillary knots of a twig, as a rule in the angle formed by the leaf-petiole. It is of the same type as that of *D. taschenbergi* and *D. similis*, ranging from 2.5 to 4.5 mm. in length, green or more or less red, furnished with long curly pubescence, mostly of a bright red to purplish-red colour.

Hab. NORTHUMBERLAND, Dipton Woods, Corbridge-on-Tyne, June 29th, 1918, about a dozen examples were taken on one shrub (*J. W. H. H.*; *R. S. B.*), Ovingham (*R. S. B.*); DURHAM, woods near Winlaton Mill (*R. S. B.*).

Recorded from Austria and Hungary by Dalla Torre & Kieffer, but Houard reports it from Central Europe, Italy, and France. It is apparently, in any case, much less known than the agamous form.

July 5th, 1918.

Recent captures of Coleoptera in the Oxford district.—Among a large number of species of *Coleoptera* met with by me during the present season near Oxford, the following are perhaps worthy of notice. *Panagaeus 4-pustulatus* and *Amara patricia*, at Shotover Hill (Oxon) and Tubney respectively; *A. anthobia*, commonly at the end of May by sweeping in a meadow almost adjoining my house, and unaccompanied by any other members of the genus. *Hydroporus ferrugineus*, one in a nearly dry puddle of clear water, near Stanton St. John, Oxon. *Agabus uliginosus* (1 ♂), *Ilyobates forticornis*, and *Philonthus lucens* (again not rare) in Cherwell flood-refuse. *Oxytelus fulvipes*, sparingly in wet tufts at Yarnton, with *Pselaphus dresdensis* and one example of a *Calodera*, perhaps referable to *C. rufescens* Ktz. A small heap of old manure close to my house produced a good number of the pretty and distinct little *Millidium trisulcatum*; I find the best way to obtain this and other minute beetles is to half-fill a large glass-topped box with the finely-sifted débris, when the insects very soon make their appearance on the glass and are readily taken. *Cryptophagus populi*, in a similar manure-heap, also in fungus at Cothill. *Pediacus dermestoides*, under bark of wild cherry, and *Conopalpus testaceus*, walking on a dead beech at Wytham Park; *Necrophorus vestigator*, a fine pair under a recently dead mole at Tubney. The sweeping-net yielded many interesting species during the fine weather in May, notably *Aleochara maculata* (1), *Calodera umbrosa*, *Colon denticulatum* (1), *Ips 4-punctata* (1), *Tychius lineatulus*, and a stray example of *Dorytomus validirostris* at Shotover; *Homalata splendens* (4) and *H. exarata* (1 ♂) at Boar's Hill on May 16th; *Euplectus abeillei*, a fine ♂ in a very unsuggestive-looking lane close to my house; *Saprinus virescens*, *Molorchus minor*, *Cryptocephalus bipunctatus* var. *lineola*, *Gymnetron rostellum*, *collinus*, and *linariae*, all sparingly except the last, at Tubney; and *Colon viennense*, *Melasis buprestoides*, and *Phytoecia cylindrica* at Wood Eaton, Oxon. Of the genera *Ceuthorrhynchus* and *Ceuthorrhynchidius*, which are well represented in the district, *C. pilosellus* occurred, but more sparingly than usual, in rabbit-holes at Tubney, with occasional *C. euphorbiae*; *C. trimaculatus*,

freely on *Carduus nutans* at the same place, and *C. nigrinus*, on *Fumaria*, at Wood Eaton; and at Shotover *C. punctiger* was very common on dandelions in May, and the pretty *C. triangulum* and *C. barnevillei* (*chevrolati*) were taken rather freely on the young growth of *Achillea millefolium*, in company with a good many *Cassida sanguinolenta*. Of the last-named species, all the specimens of the second brood, which I have taken here as well as at Deil in August and September, are of the unicolorous green form. The curious little *Rhytidosomes globulus* still holds its own well in its restricted locality near Cothill, Berks.

An excursion to the Blewbury Downs with the members of our Natural History Society on May 30th produced but few beetles, the most plentiful species met with being *Phyllobius viridicollis*, unexpectedly common so far south; but a fresh specimen of *Smicronyx reichei* was a decidedly welcome addition to the Berkshire County List of Coleoptera.—JAMES J. WALKER, Aorangi, Lonsdale Road, Summertown, Oxford: July 16th, 1918.

Donacia clavipes F. at home.—Dr. Vinter and I paddled down the Norfolk Bure from Coltishall one hot afternoon late last July, and turned up a back-water to the south, just beyond Belaugh. All the way we had vainly searched the numerous flowers of *Nuphar luteum* for this fine *Donacia*. The presence of a small colony of the white Aphis (*Hyalopterus arundinis* Fab.) on the stem of a reed (*Phragmites communis*) caused me idly to unroll its leaf—and there was *D. clavipes* snugly ensconced at its base. We examined many reeds, but only those that supported the Aphis gave also the *Donacia*; usually these grew direct from the water. Ten minutes' work produced a fine series; and in one or two cases we detected the beetle actually in the act of devouring the Aphides or their honey-dew. But none were apparent: all sheltered from the heat within the curled leaf, where one or two pairs were *in cop*. The species has never occurred to me outside East Anglia: in the flowers of yellow water-lilies it was rare at Ipswich in 1896, and very common at Horning in 1901; I have swept it singly from reeds at Chippenham in Cambs., and at Mildenhall in Suffolk, whence it has also been recorded from Fritton, Bungay, and Oulton Broad, always, I believe, only during the latter half of June.—CLAUDE MORLEY, Monks Soham: July 1st, 1918.

Elater sanguinolentus Schr., var. *paleatus* Cand. at Wimbledon.—I have captured two specimens of this variety on Wimbledon Common—one in June 1917, the other early in the same month of this year. *E. paleatus* was described in 1893 from two examples taken by M. Gérard near Hasselt in the north of Belgium; it differs from the type in having the elytra yellow, instead of the customary bright red colour. Both my specimens possess the black spot common to the type. I am indebted to Mr. Blair for the name of this varietal form, which is not represented in the British Museum. It is not noticed by Fowler.—CEDRIC W. CAMERON, "St. Oswalds," Claughton, Birkenhead: July 1918.

Note on Alianta pictipennis Fauv.—In the "Revue d'Entomologie," xxiv, 1905, p. 142, Fauvel described under the above name a Staphylinid, taken by myself at Perim and Kamaran, on the Red Sea littoral, on sandy beaches under seaweed. In general appearance the insect resembles *Heterota* Rey. A microscopical examination shows the tarsal formula to be 4, 4, 5, and the structure

of the mouth-parts to be the same as in that genus, in which, therefore, it must be placed. A very closely allied species, at present undescribed, occurs in the vicinity of Port Darwin (N. W. Australia) and in Singapore, in a similar habitat.—M. CAMERON, 7 Blessington Road, Lee, S.E. 13: *June 23rd*, 1918.

The association between the Hemiptera-Heteroptera and vegetation: an addendum.—The publication of my paper on this subject has brought me the record for which I have for years been looking in vain, that of the occurrence of a heteropterous bug on an orchid. Mr. W. Evans, of Edinburgh, has called my attention to a paper of his on insect visitors to certain orchids, which was published last year in the "Transactions and Proceedings of the Botanical Society of Edinburgh." In this paper he records finding, in August 1909, one specimen each of *Pithanus maerkeli* and *Lygus lucorum* on a plant of *Listera ovata*. As these two species are gregarious on their regular food-plants, while, in this instance, only one specimen was found in each case, the occurrence is scarcely likely to have been other than casual; but still it forms the exception, and it is interesting to note that it comes from Scotland, which has been much less worked for Hemiptera than England. I may add that those Heteroptera that frequent flowers may occasionally serve as agents in pollination, as they are sometimes found with pollen-grains adhering to them.—E. A. BUTLER, 14 Drylands Road, London, N. 8: *July* 1918.

Sapyga clavicornis L. and other Hymenoptera, in old posts at Oxford.—I am pleased to be able to record the capture of a male of this rare Fossor on an old post in my garden, Southfield Road, late in the afternoon of June 1st. For some years past I have kept under observation, mostly at week-ends, a couple of old willow-posts, which had formerly done duty as clothes-posts, but becoming unsuitable for that purpose, they were tied to the fence, one on either side of the garden; consequently one is more or less in shade, and the other, which gets all the afternoon sun, is always the more attractive. Into them I have bored a number of gimlet-holes of various calibre, which attract large numbers of *Aculeata* and other Hymenoptera. The following rough and ready list will give some idea of the success of the method adopted. I have no doubt that many more species could be attracted if materials for nidificating purposes, to suit all tastes, were provided. Apart from their interesting habits, it is an endless source of amusement to watch the many species at work or on pleasure bent. On a bright sunny day in June it is no unusual sight to see 12 to 20 species on or about the posts at one time.

FOSSORES.—*Sapyga quinquepunctata*, both sexes seen every year. *Trypoxylon figulus* and *clavicerum* breed regularly. *Stigmus solskyi*, breeds every year in some numbers, appropriating the small borings left by *Anobium*. *Pemphredon*, three species, occasionally nidificating. *Diodontus*, all three species, sparingly. *Passalocetus*, one or more species sometimes. *Psenulus pallipes*, occasionally nidificating. *Crabro*, seven or eight species; these include both large and small forms. *Spilomena troglodytes* has just been taken by me. This minute Fossor nidificates in the small burrows of *Anobium*, which I have seen it enter with its prey, an immature Aphid.

DIPLOPTERA.—*Odynerus*, several species; many individuals are attracted but seldom nidificate.

ANTHOPHILA.—*Prosopis*, three or four species. *Halictus*, several species. *Chelostoma*, both species breed regularly every year, sometimes in numbers. *Coelioxys*, two species. *Megachile willughbiella*, *circumcincta*, *ligniseca*, and *centuncularis*, seldom nidificating, except the last species, but use the ready-made holes as sleeping quarters freely. *Osmia rufa*, *caerulescens*, and *leuana*, all three species nidificate fairly frequently. *Stelis aterrima*, occasionally. *Anthidium manicatum*, sometimes seen round the posts, often in numbers at the flowers of *Stachys sylvatica*, which is allowed to grow in the garden. *Anthophora furcata*, nidificates sometimes in holes in the fence, but is frequent on flowers of the *Stachys*.

CHRYSIDIDAE.—*Chrysis cyanea* and *ignita*, both species very abundant. *C. pustulosa* is not rare, several taken most years.

EVANIIDAE.—*Foenus*, two species, sometimes fairly common.—A. H. HAMM, 22 Southfield Road, Oxford: July 1918.

A new locality for Somatochlora arctica Zett.—On the 17th inst. when collecting in Glen Nant, Argyllshire, along with Mr. J. W. Bowhill, I had the pleasure of taking a ♂ of *S. arctica*, and soon afterwards Mr. Bowhill secured a ♀ of the same species. Unfortunately, only passing gleams of sunshine favoured us, but during the day one or two more ♂ examples were seen. The locality is farther south than Glen Lochay in Perthshire, which, I believe, has been the limit of the ascertained distribution of this interesting species in Scotland in that direction. Whether *Aeschna coerulea*, with which *S. arctica* is almost invariably associated, will also be discovered in this Argyllshire locality is a matter for further investigation. The other dragonflies noticed—all already recorded for the county—were: *Libellula quadrimaculata* L., *Cordulegaster annulatus* Latr., *Pyrrhosoma nymphula* Sulz., *Enallagma cyathigerum* Charp., and *Calopteryx virgo* L. The last named at the beginning of July last year was found by us in great abundance in the same valley and elsewhere in the Loch Awe district, *Ischnura elegans* being also common.—KENNETH J. MORTON, 13 Blackford Road, Edinburgh: June 21st, 1918.

Review.

“MEMOIR OF THE REVEREND OCTAVIUS PICKARD-CAMBRIDGE, M.A., F.R.S.” By his SON, ARTHUR WALLACE PICKARD-CAMBRIDGE, M.A., Fellow of Balliol College. Oxford: Printed for private circulation. 1918.

In this neat little volume Mr. Pickard-Cambridge has given us an exceedingly pleasing sketch of his father's well-known and attractive personality, in its many-sided aspects as country parson, traveller, musician, antiquary, and above all as an “all round” Naturalist, and a prolific writer on one of the most interesting branches of Zoological science. We find that his love of Entomology began at a very early age—his first butterfly, a *Colias hyale* still standing in his collection, was taken in his eighth year, as long ago as 1835—and his first paper—on “Robber-bees”—appeared in the “Zoologist” for 1852. This volume also contained his first note on the *Arachnida*, the last contribution that he made to his special subject being dated more than sixty years later. A valuable feature of this little book is the very complete bibliography of his scientific papers, which will not fail to be fully appreciated by

all naturalists. Several good half-tone plates illustrate the book, the most striking of these being the interior of the famous "den" at Bloxworth Rectory, with its occupant surrounded by his books and collections; and it is satisfactory to know that the great series of *Arachnida*, with its numberless "types," brought together during his long life, and the extensive library of works relating to the Class, have found a final resting-place in the Oxford University Museum, and are now available to all students of the subject.

Society.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY:
 May 23rd, 1918.—Mr. STANLEY EDWARDS, F.L.S., President, in the Chair.

Mr. Main exhibited the pupa of *Ocyopus olens* (Coleopt.) in the pupal chamber and pointed out the strong spines which prevented direct contact with the earthen sides. He also showed the larva of *Timarcha tenebricosa* ready for pupation on its back in the cell. Mr. Ashdown, Albin's "Natural History of English Insects," 1720, one of the first coloured English entomological works. Mr. Dennis, stereoscopic slides of *Tortrix cristana*, etc. Mr. Main, *Anopheles bifurcatus* and other mosquitoes. Mr. Adkin asked for support for the "Wicken Fen Fund," indicating the object of the Fund and what had been done so far. The remainder of the evening was spent in an exhibit and discussion of *Mimas tiliae*, introduced by Mr. Sperring. Messrs. Leeds, R. Adkin, and Sperring exhibited their series of *Mimas tiliae*. Mr. Leeds, a wild captured ab. *suffusa* and a number of ab. *maculata*. Mr. R. Adkin, series of local races, and a long graduated series of modifications of the central transverse band, and gynandromorphous examples. Mr. Sperring then read his notes dealing with Nomenclature (shortly), Ova, Larva, Pupa, Time of Emergence, Forcing, Assembling, Pairing, and Variation, the last in some detail. A discussion ensued, Messrs. R. Adkin, B. Adkin, S. Edwards, W. West, Dennis, Main, and others taking part. *Mimas tiliae* was noted as being a very common suburban insect in the larval stage; until recently invariably attached to lime-trees, feeding well on birch, formerly common in the pupal stage at the foot of oaks in Greenwich Park, recently commonly attached to elms, always small when bred from elm-trees, occurring in Higham's Park on alder, etc.

June 13th, 1918.—The President in the Chair.

Prof. F. A. Dixey, M.A., M.D., F.R.S., was elected an Honorary Member.

The evening was mainly devoted to an Exhibition of Living Specimens of Natural History. Mr. Ashdown exhibited living larvae of *Anatis ocellata* (Coleopt.) and living imagines of *Rhagium inquisitor* (Coleopt.). Mr. R. Adkin, "winter nests" and living larvae of *Euproctis similis (auriflua)* and of *E. chrysorrhoea*, the one solitary in hibernation, the other gregarious; and also living *Scoparia dubitalis* and its white form to show the *Depressaria*-like attitude of the latter. Mr. H. Main, various early stages of *Chrysomela graminis* on Tansy, of *Timarcha violaceonigra* on Woodruff, of *Timarcha tenebricosa*, of *Necrophorus mortuorum* (all Coleopt.), of *Gastrophilus equi* (Dipt.), of *Podisus luridus* (Hemipt.), of *Pseudoterpna pruinata* and *Coleophora genistae* on Petty-whin, and of *Dasychira pudibunda*. Mr. Dennis, living larvae of

Dicranura vinula feeding on Aspen, and stereoscopic slides. Mr. K. G. Blair, various early stages of the mosquitoes *Anopheles maculipennis*, *A. bifurcatus*, and *Culex pipiens*, of the wasp *Odynerus spinipes*, of the beetles *Lema melanopa* and the two sexes of *Ptilinus pectinicornis*, and, on behalf of Mr. F. W. Champion, the rare beetle *Gnorimus nobilis*, from Ealing. Mr. H. Moore, a living *Augiades sylvanus*, and seasonal forms of the American *Papilio marcellus* (*ajax*)—the spring form, and form *telamonides*, the late spring form, a transition to *lecontei* (*marcellus*), the summer form. Mr. Hy. J. Turner, a melanic specimen of *Alsophila aescularia* from Mansfield, and *Pyrameis atalanta*, with pale red bands, from W. Cornwall and Ireland. Mr. F. W. Frohawk, the rare *Trichius fasciatus* (Coleopt.) from S. Wales, a male *Euvanessa antiopa* from N. Britain, a series of female *Pieris brassicae* showing gradation in the development of a band on the fore-wings, one example having a black spot on the hind-wing. Mr. Lachlan Gibb, the very rare yellow form of *Pieris rapae* from Canada. Mr. Neave, a partially banded *Pieris brassicae*, bred from Nasturtium. Mr. Simms, larvae of *Ruralis betulae* and *Strymon pruni*. Mr. Edwards, a *Calosoma sycophanta* from Epping Forest.

June 27th, 1918.—The President in the Chair.

Mr. Moore exhibited for Mr. Cooke, living *Tortrix viridana*, which had emerged from a mass of pupae taken from the throat and stomach of a dead jay. Mr. Priske, the rare blue form of the beetle *Calosoma inquisitor*, the egg-mass of the water-beetle *Hydrophilus piceus* beneath a *Potamogeton* leaf, and pointed out the "mast." Mr. Neave, an extremely pale brown form of *Hesperia malvae*, and an example of *Polyommatus icarus* ab. *icarinus*. Mr. Sperring, aberrations of underside in *Agriades thetis* from Cuxton, one with unusually dark and well-developed submarginal spots, another with somewhat sagittate spots, and another deficient in the basal spots. Mr. Main noted that *Ptychopoda* (*Acidalia*) *aversata* male rested on the four front legs with the hind legs extended backwards. Mr. Turner exhibited for Dr. Chapman a larva of the W. American *Orgyia*, *O. vetusta*, from California. Mr. B. W. Adkin, for Mr. E. B. Kershaw, an example of *Lycaena arion* with all markings absent except the discoidal spot and the marginal spots, also a specimen of the Hong-kong butterfly *Clerome eumeus*, belonging to the *Morphinae*. The rest of the evening was devoted to the exhibition and discussion of *Ematurga atomaria*. Mr. R. Adkin exhibited series from many parts of the British Isles, including a unicolorous dark brown male from Epping Forest, and the Lancashire dark form. Mr. B. W. Adkin, races from many southern localities and a blackish-brown race from Durham. Mr. Ashdown, series from Surrey, with the yellow Swiss form for comparison. Mr. Leeds, series from the Midlands, one having a bright yellow ground. Mr. Burnett, pale examples from the Fens, and various series from the Surrey hills. Mr. H. J. Turner, British forms, and a series from various places in France, Italy, Switzerland, and Germany, showing the strong sexual divergence in colour in the former series and the strong sexual convergence in colour in the latter series. He then read a paper dealing with the named forms, and summarised the lines of variation.

—HY. J. TURNER, *Hon. Editor of Proceedings.*

NEW AND LITTLE-KNOWN SALTATORIAL DASCILLIDAE.

BY G. C. CHAMPION, F.Z.S.

(Continued from p. 149.)

8.—*Scirtes nigrans*, n. sp.

Oval, rather broad, somewhat convex, shining, finely pubescent; black or piceous, paler beneath, the antennae testaceous, more or less infusate at or towards the tip, the palpi infusate or black, the elytra in one specimen testaceous along the suture and on the anterior portion of the disc, the legs testaceous, the posterior femora in the middle, and the posterior tibiae at the apex sometimes, infusate; sparsely, minutely, the elytra rather coarsely and diffusely, punctate. Head broad, the eyes large; antennae slender, moderately long; joints 2 and 3 short, equal. Prothorax broad, rapidly, arcuately narrowing from the base, hollowed in front opposite the eyes. Elytra without grooves or costae, sharply margined. Posterior coxal plates rectangular. Posterior legs moderately elongate, the femora broad, the tibiae widened, curved, the upper spur much shorter than the first tarsal joint.

Length 3–3½, breadth 2¼–2½ mm. (♂ ♀.)

Hab. BRAZIL, Rio de Janeiro (*Fry*).

Eight specimens, including one with the disc of the elytra indeterminate testaceous on the disc anteriorly. Larger and more robust than the European *S. hemisphaericus* L., the elytra rather coarsely, diffusely punctate, the posterior tibial spurs shorter. A more elongate example (♀) from Ilha Santa Amaro, Santos (*G. E. Bryant*: 16.ii.1912), with the elytral puncturing still stronger, probably belongs to the same species. Compared with the somewhat similar, differently coloured *S. rotundatus* Champ., from Central America, the posterior femora are less incrassate. *S. brasiliensis* Pic (1913), length 3½ mm., which has the head and prothorax red, may be allied to *S. nigrans*. There are various very similar Eastern forms.

9.—*Scirtes testaceicollis*.

Scirtes testaceicollis Pic, L'Echange, 1913, p. 173.

Short-oval, moderately convex, shining, thickly cinereo-pubescent; nigropiceous, the antennae (the slightly infusate joints 9–11 excepted), prothorax, elytral suture (indistinctly), tibiae, tarsi, and apices of femora, testaceous; closely, extremely minutely, the elytra much more coarsely, punctate. Head broad; antennae not very slender, comparatively short, joint 3 minute, shorter than 2, the following joints moderately elongate, somewhat widened. Prothorax convex, rapidly, arcuately narrowed from the base, feebly hollowed in front opposite the eyes, the anterior angles not very prominent. Elytra rounded and sharply margined at the sides. Posterior coxal plates rect-

angular. Posterior legs moderately elongate, the upper tibial spur shorter than the first tarsal joint.

Length $2\frac{7}{8}$, breadth 2 mm.

Hab. BRAZIL [type], Rio de Janeiro (*Fry*).

One specimen, sex not ascertained, agreeing with the description, so far as it goes, except that the front of the head is infusate.* It is smaller and a little shorter than *S. trinitatis*; the antennae are very much shorter, and not so slender; and the under surface, the bases of the femora, and scutellum are nigro-piceous or piceous.

10.—*Scirtes trinitatis*, n. sp.

♂. Oval, convex, shining, thickly, rather coarsely pubescent; testaceous, the eyes, head (except in front), and elytra piceous or black, the antennal joints 7–11 slightly infusate; closely, minutely, the elytra much more coarsely, punctate. Head broad, the eyes large; antennae very long, slender, joint 3 minute, a little shorter than 2. Prothorax convex, rapidly, obliquely narrowed from the base, bisinuate in front, the anterior angles prominent. Elytra rounded at the sides and also at the apex, slightly depressed along the suture anteriorly, and with an indication of a sutural groove, the lateral margins somewhat dilated and conspicuous from above. Posterior legs very long, the tibiae widened and sharply carinate, the long upper spur shorter than the first tarsal joint.

Length $3\frac{1}{16}$, breadth $2\frac{1}{2}$ mm.

Hab. TRINIDAD (*G. E. Bryant*: 1903).

One male, with the genital armature partly exposed. This species must be nearly related to the imperfectly described *S. brasiliensis* and *S. testaceicollis* Pic (1913), from Brazil. The testaceous scutellum, under surface, and legs, and partly testaceous head, should separate it from the first-named insect, and the unusually elongate antennae from *S. testaceicollis*.

11.—*Scirtes thoracicus*.

Scirtes thoracicus Champ. Biol. Centr.-Am., Coleopt. iii. 1, p. 610, pl. 27, fig. 3.

Hab. MEXICO; GUATEMALA; PANAMA; TRINIDAD (*F. Birch*: 1904). In the British Museum there is a specimen of this Central American *Scirtes* from Trinidad, from the Sharp collection.

* *S. boliviensis* Pic, Mélanges exot.-entom. xii (1915), is said to be an allied form with the disc of the elytra depressed, a character almost certainly peculiar to the ♀.

12.—*Scirtes forticornis*, n. sp.

Elliptic, depressed, shining, thickly pubescent; testaceous, the head (except in one specimen), the antennal joints 4–11, the prothorax with a patch on the middle of the disc, the scutellum, the elytra (except the sides anteriorly, and the suture and base), and the posterior femora and under surface in part, piceous; densely, finely, the elytra a little more distinctly, punctate. Antennae closely pilose, rather stout, in ♂ almost as long as the body, joint 3 very short, barely as long as 2. Eyes large. Prothorax rapidly narrowing from the base, feebly hollowed in front opposite the eyes, the anterior angles obtuse. Elytra sharply margined, without grooves on costae. Posterior coxal plates large, subquadrate. Posterior legs long, the tibiae widened, the upper spur much shorter than the first tarsal joint.

Length $2\frac{1}{2}$ –3, breadth $1\frac{1}{2}$ –2 mm.

Hab. BRAZIL, Rio de Janeiro [type], Bahia (*Fry*).

Three specimens, the one from Bahia (♀?) probably conspecific with the two from Rio de Janeiro, one of these latter (♂) having the genital armature exposed. A small form, with the elytra coloured much as in *Ora discoidea* Champ., the antennae (♂) nearly as long as the body and closely pilose, the posterior coxal plates well developed. *S. longicornis* Champ., from Panama, also has unusually elongate antennae.

13.—*Scirtes flavomarginatus*, n. sp.

Subhemispheric, convex, shining, finely pubescent: rufo-testaceous, the eyes black, the antennae and legs testaceous, the prothorax broadly flavo-marginate at the sides; closely, minutely, the elytra more distinctly, punctate. Head very broad; antennae quite slender, moderately long, joint 3 minute, barely as long as 2, 4–11 filiform. Prothorax rapidly, arcuately narrowing from the base, hollowed in front opposite the eyes. Elytra rounded and narrowly margined at the sides, without trace of grooves or costae. Posterior coxal plates small, angular. Posterior legs moderately elongate, the femora very broad, the tibiae feebly arcuate, flattened, and sharply carinate, the spurs curved, the upper one much shorter than the first tarsal joint.

Length 3, breadth 2 mm. (♂ ♀.)

Hab. LESSER ANTILLES, Granville (Windward side) in Granada (*H. H. Smith*).

One pair, the genital armature of ♂ and ovipositor of ♀ extruded. A convex, subhemispheric, rufo-testaceous insect, with the lateral margins of the prothorax yellow, the antennae very slender, the posterior coxal plates small. Mr. Smith notes that the specimens were found on herbage in a swampy thicket near sea-level, north of Granville, on April 1st. Five species of this genus from Granada or St. Vincent were

enumerated by myself in 1897.* The present insect was placed with the *Halticidae* when the collections from these islands were sorted. The Central American *S. pulicarius* and *S. suborbiculatus* are allied forms.

14.—*Scirtes helvolus*, n. sp.

Oblong-oval, somewhat depressed, shining, finely pubescent; testaceous, the eyes black, the elytra sometimes with a faint, common, triangular scutellar patch and a patch on the outer part of the disc at about the middle more or less infuscate; densely, very finely punctate. Antennae very slender, the thickened joints 1 and 2 excepted, 3 short, not longer than 2, those following moderately elongate. Eyes small. Prothorax rapidly, arcuately narrowing from the base, feebly hollowed in front opposite the eyes. Elytra with an indication of a sutural groove, otherwise unimpressed, the margins inconspicuous as seen from above. Posterior coxal plates angular. Posterior legs not very elongate, the tibiae narrow, the spurs rather slender, the upper one barely two-thirds the length of the first tarsal joint.

Length $2\frac{1}{10}$ – $2\frac{1}{4}$, breadth $1\frac{1}{4}$ – $1\frac{1}{3}$ mm. (♂ ♀.)

Hab. BRAZIL, Rio de Janeiro [type], Pernambuco (*Fry*).

Seven specimens from Rio de Janeiro and one from Pernambuco. A small, oblong oval, pallid form, with extremely slender antennae, small eyes, and feebly margined elytra. It is allied to *S. puncticollis* Champ., from Panama, the latter having more rounded sides to the elytra. *S. helvolus* has the general facies of a *Scymnus*.

15.—*Scirtes dispersus*, n. sp.

Short-oval, rather convex, shining, finely pubescent; testaceous, the head, scutellum, and elytra (the sutural and lateral margins excepted) piceous or rufo-piceous; minutely, somewhat sparsely punctate. Head broad, the eyes large; antennae rather slender, joint 3 small, barely as long as 2, the following joints moderately elongate. Prothorax rapidly narrowed from the base, feebly followed in front opposite the eyes. Elytra narrowly margined, without trace of grooves or costae. Posterior coxal plates rectangular. Posterior legs moderately elongate, the femora very broad, the tibiae curved, widened, and carinate, the upper spur shorter than the first tarsal joint.

Length $2\frac{1}{2}$, breadth $1\frac{2}{3}$ mm.

Hab. BRAZIL, Pernambuco (*Fry*).

One specimen, sex not ascertained. Near the Central American *S. suborbiculatus* Champ., differing from it in the finer and sparser puncturing of the elytra, which are piceous in colour, with the sutural and outer margins testaceous, and the more slender antennae.

* Trans. Ent. Soc. Lond. 1897, pp. 292, 293.

16.—*Scirtes strigosus*, n. sp.

Oblong, shining, rather coarsely pubescent; rufo-castaneous, the eyes black, the antennae testaceous, the posterior femora slightly infusate; the elytra densely, rugulose, the rest of the upper surface closely, minutely, punctate. Head broad, the eyes rather large; antennae quite slender, long, joints 2 and 3 short, equal in length, those following becoming very gradually shorter and perceptibly stouter. Prothorax convex, arcuately narrowing from the base, hollowed in front opposite the eyes. Elytra oblong, rounded at the apex, narrowly margined. Posterior coxal plates subrectangular. Posterior legs long, the tibiae moderately widened, the upper spur much shorter than the first tarsal joint.

Length 3, breadth $1\frac{4}{5}$ mm.

Hab. BRAZIL, Rio de Janeiro (*Fry*).

One specimen, in good condition. Intermediate in size between *S. lutens* and *S. helvolus*: the antennae much more slender, the elytra more densely punctured, and the posterior tibial spurs not so stout as in the former; the elytra much longer than in the latter.

17.—*Scirtes laevicollis*, n. sp.

♀. Oblong-oval, shining, clothed with fine brown pubescence; nigropiceous, the basal margin of the prothorax, the suture (indistinctly) and epipleura of the elytra, the apices of the femora, and the tibiae and tarsi, rufescent or testaceous, the antennae almost entirely black; the head and prothorax sparsely, very minutely, the elytra densely, finely, punctate. Antennae very slender, moderately long. Prothorax rapidly narrowed from the base, hollowed in front opposite the eyes, the anterior angles obtuse. Elytra with an indication of a sutural groove, narrowly margined, transversely depressed before the apex, the apices somewhat oblique and feebly sinuate, the sutural angles sharp. Posterior coxal plates angular. Posterior femora moderately broad, the tibiae slightly widened, the spurs slender, the upper one much shorter than the first tarsal joint.

Length $2\frac{2}{3}$, breadth $2\frac{1}{2}$ mm.

Hab. BRAZIL, Alto da Serra Sao Paulo (*G. E. Bryant*: 21.iii.1912).

One specimen, assumed to be ♀, the apices of the elytra being formed as in that sex of the Eastern *S. nilgiriensis* (*infra*), which is very like the present insect. *S. laevicollis* may be known by its piceous body, very slender, black antennae, comparatively smooth prothorax, rather slender posterior tibiae, and somewhat oblong shape, resembling *Cyphon* in that respect.

WATKINS & DONCASTER, Naturalists.

Keep in stock all Articles for Entomologists, Ornithologists, Botanists, &c.: Umbrella Net, 7/-; Folding Cane or Wire, 3/6, 4/-, 4/6; Plain Ring Net, 1/3, 2/-, 3/-; Pocket Boxes, 6d., 9d., 1/-, 1/6; Store Boxes, with Camphor Cells, 2/6, 3/6, 4/-, 5/-, 6/-; Zinc Pocket Boxes, 9d., 1/-, 1/6, 2/- Setting Boards, from 5d. to 1/10; Complete set of 14 boards, 10/6; Breeding Cages, 2/6, 4/-, 5/-, 7/6; Sugaring Tins, 1/6, 2/-; Sugaring Mixture, ready for use, 1/9 per tin; Setting Houses, 9/6, 11/6, 14/-; Glass Topped and Glass Bottomed Boxes, from 1/- per doz.; Zinc Killing Boxes, 9d., 1/-; Coleoptera Collecting Bottles, 1/6, 1/8; Collecting Box, containing 26 tubes (very useful for Coleopterists, Microscopists, &c.), 4/6; Brass Chloroform Bottle, 2/6.

Improved Pocket Pupa-digger in leather sheath (strongly recommended), 1/9; Steel Forceps, 1/6 to 3/- per pair; Pocket Lens, from 1/6 to 8/6.

Taxidermists' Companion, containing most necessary implements for skinning, 10/6; Scalpels, with ebony handles, 1/3; Fine Pointed Scissors, 2/- per pair; Brass Blow-pipes, 4d., 6d.; Egg Drills, 2d., 3d.; ditto, best quality, 9d. each; Botanical Vasculum, 1/6, 2/9, 3/6, 4/6; Label List of British Macro-Lepidoptera, with Latin and English Names, 1/6; List of British Lepidoptera (every species numbered), 1/-; or on one side for Labels, 2/-.

SILVER PINS FOR COLLECTORS OF MICRO-LEPIDOPTERA, &c., as well as minute insects of all other families.

We stock various sizes and lengths of these Silver Pins, which have certain advantages over the entomological pins usually employed.

For instance, insects liable to become greasy and verdigrisy, like Sesiidae, are best pinned on Silver pins, which will last much longer than the ordinary pins (whether enamelled black, or gilt, or silvered).

We shall be pleased to send pattern cards on application.

A large stock of British, European, and Exotic Lepidoptera, Coleoptera, and Birds' Eggs.

ENTOMOLOGICAL PINS.

The "DIXON" LAMP NET (invaluable for taking Moths off street lamps without climbing the lamp posts), 3s. 6d.

SHOW ROOM FOR CABINETS, &c.

36, STRAND, LONDON, W.C., ENGLAND.

Birds and Mammals, &c., Preserved & Mounted by first-class workmen.

Our New Price List (100 pp.) sent post free to any address on application.

FOR SALE.

16 NATURAL HISTORY CABINETS

BELONGING TO THE LATE DR. MASON,

ALSO

FOUR MICROSCOPICAL CABINETS,

Containing Microscopical Slides by G. R. VINE, of Sheffield.

ALSO

400 BRITISH BIRDS IN CASES.

Apply—MRS. MASON, TRENT HOUSE, BURTON-ON-TRENT.

THE SIX COLOURED PLATES illustrating the articles on
"SOME INTERESTING BRITISH INSECTS,"

with the accompanying text (issued in the Ent. Mo. Mag. for September, 1909, January and September, 1910, September, 1911, and August, 1913), are issued in a separate wrapper, price 2s.

APPLY TO THE PUBLISHERS.

Scale of Charges for Advertisements.

Whole Page.....£3. Half Page.....£1 11s. 6d. Quarter Page.....17s.

Lowest charge, 7s. up to 5 lines; 1s. per line afterwards.

Repeated or continuous Advertisements per contract.

There is no charge for Lists of Duplicates and Desiderata.

All payments and applications for the above should be made to

R. W. LLOYD, I. 5, Albany, Piccadilly, W.

AUTHORS are requested to send their communications and proofs to either
J. J. WALKER, Aorangi, Lonsdale Road, Summertown, Oxford; or
G. C. CHAMPION, Broomhall Road, Horsell, Woking.

AUTHORS requiring separate copies of their papers (which can be supplied at small cost) are requested to mark the number wanted on their MS.

ENTOMOLOGICAL NEWS.

A forty-eight page illustrated magazine, issued monthly, except in August and September, devoted to the study of INSECT LIFE. It contains a resumé of the proceedings of a number of Entomological Societies, and also articles by the leading Entomologists in the United States and Canada. Valuable information for the beginner, the economic entomologist, and the systemist. **TWO DOLLARS a year in advance.** Single copies, 25 cents. Address—

ENTOMOLOGICAL NEWS,

The Academy of Natural Sciences,
1900 RACE STREET, PHILADELPHIA, PA.

THE CANADIAN ENTOMOLOGIST.

A MONTHLY MAGAZINE DEVOTED TO THE STUDY OF SCIENTIFIC ENTOMOLOGY.

Volume 50 is now in course of publication. Back volumes can be supplied. It is the oldest established Magazine of the kind in America, and has a world-wide circulation. Subscription, \$2 per annum, payable in advance, which includes a copy of the Annual Report of the Entomological Society of Ontario to the Legislature. Editor, Dr. E. M. Walker, Biological Department, University of Toronto, Toronto, Canada.

Address: Entomological Society of Ontario, Guelph, Canada.

WICKEN FEN.—The Custodians, the National Trust, appeal to Entomologists for assistance towards the providing of the Watcher who guards the Fen against abuse. This expense, which is absolutely necessary, is provided by voluntary subscriptions, and I am desired to ask for Contributions, which will be gratefully received, however small.—W. G. SHELDON, Honorary Treasurer of the Wicken Fund, Youlgreave, South Croydon.

A SYNOPSIS OF THE BRITISH SIPHONAPTERA, by the
 Hon. N. CHARLES ROTHSCHILD, M.A., F.L.S., illustrated by Eight Plates
 (issued in the Ent. Mo. Mag. for March, 1915, pp. 49-112), price 1s. 6d. Apply to
 the publishers.

THE BIOLOGY OF DRAGONFLIES

(ODONATA or PARANEUROPTERA)

By R. J. TILLYARD, M.A., B.Sc., F.L.S., F.E.S.

Demy 8vo. pp. xii+398. With 4 plates and 188 text-figures. 15s net.

CAMBRIDGE ZOOLOGICAL SERIES.

"Never before has the group received such detailed and well-balanced treatment as Mr Tillyard has given. . . . Students of the anatomy and development of insects are much indebted to him for providing in this convenient form a trustworthy guide to the external and internal structure of dragonflies at various stages of their life-histories."—*Nature*

Prospectus on application

Cambridge University Press, Fetter Lane, London, E.C. 4, C. F. Clay, Manager

COLEOPTERA ILLUSTRATA,

CARABIDAE.

Vol. 1, No. 3.

CARABIDAE.

PRICE \$1.

CONTENTS.

PRICE \$1.

LEISTUS
ferrugineus Linn.

BLAPHRUS
aureus Mull.

LOBOCERA
pilicornis Fabr.

BROSCOSOMA
baldense Putz.

BEMBIIDUM
fasciolatum Duft.
articulatum Gyll.

CILLENUS
lateralis Sam.

THALASSOPHILUS
longicornis Sturm.

TRECHUS
discus Fabr.

ANOPHTHALMUS
hirtus Sturm.
v. rostratus Mots.

PTEROSTICHUS
lepidus Leake.
cupreus Linn.
infuscatus Dej.
puncticollis Dej.
crenatus Dej.
barbarus Dej.
carbonicolor Sols.
macer Marsh.
aterrimus Hrbst.
elongatus Duft.
oblongopunctatus Fabr.
angustatus Duft.
melanoecelis Chaud.
niger Schall.
vulgaris Linn.
nigritus Fabr.
minor Gyll.
interstinctus Sturm.
negligens Sturm.
subsinnatus Dej.
brevis Duft.
caspius Men.
cognatus Dej.
aethiops Panz.
globosus Fabr.

PTEROSTICHUS
cylindricus Hrbst.
melas Creutz.

ABAX
ater Vill.
ovalis Duft.
schuppelii Pall.
v. rendschmidtii Germ.
corsicus Dej.

MYAS
chalybaeus Pall.

AMARA
ingenua Duft.

ZABRUS
chalceus Fald.
heros Fald.
seidlitzii Schaum.
graecus Dej.
blapoides Creutz.

ANISODACTYLUS
binotatus Dej.
signatus Panz.

ACCURATE ENLARGED PEN DRAWINGS, UNIFORM IN SIZE,
 ONE TO A PAGE 8vo.

COLEOPTERA ILLUSTRATA will be mailed upon receipt of price.
 HOWARD NOTMAN, 136 JORALEMON STREET, BROOKLYN, N.Y., U.S.A.
 Vol. I, Nos. 1 and 2, \$1 each.

CONTENTS.

	PAGE
New Oriental Staphylinidæ (2).— <i>M. Cameron, M.B., R.N., F.E.S.</i>	169
Notes on the Derbidae in the British Museum Collection.— <i>I. Zoraidinae.</i> — <i>F. Muir, F.E.S.</i>	173
On some Cynipid oak-galls new to the British Fauna.— <i>E. S. Bagnall, F.L.S.,</i> <i>and J. W. H. Harrison, D.Sc.</i>	177
Recent captures of Coleoptera in the Oxford district.— <i>J. J. Walker, M.A., R.N.,</i> <i>F.L.S.</i>	182
<i>Donacia clavipes</i> F. at home.— <i>Claude Morley, F.Z.S.</i>	183
<i>Elater sanguinolentus</i> Schar., var. <i>paleatus</i> Cand. at Wimbledon.— <i>C. W. Cameron</i>	183
Note on <i>Alianta pictipennis</i> Fauv.— <i>M. Cameron, M.B., R.N., F.E.S.</i>	183
The Association between the Hemiptera-Heteroptera and vegetation: an addendum.— <i>E. A. Butler, B.A., B.Sc., F.E.S.</i>	184
<i>Sapyga clavicornis</i> L. and other Hymenoptera, in old posts at Oxford.— <i>A. H.</i> <i>Hamm, F.E.S.</i>	184
A new locality for <i>Somatochlora arctica</i> Zett.— <i>K. J. Morton, F.E.S.</i>	185
REVIEW.—“Memoir of the Reverend Octavius Pickard-Cambridge, M.A., F.R.S.” By his Son, Arthur Wallace Pickard-Cambridge, M.A.	185
SOCIETY.—South London Entomological Society	186
New and little-known saltatorial Dascillidæ (continued).— <i>G. C. Champion,</i> <i>F.Z.S.</i>	188

THE NATURALIST:

A MONTHLY ILLUSTRATED JOURNAL OF

NATURAL HISTORY FOR THE NORTH OF ENGLAND

EDITED BY

T. SHEPPARD, M.Sc., F.G.S., F.R.G.S., F.S.A.Scot.,
THE MUSEUM, HULL;

AND

T. W. WOODHEAD, Ph.D., M.Sc., F.L.S.,
TECHNICAL COLLEGE, HUDDERSFIELD;

WITH THE ASSISTANCE AS REFEREE IN SPECIAL DEPARTMENTS OF

J. GILBERT BAKER, F.R.S., F.L.S., GEO. T. PORRITT, F.L.S., F.E.S.,

Prof. **P. F. KENDALL, M.Sc., F.G.S. JOHN W. TAYLOR, M.Sc.,**

RILEY FORTUNE, F.E.S.

*The Journal is one of the oldest Scientific Periodicals in the British Isles, dating
back to 1833, and is circulated widely amongst the principal Naturalists of the country.*

LONDON: A. BROWN AND SONS, LIMITED, 5, FARRINGTON AVENUE, E.C.

And at Hull and York.

PRICE, SIXPENCE NET. BY POST SEVENPENCE.

Prepaid Subscription, 6s. 6d. per annum, post free.

The Annual Subscription for 1918 is 9/-.

[See p. 2 of Wrapper.]

Third Series, No. 45.] SEPTEMBER, 1918. [PRICE 1/- NET.
[No. 652.]

THE
ENTOMOLOGIST'S
MONTHLY MAGAZINE.

EDITED BY

G. C. CHAMPION, F.Z.S. J. E. COLLIN, F.E.S.

W. W. FOWLER, D.Sc., M.A., F.L.S.

B. W. LLOYD, F.E.S. G. T. PORRITT, F.L.S.

J. J. WALKER, M.A., R.N., F.L.S.

VOLUME LIV.

[THIRD SERIES—VOL. IV.]

“J'engage donc tous à éviter dans leurs écrits toute personnalité, toute allusion dépassant les limites de la discussion la plus sincère et la plus courtoise.”—*Laboulbène*.

LONDON:

GURNEY & JACKSON (MR. VAN VOEST'S SUCCESSORS),

33, PATERNOSTER ROW, E.C. 4.

TAYLOR AND FRANCIS, RED LION COURT, FLEET STREET.



NOTICE. Owing to the greatly increased cost of paper, printing, etc., the Editors of the Magazine are compelled to raise the subscription to 9s. per annum (post free). Subscriptions for the 1918 volume should be remitted as soon as possible to **R. W. LLOYD, I. 5, Albany, Piccadilly, London, W. 1.**

The price of a single ordinary number is 1s.

CHANGE OF ADDRESS.

H. BRITTEN, F.E.S., from Myrtle View, Windmill Road, Headington, Oxon,
to 22 Birch Grove, Levenshulme, Manchester.

REDUCED PRICES FOR BACK VOLUMES.

FIRST SERIES.

This can only be obtained in complete Volumes (bound or unbound).

A limited number of sets, from Vol. x to Vol. xxv can still be obtained at £2 15s. per set net (in parts), or of five consecutive Vols. at £1 per set net (if bound, 1s. per Vol. extra).

Certain of the Vols. i to ix can be had separately at 10s. each.

SECOND SERIES.

Vols. i to xv. are now offered at £3 per set net (in parts), or £1 2s. 6d. for five consecutive Vols. (if bound, 1/- per Vol. extra).

THIRD SERIES.

Vol. li (Third Series, Vol. i) can be supplied by the Publishers at 7/6 (8/6 if bound) per copy. Cover for binding, 1/-.

Vol. li (1915) contains 23 Plates (one coloured), a complete Monograph of the British Siphonaptera, and numerous extra pages of text.

Apply to the Publishers.

MEETINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON, 11, Chandos Street, Cavendish Square, W.—Wednesday, October 2nd, 16th, November 6th.

The Chair will be taken at 8 o'clock in the evening precisely.

The Library is open daily from 9 a.m. to 6 p.m. (except on Saturdays, when it is closed at 2 p.m.), and until 10 p.m. on Meeting nights.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge. The Second & Fourth Thursdays in each month, at 7 p.m. The lantern will be at the disposal of Members for the exhibition of slides.

The Chair will be taken punctually at 8 o'clock.

THE LONDON NATURAL HISTORY SOCIETY, which meets at 7 p.m. on the 1st and 3rd Tuesdays in each month, at Room 20, Salisbury House, Finsbury Circus, E.C., will be glad to welcome at its Meetings any French or Belgian entomologists now staying in this country, and to give them the benefit of its library and collections. Communications should be addressed to the Secretary, Salisbury House, E.C.

Hon. Sec. : J. Ross, 18, Queen's Grove Road, Chingford, N.E.

Chingford Branch. The Chingford Local Branch meets at the Avenue Café, opposite Chingford Station, at 8 p.m., on the 2nd Monday in each month.

AFRICAN SPECIES.*

Upper posterior tibial spur simple Nos. 18-24.
 Upper posterior tibial spur subulate at tip No. 25.

18.—*Scirtes subcostatus*, n. sp.

♀. Oblong-oval, broad, shining, thickly pubescent; fusco-testaceous or brownish-piceous, the head and prothorax darker in one example, the antennae piceous, the three basal joints, the legs, and under surface testaceous; densely, finely, the elytra a little more coarsely, punctate. Antennae long, slender, joint 3 distinctly longer than 2, 4-11 elongate. Prothorax very short, rapidly, arcuately narrowed from the base, bisinuate in front. Elytra long, sharply margined, feebly tricostrate. Posterior coxal plates transverse, arcuato-emarginate behind, angulate at the outer angle. Posterior tibiae widened, feebly curved, sharply carinate, the upper spur strongly curved, stout, shorter than the first tarsal joint.

Length $5\frac{1}{2}$ -6, breadth $3\frac{1}{2}$ mm.

Hab. UGANDA, Entebbe (*S. A. Neave*: 11.ix.1911; *C. C. Gowdey*: xii.1912, and iii.1913).

Described from two females; a third example taken by Mr. Gowdey, probably ♂, is somewhat injured. A large, broad, oblong-oval, brownish insect, with the elytra feebly tricostrate, not unlike a *Microcara*. *S. costulatus* Waterh., from Penang, and *S. costulipennis* Fairm., from Tonkin, are somewhat similar forms, with more densely sculptured elytra.

19.—*Scirtes zambesianus*, n. sp.

♀. Oblong-oval, broad, shining, pubescent; rufo-castaneous, the elytra becoming a little paler towards the apex, the antennae, legs (the infuscate posterior knees excepted), and under surface testaceous or rufo-testaceous; densely, finely, the elytra more coarsely, punctate. Antennae long, slender, joints 2 and 3 short, subequal in length, 4-11 elongate. Prothorax rapidly narrowed from the base, the anterior angles prominent. Elytra long, with an indication of four almost obsolete costae on the disc, narrowly margined. Posterior coxal plates arcuato-emarginate behind, angulate at the outer angle. Posterior tibiae widened, sharply carinate, the upper tibial spur long, shorter than the first tarsal joint.

Length $5\frac{1}{2}$, breadth $3-3\frac{1}{4}$ mm.

Hab. ZAMBESI (*Mus. Brit.*).

Two examples, in somewhat decayed condition, received by the Museum in 1877. Very like *S. subcostatus* from Uganda, rufo-castaneous above; the antennae rufescent; the elytra less rounded at the sides, and the costae only just traceable.

* Of the seventeen recorded African forms, one only, *S. giganteus* Champ., is known to me. The eight here enumerated are treated as new. One other before me, from Nyasa, is too imperfect for description.

20.—*Scirtes validus*, n. sp.

Oblong-oval, robust, somewhat depressed, shining, rufo-testaceous, the eyes black; clothed with rather long, coarse, flavous pubescence; closely, finely, the elytra more coarsely, punctate. Head broad, the eyes large; antennae long, slender, joints 2 and 3 short, subequal in length, 4-11 gradually decreasing in length. Prothorax convex, rapidly narrowing from the base, deeply hollowed in front opposite the eyes, the anterior angles prominent. Elytra oblong, arcuately narrowed posteriorly, flattened on the disc, with an indication of a sutural groove, the disc without costae. Posterior coxal plates rectangular. Legs long; posterior femora very broad, the tibiae stout, sharply costate, the upper tibial spur thickened, considerably shorter than the first tarsal joint.

Length $5\frac{1}{5}$, breadth 3 mm. (♂?)

Hab. WHITE NILE, Roseires (*Dr. G. B. Longstaff, in Mus. Oxon.*: 18.ii.1909).

One specimen, in excellent condition. A large, robust, elongate, rufo-testaceous form, narrower than *S. subcostatus* from Uganda, and larger and more robust than *S. africanus* from Natal, the elytra not costate as in the former, the antennae longer and more slender than in the latter.

21.—*Scirtes africanus*, n. sp.

Oblong-oval, robust, shining, coarsely flavo-pubescent; brown, the head and prothorax slightly infusate, the antennae piceous, the joints 1-3 and 11 at the tip, and the legs and under surface, testaceous; densely, finely punctate. Antennae moderately long, not very slender, joints 2 and 3 short, equal in length. Prothorax short, rapidly narrowed from the base, deeply hollowed in front opposite the eyes. Elytra long, sharply margined anteriorly (the dilated margin conspicuous from above to about the middle), and with a faintly impressed sutural line down the basal third. Posterior coxal plates transverse, arcuato-emarginate behind, angulate at the outer angle. Posterior legs long, stout, the tibiae widened, sharply carinate, the curved upper spur moderately elongate, shorter than the first tarsal joint.

Length $4\frac{1}{5}$, breadth $2\frac{1}{2}$ mm. (♂?)

Hab. NATAL, Malvern (*G. A. K. Marshall*: vi.1907).

One specimen, in perfect condition. Extremely like *S. japonicus* Kies., but larger and more elongate, the elytral margins more expanded anteriorly, the upper posterior tibial spur much shorter. The elytral sculpture and coxal plates are similar in the two insects. From *S. elongatus* Waterh., from Hong Kong, etc., the present species may be separated by the shorter tibial spurs and broader elytral margins. *S. sericeus* Waterh., from Siam, etc., is another very similar insect.

22.—*Scirtes vittifrons*, n. sp.

♀. Elliptic, robust, somewhat convex, very shining, sparsely, finely pubescent; head with a broad sharply-defined space on each side (including the eyes) black, the central portion, prothorax, and scutellum flavo-testaceous, the antennae (except the extreme base, which is black), legs, and under surface testaceous or rufo-testaceous, the elytra reddish brown; the head, prothorax, and scutellum rather sparsely, minutely, the elytra closely and somewhat coarsely, punctate. Head without foveae; antennae long, slender, joints 2 and 3 short, equal, the others elongate, 4 longer than 2 and 3 united. Prothorax convex, arcuately narrowed from the base, deeply hollowed in front opposite the eyes, the anterior angles prominent. Elytra without trace of grooves or costae, sharply margined. Posterior coxal plates transverse, angulate, hollowed behind. Legs stout; posterior femora very broad, the tibiae widened, moderately long, almost straight, sharply carinate, the upper spur nearly as long as the first tarsal joint.

Length $4\frac{1}{2}$, breadth 3 mm.

Hab. GUINEA, Sierra Leone (*ex coll. Fry*).

One specimen. A robust, rather convex, shining insect, with a flavo-vittate head, yellowish prothorax and scutellum, reddish-brown, rather coarsely punctured elytra, and testaceous limbs. It has the facies of a Halticid. The only described *Scirtes* from Sierra Leone is *S. subapicalis* Pic (1913), which must be a very different insect.

23.—*Scirtes nigeriensis*, n. sp.

Elliptic, rather broad, robust, moderately convex, shining, sparsely, finely pubescent; head, prothorax, and scutellum rufous, the eyes and elytra black, the reflexed apical margin of the latter and the antennae, legs, and under surface, testaceous; closely minutely, the elytra sparsely and a little more distinctly, punctate. Head broad, unimpressed, the eyes rather large; antennae moderately long, joint 3 small, not longer than 2, 4 and 5 elongate (the outer joints wanting). Prothorax short, rapidly narrowed from the base, feebly hollowed in front opposite the eyes, the anterior angles somewhat obtuse. Elytra sharply margined laterally, with an indication of a faint sutural groove down the apical half, unimpressed on the disc. Posterior coxal plates angular, rather small. Posterior legs stout, the femora greatly developed, the tibiae sharply carinate, the upper spur nearly as long as the first tarsal joint.

Length $3\frac{4}{5}$, breadth $2\frac{1}{2}$ mm. (♂?)

Hab. S. NIGERIA, Ilesha (*L. E. H. Humfrey*).

One specimen, received by the Museum in 1911. Near *S. vittifrons*, from Sierra Leone, the head wholly red between the eyes, the elytra black, and more finely and quite sparsely punctured, the posterior femora and tibiae very stout.

24.—*Scirtes helodinus*, n. sp.

♀. Oblong, depressed, shining, closely, finely pubescent; testaceous, the eyes black, the antennal joints 4-11 infusate; densely, very finely punctate. Head rather small, the eyes moderately large; antennae long, slender, joints 2 and 3 short, 4-11 filiform, subequal in length. Prothorax arcuately narrowed from the base, hollowed in front opposite the eyes. Elytra long, without trace of costae, narrowly margined, broadly depressed along the suture anteriorly, and with a slightly depressed, somewhat roughened space on the disc towards the apex. Posterior coxal plates angular, hollowed behind. Posterior tibiae moderately widened, feebly curved, the upper spur simple, a little shorter than the first tarsal joint.

Length $4\frac{1}{2}$, breadth $2\frac{1}{2}$ mm.

Hab. BRITISH EAST AFRICA, Lari (*C. S. Betton*: 15.viii-26.ix. 1899).

Two females, one in perfect condition. An elongate, depressed, testaceous insect, with the facies of a *Microcara* or *Helodes*. It cannot be compared with any other African species here enumerated.

25.—*Scirtes subulatus*, n. sp.

Oval, rather convex, shining, closely, finely pubescent; testaceous, the eyes black; densely, very finely punctate. Head broad, the eyes large: antennae long, rather stout, joints 2 and 3 short, equal, 4 about as long as 2 and 3 united, 4-11 gradually decreasing in length. Prothorax arcuately narrowed from the base, hollowed in front opposite the eyes. Elytra with a finely impressed sutural line, narrowly margined, rounded at the apex. Posterior coxal plates rectangular. Posterior legs moderately elongate, the tibiae widened, curved, sharply carinate, the spurs stout, the upper one pilose beneath, abruptly narrowed just before the tip, and nearly as long as the first tarsal joint.

Length $2\frac{3}{4}$ -3, breadth $1\frac{3}{4}$ -2 mm. (♂ ♀.)

Hab. NIGERIA, Bonney (*Dr. Annett*: 9.vii.1900), Badagri (*J. J. Simpson*: 1.ii.1910).

Two specimens from each locality, one with the sutural region of the elytra flattened anteriorly assumed to be ♀, the others ♂ ♂. The abrupt, narrow, claw-like termination of the upper posterior tibial spur is characteristic of the present species, which has the general facies of a *Cyphon*. *S. minutus* Pic (1913), from Gaboon, described in ten words, may be an allied form?

MADAGASCAR SPECIES.

26.—*Scirtes nigrolimbatus*, n. sp.

♀. Broad, oblong-oval, rather coarsely pubescent, shining; rufo-castaneous, the elytra with a black stripe adjacent to the marginal carina

extending from the base to far beyond the middle, their apices indelimitably, and the under surface, legs, palpi, and antennae, testaceous; closely, finely, the elytra much more distinctly, punctate. Head obsoletely foveate on each side near the eyes, the latter convex and moderately large; antennae long, very slender, joint 3 about one-half longer than 2, 4-11 elongate, filiform, 4 nearly twice the length of 3. Prothorax rapidly, obliquely narrowed from the base, deeply sinuate in front opposite the eyes, the anterior angles sharp, deflexed. Elytra long, broad, rounded at the sides anteriorly, somewhat acuminate at the apex, sharply margined, depressed along the suture for some distance below the base, and with an indication of a shallow sutural groove. Posterior coxal plates deeply arcuato-emarginate behind, angulate at the outer angle. Posterior tibiae feebly curved, broad, sharply carinate, the upper spur very long, equalling the first tarsal joint

Length $5\frac{1}{2}$, breadth $3\frac{4}{5}$ mm.

Hab. MADAGASCAR (*Gerrard, ex coll. Fry*).

One specimen, ♀, badly preserved, the ovipositor partly extruded. A very large, broad, rufo-castaneous form, with a black lateral vitta on each elytron; the antennae very slender, with the third joint much longer than the second; the posterior coxal plates dentiform at the exterior angle. *S. nigrolimbatus* cannot be compared with any of the five species recorded from the island, coming nearest, perhaps, to *S. fuscicrus* Fairm. (1897), from Suberbieville.

ASIATIC SPECIES.*

The numerous Asiatic *Scirtes* here enumerated may be grouped thus:—

Elytra metallic, species large, hemispherical	No. 27.
Elytra maculate on disc †	Nos. 28-38.
Elytra without markings on disc.	
Elytra in ♀ with deep foveae or excavations towards apex .	Nos. 39-46.
Elytra simple in the two sexes ‡	Nos. 47-72.

27.—*Scirtes sphaericus*, n. sp.

♂. Hemispherical, convex, shining, clothed with extremely fine pubescence, which is fuscous on the elytra and cinereous on the rest of the surface; head, prothorax, and scutellum nigro-piceous, the elytra aeneous, the oral organs, antennae, legs (the blackened apices of the posterior femora excepted), and under surface testaceous or fusco-testaceous; the upper surface closely, finely, the under surface densely, punctate, the punctures on the elytra coarser

* About 50 species of Asiatic *Scirtes* have been recorded, from India, Indo-China, Siam, Mauritius, Burma, Macassar, Bangui, Borneo, Java, Formosa, Japan, China, Penang, etc. There are two unnamed species from Mindoro, Philippines, in the Museum, both imperfect. One is known from New Caledonia.

† *S. quadrimaculatus* Waterh., from Burma, etc., belongs to this section.

‡ Possibly foveate in ♀♀ of Nos. 47, 48, etc., one sex only of which is at present known.

and less approximate than those on the head and prothorax. Head broad, the eyes large and convex; antennae rather short, slender, joint 3 about as long as 2, 4-11 moderately elongate. Prothorax hollowed in front opposite the eyes, the anterior angles prominent, obtuse. Scutellum large, somewhat convex. Elytra broad, rounded, sinuate at the sides when viewed in profile, the margins explanate and sharply carinate, slightly sinuate near the sutural angle, the intra-humeral callosities smooth, prominent, the disc regularly convex. Ventral segment 5 with a large, deep, smooth fovea in the middle. Posterior coxal plates transversely subquadrate. Posterior legs not very elongate, stout, the femora extremely broad, the tibiae widened, feebly curved and sharply carinate, the upper spur nearly as long as the first tarsal joint.

Length nearly 5, breadth $4\frac{1}{2}$ mm.

Hab. BORNEO, Mt. Matang, W. Sarawak, alt. 1000 ft. (*G. E. Bryant*: 13.ii.1914).

One example, assumed to be ♂, on account of the very deep ventral fovea. *S. caeruleus* Champ., from Panama, is an allied form. These two species are the only metallic *Scirtes* known to me.

(To be continued.)

219

TROGOPHLOEUS IMPRESSUS LAC.: AN ADDITION TO THE LIST OF
BRITISH COLEOPTERA.

BY E. A. NEWBERY.

This little *Trogophloeus* is very nearly allied to both *T. elongatulus* and *corticinus*. Ganglbauer (*Die Käfer Mitteleurop.* ii, 653) compares *impressus* with the latter, but it appears to me, by reason of its dull head and thorax, to more nearly resemble the former.

Rey, in his table (*Oxytéliens*, pp. 294, 295), separates it from both the above species by its evidently more slender antennae; a slight modification of this table will easily separate the three species:

- I. The 4th and 6th antennal joints not or scarcely transverse.
T. impressus Lac. (*inquilinus* Er., *obsoletus* Muls. & Rey).
- II. The 4th and 6th antennal joints distinctly or strongly transverse.
 - A. Head and thorax visibly punctured, shining *T. corticinus* Grav.
 - B. Head and thorax shagreened, dull *T. elongatulus* Fr.

The thorax of *impressus* is much less shining than that of *corticinus*, but a little more so than that of *elongatulus*, being more evidently punctured; its slender antennae is a marked character.

I have but a single specimen of *impressus*, taken in July 1887, by sweeping the sides of the ditch parallel to the Thames east of Hammer-smith Bridge, a prolific locality at that date. The insect could not be named at the time, and it was placed in my collection as "unknown

to me" and forgotten; I owe its identification to my friend Dr. M. Cameron, to whom the specimen was sent with some other puzzles. He has compared it with several examples of *T. impressus* named by M. Fauvel. There is little doubt that others will be found in our collections mixed with *elongatulus*, now that the differences have been pointed out.

13 Oppidans Road, N.W. 3.

August 15th, 1918.

A NOTE ON THE HABITS OF A *MELANOPHILA* (*BUPRESTIDAE*)
AND OTHER INDIAN COLEOPTERA.

BY H. G. CHAMPION, I.F.S., F.E.S.,
Divisional Forest Officer, W. Almora Divn., U.P., India.

Having spent a good deal of time some years ago in the pursuit of *Melanophila acuminata* near my old home in Surrey, and remembering the statements current about "fire-bugs" in N. America (beetles belonging to the same genus), I have been interested in the species occurring in the pines (*Pinus longifolia*) in the Forest-division to which I am at present attached. A few specimens of the insect in question have been bred from pupae found in the outer bark of dead or dying trees, but this note is concerned with the adult rather than with its earlier stages.

For some months past it has been part of my duty to supervise the erection and working of a small "plant" in the forest for the production of Stockholm tar from highly resinous stump-wood. The "plant" consists of iron retorts enclosed in masonry kilns; at one end is a series of iron pipes and tanks for the collection of the products of the distillation, whilst at the other end wood fuel is fed into the furnaces. This place has been visited by me three times during the last six weeks—once in the hot weather, once at the break of the monsoon, and once in the rains—and on each occasion specimens of a *Melanophila* have been captured flying about the "plant" and settling on and running over the tarry pipes and tanks (which were almost too hot to touch) and on the heated masonry. Of the six examples brought back on the occasion of my last visit, all appear to be males, though there is much variation in size.

It may be stated that although there are large stacks of fairly fresh pine-fuel not far off, the *Melanophila* is not to be seen on them, but *Buprestis* (*Ancylocheira*) *geometrica* is frequent there, as well as an occasional *Capnodis indica*. The last-named species is commoner in the spring and hot weather, being now in the larval stage, and it is

worth while to note that a larva believed to be that of the *Capnodis* was found in the bark of a living healthy tree, the cavity made by the beetle being full of very fluid resin without any apparent inconvenience to its occupant. Another insect one sees sometimes around a second tar installation, is the Longicorn *Nothorrhina muricata*, but this is more probably attracted by the resin stored in the vicinity, whereas the *Melanophila* seems definitely to prefer the hot and tarry places, such as result from the action of fire. I am thankful to say that there has been no opportunity this season to see burnt or burning areas.

June 20th, 1918.

* * * *Melanophila ignicola*, n. sp.—Closely related to the holartic *M. acuminata* de Geer (= *appendiculata* F. and *obscurata* Lewis), and differing as follows:—The prothorax rounded at the sides, with the hind angles obtuse, the sculpture very slightly finer on the disc than on the lateral portions, the basal fovea deep; the elytra duller and less uneven, obscure aeneo-piceous in colour, with a short yellowish streak near the suture below the base (wanting in one specimen), and several very small scattered similarly coloured spots on the disc, four or six of which are more distinct than the rest and arranged in a common arcuate series towards the apex, the reticulate sculpture finer, the narrow, finely denticulate apices simply rounded, and not produced into a sharp point as in *M. acuminata*. The under surface shining, metallic bronze; fifth ventral segment broadly arcuato-emarginate, the emargination limited on each side by a conspicuous tooth. Penis-sheath simply acuminate; lateral lobes abruptly narrowed from about the apical third, the narrow distal portions curving inwards and pointed at the tip, and fringed externally with very long, curled, projecting hairs.—Length $8\frac{3}{4}$ – $10\frac{1}{2}$, breadth $3\frac{1}{4}$ –4 mm.

Hab. INDIA, W. Almora Division, Kumaon.

Described from three males, one of which was bred in June 1917. The only species of the genus recorded from India is the variable *M. coriacea* Kerremans (1894), found by Père Cardon at Barway, Bengal; this insect also has the elytra sharply produced at the tip and immaculate as in *M. acuminata*. *M. obscurata* Lewis (1893), from Japan, can be matched exactly in a series of *M. acuminata* from Europe or N. America. The type of *M. ignicola* has been deposited in the British Museum.—G. C. C.

NOTES ON SOME APHIDES COLLECTED IN SOUTH-EASTERN RUSSIA
IN 1917.

BY MAUD D. HAVILAND.

In the summer of 1917, I made a small collection of insects on the Steppes of South-Eastern Russia. The time and facilities for collecting were very limited, but I was able to obtain, and preserve in spirit, certain

species of Aphidae. The following notes are offered in case they may be of interest to other students of the Homopterous fauna of the region. At the end of June and beginning of July I collected on the shore of the Black Sea, close to Odessa. The rest of the summer was spent at Reni, on the Steppe near Galatz.

Macrosiphum sonchi Linn. Apterous examples were taken on *Cichorium* in August at Bolgrad, Bessarabia, and on *Centaurea* in October at Odessa.

Myzus cerasi Fab. Not uncommon on wild cherry at Reni in July.

Rhopalosiphum ribis Linn. At the end of June, the shoots of a currant in a garden at Odessa were twisted and distorted by an aphid. No specimens were collected, but examination with a hand-lens showed them to be of this species. A day or two later, apterous examples of *Rhopalosiphum lactucae* Kalt. were seen.

Aphis cardui Linn. (= *myosotidis* Koch).* Taken from thistle at Odessa on June 30th.

Aphis laburni Kalt. This species was very abundant at Odessa at the end of June. It twisted and stunted the young shoots of acacia trees, smearing them with honeydew in a disgusting manner. The winged form was then just emerging, and the following week I found numerous newly-established colonies on melilot (*Melilotus officinalis*) and lucerne (*Medicago*). Another aphid, which infested a species of *Sambucus* in garden shrubberies, and also appeared on *Chenopodium* near the sea, seems, after comparison of spirit specimens, to be identical with *A. laburni*. This insect was preyed upon by the larva of a large five-spotted Coccinellid, and also by Garden Warblers (*Sylvia hortensis*), which climbed up and down the infected shoots, methodically picking off the aphides. In October I again spent a few days in Odessa, and one warm afternoon a grove of acacias near the sea was invaded by a swarm of *A. laburni*, which may possibly have been the return migration of the sexual forms.

Aphis myosotidis Koch (= *cardui* Linn.).* Apterous examples were taken from thistle at Odessa on June 29th, where they were severely parasitised by a small Braconid.

Aphis sp.? A very small bright green species, of which some apterous specimens and one winged form were found clustering round the corolla of *Nigella* on the seashore near Odessa. So far, and without access to Russian collections, I have not been able satisfactorily to determine either this species or the next.

* Dobrovliansky (Bulletin on pests of agriculture. Kiev, 1916).

Aphis sp.? A small yellowish-green aphid which infested the common *Euphorbia* of the Bessarabian Steppe. I was unable to procure any winged representatives of this species, although I made several expeditions for that purpose. The apterous specimens have very distinctive abdominal protuberances or spines.

Cryptosiphum artemisiae Buckton. Apterous examples were taken under the leaves of *Artemisia* on the Steppes in July.

Dryobius croaticus Koch. This fine aphid was found in July on the shoots springing from the stump of an oak tree. According to Buckton, this is its typical habitat. He remarks: "They are usually stated to prefer the branches springing from oak stumps" (vol. iii, p. 76). This species was almost spider-like in its activity, and was numerously attended by ants.

Schizoneura ulmi Linn. Common on elm trees at Odessa in June.

Tetraneura ulmi De Geer. The characteristic flask-shaped galls were found on elms at Odessa in July, but were then all empty.

Zoological Laboratory, Cambridge.

August 16th, 1918.

NOTES ON THE *DERBIDAE* IN THE BRITISH MUSEUM
COLLECTION.—I. *ZORAIDINAE*.

BY FREDERICK MUIR, F.E.S.

(Concluded from p. 178.)

PAMENDANGA Distant.

Both the original description and the figure of the type species are wrong, for the clypeus is longer than the face, and the face is narrow and formed by the two carinae in contact from base to near apex, and it is not centrally carinate. It is synonymous with *Paraproutista* Muir.

P. distanti, sp. n.

Brown; legs lighter, clypeus darker; abdominal tergites with a transverse dark mark across each segment. Tegmina and wings light brown, darker and fuscous over costal and subcostal cells; some faint light marks along costal and in subcostal cells, subcosta and radius red, other veins brown with a slight red tint.

Ventral edge of pygofer straight, lateral edges angularly produced beside the anal segment, the apices curved inward and embracing the anal segment, length of anal segment equal to width at base, triangular, anus in the middle; genital styles longer than the anal segment, broad, dorsal edge produced into

an angular process in middle, a groove runs parallel and near to the dorsal edge, ventral edge convex, a round emargination near the apex, apex bluntly pointed and curved inward.

Length 4.2 mm.; tegmen 10.8 mm.

Hab. CEYLON (*J. P. Maskeliya*).

One male, in the B.M. coll., labelled "*Zoraida egregia* Melichar," but it is not that species.

P. grahami, sp. n.

Stramineous with a greenish tint; slightly fuscous over lateral portion of the pronotum, apex of rostrum, and tarsi; the green darker over the basal portion of abdomen. Tegmina hyaline with a stramineous tint, with light fuscous mottlings, darkest over subcostal cell, veins stramineous, light brown where the fuscous mottling touches them; wings half the length of the tegmina, hyaline, veins stramineous.

Ventral edge of pygofer angularly produced, lateral edges subangular beside the anal segment; anal segment long, narrow, anus in middle, basal half tubular, distal half produced into a point sloping ventrad, a small transverse ridge over the anus; genital styles large, broadly sublanceolate, widest in middle, where they are slightly more than half the length; apex narrow, rounded; ventral edge entire, convex to near apex; dorsal edge subangularly produced to middle, where it is produced into a small flattened process with a rounded apex.

Length 3.9 mm.; tegmen 9.6 mm.

Hab. ASHANTI, Obuasi (*W. M. Graham*, iv, 1906); UGANDA, Durro Forest (*S. A. Neave*, x, 1911).

Two males, in the B.M. coll., the one from Ashanti taken as the type.

P. pseudoabscissa, sp. n.

Zoraida abscissa Dist., nec Walk.

Brown, slightly lighter over the carinae of head and thorax, rostrum, legs, and ventral surface; apex of rostrum and genitalia darker; abdomen reddish. Tegmina reddish brown, veins darker; twelve light marks along the costal cell, a lighter mark at the base of the fourth, fifth, and sixth sectors; four small marks in radial cells, the one in the apex slightly larger and extending beyond the vein.

Genital styles abortive; anal segment very minute; lateral margin of genital area produced into a ridge; pregenital plate large, produced well beyond the genital area into a stout quadrate process with a narrow emargination at the apex; the medio-basal area produced conically.

Length 4.5 mm.; tegmen 10.8 mm.

Hab. SULA.

One female (*B.M. coll.*).

PSEUDOHELICITA, gen. n.

Antennae longer than face, cylindrical or very slightly flattened; arista about one-third from apex; in profile the face produced conically between the eyes; subcostal cell very narrow, radial cell narrow to cross-vein, four cubital veins entering the hind margin, four median sectors all simple. The female genital styles normally developed.

This genus holds the same position to *Zoraida* Kirk. as *Helcita* Stål does to *Pamendanga* Dist.

P. walkeri (Distant).

Zoraida walkeri Dist.

NEODIOSTROMBUS, gen. n.

Antennae slightly longer than face, cylindrical; four cubital veins reaching the hind margin, median sectors all simple. Pronotum long in the middle, the hind margin straight, not emarginate, carinae on thorax very faint.

This genus approaches such forms as *Zoraida walkeri* Dist., but the straight hind margin of the pronotum is very distinctive.

N. basalis (Walker).

Thracia hasalis Walk.

ZORAIDA Kirkaldy.

I have sunk the genus *Peggiopsis* Muir to a subgenus, and erected another subgenus, *Neozoraida*, for those forms having six cubital veins, as this at present appears to be the most convenient and natural way of dealing with the species, especially as at present I am unable to exactly locate the genus *Peggia* Kirk. (= *Nebrissa* Stål).

Z. distantii, sp. n.

Zoraida sinuosa Dist., nec Boh.

Antennae one and one-half times the length of the face, narrow, flattened; four cubital veins reaching the hind margin; wings slightly less than half the length of the tegmina.

Light brown, slightly darker over the pronotum and abdomen; pronotum with a few minute pustular marks; abdominal tergites irrorated with fine light spots. Tegmina fuscous over costal, subcostal, radial, and the basal half of radial and claval cells, the infuscation being darker along the media; veins concolorous as the membrane or slightly yellowish, the median sectors somewhat fuscous, the gradate cross-veins fuscous, five small black spots on the veins near apex; wings fuscous, slightly darker over costal area, a small black spot on costa.

Anal segment longer than broad, sides slightly convex, apex roundly emarginate; pregenital plate large, longer than wide, angularly produced on hind margin, the sides of the angle being slightly concave, projecting beyond the base of the styles, slightly tumid along the basal edge.

Length 5 mm.; tegmen 13 mm.

Hab. PORTUGUESE EAST AFRICA, Valley of the Kolo River (*S. A. Neave*, viii, 1913); NATAL, Durban.

One female from each locality, the type being from the Kolo River. There are specimens from West Africa in the British Museum which are distinct from this species, and which I consider to be *Z. sinuosa*; they are both related to *Z. pterophoroides* (Westw.).

Z. ridleyi, sp. n.

♂. Antennae slightly longer than face, cylindrical; four cubital veins entering the hind margin; wings one-half the length of the tegmina.

In coloration this species is similar to *Z. rufivena* Dist. and *Z. cumulata* (Walk.).

Brown; legs, antennae, and carinae of mesonotum lighter, abdomen thickly irrorated with lighter spots. Tegmina light fuscous, thickly mottled with lighter spots, veins reddish, the lighter marks numerous along the median sectors, numerous in radial cell, and occupying most of the costal and subcostal cells; wings fuscous with reddish veins.

Anal segment long and narrow, sides sloping steeply except at the apex, which is truncate and, in lateral view, curved into a semicircle, anus in the middle of segment, in lateral view deep until the curved apex; genital styles long, narrow, reaching to the apex of the anal segment, narrowest at base and apex, widest in the middle, apex truncate, ventral edge as seen from the side slightly sinuous, entire, dorsal edge angularly produced to the middle.

Length 4.2 mm.; tegmen 10 mm.

♀. Tegmina darker in colour than in the male, the light spots not so large. Pregenital plate large, about as long as wide, posterior edge slightly and angularly produced.

Length 4.8 mm.; tegmen 12 mm.

Hab. SINGAPORE (*H. H. Ridley*, 1903).

One male, the type, and one female, both in the B.M. coll.

Z. kirkaldyi, sp. n.

Zoraida cumulata Dist. nec Walk., Fauna Brit. Ind., Rhynchota, iii, p. 301.

Antennae a little longer than the face, cylindrical; carinae of face not meeting. In coloration it is very near *Z. ridleyi*, the brown is darker and on the tegmina the light marks are much smaller along the median sectors and cubital veins; a large dark patch in the apical, subcostal, and radial cells.

Wings half the length of tegmina, slightly fuscous with a few small spots along the costal margin.

Anal segment large, a little longer than wide, anus near the base, sides subparallel or slightly converging towards the apex, apex truncate with the median half roundly produced, a small ridge runs from beside the anus to each apical corner; pregenital plate considerably longer than broad, in profile concave towards the base, posterior edge moderately and subangulately produced.

Length 5.7 mm.; tegmen 14.4 mm.

Hab. CEYLON, Kandy.

Two females, one of them the type, in the B.M. coll.

Z. aburiensis, sp. n.

Face three-fourths the length of the antennae, antennae cylindrical; four cubital veins entering the hind margin; wings half the length of the tegmina.

Light brown; legs, anal segment, and abdominal sternites lighter; antennae darker; abdominal tergites reddish. Tegmina light brown, veins red, a transverse, diagonal light mark from costa through the middle of radial cell, over the base of the first median sector to the hind margin slightly distad of clavus, a faint light mark in the middle of the cubitus and on hind margin between the median veins; wings fuscous with brown veins.

Anal segment slightly longer than wide, rotundate, anus at base; pregenital plate broader than long, hind margin slightly and broadly angularly produced.

Length 3.7 mm.; tegmen 9.6 mm.

Hab. GOLD COAST, Aburi (*W. H. Pattison*, 1912).

One female, in the B.M. coll.

Z. wallacei, sp. n.

Zoraida walkeri Dist. in part.

Antennae four and one-half times the length of the face, flat, thin, apex pointed, edges crassate, arista subapical; four cubital veins reaching the hind margin; wings one-eighth the length of the tegmina.

Stramineous; antennae and genitalia tinted with red, a small black spot at base of antennae and black on the lateral margins of the pronotum, a small black dot on pleura at the base of abdomen, white over median portion of pronotum. Tegmina hyaline, veins light brown, slightly yellowish over costal and subcostal cells; wings hyaline, veins brown.

Medio-ventral process of pygofer subturbinate, apex pointed, lateral margins of pygofer acutely angularly produced beside the anal segment, length of anal segment two and one-half times the width, anus in the middle, a carina from the middle over the anus runs back to each basal corner dividing the basal portion from the distal half, distad of the anus subspatulate with the apex slightly emarginate; genital styles long, narrow, narrowest at base, apex

pointed, ventral margin convex, entire, dorsal margin with a small round notch in the middle.

Length 4.2 mm.; tegmen 12 mm.

Hab. SINGAPORE (*A. R. Wallace*).

One male, in the B.M. coll.

ZEUGMA Westwood.

This genus has the wings more than half the length of the tegmina, and the cubital and claval areas are normal with normal claval and cubital veins, and so it does not come into the *Zoraidinae* where I placed it formerly.

PHENICE Westwood.

Phenice was erected by Westwood for three species—*Derbe fritillaris* Boh., *Derbe fasciolata* Boh., and *Derbe stellulata* Boh. The generic description was based upon *D. fasciolata* Boh., and figures of that species were given and specially referred to. In the same work Westwood remarks:—

“On various previous occasions I have endeavoured to establish a fixed principle relative to the selection of the typical species in genera, established by our predecessors, which combined several distinct forms under one generic name. For this purpose, I have considered that the species which could be proved to have been more especially under the examination of the founder of such genera, ought to retain the old generic name; and where this could not be learned from any particular expression, that we should resort to the first species in the genus.”

This constitutes a type fixation, and so *Derbe fasciolata* Boh. must be the type of *Phenice* Westw. The two species belong to different sections of the *Derbidae*: *fritillaris* to the *Zoraidinae* and *fasciolata* to the *Cenchreinae*.

Note on the habits of Cryptophagus populi Payk.—On July 25th last, while wandering about the New Forest in company with Mr. F. Muir, we came across a number of burrows of *Dasypoda hirtipes*, with the bees busy at work, as shown by the frequent upheaval of the sandy soil in the holes made by them. Two females of the bee were taken home, one living, the other dry and imperfect. These were subsequently pinned, placed in a small box, and forgotten. Some days afterwards, on casually opening the box, a living *Cryptophagus populi* was found beneath the imperfect example of the bee, to which it must have been attached when the latter was secured. It is possible that this beetle preys upon the bees, as a mounted Jassid in the same box had been partly devoured by it. In any case, the *Cryptophagus* must live in association with the *Dasypoda*. I have twice found specimens of an allied insect, *Antherophagus pallens*, attached to living *Bombi*, these beetles being thus carried on the hairs of the bees from the flowers visited by them to their nests. In 1875 the capture of a very long and extremely variable series of *C. populi* about the

burrows of *Colletes daviesana* at Farnham, Surrey, was recorded by myself in this Magazine (xii, pp. 107, 108). *C. populi* may therefore be said to be associated with two genera of bees, *Colletes* and *Dasygaster*. A long account of the life-history, etc., of the last-named insect, accompanied by a figure of a New Forest specimen, is given by Dr. Sharp in the "Cambridge Natural History," but nothing is said about the *Cryptophagus*.—G. C. CHAMPION, Horsell, Woking: August 8th, 1918.

The Coast-frequenting Coleoptera of S. Devon and S. Cornwall.—The attention of entomologists is called to a valuable paper on these beetles by Mr. J. H. Keys, entitled "A list of the Maritime, Submaritime, and Coast-frequenting Coleoptera of South Devon and South Cornwall, with especial reference to the Plymouth District" [Journ. Marine Biol. Assoc. of the United Kingdom, xi, No. 4, pp. 497-513 (May 1918)]. It is, of course, mainly based upon the insects captured by the author in the Plymouth district during the past thirty years or more. He places them under three categories: (1) "Maritime," including the forms inhabiting places covered by the sea for a considerable time during the flow and ebb of the tide; (2) "Submaritime," dwellers at high-tide mark or thereabouts, subjected to occasional wettings by the sea, and the species living in brackish pools and wet places in salt-marshes; (3) "Coast species" living under stones and rejectamenta, as a rule safe from the reach of high tide, and those peculiar to the roots, leaves, and flowers of plants attached to the coast, as well as inhabitants of wooden piles on the shore and the denizens of the ooze of freshwater trickles on the cliffs—excepting species equally obtainable inland. The first category includes 8 species only—*Cillenius*, the two *Aëpus*, *Actocharis*, *Arena*, *Diglossa*, *Trogophloeus halophilus*, and *Micralymma*; the second, 54; and the third, 89. The writer obviously finds it difficult to draw the line of demarcation between coast and inland forms, and follows, in the main, Fowler's "Coleoptera" as a guide. Such insects as *Chlaenius vestitus*, *Perileptus*, *Harpalus tardus*, *Amara ovata* and *lucida*, *Hydroporus lineatus*, *Atheta triangulum*, *Quedius umbrinus*, *Philonthus cruentatus*, *Oxytelus complanatus*, *Georyssus*,* *Apion schoenherri*, etc., etc., seem to be quite at home on the coast, and are included in the author's coast-list, but they are all well known to occur in inland localities. The following species, captured by myself at various times, may be added to Mr. Keys' third category: *Ocys harpaloides*, commonly, in many places along the south coasts of Cornwall and Devon, comparatively rare inland; *Harpalus discoideus*, Dawlish Warren, but really an inland form; *Bledius atricapillus*, sparingly, with *Dyschirius aeneus*, in a damp place on the cliffs near Sidmouth; *Lathrobium angustatum*, Shaldon and Exmouth, in wet moss on the cliffs, commoner on the coast than inland, in my own experience. *Tachys parvulus* has been recorded by me from Gerrans Bay, Cornwall, in this Magazine,† but the only locality given is Bovisand. *Anchomenus albipes* has certainly as good a claim as a coast-species as *Chlaenius vestitus*, and is so abundant all along the coast, often with *Bembidium saratite*, that it should have been mentioned. *Eurynebria complanata*, common at Braunton on the N. coast of Devon, so far as at present known, is absent from the southern beaches of that county. *Ochthebius metallescens*, v. *poweri* was found freely in June last by myself in a new locality on the cliff-face near Sidmouth.—G. C. CHAMPION.

* Seen by me during the present year on the banks of the Wey, at Wisley, Surrey.

† Ent. Mo. Mag. 1897, p. 213.

Elater sanguinolentus, var. *paleatus* Candèze.—A little additional information as to this beetle, recorded by Mr. Cedric W. Cameron in the August number of this Magazine, p. 183, may be acceptable. In a spot at Brockenhurst, where *E. sanguinolentus* abounds, the pale form *paleatus* occurs annually, as a rarity, forming perhaps 1 or 2 per cent. of the *sanguinolentus* population. The species is well known to be variable in colour, the black pigmentation of the elytra being occasionally quite wanting, and in a similar manner the red pigmentation is variable, indeed the straw-colour of *paleatus* is probably merely a deficiency of red pigment, just as the var. *immaculatus* is a deficiency of the black pigment. I have also seen a specimen found many years ago by Mr. C. J. C. Pool, but I do not know where. Here at Brockenhurst the black marking of the elytra is usually extensive, and when this is the case the deficiency of red pigment, when it occurs in such an individual, is but little conspicuous, but if I recollect right Commander Walker found here an example in which both black and red pigments are deficient, forming a very remarkable variation. There are but few references to this insect in entomological literature. It is entered in the 1906 European catalogue as "*palleatus*," and with a wrong reference. The correct one can be found by means of the "Zoological Record": it is—Candèze, Ann. Soc. ent. Belgique, xxxvii, 1893, p. 286.—D. SHARP, Brockenhurst: August 6th, 1918.

Otiorrhynchus porcatus Herbst at Oxford.—A specimen of an *Otiorrhynchus* unknown to me was found by Mr. H. B. Gray in his garden at Oakthorpe Road, Summertown, Oxford, among lettuce, on June 28th, 1918. He gave the insect to Mr. Hamm, who passed it on to me. Mr. Champion has identified the species as *O. porcatus* Herbst, and states that it is recorded from Ireland by Dr. Nicholson in Ent. Mo. Mag, 1916, pp. 202, 203.—J. COLLINS, 74 Islip Rd., Sunnymead, Oxford: August 16th, 1918.

Ceuthorrhynchus rapae Gyll. at Oxford.—While beating ivy at Godstow, near Oxford, on August 14th, 1918, I captured a specimen of *C. rapae* Gyll. Subsequently, by diligently sweeping amongst its food-plant, *Sisymbrium officinale*, I obtained two more examples, as well as nine of the common *Ceuthorrhynchus assimilis* Pk., which it very much resembles.—J. COLLINS: August 16th 1918.

Coleoptera of the Downs and country round Brighton.—The neighbourhood of Brighton includes three distinct types of country:—(1) The Downs proper, with rounded, turf-clad hills and here and there some patches of furze or bramble. In some of the more sheltered valleys (e.g. those near Ditchling Beacon) heather and bracken grow luxuriantly. (2) The beech woods on the Downs which usually have no undergrowth at all but a thick layer of dead leaves; *Mercurialis perennis*, however, is often present. (3) The Lowlands, including the valleys of the Ouse and Adur, and the thickly wooded Weald. The ditches near Lewes and Shoreham would probably yield many aquatic and semi-aquatic species, but so far I have worked them very little.

(1) *The Downs proper.*

Cicindela campestris, the only species found near here, is locally abundant, but does not turn up every year. *Zabrus gibbus*, occasionally common near cornfields, Ovingdean. *Calathus melanocephalus*, quite common. *Brachinus*

crepitans, common near Ovingdean under large flints (I have only once known one to make use of its explosive fluid). *Pelobius tardus*, abundant in dewponds with *Coelambus confluentis* and *Noterus clavicornis* De G.; this latter species is sometimes covered with a growth, perhaps similar to that found on *Cyclops* and other Entomostracans. *Colymbetes fuscus* and *Acilius sulcatus*, not uncommon, especially in a dewpond near Ovingdean. *Rhantus pulverosus*, not common. *Quedius mesomelinus* occurred once (under a stone?) near Ovingdean. *Creophilus maxillosus*, two in a hedgehog at Stanmer Park. *Ocybus brunniipes*, at Lewes and Kemp Town, one each. *Olophrum piceum*, once in the mouth of a rabbit's burrow, Stanmer Down. *Lathrimaem unicolor* and *Proteinus ovalis*, common in dead birds in winter, Stanmer Park. *Hister unicolor*, *H. cadaverinus*, and *Saprinus nitidulus*, common in carrion, Stanmer Park. *Geotrupes vernalis*, one example on Stanmer Down, near "Mary Farm." *Homaloptia ruricola*, one at Lancing, July 1918, two on Ditchling Road, July 1916, 1918; the 1916 specimen has the black marginal and sutural lines much broader than usual; I have also heard of several taken near Ovingdean by Mr. C. L. Trafford. *Brachylacon murinus* is extremely abundant always, in May. *Malachius bipustulatus* and *Psilothrix cyaneus*, quite common near Ovingdean. *Cryptocephalus aureolus*, everywhere on *Hieracium*, but not in great abundance. *Timarcha coriaria*, occurs in great profusion for a few days every spring. *Sermyla halensis*, common on bedstraw in July and August. *Oedemera nobilis*, on flowers near Rottingdean, July 1916, 1917.

(2) *The Beech Woods on the Downs.*

These woods only cover a very small area of the country, but small copses are fairly abundant. *Cychnus rostratus*, I have only taken this insect once near Falmer, on the Brighton-Lewes Road. *Carabus catenulatus* is more common than *C. violaceus*, but both are plentiful under fallen logs, etc. *Bradycellus verbasci*, several swept off herbage in Stanmer Park (Great Wood), August 1918. *Dromius meridionalis*, one; *D. 4-notatus*, abundant under bark. *Bolitobius lunulatus* and *B. trinotatus*, in *Russula emetica* (?). *Siagonum quadricorne*, not uncommon under bark in Stanmer. *Necrophorus humator* is the only common species of the genus; one pair of *N. vestigator* was taken in a dead mole, and a single example of *N. interruptus* was found in a dead thrush near Bramber. *Silpha rugosa*, *obscura*, *laevigata*, and *atrata* are common, and the latter can be taken under bark in the winter by the score. *Scaphidium 4-maculatum*, once only, in a fungus. *Scaphisoma boleti*, in dead rooks at Stanmer, March-May 1916. *Byturus tomentosus*, several off wild strawberry-plants at Stanmer, June 1917. *Omosita colon*, abundant in bones, etc.; *O. discoidea* has only turned up once, in a dead rook. *Cychnus luteus*, several beaten out of a hedge in Stanmer Park, June 1917. *Enicmus histrio*, flying, etc., in Stanmer. *Tritoma bipustulata*, under bark on Newtimber Hill, May 1918. *Lucanus cervus* is not found on the Downs owing to lack of suitable food, but several were taken at Henfield and near Bramber (June 1918), where oaks are plentiful. *Serica brunnea* has only been seen once, under beech bark. *Hoplia philanthus*, flying in Stanmer Park, June 1917. *Dolopius marginatus*, on beech trees. *Malthodes minimus* and *M. marginatus*, abundant in grass, etc., under beeches. *Toxotus meridianus*, abundantly, flying round young ashes on a hot summer afternoon, Stanmer Park. *Chrysomela polita*, common under bark, etc., in winter. *Sphaeroderma testacea*,

abundant on thistles and by general sweeping. *Otiorrhynchus clavipes* Bond., several from furze, 1915. *Phytonomus (Hypera) punctatus*, once at Stanmer, September 1917. *Balaninus venosus*, one under a beech tree at Stanmer. *Rhinosismus ruficollis*, several under beech bark (April 1918) in Stanmer Park; *R. planirostris*, common. *Pyrochroa serraticornis*, abundant on nettles, Stanmer Park.

(3) *The Lowlands, including River valleys and the Weald.*

Carabus arvensis, once near Lewes, on the bank of River Ouse (C. L. Trafford). *Bembidion concinnum*, plentifully in the same place. *Chlaenius nigricornis*, one near the Adur, above Shoreham, on the muddy bank of a ditch; it was apparently trying to catch some young tadpoles which were swimming in very shallow water. *Pterostichus nigrita*, common under logs, etc., in a very damp place on Chaily Common. *Dromius 4-maculatus*, on an oak tree near Maresfield. *Dytiscus punctulatus*, several ♂♂ in a small pond on Chaily Common. *Omosita depressa*, abundantly in sawdust on some freshly-cut trees in Tilgate Forest, April 1918. *Otiorrhynchus picipes* and *Phyllobius argentatus*, beaten off beeches in Ashdown Forest, June 1918. *Silpha sinuata*, in a dead rabbit, with *Necrophorus mortuorum*, at Horsted Keynes (C. L. Trafford). *Geotrupes typhoeus* also occurred at Horsted Keynes two or three times (C. L. T.).

(4) *Brighton, the town.*

Brighton is not exactly what one might call a "happy hunting-ground" for Coleopterists; however, a few species have been found within its boundaries. *Cercyon unipunctatus*, one pair caught flying near a stable manure-pit, March 1916. *Attagenus pellio*, once on a wall, May 1918. Typical town beetles, as *Niptus hololeucus*, *Blaps mucronata*, and *Tenebrio molitor*, are, of course, commonly met with.—GEORGE B. RYLE, 15 Madeira Place, Brighton: August 17th, 1918.

Plusia moneta in Cheshire, etc.—On July 17th last I took a male of this species hovering in front of some roses at dusk in my garden at Lymm. Mr. O. J. Wilkinson informs me that he captured eighteen examples at flowers of *Delphinium* between June 23rd and July 14th, also at Lymm. Four of these specimens I have seen. On July 19th Miss Pugh took a single specimen at Hale, also in Cheshire. I am publishing these few facts in order to record the extending range of this *Noctua* both northward and westward in this country. I may add that I found larvae plentiful this spring among the terminal shoots of *Aconitum* in a garden at Birmingham, and have also received sixteen cocoons from Enville near Stourbridge (Staffs.), where it has become very common.—A. D. IMMS, D.Sc., Dept. of Agricultural Entomology, Manchester University: July 22nd, 1918.

The "swarming" of Zephyrus quercus.—In the very comprehensive account of the habits of *Zephyrus (Bithys) quercus* by the late Mr. J. W. Tutt, in his "British Butterflies," vol. ii, pp. 261 *et seq.*, a number of observations on the "swarming" of this butterfly, in Britain and on the Continent, are included. In July last year, at Tubney Wood, Berks, I noticed that *Z. quercus* particularly affected two or three adjacent trees in a long line of small scrubby oaks. Revisiting these trees on the 3rd of the present month, I found the butterfly there

again in great profusion; at least 50 or 60 specimens of both sexes were seen in the space of a few yards, walking about on the lower leaves, and when disturbed, flying for a few seconds and settling abruptly. It was easy to examine them quite closely, or even to catch them with the fingers, but they were getting decidedly worn, especially the ♂'s. On searching for any possible source of attraction in these particular trees, I found that while they appeared to be quite free from Aphides or honeydew, they were the only ones in the neighbourhood that bore any acorns; these were of course in a very immature condition, and I several times saw the butterflies sucking with evident relish the slightly glutinous moisture which they exuded. None of the other oaks in the line had any "Hairstreaks" about them, and very few were seen in other parts of the wood. On August 12th I found the butterfly equally localised and almost equally plentiful, but on this occasion nearly every specimen was worn to rags.—JAMES J. WALKER, Oxford: *August 17th*, 1918.

Bombus terrestris L. at midwinter in New Zealand.—This morning whilst walking through the Wellington Botanical Gardens I observed a queen *Bombus terrestris* L. flying along a steep clay bank, possibly seeking a suitable place to establish her nest. The morning was mild and sunny, like many in the New Zealand winter, but I do not remember seeing *B. terrestris* on the wing so early in the season before. This Humble Bee has made a good "settler" in New Zealand and is common and generally distributed throughout the country. The black variety *harrisellus* Kirby is also abundant, and Dr. Longstaff informed me when here that it was proportionately very much more numerous than it is in England.—G. V. HUDSON, Hillview, Karori, Wellington, N.Z.: *June 24th*, 1918.

Rhadinoceraea micans Klug in Cheshire.—On May 21st last I took at a pond a mile or so from Runcorn several specimens of a sawfly which the Rev. F. D. Morice, of Woking, has very kindly identified for me. He states the species to be *Rhadinoceraea micans* Klug, and as it would appear not to have been previously observed in the north of England, the matter may be worth recording. The insects were fluttering round and about or resting upon the stems of the yellow iris. I took half-a-dozen specimens, but could have taken ten times that number had I been so disposed. Possibly the species has occurred there in previous years, but I have not noticed it.—F. W. HUTTON, 53 Greenway Road, Runcorn: *21st June*, 1918.

The European species of Microvelia.—Dr. Bergroth informs me that in 1916 Horváth published a paper in which he showed that the correct synonymy of the two European species of *Microvelia* is as follows:—1. *pygmaea* Duf., Fieb., Put. = *nilicola* Costa; 2. *reticulata* Burm. = *pygmaea* Curt., Flor, Dougl., Saund. = *schneideri* Scholtz, Sahlb., Put. The former species occurs in Southern Europe and Northern Africa, while the latter occurs in Northern and Central Europe. Under these circumstances, our British species would be known as *M. reticulata* Burm. In consequence of war conditions, I have been unable to see the paper referred to, and can therefore express no opinion on the matter. I may add, however, that I have long thought Puton's description of *M. schneideri* in his "Synopsis," more appropriate to our

British species than that of his *M. pygmaea*. On the other hand, while Fieber's description of *M. pygmaea* agrees pretty well with Paton's, the former author gives 3 lines as the length of *M. schneideri*, which is far in excess of our British species, so that either this measurement is due to a *lapsus calami*, or he must have had some quite different insect before him. In the general collection of the British Museum, a number of specimens, quite agreeing with our insect, are placed under the name *schneideri*, and there is nothing at all standing as *pygmaea*.—E. A. BUTLER, 14 Drylands Road, Hornsey: July 25th, 1918.

Didea alneti Fln. in Kent.—On July 21st last I took an example of this fine Syrphid near the lighthouse between St. Margaret's Bay and Dover; the species appears to be extremely rare in this country, one of the few previously recorded specimens having been taken by my late father at Colchester in 1893. This insect is now in the Natural History Museum at South Kensington.—PHILIP HARWOOD, 5th Royal Fusiliers, Dover: July 29th, 1918.

Society.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: July 11th, 1918.—MR. STANLEY EDWARDS, F.L.S., President, in the Chair.

Mr. Ashdown exhibited numerous species of Lepidoptera taken or bred by him in Surrey this season, including *Caberu pusaria*, ab. *rotundaria*, *Amphidasys betularia*, with var. *doubledayaria* and intermediates, *Trichopteryx viretata*, *T. carpinata*, *Acronicta leporina*, &c. Mr. W. West, Coleoptera taken by him recently in the New Forest, including a fine series of *Elater sanguinolentus* which had been abundant, with extreme aberration of the dark marking and seven yellow forms. He also showed *E. lythropterus*, *E. miniatus*, *Cryptocephalus lineola*, and the Dipteron *Stomoxys bigutta*. Mr. Edwards, *Euploea depusseti* var. *lykeia* from the Talaut Isles, Malay Archipelago, and the Danaine *Lycorea halias* and its mimic the Arctiid *Pericopsis angulosa* from Venezuela. Mr. Sich, an *Ephestia* taken in the room. Mr. Lachlan Gibb, specimens of the rare beetle *Gnorimus nobilis* from Hereford. Mr. Priske, the same species from Chiswick. Mr. Sich read a paper, "A Beginner's Remarks on the Tortricina."

July 25th, 1918.—The President in the Chair.

Mr. Ashdown exhibited aberrations of *Leptura maculata (armata)* a fine graduated series, also *Clythra 4-punctata*, *Chrysomela orichalcea* (♂ and ♀) and *Otesias (Tiresias) serra*, all from Surrey. Mr. Barnett, a bred series of *Ephippiphora scutulana* from Epping Forest and its Hymenopterous parasite; a bred series of *Cydia pomonella*; and blue females of *Polyommatus icarus*. Mr. West, Coleoptera taken in the New Forest in June, *Leptura scutellata*, *Hypera rumicis*, *Luperus nigrofasciatus*, *Ceuthorrhynchus chrysanthemi*, and *Cleonus nebulosus*. Mr. B. Adkin, a photograph of the underside of the specimen of *Lycaena arion* with obsolete markings previously exhibited. Mr. Mera, living larvae of *Amphidasys betularia*: Brood A (1) on willow, and A (2) on beech; Brood B (1) on willow, B (2) on blackthorn. In both broods those on willow were green in colour, those on beech were dark and on blackthorn very dark. The decision of colour occurred only in the very early stage. Mr. Bunnett, *Dicranura*

vinula in which the hind wings were unusually hyaline, and a *Toxocampa pastinum* from Coulsdon. Mr. Moore, butterflies from Florida, including *Heliconius charitonia*, *Thecla acis*, *Lycaena hanno*, *Papilio cresphontes*, *Anosia berenice*, *Dione vanillae*, *Junonia coenia*, *Limenitis floridensis*, *L. disippus*, *Pyrameis atalanta*, &c., and discussed the distribution of the various species. Mr. A. Sich read a paper discussing the aberration of *Lampronia quadripunctella* and naming two recurrent forms. Mr. Edwards discussed the devastation caused by *Phylloxera vastatrix* to the vine, *Myelophilus piniperda* to the pine, and *Doryphora decemlineata* to the potato, illustrating his remarks with a series of large diagrams—HY. J. TURNER, *Hon. Editor of Proceedings*.

NEW ORIENTAL STAPHYLINIDÆ (3).

BY MALCOLM CAMERON, M.B., R.N., F.E.S.

(Continued from p. 172.)

Acylophorus flavicornis, n. sp.

Black, shining, posterior margins of the abdominal segments pitchy; head small, subtriangular, the vertex bipunctate; antennae rather short, entirely testaceous; legs reddish-testaceous. Length scarcely 5 mm. Head small, a little longer than broad, subtriangular; vertex with two approximate and moderately large punctures, one on either side of the middle line; temples with one or two small setiferous punctures. Antennae with the 1st joint fully as long as the four succeeding joints united, the 2nd to the 5th longer than broad, decreasing in length, the 6th and 7th about as long as broad, the 8th to the 10th about half as wide again as long, the 11th small, scarcely longer than the 10th. Thorax moderately transverse, narrower in front, the anterior angles bluntly rectangular, the sides moderately rounded, passing insensibly into the base; disc with a pair of punctures on either side of the middle line, one or two very fine ones behind the anterior angles, and six along the posterior margin; the sides setiferous. Scutellum punctured and pubescent. Elytra about as long and as wide as the thorax, transverse, with rather coarse, close, rugulose puncturation and stiff greyish pubescence; the sides with a few fine setae. Abdomen slightly iridescent, moderately coarsely and closely punctured throughout; pubescence long, stiff, and greyish.

Hab. BORNEO, Mt. Matang, W. Sarawak (*G. E. Bryant*).

Acylophorus maculicornis, n. sp.

Black, shining; head small, elongate; posterior margins of the elytra and the abdominal segments obscurely pitchy; fourth joint of the antennae black, the others yellowish-red; legs reddish-testaceous. Length 2.8 mm. A small species, with narrow head, doubtless closely allied to *A. microceros* Fauv., from Burma. Head narrow, elongate, subtriangular, impunctate, the eyes small and flat. Antennae short, the 2nd joint equal to the three following joints together, the 3rd a little longer than broad, the 4th and 5th square, the 6th to the 10th transverse, gradually increasing in breadth, the 11th short, oval,

Thorax nearly twice as broad as long, widest behind, from thence narrowed and rounded to the bluntly rectangular anterior angles; disc with a pair of punctures on either side of the middle line, one at the sides externally, four along the anterior margin of small size and four similar ones along the posterior margin. Scutellum with two or three small punctures at the base. Elytra as long as the thorax, transverse; puncturation sparing, asperate; pubescence yellowish. Abdomen with the first visible segment impunctate, the second and third segments with a row of punctures at the extreme posterior margin, otherwise impunctate, smooth, and shining, the fourth to the sixth with rather sparing asperate puncturation; pubescence rather long, stiff, yellowish, by no means dense.

Hab. BORNEO, Mt. Matang, W. Sarawak (*G. E. Bryant*).

EUCONONOSOMA, n. gen.

Labrum transverse, membranous, only the lateral margins corneous. Mandibles short, stout, triangular, the inner margin closely crenulate nearly up to the sharp apex. Inner lobe of maxilla stout, membranous, gradually narrowed to the extremity, which is corneous, rounded, and densely clothed with fine pectinations, the inner margin of the corneous portion densely covered with stouter pectinations; the outer lobe appears to consist of two segments, a stout, basal, membranous one furnished at the distal end of the inner border with four long teeth, and a narrower fusiform corneous and densely ciliated apical part. Maxillary palpi 4-jointed, the 1st joint small, transverse, the 2nd narrowed at the base, gradually widening towards the apex, the 3rd scarcely longer than the 2nd and of much the same shape, the 4th about as long as, but narrower than, the 3rd, gradually pointed, scarcely subulate. Mentum transverse, membranous, the anterior margin narrower than the posterior, the sides converging. Labium membranous, the lateral margins, central raphé, and the articulation of the labial palpi, corneous, the sides parallel for more than the posterior half, then rather suddenly diverging so that the anterior border is very considerably broader than the posterior. Tongue divided into two strongly diverging lobes which are rather widely separated at the base; each lobe narrow at the root and gradually thickened towards the extremity, placed transversely, and lying against the wide anterior border of the labium, the antero-external angles of which extend just beyond their extremities; the anterior margin of each lobe furnished with ten long and strong spines. Paraglossae well developed, extending from the base of the labium to the anterior border of the tongue, closely, strongly pectinate. Labial palpi 3-jointed, arising near the anterior margin of the labium external to the root of the tongue; 1st joint elongate, 2nd much shorter, but longer than broad, 3rd enormously developed, resembling a vertical section of the top of a mushroom, the convex border articulating in the centre with the 2nd joint, the socket being placed near the extremity on the anterior border of this joint; the anterior border of the 3rd joint straight. Prosternum transverse, without trace of a median process; prothoracic episterna very small, the epimera absent. Anterior coxae large, contiguous. Mesosternal process triangular, bluntly pointed, and reaching nearly to the level of the posterior borders of the

coxal cavities, its sides and apex finely bordered. Anterior border of the metasternum produced in the middle line into a small rectangular process which meets the mesosternal process. Middle coxae narrowly separated. All the tarsi 5-jointed. Anterior tarsi with the first three joints strongly dilated, densely spongy-pubescent on the plantar surface, the 4th joint small, concealed from below by the 3rd, the 5th joint slender, elongate; claws simple. Anterior tibiae stout, their posterior margin densely clothed with stiff black pectinations, the anterior margin with a blunt tooth at the level of the junction of the anterior and middle thirds. Middle tibiae with two or three spines on the external border. Middle tarsi with the 1st joint very long, as long as all the following joints together, the 2nd much shorter, the 3rd half as long as the 2nd, the body of the 4th not half the length of the preceding, but extended on the plantar surface into a narrow process, which reaches the middle of the 5th joint, the latter elongate and equal in length to the three preceding joints together. Posterior tibiae and tarsi exactly similar in structure to the intermediate ones. Elytral epipleura complete, not extending beyond the level of the posterior margin of the metasternum, and with a fine raised line for the posterior three-fourths, parallel to the inner edge. Abdomen pointed, the first visible dorsal segment only narrowly bordered.

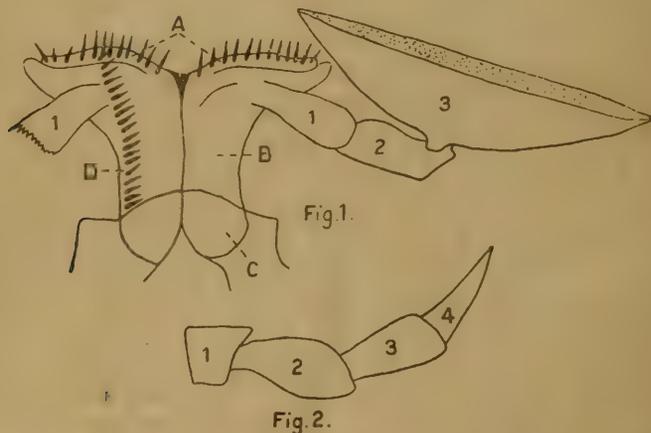


Fig. 1.—Parts of mouth of *Euconosoma elegans*: A, Tongue; B, Labium; C, Mentum; D, Paraglossa; 1, 2, 3, Labial palpus.

Fig. 2.—Maxillary palpus of same: 1, 2, 3, 4, the four joints.

Both figures from Camera lucida drawings with 1" objective.

The species on which this genus is founded has the facies of a much-enlarged *Conosoma*, to which it would appear to be related. It is here taken as the type of a new Group, the *Euconosomini*.

Euconosoma elegans, n. sp.

Robust, convex, pointed posteriorly, rather shining, testaceous-yellow, a large round spot extending from the anterior nearly to the posterior margin of the thorax, the elytra (except the suture and the middle of the base), a central spot on the 4th, the whole of the 5th and 6th (except the extreme posterior margins), the base of the 7th, and the whole of the 8th dorsal segment, black.

WATKINS & DONCASTER, Naturalists,

Keep in stock all Articles for Entomologists, Ornithologists, Botanists, &c.: Umbrella Net, 7/-; Folding Cane or Wire, 3/6, 4/-, 4/6; Plain Ring Net, 1/3, 2/-, 3/-; Pocket Boxes, 6d., 9d., 1/-, 1/6; Store Boxes, with Camphor Cells, 2/6, 3/6, 4/-, 5/-, 6/-; Zinc Pocket Boxes, 9d., 1/-, 1/6, 2/- Setting Boards, from 5d. to 1/10; Complete set of 14 boards, 10/6; Breeding Cages, 2/6, 4/-, 5/-, 7/6; Sugaring Tins, 1/6, 2/-; Sugaring Mixture, ready for use, 1/9 per tin; Setting Houses, 9/6, 11/6, 14/-; Glass Topped and Glass Bottomed Boxes, from 1/- per doz.; Zinc Killing Boxes, 9d., 1/-; Coleoptera Collecting Bottles, 1/6, 1/8; Collecting Box, containing 26 tubes (very useful for Coleopterists, Microscopists, &c.), 4/6; Brass Chloroform Bottle, 2/6.

Improved Pocket Pupa-digger in leather sheath (strongly recommended), 1/9; Steel Forceps, 1/6 to 3/- per pair; Pocket Lens, from 1/6 to 8/6.

Taxidermists' Companion, containing most necessary implements for skinning, 10/6; Scalpels, with ebony handles, 1/3; Fine Pointed Scissors, 2/- per pair; Brass Blow-pipes, 4d., 6d.; Egg Drills, 2d., 3d.; ditto, best quality, 9d. each; Botanical Vascuum, 1/6, 2/9, 3/6, 4/6; Label List of British Macro-Lepidoptera, with Latin and English Names, 1/6; List of British Lepidoptera (every species numbered), 1/-; or on one side for Labels, 2/-.

SILVER PINS FOR COLLECTORS OF MICRO-LEPIDOPTERA, &c., as well as minute insects of all other families.

We stock various sizes and lengths of these Silver Pins, which have certain advantages over the entomological pins usually employed.

For instance, insects liable to become greasy and verdigrisy, like Sesiidae, are best pinned on Silver pins, which will last much longer than the ordinary pins (whether enamelled black, or gilt, or silvered).

We shall be pleased to send pattern cards on application.

A large stock of British, European, and Exotic Lepidoptera, Coleoptera, and Birds' Eggs.

ENTOMOLOGICAL PINS.

The "DIXON" LAMP NET (invaluable for taking Moths off street lamps without climbing the lamp posts), 3s. 6d.

SHOW ROOM FOR CABINETS, &c.

36, STRAND, LONDON, W.C., ENGLAND.

Birds and Mammals, &c., Preserved & Mounted by first-class workmen.

Our New Price List (100 pp.) sent post free to any address on application.

FOR SALE.

16 NATURAL HISTORY CABINETS

BELONGING TO THE LATE DR. MASON,

ALSO

FOUR MICROSCOPICAL CABINETS,

Containing Microscopical Slides by G. R. VINE, of Sheffield.

ALSO

400 BRITISH BIRDS IN CASES.

Apply—MRS. MASON, TRENT HOUSE, BURTON-ON-TRENT.

THE SIX COLOURED PLATES illustrating the articles on
"SOME INTERESTING BRITISH INSECTS,"

with the accompanying text (issued in the Ent. Mo. Mag. for September, 1909, January and September, 1910, September, 1911, and August, 1913), are issued in a separate wrapper, price 2s.

APPLY TO THE PUBLISHERS.

Scale of Charges for Advertisements.

Whole Page.....£3. Half Page£1 11s. 6d. Quarter Page.....17s.

Lowest charge, 7s. up to 5 lines; 1s. per line afterwards.

Repeated or continuous Advertisements per contract.

There is no charge for Lists of Duplicates and Desiderata.

All payments and applications for the above should be made to

R. W. LLOYD, I. 5, Albany, Piccadilly, W.

AUTHORS are requested to send their communications and proofs to either
J. J. WALKER, Aorangi, Lonsdale Road, Summertown, Oxford; or
G. C. CHAMPION, Broomhall Road, Horsell, Woking.

AUTHORS requiring separate copies of their papers (which can be supplied at small cost) are requested to mark the number wanted on their MS.

ENTOMOLOGICAL NEWS.

A forty-eight page illustrated magazine, issued monthly, except in August and September, devoted to the study of INSECT LIFE. It contains a resumé of the proceedings of a number of Entomological Societies, and also articles by the leading Entomologists in the United States and Canada. Valuable information for the beginner, the economic entomologist, and the systemist. **TWO DOLLARS** a year in advance. Single copies, 25 cents. Address—

ENTOMOLOGICAL NEWS,

The Academy of Natural Sciences,

1900 RACE STREET, PHILADELPHIA, PA.

THE CANADIAN ENTOMOLOGIST.

A MONTHLY MAGAZINE DEVOTED TO THE STUDY OF SCIENTIFIC ENTOMOLOGY.

Volume 50 is now in course of publication. Back volumes can be supplied. It is the oldest established Magazine of the kind in America, and has a world-wide circulation. Subscription, \$2 per annum, payable in advance, which includes a copy of the Annual Report of the Entomological Society of Ontario to the Legislature. Editor, Dr. E. M. Walker, Biological Department, University of Toronto, Toronto, Canada.

Address: Entomological Society of Ontario, Guelph, Canada.

WICKEN FEN.—The Custodians, the National Trust, appeal to Entomologists for assistance towards the providing of the Watcher who guards the Fen against abuse. This expense, which is absolutely necessary, is provided by voluntary subscriptions, and I am desired to ask for Contributions, which will be gratefully received, however small.—**W. G. SHELDON**, Honorary Treasurer of the Wicken Fund, Youlgreave, South Croydon.

A SYNOPSIS OF THE BRITISH SIPHONAPTERA, by the
 Hon. N. CHARLES ROTHSCHILD, M.A., F.L.S., illustrated by Eight Plates
 (issued in the Ent. Mo. Mag. for March, 1915, pp. 49-112), price 1s. 6d. Apply to
 the publishers.

THE BIOLOGY OF DRAGONFLIES

(ODONATA or PARANEUROPTERA)

By R. J. TILLYARD, M.A., B.Sc., F.L.S., F.E.S.

Demy 8vo. pp. xii+398. With 4 plates and 188 text-figures. 15s net.

CAMBRIDGE ZOOLOGICAL SERIES.

"Never before has the group received such detailed and well-balanced treatment as Mr Tillyard has given. . . . Students of the anatomy and development of insects are much indebted to him for providing in this convenient form a trustworthy guide to the external and internal structure of dragonflies at various stages of their life-histories."—*Nature*

Prospectus on application

Cambridge University Press, Fetter Lane, London, E.C. 4, C. F. Clay, Manager

COLEOPTERA ILLUSTRATA,

CARABIDAE.

Vol. 1, No. 3.

CARABIDAE.

PRICE \$1.

CONTENTS.

PRICE \$1.

LEISTUS
ferrugineus Linn.

ELAPHRUS
aureus Mull.

LOROCERA
pilicornis Fabr.

BROSCOSOMA
baldense Putz.

BEMBIDIUM
fasciolatum Duft.
articulatum Gyll.

GILLENUS
lateralis Sam.

THALASSOPHILUS
longicornis Sturm.

TRECHUS
discus Fabr.

ANOPHTHALMUS
hirtus Sturm.
v. rostratus Mots.

PTEROSTICHUS
lepidus Leske.
cupreus Linn.
infuscatus Dej.
puncticollis Dej.
crenatus Dej.
barbarus Dej.
carbonicolor Sols.
macer Marsh.
aterrimus Hrbst.
elongatus Duft.
oblongopunctatus Fabr.
angustatus Duft.
melanoscelis Chaud.
niger Schall.
vulgaris Linn.
nigritus Fabr.
minor Gyll.
interstinctus Sturm.
negligens Sturm.
subsinnatus Dej.
brevis Duft.
caspicus Men.
cognatus Dej.
aethiops Panz.
globosus Fabr.

PTEROSTICHUS
cylindricus Hrbst.
melas Creutz.

ABAX
ater Vill.
ovalis Duft.
schuppelii Pall.
v. renschmidtii Germ.
corsicus Dej.

MYAS
chalybaeus Pall.

AMARA
ingenua Duft.

ZABRUS
chalcus Fald.
heros Fald.
scidlitzii Schaum.
graecus Dej.
blapoides Creutz.

ANISODACTYLUS
binotatus Dej.
signatus Panz.

ACCURATE ENLARGED PEN DRAWINGS, UNIFORM IN SIZE,
 ONE TO A PAGE 8vo.

COLEOPTERA ILLUSTRATA will be mailed upon receipt of price.
 HOWARD NOTMAN, 136 JORALEMON STREET, BROOKLYN, N.Y., U.S.A.
 Vol. I, Nos. 1 and 2, \$1 each.

CONTENTS.

	PAGE
New and little-known saltatorial Dascillidae (<i>continued</i>).— <i>G. C. Champion, F.Z.S.</i>	193
<i>Trogophloeus impressus</i> Lac.: an addition to the List of British Coleoptera.— <i>E. A. Newbery</i>	198
A note on the habits of a <i>Melanophila</i> (Buprestidae) and other Indian Coleoptera.— <i>H. G. Champion, F.Z.S., F.E.S.</i>	199
Notes on some Aphides collected in South-eastern Russia in 1917.— <i>Maul D. Haviland</i>	200
Notes on the Derbidae in the British Museum Collection.— <i>I. Zoraidinae (concluded)</i> .— <i>F. Myr, F.E.S.</i>	202
Notes on the habits of <i>Cryptophagus populi</i> Payk.— <i>G. C. Champion, F.Z.S.</i>	207
The coast-frequenting Coleoptera of S. Devon and S. Cornwall.— <i>Id.</i>	208
<i>Elater sanguinolentus</i> , var. <i>paleatus</i> Candèze.— <i>D. Sharp, M.A., F.R.S.</i>	209
<i>Otiorrhynchus porcatus</i> Herbst at Oxford.— <i>J. Collins</i>	209
<i>Centorrhynchus rapae</i> Gyll. at Oxford.— <i>Id.</i>	209
Coleoptera of the Downs and country round Brighton.— <i>G. B. Ryle</i>	209
<i>Plusia moneta</i> in Cheshire, etc.— <i>A. D. Imms, D.Sc., F.E.S.</i>	211
The "swarming" of <i>Zephyrus quercus</i> .— <i>J. J. Walker, M.A., R.N., F.L.S.</i>	211
<i>Bombus terrestris</i> L. at midwinter in New Zealand.— <i>G. V. Hudson, F.E.S.</i>	212
<i>Rhadinoceraea micans</i> Klug in Cheshire.— <i>F. W. Hutton</i>	212
The European species of <i>Microvelia</i> .— <i>E. A. Butler, B.A., B.Sc., F.E.S.</i>	212
<i>Didea alneti</i> Fln. in Kent.— <i>Lieut. P. Harwood, F.E.S.</i>	213
SOCIETY.—South London Entomological Society	213
New Oriental Staphylinidæ (3).— <i>M. Cameron, M.B., R.N., F.E.S.</i>	214

THE NATURALIST:

A MONTHLY ILLUSTRATED JOURNAL OF
NATURAL HISTORY FOR THE NORTH OF ENGLAND

EDITED BY

T. SHEPPARD, M.Sc., F.G.S., F.R.G.S., F.S.A.Scot.,
THE MUSEUM, HULL;

AND

T. W. WOODHEAD, Ph.D., M.Sc., F.L.S.,

TECHNICAL COLLEGE, HUDDERSFIELD;

WITH THE ASSISTANCE AS REFEREES IN SPECIAL DEPARTMENTS OF

J. GILBERT BAKER, F.R.S., F.L.S., GEO. T. PORRITT, F.L.S., F.E.S.,
Prof. P. F. KENDALL, M.Sc., F.G.S. JOHN W. TAYLOR, M.Sc.,
RILEY FORTUNE, F.Z.S.

The Journal is one of the oldest Scientific Periodicals in the British Isles, dating back to 1833, and is circulated widely amongst the principal Naturalists of the country.

LONDON: A. BROWN AND SONS, LIMITED, 5, FARBINGDON AVENUE, E.C.

And at Hull and York.

PRICE, SIXPENCE NET. BY POST SEVENPENCE.

Prepaid Subscription, 6s. 6d. per annum, post free.

The Annual Subscription for 1918 is 9/-

[See p. 2 of Wrapper]

Third Series, No. 46.]
[No. 653.]

OCTOBER, 1918

[PRICE 1/- NET.]

THE
ENTOMOLOGIST'S
MONTHLY MAGAZINE.

EDITED BY

G. C. CHAMPION, F.Z.S. J. E. COLLIN, F.E.S.

W. W. FOWLER, D.Sc., M.A., F.L.S.

R. W. LLOYD, F.E.S. G. T. PORRITT, F.L.S.

J. J. WALKER, M.A., R.N., F.L.S.

VOLUME LIV.

[THIRD SERIES—VOL. IV.]

“J'engage donc tous à éviter dans leurs écrits toute personnalité, toute allusion dépassant les limites de la discussion la plus sincère et la plus courtoise.”—*Laboulbène*.

LONDON:

GURNEY & JACKSON (MR. VAN VOORST'S SUCCESSORS),
33, PATERNOSTER ROW, E.C. 4.

TAYLOR AND FRANCIS, 5, ABchurch LANE, LONDON, E.C. 4.

NOTICE. Owing to the greatly increased cost of paper, printing, etc., the Editors of the Magazine are compelled to raise the subscription to 9s. per annum (post free). Subscriptions for the 1918 volume should be remitted as soon as possible to R. W. LLOYD, I. 5, Albany, Piccadilly, London, W.1.

The price of a single ordinary number is 1s.

CHANGE OF ADDRESS.

H. BRITTEN, F.E.S., from Myrtle View, Windmill Road, Headington, Oxon,
to 22 Birch Grove, Levenshulme, Manchester.

REDUCED PRICES FOR BACK VOLUMES.

FIRST SERIES.

This can only be obtained in complete Volumes (bound or unbound). A limited number of sets, from Vol. x to Vol. xxv can still be obtained at £2 15s. per set net (in parts), or of five consecutive Vols. at £1 per set net (if bound, 1s. per Vol. extra).

Certain of the Vols. i to ix can be had separately at 10s. each.

SECOND SERIES.

Vols. i to xv. are now offered at £3 per set net (in parts), or £1 2s. 6d. for five consecutive Vols. (if bound, 1/- per Vol. extra).

THIRD SERIES.

Vol. li (Third Series, Vol. i) can be supplied by the Publishers at 7/6 (8/6 if bound) per copy. Cover for binding, 1/-.

Vol. li (1915) contains 23 Plates (one coloured), a complete Monograph of the British Siphonaptera, and numerous extra pages of text.

Apply to the Publishers.

MEETINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON, 11, Chandos Street, Cavendish Square, W.—Wednesday, October 2nd, 16th, November 6th, 20th, December 4th.

The Chair will be taken at 8 o'clock in the evening precisely.

The Library is open daily from 9 a.m. to 6 p.m. (except on Saturdays, when it is closed at 2 p.m.), and until 10 p.m. on Meeting nights.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge. The Second & Fourth Thursdays in each month, at 7 p.m. The lantern will be at the disposal of Members for the exhibition of slides.

The Chair will be taken punctually at 8 o'clock.

THE LONDON NATURAL HISTORY SOCIETY, which meets at 7 p.m. on the 1st and 3rd Tuesdays in each month, at Room 20, Salisbury House, Finsbury Circus, E.C., will be glad to welcome at its Meetings any French or Belgian entomologists now staying in this country, and to give them the benefit of its library and collections. Communications should be addressed to the Secretary, Salisbury House, E.C.

Hon. Sec.: J. ROSS, 18, Queen's Grove Road, Chingford, N.E.

Chingford Branch. The Chingford Local Branch meets at the Avenue Café, opposite Chingford Station, at 8 p.m., on the 2nd Monday in each month.

Antennae elongate, a little thickened towards the apex, the first four joints and the last testaceous yellow, the rest black. Legs reddish-testaceous. Length 6-6.5 mm. Head rather large, transverse, deeply inserted in the thorax, eyes large; colour yellowish, black on the temples, and occasionally the disc with one or two pitchy spots; puncturation very fine and moderately close; pubescence fine and yellow. Antennae with the 1st and 3rd joints of equal length the 2nd shorter than these, the 4th longer than the 3rd, the 5th, 6th, and 7th gradually becoming shorter, the 8th, 9th, and 10th much narrower at the base, about as long as broad, the 11th oval, about as long as, but narrower than, the 10th. Thorax convex, transverse, widest at the base, the sides evenly rounded and narrowed to the produced acute anterior angles; the anterior border emarginate; the posterior angles briefly rounded, the base feebly bisinuate; the colour as previously indicated; puncturation very fine and rather close; pubescence yellowish. Scutellum small, reddish, with three or four punctures. Elytra transverse, scarcely as long or as broad as the thorax, obliquely truncate at the apex; the suture broadly, and the central part of the base more narrowly, reddish-testaceous, the rest of the surface, including the humeral angles, black, so that a reddish T-shaped pattern is formed; puncturation fine and rather asperate, closer than that of the thorax; the pubescence similar to that of the fore-parts; the sides furnished with eight rather long black setae. Abdomen pointed, and of the colour previously indicated, finely and moderately closely punctured, rather more sparingly on the last two segments; the pubescence moderately close, fine, and yellow; the sides and apex furnished with long black setae. Under surface entirely reddish-testaceous, with the exception of the last four segments which are black.

♂. Eighth dorsal segment truncate; 6th ventral segment with a deep, broad, triangular excision, the apex of which is rounded.

♀. Eighth dorsal segment divided by three very narrow excisions into four blunt digitiform processes, of which the central pair are a little longer than the lateral.

Hab. BORNEO, Quop, W. Sarawak (*G. E. Bryant*).

Conosoma laterale, n. sp.

Rather robust, convex, black; elytra transverse, the sides setose; the base of the thorax narrowly, the base (except externally), the suture and apical margins narrowly of the elytra, and the posterior margins of the abdominal segments narrowly, dull red; antennae short, reddish-testaceous, the legs similarly coloured; abdomen clothed with golden pubescence. Length 3 mm. (in retracted example). Rather more convex than *C. breve* Fauv., with shorter and broader thorax, much shorter antennae, and different coloration. Head exceedingly finely and rather sparingly punctured. Antennae short, the 2nd, 3rd, and 4th joints of about equal length, the 5th a little shorter, the 6th and 7th a little longer than broad, the 8th, 9th, and 10th slightly transverse, the 11th oval, pointed. Thorax exceedingly finely and not very closely punctured; pubescence fine, golden. Elytra of the length of the thorax, transverse, the base (except the external angles), and the suture and apical margins narrowly, dull red; puncturation coarser and closer than that of the thorax; pubescence

golden-yellow; the lateral margins with five long setae. Abdomen rather closely and finely punctured, except posteriorly, the 7th segment being impunctate, rather closely covered with golden-yellow pubescence; the sides and apex furnished with long black setae, the dorsum also with a few erect black setae.

Hab. BORNEO, Quop, W. Sarawak (*G. E. Bryant*).

Olophrinus octolineatus, n. sp.

Black, shining, convex, robust; each elytron with eight rows of large regular punctures; first four joints of the antennae, mouth-parts, and legs reddish-testaceous. Length 6.2 mm. Head black, the front reddish-testaceous; eyes large and prominent; puncturation wanting, ground-sculpture exceedingly fine and strigose. Antennae long, slender, the 1st, 3rd, and 4th joints of about equal length, the 2nd shorter, the 5th to the 10th, elongate, very gradually diminishing in length, the 11th elongate, as long as the 10th. Thorax twice as broad as long, widest at the base, the sides strongly convergent and gently arcuate to the rounded anterior angles; anterior border emarginate, posterior border feebly bisinuate, the posterior angles obtusely rounded; impunctate and glabrous, with the ground-sculpture similar to that of the head. Scutellum semicircular, impunctate. Elytra broader than and half as long again as the thorax, transverse, narrowed posteriorly, each marked with eight rows of regular punctures (which do not quite reach the apex), five between the suture and the humeral callus, and three between this and the margin, one row being actually in the marginal groove itself; the three inner rows consist of finer punctures than those forming the outer ones; apart from these there are three or four small punctures at the postero-external angles, otherwise the surface is impunctate and with similar ground-sculpture to that of the head and thorax. Abdomen narrowed behind, puncturation fine, superficial, and sparing, pubescence scanty.

♂. Eighth dorsal segment divided by five excisions into six pointed, triangular processes, of which the central pair extend furthest back, and the outermost are the least produced; the central excision is narrower and more pointed, not extending so far forwards as the lateral ones. Sixth ventral segment with a broad, deep, triangular excision in the posterior margin, lateral margin with a short dentiform process on each side. Fifth ventral segment with a rather broad emargination (which is finely crenulate) of the posterior margin, in front of which is a shining quadrilateral impression extending nearly to the anterior border, studded with shining granules. Fourth ventral segment with a narrower, less deep emargination, the edge of which is finely crenulate.

Hab. BORNEO, Quop, W. Sarawak (*G. E. Bryant*).

Male only known.

Leucocraspedum nigromaculatum, n. sp.

Reddish testaceous, the elytra blackish, the base broadly, the suture, apex, and sides narrowly, reddish-testaceous; the second dorsal segment with an

indeterminate black spot in the middle of the disc; antennae and legs reddish-testaceous, the last joint of the former infuscate. Length scarcely 2 mm. Of about the size and build of *L. pulchellum* Kr., from Ceylon. Antennae with all the joints to the 7th longer than broad, the 8th to 10th transverse, the 11th as long as the two preceding together. Thorax very finely and rather closely punctured, pubescence yellow. Elytra transverse, finely and closely punctured, pubescence yellow. Abdomen pointed, finely and closely punctured and pubescent throughout, more sparingly on the last two segments.

Hab. CEYLON, Kandy (*G. E. Bryant*).

NEW AND LITTLE-KNOWN SALTATORIAL DASCILLIDAE.

BY G. C. CHAMPION, F.Z.S.

(Continued from p. 198.)

28.—*Scirtes bipustulatus*, n. sp.

♀. Hemispherical, convex, shining, rather coarsely pubescent; black, the elytra each with a large, rounded rufous spot near the suture at the base, the antennae, palpi, legs, and under surface rufo-testaceous; closely, finely, the elytra more coarsely, punctate. Head broad, short, the eyes convex; maxillary palpi stout; antennae moderately long, slender, joint 3 slightly longer than 2, 4–11 filiform, very gradually decreasing in length. Prothorax rapidly narrowed from the base, deeply hollowed in front opposite the eyes, the anterior angles obtuse, the margins slightly explanate. Elytra with a shallow groove along the suture, sharply margined. Posterior coxal plates transverse, hollowed behind. Posterior femora extremely broad, the tibiae curved, broad, sharply carinate, the upper spur stout, and about as long as the first tarsal joint.

Length $4\frac{1}{5}$, breadth $3\frac{1}{2}$ mm.

Hab. BORNEO, Sarawak (*A. R. Wallace, in Mus. Oxon.*).

One example. This remarkable insect has exactly the facies of a Coccinellid, a resemblance accentuated by the sharply-defined red spot on each elytron. *Exochomoscirtes* Pic (1916),* based upon three allied forms from Java, is said to have the sides of the prothorax very prominent in front, a definition not applicable to the Bornean *Scirtes*. Compared with *E. binotatus*, which is similarly coloured (except that the sides of the prothorax are rufescent in the latter), *S. bipustulatus* would appear to be a more convex insect.

29.—*Scirtes flavocinctus*, n. sp.

Oval, rather convex, robust, shining, finely pubescent; testaceous or rufo-testaceous, the palpi (except at the tip), the antennal joints 4–11 (the tip of 11 excepted), and the elytra black, the elytra with a narrow space along the basal margin, extending for some distance down the suture and still further along

* "Description al-régée," in *Mélanges exot.-entom.* xx, p. 7 (July 1916).

the outer edge, a median fascia (not reaching the suture), and a large oval spot adjacent to the suture near the tip, flavous, the tarsal joints 2 and 3 more or less infuscate; densely, finely punctate. Head broad; antennae rather stout, moderately long, shorter in ♀, joint 3 short, not longer than 2, 4-10 gradually decreasing in length. Prothorax hollowed in front opposite the eyes, arcuately narrowed from the base. Elytra with an indication of an impressed line along the suture. Ventral segment 5 arcuato-emarginate at apex in ♂. Posterior coxal plates subquadrate. Legs stout; posterior femora very broad, the tibiae widened, sharply carinate, the spurs strongly curved, the upper one one-half longer than the lower one, the first tarsal joint longer than the others united.

Length $3\frac{3}{4}$ - $4\frac{1}{4}$, breadth $2\frac{2}{5}$ -3 mm. (♂ ♀.)

Hab. BORNEO, Quop, W. Sarawak (*G. E. Bryant*: ii.iii.1914).

One pair. Distinguishable by the sharply maculate elytra, convex, oval form, etc. *S. flavocinctus* might easily be mistaken for a Halticid.

30.—*Scirtes flavoguttatus*, n. sp.

♂. Rather broad, elliptic, feebly convex, shining, closely fusco-pubescent; nigro-piceous, the knees, tarsi, and posterior tibiae paler, the antennae testaceous, with joints 8-10 and the basal half of 11 infuscate; the elytra with an irregular, narrow, transverse fascia below the base (not reaching the suture or outer margin, and formed by three transverse confluent patches on each elytron), four small, arcuately arranged spots on each beyond the middle, and a larger rounded spot before the tip, pale yellow; densely, finely, punctate. Head broad, the eyes large; antennae long, not very slender, joint 3 not longer than 2, 4-6 elongate, 7-11 shorter than those preceding. Prothorax broad, slightly hollowed in front opposite the eyes, the sides arcuately converging from the base. Elytra with very faintly impressed grooves on the disc, a sutural stria visible in certain lights. Posterior coxal plates subquadrate. Legs long, rather stout; posterior tibiae feebly curved, sharply carinate, the upper spur nearly twice as long as the lower one; joint 1 of posterior tarsi longer than the others united.

Length 4, breadth $2\frac{1}{2}$ mm.

Hab. BORNEO, Mt. Matang, W. Sarawak, alt. 1000 ft. (*G. E. Bryant*: 29.i.1914).

One male, in perfect condition, the sex indicated by the slender protruding aedeagus. The peculiarly arranged stramineous markings on the elytra—a narrow fascia, followed by a transverse arcuate series of small spots, and a larger spot at the tip,—and the long legs and antennae, the latter with the intermediate joints unusually elongated, characterize the present species, one of several interesting new forms captured in Borneo by Mr. Bryant.

31.—*Scirtes decemguttatus*, n. sp.

Elliptic, rather broad, somewhat convex, shining, finely cinereo-pubescent; black, the legs in great part, and under surface, piceous, the antennal joints 1-3,

knees (the posterior pair excepted), and tips of the tarsi, more or less testaceous; the elytra with ten sharply-defined, rather large yellow spots—five oblong, transversely arranged, a little below the base (two on the outer part of the disc, the external one triangular, and one, common to the two elytra, post-scutellar), two on the disc of each elytron beyond the middle, angular, and obliquely placed, and one, elongate, along the suture at the apex; closely, finely punctate. Head broad, the eyes moderately large; antennae slender, not very elongate, joint 3 small, scarcely as long as 2. Prothorax broad, short, arcuately narrowing from the base, hollowed in front opposite the eyes, the hind angles obtuse. Elytra without impressed lines on the disc. Posterior coxal plates small, subrectangular. Posterior legs moderately elongate, the tibiae widened, sharply carinate, the spurs stout, the upper one nearly as long as the first tarsal joint.

Length $3\frac{1}{4}$, breadth $2\frac{2}{5}$ mm.

Hab. S. INDIA, Kodaikanal (*Campbell*).

One specimen in perfect condition, its sex not ascertained, recently presented to the Museum by Mr. E. A. Butler. Shorter and a little more convex than the Bornean *S. flavoguttatus*; the legs less elongate; the antennae slender, much shorter, with joints 4–11 black and 3 quite small; the flavous spots on the elytra larger, less numerous, and differently arranged. The Brazilian *S. flavomaculatus* is not unlike *S. decemguttatus*.

32.—*Scirtes maculatus*.

Scirtes maculatus Waterh. Cist. Ent. ii, p. 568 (1880).

Scirtes maculatus Bourg. Bull. Soc. Ent. Fr. 1896, p. 120.

Scirtes bourgeoisi Pic, L'Echange, 1913, pp. 164, 165, and in Junk's Col. Cat. 58, p. 41.

Hab. INDIA [type of Waterhouse], Kanara, Bombay (*Bell*).

Bourgeois was not aware that the species described by him had been named long before by Waterhouse, the Kanara insect, lent me by Mr. Andrewes, simply differing from the latter in its smaller size, the elytral markings being exactly similar. The new name given by Pic is therefore not required.

33.—*Scirtes tetrastigma*, n. sp.

Subhemispherical, convex, shining, thickly pubescent; testaceous, the prothorax (except along the sides and apical margin), two large transverse patches on each elytron (one just before, the other beyond, the middle), the antennal joints 4–11, and the posterior femora in part, black or piceous, the head slightly infusate; closely, minutely, the elytra more distinctly, punctate, the punctures on the latter well separated one from another. Head broad, the eyes small; antennae moderately long, slender, joints 2 and 3 short, equal in length, 4–11 subfiliform. Prothorax very short, rapidly narrowed

from the base, slightly hollowed in front opposite the eyes, the anterior angles obtuse. Elytra convex, rounded and sharply margined at the sides, without trace of impressed lines. Posterior coxal plates rectangular. Posterior femora enormously developed, the tibiae broad, curved, sharply carinate, the upper spur stout, strongly curved, and about as long as the first tarsal joint.

Length 3, breadth $2\frac{1}{3}$ mm.

Hab. ASSAM, Patkai Mts. (*Doherty, ex coll. Fry*).

One specimen, sex not ascertained. The subhemispherical, convex shape, testaceous elytra, each with two large black transverse patches, and the unusually stout, hooked, upper posterior tibial spur, render *S. tetrastigma* easy of recognition. The system of coloration is common to various Halticids and Coccinellids.

34.—*Scirtes ehippiatus*, n. sp.

♂. Broad, subhemispherical, rather convex, shining, closely cinereo-pubescent; black, the elytra with a common, transverse, sharply defined, saddle-shaped patch on the disc before the middle, and the antennae and legs in great part, testaceous or rufo-testaceous, the outer joints of the antennae and the posterior femora at the base infusate; densely, finely punctate, the punctures on the elytra a little coarser than those on the head and prothorax. Head broad; antennae moderately long, slender, joint 3 very small, much shorter than 2, 4-11 long, subequal, filiform. Prothorax very short, hollowed in front opposite the eyes, the anterior angles prominent. Elytra rounded at the sides, without trace of impressed lines or costae on the disc, the margins sharply carinate, narrowly explanate, the intra-humeral callosities prominent. Posterior coxal plates subquadrate. Posterior legs stout, moderately long; femora very broad; tibiae sharply carinate, the upper spur twice the length of the lower one, as long as joint 1 of tarsus, the latter slightly longer than joints 2-5 united.

Length 3, breadth $2\frac{1}{2}$ mm.

Hab. BORNEO, Quop, W. Sarawak (*G. E. Bryant: 27.ii.1914*).

One male. Easily recognizable by its subhemispherical shape, the common, sharply defined, saddle-shaped testaceous patch on the elytra (the rest of the body being black), and the stout posterior legs. From *S. bipustulatus*, also from Sarawak, the present species differs in its smaller size, less convex form, distinctly stouter antennae, with shorter third joint, and less rounded, dissimilarly marked elytra.

35.—*Scirtes flavonotatus*, n. sp.

Oblong-oval, shining, closely, finely pubescent; nigro-piceous, joints 1 and 2 of the antennae, the basal margin of the prothorax, knees, tibial spurs, and apices of the tarsi testaceous; the elytra with ten sharply-defined yellow spots—four, transverse, subangular, forming a common, interrupted fascia

below the base, four, similar, beyond the middle, and two, triangular, near the apex; densely, finely, uniformly punctate. Head rather small, unimpressed, the eyes not very large; antennae pilose, moderately long, rather stout, joints 2 and 3 short, equal in length, those following subequal in width. Prothorax convex, short, arcuately narrowing from the base, feebly bisinuate in front, the anterior angles obtuse. Elytra with an indication of a sutural groove, narrowly margined. Posterior coxal plates small, rectangular. Posterior legs moderately long, the tibiae feebly curved, the upper spur shorter than the first tarsal joint.

Length $3\frac{1}{5}$, breadth 2 mm. (δ ?)

Hab. N.W. BORNEO, Kuching (*R. Shelford, in Mus. Oxon.*).

One specimen, slightly injured by pinning, labelled as having been captured by a Dyak on August 11th, 1899. A very distinct form, recognizable by its rather elongate shape, nigro-piceous colour, and the ten sharply-defined yellow spots on the elytra. The following species from Perak and Penang is nearly related to it.

36.—*Scirtes decemnotatus*, n. sp.

δ . Oblong-oval, shining, closely, finely pubescent; nigro-piceous or piceous, the head obscurely rufescent, the prothorax with the outer margin and a rather broad space on each side at the base (leaving a broad, cruciform, dark patch on the disc), and the elytra with the juxta-scutellar margin and ten sharply-defined, transverse, angular spots—four forming a common, interrupted fascia below, four, similarly arranged, beyond the middle, and two (transverse or triangular) on the disc near the apex,—yellow, the antennal joints 1–3, and the legs and abdomen in part, testaceous; densely, finely punctate. Head broad, unimpressed, the eyes moderately large; antennae pilose, long, stout, tapering at the tip, joints 2 and 3 short, equal. Prothorax convex, short, arcuately narrowing from the base, feebly bisinuate in front, the anterior angles obtuse. Elytra with an indication of a sutural groove, narrowly margined. Posterior coxal plates feebly developed, angular. Posterior tibiae widened, arcuate, the upper spur curved, rather slender, much shorter than the first tarsal joint.

Length $2\frac{1}{2}$ – $2\frac{3}{4}$, breadth $1\frac{1}{2}$ mm.

Hab. PERAK (*Doherty, ex coll. Fry: type*); PENANG (*G. E. Bryant: 11.xi.1913*).

Two specimens, assumed to be males, simply differing *inter se* in the shape and development of the yellow spots on the elytra, the two near the apex transverse and angulate in the Perak example. The anterior margin of the prothorax is much less sinuate than usual in *Scirtes*, and the posterior coxal plates are feebly developed. Smaller and less elongate than the Bornean *S. flavonotatus*, the antennae very

different and with joints 1-3 testaceous, the prothorax broadly flavous on each side at the base, the elytral markings larger. The Perak specimen had been placed by Fry amongst his Halticids. *S. dichrous* (No. 47) is similarly shaped, but wants the spots on the elytra, etc.

37.—*Scirtes andamanus*, n. sp.

♀. Broad oval, robust, moderately shining; obscure testaceous, variegated with black, the dark mottling on the elytra partly or entirely enclosing various well-defined testaceous markings—a transverse patch at the sides below the base extending forward along the outer margin to the humeri, an oval spot on the disc just before the middle, an arcuate fascia near the tip, a small apical patch extending forward for some distance along the suture, and numerous small spots; the antennae (joints 1-3 excepted) and maxillary palpi black, the legs testaceous, the posterior femora infuscate at the apex; the upper surface thickly pubescent (the pubescence partaking of the ground-colour, and thus accentuating the elytral markings), and densely, minutely punctate. Antennae with joint 3 slightly longer than 2, 4-11 elongate, very slender, filiform. Prothorax arcuately narrowed from the base, deeply hollowed in front opposite the eyes. Elytra narrowly margined, with three distinct costae on the disc, the suture also slightly raised. Posterior coxal plates rectangular. Posterior femora enormously thickened, the tibiae feebly curved, broad, and sharply carinate, the upper tibial spur nearly as long as the first tarsal joint.

Length 4, breadth $2\frac{3}{4}$ mm.

Hab. ANDAMAN IS. (*G. Rogers*).

One specimen, received by the Museum in 1906. Smaller and less robust than *S. 4-maculatus* Waterh., from Burma, the Andamans, and Nicobars; the elytral markings very different, the costae more distinct; the antennae still more slender, the third joint longer than usual in the genus *Scirtes*. The palps projecting from the ovipositor are unusually elongate.

38.—*Scirtes elegans*.

Scirtes elegans Waterh. Cist. Ent. ii. p. 567 (1880).¹

? *Scirtes albomaculatus* Bourg. Ann. Soc. Ent. Fr. 1890, p. 163.²

Hab. PENANG¹ [type].

Described by Waterhouse from three specimens from Penang, varying in the development of the elytral markings, and in the colour of the prothorax. An example captured by Mr. G. E. Bryant, at Lundu, Sarawak, Borneo, on January 8th, 1914, is doubtless another form of the species; it has the prothorax testaceous and the elytra

nigro-piceous, the latter with a broad oblique fascia before the middle (not reaching the suture), and a large spot on the disc towards the apex, flavous. *S. albomaculatus* Bourg., from Cambodia², may be another variety of the same species?

(To be continued.)

256

On Gynarchy in Coleoptera.—I was very much interested in Dr. Sharp's note on this subject (*antea* p. 154), more especially as I have been working at the physiology of sex, in connection with ants, for some time past. In the case of the latter insects, where under certain circumstances we have now shown that workers will lay parthenogenetic eggs which produce workers, one might well repeat Dr. Sharp's question, "Why, then, do males exist?" The following Coleoptera may be added to Dr. Sharp's list:—

Malthodius atomus Th.—I only know of three males of this beetle: one taken by Dr. Power at Wicken Fen, one by the late E. A. Waterhouse at Wokingham, and one by Commander Walker at Wytham Park, Berks. I have swept the species freely at Dulwich Wood, Wimbledon Common, Richmond Park, Wicken Fen, the Isle of Wight, etc., but have never taken a male.

Tillus elongatus L.—The male of this insect is considered to be more rare than the female. I have taken the species at Oakham (Rutland), Owston Wood (Leicestershire), Bradfield, Streatley, Oxford district, Epping Forest, and frequently in the New Forest; but I only once found the male, when it occurred in some numbers with females on a dead tree in the New Forest.

Other species in which I have found the male much less common than the female are: *Anthocomus terminatus* Mén., *Cryptocephalus sexpunctatus* L., *Cteniopus sulphureus* L., and *Xyleborus dispar* F.; these latter insects, however, may represent only my individual experience.—HORACE DONISTHORPE, 19 Hazlewell Road, Putney Hill, S.W. 15.

[*Malthinus balteatus* Suffr. is another insect of which the ♂ is extremely rare.—G. C. C.]

Hammaticherus lacordairei Gahan at Swansea.—Several examples of this fine Longicorn were picked up alive in Swansea docks earlier in the War. It was ascertained that they came from a cargo of South American logwood on board a German prize which was brought into the docks. I am much indebted to Dr. Gahan for identifying the species.—J. R. LE B. TOMLIN, Lakefoot, Hamilton Road, Reading: Sept. 18th, 1918.

Early appearance of Macroglossa stellatarum.—On March 21st I saw in the public park here in the morning, about eleven o'clock (new time), a specimen of *Macroglossa stellatarum*—quite perfect. I had a good opportunity of observation, as it attracted my attention by its usual flight, and then settled on a piece of earth on the border, and rested there for some minutes, and then took flight to another quarter. I have never experienced this before, and a

query came to my mind: had this moth hibernated? * I turned up what information I possess on Entomology, without result. I may add that I took a *M. stellatarum* in a wood near here on July 15th, 1917, when looking for *Limenitis sibylla*.—T. RALPH HYDE, Worthing.

[From the "Selborne Magazine," Vol. xxix, No. 340, p. 38.—Eds.]

Nomada furva K. and its hosts.—About the middle of August I noticed a colony of *Halictus minutus* Kirb. in a hedge-bank at South Brent. Many males of the bee were flying in and out of the burrows, but no females were to be seen. On digging out a few burrows I unearthed a fully developed female of the small *Nomada furva* K. When the weather became wet and colder in September, I dug out many burrows and found numerous female *Halictus*, but males were now scarce. The *Nomada* was not infrequent, all the examples being fully mature, and no larvae or pupae were found. I had supposed from my first observation that the only *Halictus* present in this colony was *minutus*, but on examining those which I took away, I found that *H. nitidiusculus* K. was also present, perhaps in the proportion of one to ten of the *minutus*. It therefore remains still uncertain whether the *Nomada* is associated with the latter or only with *nitidiusculus*, which is certainly its common host. I have taken it from pure colonies of this *Halictus* at Oxford, in Monmouthshire, and in many Devon localities, as well as in Somerset and elsewhere. Smith gives *H. minutus* and *morio* as the hosts, but he was not able to distinguish between *minutus* and *nitidiusculus*, and in his collection most of the supposed specimens of the former are really the latter. Where I have found *N. furva* at colonies of *morio*, careful examination has always shown that *nitidiusculus* was mixed with these and was the real host of the *Nomada*. However, I now feel almost certain that it will be found to live with *minutus*, as well as with the commoner and closely allied species. In the Journal of the Torquay Natural History Society for 1918 I have given a list of all our species of *Nomada* and their hosts. This differs considerably from that of F. Smith, and I believe that Saunders, too, is not always correct in assigning hosts to these parasites. I might add that I have been able to ascertain recently beyond doubt that *N. solidaginis* is a parasite of *Andrena denticulata*, as well as of *A. fuscipes*, the former having been given as *probably* an additional host in my list above mentioned. To return to *N. furva*, the earliest date noted in Devon is May 1st, and worn females may be sometimes seen still busy about colonies of *Halictus* in July. Those found by me this August in the burrows would therefore remain torpid, though fully developed, for eight or nine months—in fact, until the hibernated female *Halicti* are busy storing their cells.—R. C. L. PERKINS, Paignton: Sept. 17th, 1918.

The Bionomics of the Common Earwig.—In his latest contribution to our knowledge of *Forficula auricularia* (Proc. Cambridge Phil. Soc., vol. xix, part 4), Mr. H. H. Brindley gives the results of further researches into the effects of parasitism and of experiments made with the object of determining the nature of the food consumed. The examination of the alimentary canal in 46 males has been undertaken, for the purpose of testing the validity of the suggestion that the "low" and "high" condition of their forcipes may be due

* Almost certainly an immigrant.—J. J. W.

to the presence or absence of gregarine parasites. An equal number (23) of "low" and "high" males, from a large batch obtained in the Scilly Isles, were carefully examined, and it was found that about half the specimens of each description were free from parasites. The remaining half in each case were infected by the gregarine *Clepsydrina ovata*, the average number of gregarines per individual being 29 in the case of the "low" males and 20 in the case of the "high" males. The author concludes that "the evidence so far obtained is that the dimorphism of the forcipes in *F. auricularia* ♂ is not a result of or influenced by gregarine infection." Other parasites, both animal and vegetable, are known to attack earwigs, and affect the health of their hosts in a greater or lesser degree. It has been a subject of debate for many years as to whether earwigs actually feed upon the plants which they frequent, or whether they merely prey upon the other insects which are found there. While a considerable body of evidence exists to show that earwigs occasionally, or even habitually, select animal food, Mr. Brindley has demonstrated, by experiments with adult individuals kept in captivity, that they can be maintained in health for several weeks, without any animal food beyond that accidentally afforded by the decease of one of their number. Three different kinds of vegetable food, taken haphazard, were offered at a time, and it was noticed that a decided preference was manifested for the leaves of vegetable-marrow, beet, and cabbage, the flowers of *Anchusa* and *Oenothera*, and unskinned plums.

Mr. Brindley concludes his paper with a very useful summary of what has been published concerning the capture of earwigs by birds. Domestic fowls always eat earwigs readily, but not more than 14 species of wild birds have been recorded as feeding upon them, and then only very sparingly in most instances. This list is likely to be extended as further observations are made, for certain notoriously insectivorous birds, such as the Blue Tit and the Tree Creeper, are not yet included in it. At the same time, of course, earwigs enjoy more or less protection from their foes by reason of their nocturnal habits, and probably also on account of the well-defined odour which they are known to emit.—HERBERT CAMPION, 58 Ranelagh Road, Ealing, W. 5: *September*, 1918.

Orthotylus virens Fall.—This bug has occurred abundantly during the present season on Cumwhitton Moss, where the original British specimens were found in 1917 (*vide* Ent. Mo. Mag. 1917, p. 251), and some care was taken to ascertain the particular species of willow to which it was attached, this proving to be *Salix pentandra*—the Bay Willow. Noting the same plant on Hayton Moss, a few miles away, Mr. Routledge looked out for the bug and at once found it freely. The Bay Willow, according to Bentham's "Handbook to the British Flora," is found chiefly in northern England and southern Scotland, which may account for *O. virens* not having been met with by our southern Hemipterists.—F. H. DAY, 26 Currock Terrace, Carlisle: *Sept. 7th*, 1918.

Society.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *August 8th*, 1918.—MR. STANLEY EDWARDS, F.L.S., President, in the Chair.

Mr. Ashdown exhibited a variable series of *Malacosoma neustria*, and a dark *Notodonta dromedarius*, v. *perfusca* from the New Forest. Mr. Neave,

bred *Hyles euphorbiae* from the "Front" in France, and a *Vespa norvegica* from Rotherhithe. Mr. Ashby, a long series of *Cetonia aurata* from Portland, and a *Lasiocampa quercus* near v. *callunae* from the same place. Mr. W. West, the Neuropteran *Osmylus chrysops* from the New Forest. Mr. Blair described the pairing habits of the "swift" *Hepialus sylvinus*, referring especially to the folding-down of the hind wings of the females. Mr. Bunnett exhibited larvae and pupae of the Coleoptera *Cassida equestris*, *Cionus blattariae*, *Chrysomela polita*, etc. Mr. Sims, ova of *Piezodorus lituratus* (Hemipt.) on furze. Mr. Edwards, exotic Pieridae, including *Callosune zoë*, *C. ialone*, *Pieris charina*, etc. Mr. Sich, read a paper, "Species in the Genus *Cerostoma*."

August 22nd, 1918.—The President in the Chair.

The death from wounds of a member, Mr. C. P. Emmett, F.E.S., was announced.

Mr. Court, of Market Rasen, was elected a member.

Mr. Turner exhibited a copy of "Exotic Moths," Jardine's Library, 1840, and referred to the portrait and memoir of the great French naturalist Latreille contained in it. Mr. Edwards, *Papilio lama* from Tibet, and v. *plutonius* of *P. alcinous* from Tibet. Mr. Ashdown, larvae of *Notodonta dromedarius*. Mr. Barnett, undersides of *Agriades coridon*, (1) with all discal markings obsolete, (2) with markings much emphasised and dark, from Royston, and a pale *Anaitis plagiata* from Colley Hill. Mr. Neave, a living *Trichiura crataegi* and three aberrations of *Arctia caja*, (1) and (2) with discal markings on hind wings mainly obsolete, (3) a yellow form. Mr. Holden, three aberrations of *Arctia caja*, (1) a salmon-pink form, (2) with discal markings on hind wings obsolete, (3) a rich yellow form, and a *Mimas tiliae* with costal blotches only. Mr. Carr, several series of *Abraxas sylvata* (*ulmata*) from Chalfont, Wye, and Delamere. Mr. Bunnett, a very pale *Miltochrista miniata* from Crowborough. —H. J. TURNER, *Hon. Editor of Proceedings*.

NOTES ON THE DERBIDAE IN THE BRITISH MUSEUM
COLLECTION.—II. DERBINAE.

BY FREDERICK MUIR, F.E.S.

The four sections, *Derbini*, *Rhotanini*, *Cenchreini*, and *Otiocerini*, have the anal area of the wing large and the cubital and anal veins normally developed; except in the genus *Symidia*, the wings are more than half the length of the tegmina, and the tegmina are not proportionally long and narrow. They thus constitute a group in contrast to the *Zoraidinae*. Elsewhere I have treated them as four subfamilies, but, after examining the material in the British Museum collection, which includes many forms previously unknown to me, it will be better, in my opinion, to consider them as four sections under one subfamily. The *Cenchreini* and *Otiocerini* are two well-defined groups,

but the *Derbini* and *Rhotanini* are more difficult to define and have only three or four genera each. *Zeugma* Westw., which I place in the *Derbini*, has little or no affinity with the other two genera; the genera under *Rhotanini* are all nearly related.

Symidia is of interest, as its tegmina have the first median sector with three branches (the neuration approaching the cubital system of arrangement), thus leading to the *Derbini*; the wings are slightly less than half the length of the tegmina, and the anal area is not greatly developed (although there are two cubital veins), *Symidia* in this respect leading to the *Zoraidinae*.

It is interesting to note that none of the *Zoraidinae* have been reported from the American continent or the West Indies, and the two genera, *Derbe* Fabr. and *Mysidia* Westw., are confined to America south of the United States and to the West Indies, with the exception of one species in Australia.

The four sections can be separated by the following characters:—

- a*¹. The cubital veins ending in the hind margin of the tegmen, the claval cell closed, or if narrowly open then the claval vein reaching no further than the last cubital vein.
- b*¹. Cubitus with four or more veins reaching the hind margin.
.....DERBINI.
- b*². Cubitus with less than four veins reaching the hind margin.
- c*¹. Cubitus simple or furcate, reaching the hind margin direct, not running into the first median sectorCENCHREINI.
- c*². Cubitus connected with the first median sector, forming an angular or diamond-shaped cell; sometimes with a cross-vein near the base of the first median sector forming a triangular cell; tegmina broad.....RHOTANINI.
- a*². Clavus open, the cubital veins not reaching the hind margin but meeting the extended claval vein which extends to the last apical cell.
.....OTIOCERINI.

DERBINI.

- a*¹. Six or more median sectors; shoulder keels very large.....ZEUGMA.
- a*². Five or less median sectors; shoulder keels absent or very small.
- b*¹. Cubitus with four veins reaching the hind margin, the second vein bifurcate; the female genital styles generally small or very small.
.....MYSIDIA.
- b*². Cubitus with six or more veins reaching the hind margin, the second vein not furcate; female genital styles well developed ..DERBE.

DERBE Fabr.

Derbe westwoodi Fowl.

Biol. Centr.-Am., Rhynch. Homopt. i, p. 71 (1900) (part., nec figs.).

Under this name there are six specimens, three of which I consider typical, one is *D. longitudinalis* Dist., and the other two are here described as *D. fowleri* and *D. championi*.

D. championi, sp. n.

Derbe westwoodi Fowl. *loc. cit.* t. 8, figs. 16, 16 a (1900) (part.).

♀. Yellow tinged with reddish-brown. Tegmina and wings hyaline slightly tinged with yellow, veins brown; a narrow fuscous mark down the middle of each cell, except the costal, subcostal, and some of the apical cells of the tegmina.

Genital styles small, short; anal segment small, sunk into a quadrate emargination of the pregenital tergite, the ventral edge of anal segment drawn out into a small lip, two small, thin, flat processes arise from beneath the lip and project slightly beyond the edge; pregenital plate large, in profile the basal portion convex, the median third of the hind margin produced into a subquadrate flat plate, the sides of which are short and slightly converging, the apex broadly angular.

Length 4.5 mm.; tegmen 11 mm.

Hab. PANAMA, Bugaba (*G. C. Champion*).

One specimen.

D. fowleri, sp. n.

♀. Similar in coloration to *D. westwoodi* Fowl. Light brown, darker over the mesonotum and abdomen, anterior tarsi and apex of tibiae dark brown. Tegmina and wings yellowish with brown veins, fuscous at the middle of subcostal, radial, and median basal cells, a small brown mark at apex of clavus and another on the hind margin and over the cubital cross-vein, slightly fuscous at the apex of the wings.

Genital styles large, long; anal segment large, the ventral edge projecting as a wide quadrate lip, which is produced into two long narrow processes reaching to near the apex of the genital styles; pregenital plate large, the hind margin produced into a large plate much longer than wide, the base wider than the apex, the apex truncate, and the sides convex in the middle.

Length 7 mm.; tegmen 14 mm.

Hab. GUATEMALA, San Isidro, Pacific slope (*G. C. Champion*)[†].

The locality was not quoted by Fowler (*l. c.*).

D. nervosa Burm.

Under this name there is one female specimen, which is a *Mysidia*.

MYSIDIA Westw.

Mysidia elatior Fowl. (*op. cit.* p. 73, t. 8, fig. 22) is a *Heronax*.

Mysidia (?) *spretta* Fowl. (*op. cit.* p. 74) is a *Basileocephalus*.

RHOTANINI.

- a*¹. A triangular cell present at the base of the first median sector.
*b*¹. Face not linear, carinae of face not contiguous DECORA.
*b*². Face linear, carinae of face contiguous to near apex.
*c*¹. Shoulder keels present LEVU.
*c*². Shoulder keels absent or very small RHOTANA.
*a*². No triangular cell at the base of the first median sector SUMANGALA.

DECORA Burm.

The following three species, placed under *Rhotana*, I consider to belong to this genus:—*R. ramentosa* Dist., *R. septemmaculata* Dist., *R. quadrimaculata* Dist.

LEVU Kirk. = ALARA Dist.

The following three species I consider belong to this genus:—*Alara dux* Dist., *Rhotana iridipennis* Mel., *Rhotana opalina* Dist.

SUMANGALA Dist. = MECYNORHYNCHUS Muir.

GENESTIA Stål.

I have not seen this genus; it appears to come near *Rhotana* Walk.

CENCHREINI.

- a*¹. Subantennal process absent or very small.
*b*¹. Shoulder keels absent or very small.
*c*¹. In profile the face and vertex meeting at an angle.
*d*¹. Subcostal cell long.
*e*¹. In profile vertex and face forming an acute angle, head considerably produced PERSIS.
*e*². In profile vertex and face forming an obtuse angle, head not produced GONEOKARA.
*d*². Subcostal cell short VEKUNTA.
*c*². In profile vertex and face forming a curve, not meeting at an angle.
*f*¹. Antennae large, reaching beyond the apex of head, flattened.
*g*¹. Face linear, carinae contiguous to near apex of face; vertex small, triangular PATARA.
*g*². Face narrow but not linear, carinae not contiguous.
. AQUIRRA.
*f*². Antennae small, not reaching to apex of head.
. DAWNARIA.
*b*². Shoulder keels well developed.
*h*¹. Face with a median carina SYNTAMES.

- k*². Face without a median carina.
- i*¹. Subcostal cell short; face not linear, carinae not touching, width of vertex at base subequal to length CENCHREA.
- i*². Subcostal cell long.
- k*¹. Face linear, carinae contiguous to near apex.
 SYMIDIA.
- k*². Face not linear, carinae not contiguous.
- l*¹. Length of vertex subequal to width at base.
 PHACIOCEPHALUS.
- l*². Vertex narrow, much longer than wide.
 BASILEOCEPHALUS.
- a*². Subantennal process well developed.
- m*¹. Shoulder keels absent or very small.*
- n*¹. Subcostal cell long.
- o*¹. Face without a median carina.
- p*¹. Vertex longer than broad, subantennal process forming a semicircular plate below the antenna . . PHENICE.
- p*². Vertex broader than long, subantennal process forming a keel below the antenna HERPIS.
- o*². Face with a distinct median carina EOCENCHREA.
- n*². Subcostal cell short.
- q*¹. In profile face meeting vertex at an angle, subantennal process forming a keel below the antenna.
- r*¹. Antennae small LAMENIA.
- r*². Antennae large NEOLAMENIA.
- q*². In profile face and vertex forming a curve, subantennal process semicircular; antennae ovate, not reaching to apex of head.
 CYCLOMETOPUM.
- m*². Shoulder keels very well developed.
- s*¹. Face very narrow, carinae touching to near apex.
 FORDICIDIA.
- s*². Face broader, lateral carinae not touching.
- t*¹. Subcostal cell starting slightly before middle of tegmina; tegmen long, apex pointed, middle considerably wider than base across middle of clavus NEOCYCLOKARA.
- t*². Subcostal cell longer, starting much nearer to base, apex truncately rounded, sides of tegmina subparallel, base across middle of clavus not much less than across middle.
 HERPIS.

VEKUNTA Dist. = PARADININA Dist.

V. tenella (Melichar) = *P. typica* Dist.

PATARA Westw. = AQUAELICUM Dist.

DAWNARIA Dist. = CYCLOKARA Muir.

* In *Herpis* the shoulder keel is sometimes comparatively large and the species might run down to *Neocyclokara*, but the tegmina are distinct.

PATARA Westw.

P. pattersoni, sp. n.

♂. Antennae large, broad, flat, compressed together at the middle. Face, antennae, pro- and mesonota, and abdominal tergites brown; clypeus, legs, and abdominal sternites light yellow. Tegmina reddish-fuscous, darkest over the base of costal cell and apical third of tegmina, veins concolorous with membrane, whitish at the apex of claval suture and at the apices of all the apical veins; wings fuscous with dark veins.

Ventral and lateral margins of pygofer entire; anal segment small, anus at the apex, each apical corner produced into a small point; genital styles large, narrow at base, ventral edge convex, dorsal edge concave, apex large, round, produced considerably on dorsal edge.

Length 2 mm.; tegmen 3.5 mm.

Hab. GOLD COAST, Aburi (*W. H. Patterson*, 1912-13).

Described from one male specimen. This is the first species of the genus described from Africa, but there is another, from Nyasaland, (represented by a single female specimen) in the collection.

SYNTAMES Fowl.

S. chiriquensis Fowl. = *S. nigrolineatus* Muir.

Syntames delicatus, var. *chiriquensis* Fowl. *op. cit.* p. 139, t. 13, fig. 22 (1905).

This insect is specifically distinct from *S. delicatus* Fowl. (fig. 21), under which it was placed as a variety.

♂. Medio-ventral process of the pygofer small, angular, lateral margins entire, slightly arcuate; anal segment long, narrow, tubular to anus near apex, apex beyond the anus broadened, apex roundly emarginate, each lateral corner forming a curved broad spine; genital styles large, reaching apex of anal segment, ventral edge straight with a narrow, long, flat process about the middle, dorsal edge produced subangularly to middle, apex of projection extended into a flat process longer than broad and turned inward, slightly basad of this the edge is produced into a more angular process, apex acute, curved inward.

The male here described is from Bartica, British Guiana. *S. delicatus* Fowl. has the genital styles broader; the dorsal edge is produced near base, then straight and entire.

S. sufflavus Muir.

The male genital armature of this species differs from that of *S. chiriquensis* in having the genital styles sublanceolate and curved, the ventral edge is slightly produced and turned inward, with a spine-like projection near the base, the dorsal edge is roundly produced in the middle, with a small projection and an emargination near the base, apex pointed and turned slightly inward.

SYMIDIA, gen. n.

Head narrower than thorax; vertex triangular, small, face linear to near apex, formed by the two contiguous carinae which diverge slightly near apex; no subantennal processes; antennae small, globose; clypeus longer than face, feebly tricarinate, rostrum reaching to near the end of the abdomen. Pronotum widely angularly emarginate on hind margin, shoulder keels large, lateral margin turned up and, together with the shoulder keels, forming an antennal chamber; mesonotum tricarinate. Tegmen with the subcostal cell long, cubitus bifurcate, both veins entering the hind margin, clavus narrowly open, media with three sectors, the first sector with three branches and appearing as if part of the cubitus. Wings slightly less than half the length of the tegmina (1-2:2), two distinct cubital veins, anal area small, without veins, the margin striate, forming a "stridulating" area.

This genus approaches the *Zoraidinae* in the structure of the wing, but it cannot be placed among them, as the cubital veins are distinct and the cubital and anal areas are not sufficiently reduced. The tegmen is not unlike that of *Mysidia*.

Type, *S. flava* Muir.

S. flava, sp. n.

♂. Light yellow, a small spot of brown in front of the eyes at the junction of the vertex and face. Tegmina white, hyaline, veins yellowish, with some irregular light brown markings, six small marks in costal cell, an irregular mark in the middle of the cubital area, an irregular broken band from the apex of subcostal cell to apex of cubital veins, slight fuscous marks over the apical portions of the median sectors; wings hyaline, a small fuscous spot in the middle, an irregular transverse mark near apex, and a small spot at apex. Both tegmina and wings opaque with white, powdery, waxy secretion.

Medio-ventral edge of pygofer forming a small triangular projection; anal segment large, narrow at base, widened to the middle and then slightly narrowed to apex, which is angularly emarginate, anus at base; genital styles large, narrow at base, widest in middle, ventral edge entire, gradually produced to middle, then more abruptly reduced, dorsal edge with a semicircular projection near the apex, apex bluntly pointed and slightly turned inward, a keel runs from near the base to the apex near the dorsal margin.

Length 2 mm.; tegmen 4.1 mm.

♀. Genital styles exceedingly small; anal segment very small, sunk into the pregenital segment, ventral edge slightly angularly produced; pregenital plate large, the median third of the posterior margin produced into a sub-lanceolate process with a wide base, the production concave along the middle, the concavity extending to near the base of the pregenital plate.

Length 2 mm.; tegmen 4.25 mm.

Hab. BRITISH GUIANA, Demerara River.

Described from five males and five females.

PHENICE Westwood (1842), Trans. Linn. Soc. Lond. xix. pp. 10, 11.

Type, *Phenice fasciolata* (Boh.), pl. 2, figs. 3, 3 a-c.

See my remarks on the type of this genus, *ante* p. 207.

I have not seen the type of *Derbe fasciolata* Boh., and the specimens standing under that name in the British Museum do not agree in certain points with Westwood's figures, but I shall consider them as typical until I can examine the type or someone redescribes it, if the insect is still in existence. These specimens have the clavus narrowly open; the cubitus with four veins, but only three reach the hind margin; media with four sectors; subcostal cell long, commencing about one-third from the base.

Derbe fritillaris Boh. is represented by several specimens which are congeneric with *Phenice moesta* Westw., and they belong to the genus *Proutista* Kirk., subfamily *Zoraidinae* (*cf. antea*, p. 177).

P. tessellata Westw.

The two specimens standing under this name have tegmina similar to those of *P. fasciolata* (Boh.), but as the subantennal processes are very small, they come nearer to *Dawnaria* Dist.

P. stellulata (Boh.).

The two specimens placed under this name are congeneric with *P. fasciolata* (Boh.), as represented in the collection.

P. neavei, sp. n.

♂. Structurally the same as *P. fasciolata* Boh., as represented in the British Museum collection by two female specimens, but the face is slightly narrower. The subantennal plate is large, about as long as broad; shoulder keels very small.

Head, prothorax, and legs yellow, mesonotum light brown, carinae lighter, abdomen darker brown, anal segment and genital styles yellowish. Tegmina hyaline; subcosta, radius, and media yellow; median sectors, cubitus, and claval veins brown, light fuscous mottling over basal third, more markedly so in clavus; light fuscous over most of the rest of the tegmina, with lighter patches between the median sectors and over radial cell; four small dark marks in the middle of costal cell and a larger one at apex, darker in the narrow subcostal cell and in the subcostal and median apical cells. Wings light fuscous with dark veins.

Anal segment of medium length, broad, narrowest at base, apex rounded and subsinuuous, broadest slightly beyond middle, lateral margins sloping downward and rounded in outline, anus in the apical third; genital styles large, longer than anal segment, ventral edge entire, convexly rounded, dorsal edge

produced into a narrow edge on the basal half, with a small curved spine at the distal corner of the production, apical dorsal edge with a slight notch near apex, apex broadly rounded.

Length 3·7 mm.; tegmen 6·8 mm.

♀. Similar to ♂. Length of anal segment subequal to width, bluntly conical, broadest at the base, ninth tergite produced into a small stout spine at the sides, pregenital plate broader than long, posterior edge straight with a small triangular production in the middle, a longitudinal groove from the posterior edge to near the base.

Length 4 mm.; tegmen 7 mm.

Hab. NYASALAND, Mlanje (*S. A. Neave*).

Described from one male and one female specimen in the B.M. coll. In *P. fasciolata* the anal segment of the female is considerably longer than wide, subconical, evenly and slightly enlarged from base to a third from the apex; the ninth tergite not produced in a spine; the pregenital plate longer than broad, posterior median area swollen.

HERPIS Stål.

H. aburiensis, sp. n.

Shape of the tegmina and the neuration as in typical *Herpis*, but the shoulder keels are more pronounced than is usual in this genus. Vertex broader than long; subantennal process longer than broad.

Ochraceous. Tegmina and veins ochraceous; wings hyaline, veins dark. Both the tegmina and wings covered with white waxy secretion.

Ventral and lateral edges of pygofer straight, entire; anal segment long, narrow, subcylindrical, apex produced into a fine point and curved ventrad; genital styles large, broad, reaching beyond the apex of anal segment, base narrow, apex broadly rounded and produced into a small spine on inner margin, ventral edge slightly convex, entire, the median third of dorsal edge produced into a large quadrate plate about as long as broad.

Length 2·2 mm.; tegmen 3·7 mm.

Hab. GOLD COAST, Aburi (*W. H. Patterson*).

This is the first of this genus to be described from Africa; there is a second species from the same district represented by a damaged female.

FESCENNIA Stål.

I have not seen the type of this genus, and the two species, *F. bimaculata* Dist. and *F. aurea* Dist., standing under the name *Fescennia*, I do not think belong to it. They are very near *Neocyclo-kara* Muir.

OTIOCERINI.

- a*¹. Media not arising from radius or arising before the forking of the subcosta from the radius.
- b*¹. First median sector arising before the apical third of the tegmen.*
- c*¹. First joint of antenna short, length subequal to the width or shorter.
- d*¹. Forking of subcosta and radius at or before the middle of the tegmen (subcostal cell long).
- e*¹. Subantennal process absent or very small; shoulder keels absent or very small.
- f*¹. In profile vertex and face forming a curve, or subconical; face not wider at base than at apex.
- g*¹. In profile head not produced much in front of eyes, margin subparallel to eye . . . PYRRHONEURA.
- g*². In profile head considerably produced in front of eye.
- h*¹. Antennae not reaching to the apex of head.
 PHANTASMATOCERA (in part.).
- h*². Antennae reaching to the apex of head.
- i*¹. Face and vertex in profile rounded.
 KURANDA.
- i*². Face and vertex subconical or narrowly rounded.
 ANOTIA.
- f*². In profile vertex and face forming a distinct angle, or the face wider at the base than at the middle.
- k*¹. Face at base as wide as, or wider than, at the apex.
- l*¹. In profile head widely produced before the eyes, vertex slightly concave . . . PHANTASMATOCERA,
 (in part.).
- l*². In profile head considerably and narrowly produced in front of eyes and curved upward.
 SWEZEYIA.
- k*². Face narrower at base than at apex.
- m*¹. In profile vertex sinuous KAMPULOKARA.
- m*². In profile vertex not sinuous.
1. In profile vertex and face meeting at an angle of about 45° NICERTOIDES.
2. In profile vertex and face meeting at an angle of 45° to 80°; face not strongly curved.
 KAMENDAKA.
3. In profile vertex and face meeting at an angle of about 90°; face strongly curved, especially on apical half EOSACCHARISSA.
- e*². Subantennal process well developed.
- n*¹. Shoulder keels absent or very small.
- o*¹. Vertex and face in profile round; vertex not ascending.
 NESOCORA.

* *Banksiella* has the first median sector in the apical third, but is included in this group.

- o*². Head in profile with vertex ascending.
- p*¹. In profile vertex ascending and curved backward.
.....NESONIPHAS.
- p*². In profile vertex ascending, but not curved backwardNESONEURA.
- n*². Shoulder keels well developed.
- q*¹. Subantennal process spatulate, attached to the gena by a slender stalk.
- r*¹. Face considerably produced in front of eyes; antennae in some species small with large "sense organs," in others with the second joint produced and bearing large "scales" and appearing as if irregularly pectinate, oftentimes differing in the sexesKAHA.
- r*². Face not considerably produced in front of eyes; antennae larger with smaller "sense organs," never with "scales"NESOKAHA.
- q*². Subantennal process not spatulate, attached to the gena by a broad base.
- s*¹. Vertex truncate at apex; lateral carinae of face not contiguousLYRICEN.
- s*². Vertex acutely angular, carinae meeting at apex and continued on to face, face linear, carinae contiguousPARALYRICEN.
- d*². Forking of subcosta and radius beyond the middle of the tegmen (subcostal cell short).
- t*¹. In profile vertex and face meeting at an angle.
- u*¹. Costal margin entire.
1. In profile vertex and face meeting at an angle of about 45°NICERTOIDES.
2. In profile vertex and face meeting at an angle of 45° to 80°; face not strongly curved.
.....KAMENDAKA.
3. In profile vertex and face meeting at an angle of about 90°; face strongly curved, especially on apical half.
.....EOSACCHARISSA.
- u*². Costal margin not entire, more or less sinuous and broken by an angular projection; a distinct precostal area in basal third of tegmenBANKSIELLA.
- t*². In profile vertex and face forming a curve, not angular.
.....MAKULA.
- c*². First joint of antennae long, length more than twice the width.
- v*¹. No subantennal process.
- w*¹. In profile head round, not greatly produced in front of eyes.
.....DENDROKARA.
- w*². In profile vertex and head meeting at an angle or narrowly rounded, considerably produced in front of eyes.
.....OTIOCERUS.
- v*². Subantennal process presentNEODENDROKARA.

- δ^2 . Median sectors confined to the apical third of tegmen.
- x^1 . Length of head twice the length of the pro- and mesonota together.
.....VIVAHA.
- x^2 . Length of head less than twice the length of pro- and mesonota together.
- y^1 . Subcostal cell short.
- z^1 . Antennae large, flatLEPTALFOCERA.
- z^2 . Antennae cylindricalROBIGUS.
- y^2 . Subcostal cell long; antennae cylindrical, in some species simple, in others with a knob at base or horseshoe-shape.
- a^1 . In profile vertex and face forming an angle, or narrowly rounded, produced in front of the eye more than the width of an eyeINTERAMMA.
- a^2 . In profile vertex and face forming a curve, not produced in front of eye so much as the width of an eye.
- b^1 . Head as broad or nearly as broad as the thorax, vertex quadrate, apex truncate, base broader than apex, keels of vertex and face very large, not contiguous on face or only so along the edges.MEGATROPIS.
- b^2 . Head narrower than thorax, vertex triangular, face narrow, keels of vertex and face large, contiguous on faceNICERTA.
- a^2 . Media not separating from radius until after the forking of subcosta and radius.
- c^1 . Subantennal process absent or very small.
- d^1 . Antenna with first joint much longer than wide.
.....PHRA.
- d^2 . Length of the first joint of antennae subequal to width.
- e^1 . Antennae longer than facePLATOCERA.
- e^2 . Antennae not longer than faceHERONAX.
- c^2 . Subantennal process presentMYSIDIoidES.

PYRRHONEURA Kirk.

Kirkaldy treats *Pyrrhoneura* as synonymous with *Makula* Dist., but the latter has a short subcostal cell and the head somewhat differently shaped. The type of *Pyrrhoneura* has a very small shoulder keel. *Otiocerus rubescens* Fowl. (B. C.-A., Rhynch. Homopt. i, p. 76, t. 9, fig. 2) I consider comes into this genus.

P. mlanjensis, sp. n.

♂. Face narrower than in the genotype, the carinae touching or closely approximate until near apex. Head, legs, and ventral aspect of thorax yellow, abdomen and dorsum of thorax reddish brown, slightly lighter over the median portions of pro- and mesonota, genital styles and thoracic pleura lighter and redder. Tegmina fuscous, a white mark in apical half of costal cell, a smaller one in subcostal apical cells, another at the apex of second and third median sectors, a larger one from hind margin at the end of the clavus to the forking

of the cubital veins, and a very small spot in the middle of the basal cubital cell, veins reddish brown, the apical veins bright red; wings fuscous with dark veins.

Ventral edge of pygofer straight, entire, lateral edges angularly produced in the middle; anal segment long, narrow, in dorsal vein subparallel-sided, anus at apex, basad of anus dorsal surface sloping from the middle, distad of anus slightly narrowed, apex truncate; genital styles narrow, slightly longer than anal segment, ventral edge entire, slightly sinuous, dorsal edge widely and shallowly emarginate in middle with the margin turned inward, a minute curved spine on the apical margin of the emargination.

Length 2.4 mm.; tegmen 4.8 mm.

♀. Similar to male. Anal segment minute; pregenital plate large, hind margin widely angularly produced from sides to middle, apex of production rounded, sides slightly sinuous; medio-basal portion constricted off from, and turned ventral at an angle to, the remainder of the plate.

Length 2.6 mm.; tegmen 4.8 mm.

Hab. NYASALAND, Mount Mlanje (*S. A. Neave*).

Described from one male and four females.

KAMENDAKA Distant.

The five genera *Kamendaka* Dist., *Eosaccharissa* Kirk., *Tapoosa* Dist., *Chaprina* Dist., and *Nicertoides* Matsumura, are very closely related, and depend, as far as I can see, upon the shape of the head for their separation. As there is a specific difference in the shape of the head, the genera grade into one another. At one extremity we have the vertex and face in profile forming an angle of about 90°, and the face strongly curved, especially so on the apical portion (*Eosaccharissa*); at the other extremity we have the face and vertex in profile forming an angle of about 45°, and the face not so strongly curved (*Nicertoides*); *Kamendaka*, *Chaprina*, and *Tapoosa* approach *Eosaccharissa*. The slight differences in the shape of the vertex are equally unreliable for generic separation. I therefore consider it best to regard them all as one genus, which will have to take the name *Kamendaka* Dist.; the extreme forms on one side can be regarded as a subgenus, *Eosaccharissa*, and the extreme forms on the other side as another subgenus, *Nicertoides*, while the intermediate forms would form a third, *Kamendaka*. Both *Chaprina* and *Tapoosa* will then sink under *Eosaccharissa*.

One specimen standing under the name *Brixia nivea* Walk. is a *Kamendaka*.

BANKSIELLA Muir.

Originally, this genus was placed by me in the *Nicerta* group, as the median sectors are confined to the apical third of the tegmina; but

WATKINS & DONCASTER, Naturalists.

Keep in stock all Articles for Entomologists, Ornithologists, Botanists, &c.: Umbrella Net, 7/-; Folding Cane or Wire, 3/6, 4/-, 4/6; Plain Ring Net, 1/3, 2/-, 3/-; Pock-
et Boxes, 6d., 9d., 1/-, 1/6; Store Boxes, with Camphor Cells, 2/6, 3/6, 4/-, 5/-, 6/-; Zinc
Pocket Boxes, 9d., 1/-, 1/6, 2/- Setting Boards, from 5d. to 1/10; Complete set
of 14 boards, 10/6; Breeding Cages, 2/6, 4/-, 5/-, 7/6; Sugaring Tins, 1/6, 2/-; Sugaring
Mixture, ready for use, 1/9 per tin; Setting Houses, 9/6, 11/6, 14/-; Glass
Topped and Glass Bottomed Boxes, from 1/- per doz.; Zinc Killing Boxes, 9d., 1/-;
Coleoptera Collecting Bottles, 1/6, 1/8; Collecting Box, containing 26 tubes (very
useful for Coleopterists, Microscopists, &c.), 4/6; Brass Chloroform Bottle, 2/6.

Improved Pocket Pupa-digger in leather sheath (strongly recommended), 1/9; Steel
Forceps, 1/6 to 3/- per pair; Pocket Lens, from 1/6 to 8/6.

Taxidermists' Companion, containing most necessary implements for skinning, 10/6;
Scalpels, with ebony handles, 1/3; Fine Pointed Scissors, 2/- per pair; Brass Blow-
pipes, 4d., 6d.; Egg Drills, 2d., 3d.; ditto, best quality, 9d. each; Botanical Vasou-
lum, 1/6, 2/9, 3/6, 4/6; Label List of British Macro-Lepidoptera, with Latin and
English Names, 1/6; List of British Lepidoptera (every species numbered), 1/-;
or on one side for Labels, 2/-.

SILVER PINS FOR COLLECTORS OF MICRO-LEPIDOPTERA, &c.,

as well as minute insects of all other families.

We stock various sizes and lengths of these Silver Pins, which have certain
advantages over the entomological pins usually employed.

For instance, insects liable to become greasy and verdigrisy, like Sesiidae, are best
pinned on Silver pins, which will last much longer than the ordinary pins (whether
enamelled black, or gilt, or silvered).

We shall be pleased to send pattern cards on application.

A large stock of British, European, and Exotic Lepidoptera,
Coleoptera, and Birds' Eggs.

ENTOMOLOGICAL PINS.

The "DIXON" LAMP NET (invaluable for taking Moths off street lamps
without climbing the lamp posts), 3s. 6d.

SHOW ROOM FOR CABINETS, &c.

36, STRAND, LONDON, W.C., ENGLAND.

Birds and Mammals, &c., Preserved & Mounted by first-class workmen.

Our New Price List (100 pp.) sent post free to any address on application.

FOR SALE.

16 NATURAL HISTORY CABINETS

BELONGING TO THE LATE DR. MASON,

ALSO

FOUR MICROSCOPICAL CABINETS,

Containing Microscopical Slides by G. R. VINE, of Sheffield.

ALSO

400 BRITISH BIRDS IN CASES.

Apply—Mrs. MASON, TRENT HOUSE, BURTON-ON-TRENT.

STEVENS' AUCTION ROOMS. Estd. 1760.
38 King Street, Covent Garden, London, W.C. 2.

TUESDAY, OCTOBER 29TH, AT 12.30.

NATURAL HISTORY SPECIMENS.

Mr. J. C. Stevens will sell by auction—

The Collections of British Lepidoptera formed by the late General Seafield Grant, Lt.-Col. Carlew, and others, including *C. dispar*, *N. subrosea*, and other rare and extinct species, Gynandromorphous examples, together with a number of valuable mahogany Insect Cabinets of forty drawers and smaller. Also Exotic Lepidoptera, Cabinet of Shells, Heads and Horns of big game, Minerals, etc., etc.

On view day prior and morning of Sale. Catalogues on application.

Scale of Charges for Advertisements.

Whole Page.....£3. Half Page.....£1 11s. 6d. Quarter Page.....17s.

Lowest charge, 7s. up to 5 lines; 1s. per line afterwards.

Repeated or continuous Advertisements per contract.

There is no charge for Lists of Duplicates and Desiderata.

All payments and applications for the above should be made to

B. W. LLOYD, I. 5, Albany, Piccadilly, W.

AUTHORS are requested to send their communications and proofs to either

J. J. WALKER, Aorangi, Lonsdale Road, Summertown, Oxford; or

G. C. CHAMPION, Broomhall Road, Horsell, Woking.

ENTOMOLOGICAL NEWS.

A forty-eight page illustrated magazine, issued monthly, except in August and September, devoted to the study of INSECT LIFE. It contains a resumé of the proceedings of a number of Entomological Societies, and also articles by the leading Entomologists in the United States and Canada. Valuable information for the beginner, the economic entomologist, and the systemist. TWO DOLLARS a year in advance. Single copies, 25 cents. Address—

ENTOMOLOGICAL NEWS,

The Academy of Natural Sciences,

1900 RACE STREET, PHILADELPHIA, PA.

THE CANADIAN ENTOMOLOGIST.

A MONTHLY MAGAZINE DEVOTED TO THE STUDY OF SCIENTIFIC ENTOMOLOGY.

Volume 50 is now in course of publication. Back volumes can be supplied. It is the oldest established Magazine of the kind in America, and has a world-wide circulation. Subscription, \$2 per annum, payable in advance, which includes a copy of the Annual Report of the Entomological Society of Ontario to the Legislature. Editor, Dr. E. M. Walker, Biological Department, University of Toronto, Toronto, Canada.

Address: Entomological Society of Ontario, Guelph, Canada.

WICKEN FEN.—The Custodians, the National Trust, appeal to Entomologists for assistance towards the providing of the Watcher who guards the Fen against abuse. This expense, which is absolutely necessary, is provided by voluntary subscriptions, and I am desired to ask for Contributions, which will be gratefully received, however small.—W. G. SHELDON, Honorary Treasurer of the Wicken Fund, Youghave, South Croydon.

A SYNOPSIS OF THE BRITISH SIPHONAPTERA, by the
 Hon. N. CHARLES ROTHSCHILD, M.A., F.L.S., illustrated by Eight Plates
 (issued in the Ent. Mo. Mag. for March, 1915, pp. 49-112), price 1s. 6d. Apply to
 the publishers.

THE BIOLOGY OF DRAGONFLIES

(ODONATA or PARANEUROPTERA)

By B. J. TILLYARD, M.A., B.Sc., F.L.S., F.E.S.

Demy 8vo. pp. xii+398. With 4 plates and 188 text-figures. 15s net.

CAMBRIDGE ZOOLOGICAL SERIES.

"Never before has the group received such detailed and well-balanced treatment as Mr Tillyard has given. . . . Students of the anatomy and development of insects are much indebted to him for providing in this convenient form a trustworthy guide to the external and internal structure of dragonflies at various stages of their life-histories."—*Nature*

Prospectus on application

Cambridge University Press, Fetter Lane, London, E.C. 4, C. F. Clay, Manager

COLEOPTERA ILLUSTRATA,

CARABIDAE.

Vol. 1, No. 3.

CARABIDAE.

PRICE \$1.

CONTENTS.

PRICE \$1.

LEISTUS
ferrugineus Linn.

BLAPHRUS
aureus Mull.

LOBOCERA
pilicornis Fabr.

BROSCOSOMA
baldense Putz.

BEMBIIDIUM
fasciolatum Duft.
articulatum Gyll.

CILLENUS
lateralis Sam.

THALASSOPHILUS
longicornis Sturm.

TRECHUS
discus Fabr.

ANOPHTHALMUS
hirtus Sturm.
v. rostratus Mots.

PTEROSTICHUS

lepidus Leske.
cupreus Linn.
infuscatus Dej.
puncticollis Dej.
orenotus Dej.
barbarus Dej.
carbonicolor Sols.
macer Marsh.
aterrimus Hrbst.
elongatus Duft.
oblongopunctatus Fabr.
angustatus Duft.
melanoscelis Chaud.
niger Schall.
vulgaris Linn.
nigritus Fabr.
minor Gyll.
intersignatus Sturm.
negligens Sturm.
subsinnatus Dej.
brevis Duft.
caspius Men.
cognatus Dej.
aethiops Panz.
globosus Fabr.

PTEROSTICHUS
cylindricus Hrbst.
melas Creutz.

ABAX
aster Vill.
ovalis Duft.
schuppelli Pall.
v. vendschmidtii Germ.
corsicus Dej.

MYAS
chalybaeus Pall.

AMARA
ingenna Duft.

ZABRUS
chalcus Fald.
heros Fald.
seidlitzii Schaum.
gracilis Dej.
blapoides Creutz.

ANISODACTYLUS
binotatus Dej.
signatus Panz.

ACCURATE ENLARGED PEN DRAWINGS, UNIFORM IN SIZE,
ONE TO A PAGE 8vo.

COLEOPTERA ILLUSTRATA will be mailed upon receipt of price.
 HOWARD NOTMAN, 136 JOBLEMON STREET, BROOKLYN, N.Y., U.S.A.
 Vol. I, Nos. 1 and 2, \$1 each.

CONTENTS.

	PAGE
New Oriental Staphylinidæ (3) (continued).— <i>M. Cameron, M.B., R.N., F.E.S.</i> ...	217
New and little-known saltatorial Dascillidæ (continued).— <i>G. C. Champion, F.Z.S.</i>	219
On Gynarchy in Coleoptera.— <i>H. Donisthorpe, F.Z.S.</i>	225
<i>Hammaticherus lacordairei</i> Gahan at Swansea.— <i>J. R. le B. Tomlin, M.A., F.E.S.</i>	225
Early appearance of <i>Macroglossa stellatarum</i> .— <i>T. R. Hyde</i>	225
<i>Nomada furva</i> K. and its hosts.— <i>R. C. L. Perkins, D.Sc., M.A., F.E.S.</i>	226
The Bionomics of the Common Earwig.— <i>H. Champion</i>	226
<i>Orthotylus virens</i> Fall.— <i>F. H. Day, F.E.S.</i>	227
SOCIETY.—South London Entomological Society	227
Notes on the Derbidae in the British Museum Collection.— <i>H. Derbinae</i> .— <i>F. Muir, F.E.S.</i>	238

THE NATURALIST:

A MONTHLY ILLUSTRATED JOURNAL OF

NATURAL HISTORY FOR THE NORTH OF ENGLAND

EDITED BY

T. SHEPPARD, M.Sc., F.G.S., F.R.G.S., F.S.A.Scot.,

THE MUSEUM, HULL;

AND

T. W. WOODHEAD, Ph.D., M.Sc., F.L.S.,

TECHNICAL COLLEGE, HUDDERSFIELD;

WITH THE ASSISTANCE AS REFEREES IN SPECIAL DEPARTMENTS OF

J. GILBERT BAKER, F.R.S., F.L.S., GEO. T. PORRETT, F.L.S., F.E.S.,

Prof. P. F. KENDALL, M.Sc., F.G.S. JOHN W. TAYLOR, M.Sc.,

RILEY FORTUNE, F.Z.S.

The Journal is one of the oldest Scientific Periodicals in the British Isles, dating back to 1833, and is circulated widely amongst the principal Naturalists of the country.

LONDON: A. BROWN AND SONS, LIMITED, 5, FARRINGTON AVENUE, E.C.

And at Hull and York.

PRICE, SIXPENCE NET. BY POST SEVENPENCE.

Prepaid Subscription, 6s. 6d. per annum, post free.

The Annual Subscription for 1918 is 9/-.

[See p. 2 of Wrapper.]

Third Series, No. 47. NOVEMBER, 1918. [PRICE 1/- NET.
[No. 654.]

THE
ENTOMOLOGIST'S
MONTHLY MAGAZINE.

EDITED BY

G. C. CHAMPION, F.Z.S. J. E. COLLIN, F.E.S.

W. W. FOWLER, D.Sc., M.A., F.L.S.

R. W. LLOYD, F.E.S. G. T. PORRITT, F.L.S.

J. J. WALKER, M.A., R.N., F.L.S.

VOLUME LIV.

[THIRD SERIES—VOL. IV.]

"Pengage donc tous à éviter dans leurs écrits toute personnalité,
toute allusion dépassant les limites de la discussion la plus sincère et la
plus courtoise."—*Laboulbène*.

LONDON:

GURNEY & JACKSON (MR. VAN VOORST'S SUCCESSORS),
39, PATERNOSTER ROW, E.C. 4.

TAYLOR AND FRANCIS, RED LION COURT, FLEET STREET.



NOTICE.—Owing to the greatly increased cost of paper, printing, etc., the Editors of the Magazine are compelled to raise the subscription to 9s. per annum (post free). Subscriptions for the 1919 volume should be remitted as soon as possible to **R. W. LLOYD, 1, 5, Albany, Piccadilly, London, W. 1.**

The price of a single ordinary number is 1s.

AUTHORS requiring separate copies of their papers (which can be supplied at small cost) are requested to mark the number wanted on their MS.

REDUCED PRICES FOR BACK VOLUMES.

FIRST SERIES.

This can only be obtained in complete Volumes (bound or unbound).

A limited number of sets, from Vol. x to Vol. xxv can still be obtained at £2 15s. per set net (in parts), or of five consecutive Vols. at £1 per set net (if bound, 1s. per Vol. extra).

Certain of the Vols. i to ix can be had separately at 10s. each.

SECOND SERIES.

Vols. i to xv. are now offered at £3 per set net (in parts), or £1 2s. 6d. for five consecutive Vols. (if bound, 1/- per Vol. extra).

THIRD SERIES.

Vol. li (Third Series, Vol. i) can be supplied by the Publishers at 7/6 (8/6 if bound) per copy. Cover for binding, 1/-.

Vol. li (1915) contains 23 Plates (one coloured), a complete Monograph of the British Siphonaptera, and numerous extra pages of text.

Apply to the Publishers.

MEETINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON, 11, Chandos Street, Cavendish Square, W.—Wednesday, November 6th, 20th, December 4th, January 15th, 1919 (Annual Meeting).

The Chair will be taken at 8 o'clock in the evening precisely.

The Library is open daily from 9 a.m. to 6 p.m. (except on Saturdays, when it is closed at 2 p.m.), and until 10 p.m. on Meeting nights.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge. The Second & Fourth Thursdays in each month, at 7 p.m. The lantern will be at the disposal of Members for the exhibition of slides.

The Chair will be taken punctually at 8 o'clock.

THE LONDON NATURAL HISTORY SOCIETY, which meets at 7 p.m. on the 1st and 3rd Tuesdays in each month, at Room 20, Salisbury House, Finsbury Circus, E.C., will be glad to welcome at its Meetings any French or Belgian entomologists now staying in this country, and to give them the benefit of its library and collections. Communications should be addressed to the Secretary, Salisbury House, E.C.

Hon. Sec.: J. Ross, 18, Queen's Grove Road, Chingford, N.E.

Chingford Branch. The Chingford Local Branch meets at the Avenue Cafe, opposite Chingford Station, at 8 p.m., on the 2nd Monday in each month.

it comes near to the *Kamendaka* group. *Tupoosa elegantula* Dist. belongs to it and has the first median sector well before the apical third.

MAKULA Distant.

Brixia testacea Walk. is a *Phaciocephalus*, and *B. pictipennis* Walk. is a *Basileocephalus*; they have both been wrongly placed under *Makula*.

INTERAMMA Walker.

I. ascendens Walk. must be the type of this genus, as it is upon that species the generic description was based. *I. angusta* Walk. differs from the type, and *I. subvaria* Walk. was placed by him in a different section. *Nicerta* and *Megatropis* are closely allied, and the species placed under them require further study.

ROBIGUS Distant.

This genus is stated to have the costal margin "distinctly broken by an irregular, raised, longitudinal, cellular interspace," and is figured with the costal margin broken at the apex of the subcostal cell. The specimen upon which *Robigus* is founded has the tegmina bent slightly at this point, the left more so than the right, but there is no such raised cellular interspace as described. Both the wings and the tegmina of the specimens are badly crumpled, as if they were not fully developed.

R. pattersoni, sp. n.

Tegmina typical of the genus, the subcostal cell short. Head wider and in profile more produced than in the type species, the antennae reaching slightly beyond the apex of the head.

Light yellow; genae before eyes, face, antennae, and base of clypeus bright red. Tegmina yellow with a broken, irregular, longitudinal, bright red mark down the middle, a broken fork proceeds from the first median sector to the apex of the subcostal cell with a small spot between the forks, a small spot on the hind margin slightly beyond the apex of the clavus, veins concolorous as in membrane; wings white with white veins, covered with a fine, powdery, waxy secretion.

Ventral edge of pygofer straight, entire, lateral edges entire, slightly curved; anal segment large, convex on ventral aspect, concave on dorsal aspect, slightly narrowed at base, wide at apex, which is shallowly, roundly emarginate, each apical corner is produced into a stout spine curved ventrad; genital styles large, wide, ventral edge curved, entire, dorsal edge straighter, with a small, flat, curved process from the middle, apex pointed and turned dorsad.

Length 4 mm.; tegmen 6 mm.

Hab. GOLD COAST, Aburi (*W. H. Patterson*).

Described from one male specimen. There are also in the Museum two similarly coloured females, with the head in profile distinctly helmet-shaped—one from Durban, Natal (*F. Leigh*), and the other from Mount Mlanje, Nyasaland (*S. A. Neave*). They probably represent another species, but I refrain from naming them in the absence of a male.

PHRA Distant.

The type of this genus, *P. amplificata* Dist., is represented in the collection by two females in damaged condition, and neither of them agrees with the generic description or the figures. The description says that the antennae are "short, robust," and are so figured, but the specimens have the first joint long and the second joint complex, somewhat as in *Otiocerus*. The figures of the head show a very large subantennal plate, but the specimen possesses none. I shall look upon the insect marked type as the correct type, and ignore the description and the figures of the head. The specific description founded upon colour agrees with the dorsal view of the insect as figured and with the type. The second joint of the antennae is composed of two parts: a short thick portion on which the arista is situated and a ribbon-like appendage.

P. atromaculata Dist.

This species is represented by one male specimen which is congeneric with *P. amplificata* Dist., but the second joint of the antennae consists of three parts: a small short process on which the arista is situated and two more or less ribbon-like appendages, one much longer than the other.

P. pictipennis Dist.

This is represented by one female specimen, which has well-developed shoulder keels and subantennal plates, and is a *Mysidioides* Mats. (= *Neocyclometopum* Muir).

ARCHA Distant.

This genus differs slightly in the shape of the head from *Heronax* Kirk., but otherwise is the same, and I consider them to be synonymous. *Archa* has the apical joint of the labium longer than usual in the *Derbidae*, nevertheless, in my opinion, it cannot be excluded from that family.

VINATA Distant.

This genus should be placed in the *Cixiidae*. I have one species from the Philippines in which the males have the large antennae characteristic of the genus and the females these organs much smaller and almost normal.

The genera *Kermesia* Dist., *Alara* Dist., *Inxwala* Dist., *Suva* Kirk., and *Nisi* Melichar, I reject from the *Derbidae*. They have the median ocelli and the glandular surface on the female pygofer common to many *Cixiidae*.

I have not seen authentic specimens of the following genera:—
Deribia, *Persis*, *Fescennia*, *Nebrissa*, *Flaccia*, *Labicerus*.

NOTE.

The following description was omitted under *Proutista* in Part I, ante p. 177:—

P. wilemani, sp. n.

Typical of genus, the second joint of rostrum slightly widened and flattened. Ochraceous, face and keels of thorax lighter. Tegmina hyaline, slightly ochraceous over basal third, darker ochraceous brown or fuscous over subcostal and radial cells, reaching radial cross-vein and extending in apical median cell and over the base of each median sector, a large mark at the apex of each vein along the hind margin and a fuscous mark on each side of each gradate cross-vein of median sectors and cubitals but not touching the cross-veins, five pairs of small dark marks in apical portion of costal cell, veins ochraceous; wings lightly fuscous with darker veins.

Anal segment long, narrow, anus about one-third from base, basad of anus there is a small conical process, distad of anus the dorsal side excavate, apex pointed and turned slightly ventral, at the point where the apex turns ventrad each side is produced into a small point, making the apex three-pronged; genital styles long, narrow and curved, widest on basal third, the apex of the right style is truncate or slightly excavate with each corner produced into a small projection, the left style with apex pointed.

Length 3 mm.; tegmen 6 mm.

Hab. FORMOSA, Anping (*A. R. Wileman*).

Described from one male specimen in the B.M. coll.

London.

July 1918.

MELANOPHILA ACUMINATA DE G. IN BERKSHIRE.

BY W. E. SHARP, F.E.S.

This Buprestid beetle took its place in the British fauna owing to its discovery at Woking by Mr. G. C. Champion in August 1909. In his record of its capture (*Ent. Mo. Mag.* 1909, p. 249) Mr. Champion tells how he took the insect on the trunks of pines charred and blackened by fire, how quickly it took to flight, and how great was the variation in its size.

Further specimens were taken in the same district during the two or three following years, and it was also found by Dr. Sharp and Mr. Ford in the New Forest about the same period.

The similarity of the pine-wooded country round Crowthorne to that of Woking had long suggested the possibility of the presence of *Melanophila* here, but, so far as I am aware, it was only in 1917 that its existence was actually verified by the quite accidental capture of two or three specimens by one of the students of Wellington College.

Now, before proceeding to a relation of the discovery of the beetle here this year, it should be premised that in this district of heathery wastes, mosses, and woods of comparatively young pines, after periods of dry, hot summer weather, fires, originating perhaps from the discarded match of some careless smoker, which often destroy before they are extinguished many acres of heather and young trees, are of no infrequent occurrence. It was over ground so devastated by some former fire that Mr. Bedwell and myself one day towards the end of last August commenced our search for *M. acuminata*. A single specimen only taken on a charred pine stump by the pertinacity of Mr. Bedwell had been the result of our labours, when, guided by the blue haze of distant smoke, we arrived at a spot where a fire was actually in progress, and there on a smoking pine stump Mr. Bedwell at once detected the object of our search; others were soon seen, and there, scorched by the burning peat, and half choked by the blinding smoke, we added a quite novel episode to our experiences of collecting beetles, for on ground on which it was too hot to place one's hand, many *Melanophila* were running. They were settled, often "in cop.," on pine stumps actually glowing, or flying under a blazing August sun through drifts of acrid peat smoke, as though such fiery conditions completely satisfied them. Indeed, I am convinced that these beetles thoroughly enjoyed a temperature too high for the existence of any living thing, except a Dipteron which appeared to share their habitat; and congregated in that small area of, at the most, a few acres, probably attracted by the far-reaching smell of burning peat and pine stumps, were these insects bred and born over perhaps many square miles of the rough country around.

We especially noticed, in corroboration of Mr. Champion's statement, the extreme variation in their size and their remarkable agility, for our shadow falling on one settled on a log or stump was quite sufficient to make it instantly take to wing, thus making their capture exceedingly difficult.

This infatuation of the *Melanophila* for a situation which suggests the precincts of Tartarus, is of course no novel discovery. Mr. Champion quotes (Ent. Mo. Mag. 1913, p. 109), from a paper by Mr. A. H. Mann, the almost exactly parallel case of *M. notata* Lap. & Gory in N. Carolina; and the publication of the observation of a similar habit of another *Melanophila* in India by Mr. H. G. Champion in the September issue of this Magazine was curiously coincident with our experience of *M. acuminata* here.

Now the interest of this narration lies, perhaps, not so much in the evidence it affords that this beetle is extending its range in the South of England, as in the biological problems which it evokes. We must, in the first place, certainly admit that *M. acuminata* offers a remarkably good example of cryptic protective resemblance, for the wrinkled dull ♀ or somewhat shining ♂ elytra so exactly match the charred surface of the pine bark on which they usually rest that detection until they move becomes almost impossible.

Thus we may explain its morphology and colour, but not the development of the singular attraction which heat has for the insect. That of simply charred wood is a different matter, and such insects as *Pterostichus angustatus*, *Agonum 4-punctatum*, *Sphaeriestes*, and others, may find in such places conditions which are favourable to their own larval existence because they have been cleared by former heat of other subcortical enemies or competitors.

But no such factors are involved in the attractive influence of heat alone. We found pairs of this beetle "in cop." on timber whose complete destruction by fire seemed imminent,—and if oviposition took place in such a situation it is evident that instead of any advantage a very serious risk of a similar fate would be run by any resulting progeny. One can only conjecture that the females flew to some safer spot, where although the trees might be charred they were not actually alight, before they commenced to deposit ova. The utility therefore in the ontogeny of the beetle of the heat attraction still remains unexplained, and as such I must leave it.

"The Bungalow," Crowthorne, Berks.

October 7th, 1918.

THE BUTTERFLIES OF THE OXFORD DISTRICT.

BY JAMES J. WALKER, M.A., R.N., F.L.S.

The varied geological formation of the country immediately adjacent to Oxford, and its rich flora and extensive tracts of woodland, some of them dating from very ancient times, are eminently favourable to butterfly-life; while the number of able resident collectors and observers, as well as the constant succession of enthusiastic young entomologists supplied by the University up to the commencement of the present war, has ensured its being one of the most thoroughly worked districts in the British Islands. Unfortunately the only fairly complete list of the local *Lepidoptera*, published in the Report of the Ashmolean Natural History Society for 1898, gives no details beyond the initials of the captor or observer of each species; but I found it of much service when, in 1912, I compiled a sketch of the insect fauna of the Oxford district for the use of the guide-book issued to the members of the International Congress of Entomology held here in that year, and of this the present paper, as far as the *Rhopalocera* are concerned, may be regarded as a reproduction, amplified and brought up to date where requisite. The list of *Lepidoptera* in the Victoria County History of Berkshire (1905), mainly compiled by Messrs. A. H. Hamm and W. Holland, though dealing with only a portion of the district, has also been of very material assistance in compiling these notes.

Of our 67 species of butterflies regarded as truly British, we now have definite records of 44 as having been observed in recent times within a radius of 10 miles from Carfax, the centre of Oxford, in addition to two or three species which may have formerly occurred within these limits. This tract of country is about equally divided by the Isis between the counties of Oxfordshire and Berkshire, and attains its highest elevation, 562 feet, at Shotover Hill, about three miles east of the city. It is well within sight of the beautiful and productive chalk ranges of the Chilterns and the Berkshire Downs, but does not include any portion of either; though one or two of the characteristic butterflies of the chalk, as *Agriades corydon* and (possibly) *Zizera minima*, have wandered from thence and have established themselves in outlying stations in the District. On the whole, our Oxford butterflies appear to hold their own very well from year to year, despite the fact that much of our old woodland has been drastically thinned out, and in great part replanted with uninteresting and unproductive Conifers.

Both *Pieris brassicae* and *P. rapae* are of course plentiful throughout the district, but, especially the former, vary greatly in that respect

in different years; and their abundance here is no doubt largely affected by the vigorous crusade against them by school children, "head-money" for no fewer than 6000 "white" butterflies having been paid to one parish school alone, during the present year. In the autumn of 1917 the larvae of *P. brassicae* were most abundant, but were infested with the parasite *Apanteles glomeratus* to such an extent, that it is doubtful whether 1 per cent. of the whole number were able to reach the pupa state. *P. napi* is the commonest butterfly of our flowery water-meadows and river banks, and as usual exhibits a great range of variation in intensity of markings; in July 1910 I took at Cothill, Berks, an albino example of a clear creamy-white colour, without a single black scale in any part. *Euchloë cardamines* is also plentiful in most years, and is a conspicuous and beautiful feature of our grassy lanes and wood openings in May and June, specimens in good condition being sometimes seen well into July. *Colias edusa* and *C. hyale* are very uncertain in their appearance, and are never as plentiful as on the South Coast, but the former occurs sometimes in fair numbers, as was the case with *C. hyale* in the lucerne fields near Cowley in 1901 and 1902; and a fine specimen of the latter species was observed by Mr. J. Collins and myself in August 1911 at Weston-on-the-Green, Oxon (Ent. Mo. Mag. 1911, p. 217). *Gonepteryx rhamni* is common throughout the District, and specimens newly awakened from their winter sleep may often be seen in the main thoroughfares of Oxford on bright days in February and March, while the larva may be found readily enough on the buckthorn bushes at the proper season.

Apatura iris is by no means common, but has been taken at intervals in Bagley and other large woods, and Mr. A. H. Hamm on one occasion saw a fine ♀ on one of the roads near Shotover Hill; and on August 10th of the present year I saw a battered ♀ in a wood near Forest Hill, Oxon, where the butterfly had been previously seen by Mr. Collins, who also reported *Limenitis sibylla* from the same wood; the latter species has also occurred at Bagley Wood and near Radley. *Polygonia c-album* is also a rare visitor to the District, but it appears to be not uncommon at Wychwood Forest, Oxon; I saw two specimens, and caught one, on bramble-blossom near Tubney Wood, Berks, on August 12th of this year, and my friend Lieut. E. G. R. Waters took a fine example at Wytham Park on September 27th. *Eugonia polychloros* has been found in both the larva and perfect states in the immediate neighbourhood of Oxford, but is decidedly rare, and my experience of the butterfly is confined to the sight of a specimen in one of the main roads in 1911. *Aglais urticae* is usually plentiful, but in

some years, as in 1916, is quite scarce, while *Vanessa io* is generally abundant—much more so, in fact, than I used to find it in Kent. I have no definite record of *V. antiopa* from Oxford itself, but in the University Museum collection there is a very fine specimen taken by the Rev. J. W. B. Bell in August 1900 on a sugared post at Pyrton, near Watlington, and just outside our limits. *Pyrameis cardui* and *P. atalanta* are as irregular in their appearance here as elsewhere, the latter being the more “dependable,” but during the present year it has been most markedly rare, as I have not seen a single specimen myself, and have heard of but one or two at most as having been observed. *Dryas paphia* is common in the larger woods, but I saw a specimen in my own garden in July last, and on August 10th of this year, though then mostly in worn condition, it was as numerous near Forest Hill as in the New Forest a few weeks earlier. *Argynnis adippe* also abounds in Bagley and Tubney Woods, and in 1905 I took at the latter locality a beautiful variety of the ♂, having the basal and central black markings of both wings almost entirely suppressed. *A. aglaia* is decidedly rare, but has been observed this year in the large woods beyond Forest Hill by myself and others. *Brenthis euphrosyne* is abundant in most of our woods in May; a curious variety of a clear pale ochreous ground-colour above and beneath, now in the University Museum, was taken in Tubney Wood by the Rev. C. F. Thornewill on May 29th, 1916. *B. selene* is less common and more local, but occurs freely in damp spots in Tubney Wood; in the very hot summer of 1911 a partial second brood of small specimens appeared in August, of which there is a good series in the Museum. *Melitaea aurinia*, which formerly occurred at Bagley Wood, Headington Wick, and other localities in the district, now appears to be confined to a limited area near Cothill, Berks, where it varies greatly in numbers in different years. Although constantly on the spot from 1905 onwards, I did not see a specimen before May 22nd, 1909, when I found it flying in abundance, and very fine and variable; for several seasons afterwards it continued to appear more or less plentifully, but had become very scarce, or apparently absent from about 1914 until the present year, when it reappeared in something like its former abundance on May 25th.

Melanargia galatea is distributed over a considerable area of level country between Abingdon and Tubney, where it is found in abundance in grassy lanes, sandy and boggy fields, and is even a common roadside butterfly; it also occurs commonly in several places in Oxfordshire, as at Holton stone-pits near Wheatley. On the other hand, *Pararge aegeria* is singularly scarce, as I have heard of the occurrence of only

one or two examples in our neighbourhood, though some of our woods appear eminently adapted for it. *P. megaera* is in some years also rather scarce, though in others, notably in 1917 and the present season, it has been exceedingly numerous, especially in the second brood. *Epinephile ianira* is abundant throughout the District, and a partial second brood of richly coloured specimens is sometimes observed in hot summers. *E. tithonus* is abundant in lanes and on roadsides, and *Aphantopus hyperanthus* in most years is very plentiful at bramble-blossoms in the woods; the var. *arete* is occasionally met with at Bagley, and I have taken a curious pale fuscous form at Cothill. *Coenonympha pamphilus* is, as usual, plentiful in dry places, but I have seen no striking variations of this species.

Zephyrus betulae is somewhat uncommon, but has been observed in more than one of our woods, and has its headquarters at Bagley; *Z. quercus* being much more common and widely distributed, and occurring occasionally in numbers (cf. Ent. Mo. Mag. 1918, p. 211). The entomological event of the present year is the discovery by a schoolboy, Walter Burrows, of *Strymon pruni* on June 23rd in a remote and not very accessible wood near the limits of our District; he kindly disclosed the locality to the Museum staff, and in consequence I had the pleasure on July 3rd of seeing this very interesting little butterfly alive for the first time, and of taking three or four good specimens on the blossom of the privet. *Thecla w-album* is fairly common about elms, and on bramble and privet-blossom at Radley, Besselsleigh, and Tubney, and *Callophrys rubi* is plentiful in woody places. *Rumicia phlaeas*, abundant in most years (especially so in 1911) sometimes presents very interesting variations, the var. *radiata* Tutt having occurred to me more than once at Tubney, and in the Museum is a beautiful example of the silvery-white form usually known as *schmidtii*, which was taken by Mr. W. Holland at Hen Wood, Berks, in August 1903. *Aricia astrarche* is common, especially at Tubney, and *Lycaena icarus* is usually plentiful in grassy places, but has been decidedly scarce this season. *Agriades corydon*, so abundant on the chalk hills beyond our limits, was up to 1916 known only from the District by single examples found casually on Shotover Hill and elsewhere, but in August of that year I found a station for the species on a limestone down between Headington and Stanton St. John, Oxon, where it is not rare, though very local. *Cyaniris argiolus* frequents the Oxford gardens and the "Parks," as well as the more rural lanes, and has of recent years become exceedingly common, especially in the spring brood, which is sometimes fully out in April; this year it appeared, with *Pieris rapae*,

as early as March 23rd. *Zizera minima* has been recorded for the District in the "Ashmolean" list by the late Mr. F. W. Lambert, but is evidently local and rare, and I know of no recent captures of the species.

One of the most interesting of our smaller woodland butterflies is the lively little *Nemeobius lucina*, which may be called abundant in places where primroses and cowslips grow freely at Bagley and Tubney Woods, Cothill, Wytham Park, &c., in May and early June. *Hesperia malvae* and *Thanaos tages* are both common, especially in the open parts of Wytham Park; and *Adopaea thaumas* and *Augiades sylvanus* are equally or more plentiful as well as more generally distributed.

Two other butterflies may at a former period have had a claim to a place on our Oxford list, though they have certainly not been observed in the District in recent years. Bagley Wood is given as a locality for *Melitaea athalia* in Morris's "British Butterflies," but the nature of the ground looks, to say the least, unlikely for this species, and its usual food-plant, *Melampyrum pratense*, is decidedly uncommon in the neighbourhood of Oxford. *Carterocephalus palaemon* was certainly met with in past years not rarely at Wychwood Forest, Enstone, and one or two other Oxfordshire localities, and probably still exists in some of these stations; but the rumour that it was formerly taken in Bagley Wood still lacks confirmation.

Aorangi, Lonsdale Road,
Summertown, Oxford.
October 15th, 1918.

Coleoptera in the Plymouth district and from the Lizard, Cornwall.—*Anchomenus parumpunctatus*, ab. **tibialis* Heer, one, edge of bog, Shaugh Moor, v/15; **Atheta excellens* Kr., one ♂, out of moss on boulder, in the river, near Cadover Bridge, viii/16; **A. perexigua* Shp. and *A. liliputana* Bris. (teste Dr. Cameron), a single example of each, swept off grass in a field, Spriddlestone, Brixton, vi/16; **Placusa tachyporoides* Waltl, two, at sap of felled tree, near Lee Mill, v/16; *Tachinus rufipennis* Gyll., ♂ and ♀, in sugar-trap, Shaugh, x/15; *Neuraphes angulatus* Müll., one, swept from hedge, near Yealmpton, v/16, and *N. longicollis* Mots., one, swept from hedge, Plympton, v/18 (both teste E. A. Newbery); **Pteryx suturalis* Heer, three, under bark of decaying fir, Plympton, v/18; **Corylophus sublaevipennis* Duv., one, at roots in the sand, Dowerry (Cornwall), viii/05; **Clambus punctulum* Beck, two, Yelverton, vi/14, Ivybridge, ii/94, Cann Woods, vi/97; **Trachyphloeus myrmecophilus* Seidl., one, with *Formica*, Whitsands (Cornwall), v/11; *Limnobaris t-album* L., many examples, near Saltash (Cornwall), vi/15, and Bere Ferrers (Devon), vi/16; **Deponatus mannerheimi* Humm. (*megacephalus* Germ.),

on birch, in some numbers, but restricted to three trees, Shaugh, vii/16; **Chrysomela marginalis* Duft., several examples, and also the larvae, on *Linaria* (each plant yielding one larva only), in hedge near Stoke Bay, vi & vii/17. The larvae were easy to rear, and a single specimen of a Tachinid fly, bred from one of them, has been kindly determined for me as *Macquartia grisea* Fln. by Mr. C. W. Bracken. Amongst a considerable number of insects sent to me by my friend Mr. N. Micklewood when spending a few days at The Lizard, Cornwall, in July 1917 and June 1918, the following Coleoptera occurred:—**Masoreus wetterhali* Gyll., one; **Cardiophorus erichsoni* Buyss., one; *Cathormiocerus maritimus* Rye, one; **Apion curtisi* Walt., six; **A. sedi* Germ., three. Also single examples of the Hemiptera, *Strachia oleracea* L., and *Sciocoris cursitans* Fab. Species starred are, I believe, new records for the lists of the respective counties.—J. H. KEYS, 7 Whimple Street, Plymouth: October 4th, 1918.

Geotrupes typhoeus L. in Flanders.—On 27th November, 1917, when climbing Mt. Kemmel in Flanders in order to obtain a better view of certain military operations then in progress, I caught sight of a Geotrupid-looking beetle crawling on the wet grass close to the track on which I was walking. The conditions were not such as to permit examination of the beetle, but it was hastily seized, put into a matchbox—the one receptacle I had on me—and later on in the evening, when we had returned to our headquarters in a safer locality, I found the insect was a fine female specimen of *Geotrupes typhoeus* L. The mildness of the autumn up to that period in Flanders was attested by the fact that this insect was still crawling about in the open. The beetle has been placed in my European collection as an interesting memento of a memorable day and of a hill towards which the eyes of all English-speaking people were turned with such anxiety a few months ago.—T. HUDSON BEARE, 10 Regent Terrace Edinburgh: October 10th, 1918.

Coleoptera captured in the garden of the Hospital of St. Jean, Arras, France.—I have just had the pleasure of naming a collection of *Coleoptera* made by Major H. M. Vickers, R.A.M.C., in the small garden of the Hospital of St. Jean, Arras, during the last fortnight of May and the first week of June 1918. The hospital is situated in the heart of the town, and the small garden attached to it is about 10 yards broad by 15 yards long; there are two small cherry-trees, a sycamore, and a syringa, and there were a few flowers in the various flower-beds. It may be mentioned that during the period in which the beetles were taken, Arras was repeatedly shelled by the Germans. Only three species are not British, viz., *Valgus hemipterus* L., *Agriotes pilosus* Panz., and *Chlorophanus viridis* L.; there is a specimen of *Agriotes pilosus* in the Power collection at the British Museum, but this specimen was certainly an accidental importation. There are three other species in the collection which are reputed to be British, but from the records of the captures which have been made at various times they are probably not strictly indigenous to Britain, viz., *Carabus auratus* L. (which was fairly common), *Crioceris lilii* Scop. (several specimens taken), and *Callidium sanguineum* L. (only one specimen taken). All the other species in the collection are fairly common in Great Britain, and a list of these is given:—*Notiophilus biguttatus* F.; *Dyschirius aeneus* Dj.; *Bembidium lampros* Hbst.; *Tachypus flavipes* L.; *Panagaeus*

quadripustulatus Fab.; *Badister bipustulatus* F.; *Pterostichus madidus* F., *P. vulgaris* L.; *Harpalus aeneus* F., *H. rufibarbis* F.; *Anchomenus sex-punctatus* L.; *Leistus spinibarbis* F.; *Amara ovata* F., *A. aenea* De G. (*trivialis* Gyll.), *A. plebeia* Gyll.; *Bradycellus verbasci* Duft.; *Stomis pumicatus* Pz.; *Cercyon unipunctatus* L.; *Megasternum boletophagum* Marsh.; *Philonthus politus* F.; *Aleochara fuscipes* F.; *Xantholinus linearis* Ol.; *Oxytelus inustus* Gr.; *Stenus argus* Gr., *S. similis* Hbst.; *Trichius fasciatus* L.; *Onthophagus coenobita* Hbst.; *Aphodius merdarius* F.; *Athous haemorrhoidalis* F.; *Agriotes obscurus* L.; *Dasytes plumbeus* Müll.; *Corynetes coerules* De G.; *Telephorus fuscus* L., *T. lividus* L., *T. lividus*, v. *dispar* F., *T. nigricans* Müll.; *T. bicolor* F.; *Xestobium tessellatum* F.; *Chrysomela polita* L., *C. marginalis* Duft.; *Gastroidea viridula* De G., *G. polygoni* L.; *Phyllodecta vulgatis-sima* L.; *Haltica pusilla* Duft.; *Phyllotreta nemorum* L.; *Plectroscelis concinna* Marsh.; *Cassida viridis* L., *C. nobilis* L.; *Hister cadaverinus* Hoff.; *Silpha rugosa* L., *S. sinuata* F.; *Necrophorus vespillo* L.; *Adalia bipunctata* L.; *Halysia conglobata* L.; *Simplocaria semistriata* F.; *Cytilus varius* F.; *Attagenus pellio* L.; *Antherophagus pallens* Ol.; *Anthrenus museorum* L.; *Choleva chrysmeloides* Pz.; *Byturus tomentosus* F.; *Omosita colon* L., *O. discoidea* F.; *Nitidula rufipes* L.; *Pyrochroa serraticornis* Scop.; *Otiorrhynchus sulcatus* F., *O. scabrosus* Marsh.; *Phyllobius pyri* L.; *P. oblongus* L.; *Hypera polbux* F.; *Anthonomus ulmi* De G.; *Ceuthorrhynchus assimilis* Pk.; *Magdalis pruni* L.; *Brachytarsus fasciatus* Först. The only species in the above list which calls for comment is *Brachytarsus fasciatus* Först.; Major Vickers captured several specimens of this species at large and also several in the cases of Coccids feeding on the sycamore, the species of the Coccid being *Lecanium capreae*.—

T. HUDSON BEARE.

Hemiptera in Northumberland.—I had a few days' collecting early last July in the valley of the North Tyne, between Wark and Bellingham, and was fortunate enough to capture several species of interest. The first insect met with was a specimen of *Deltocephalus abdominalis* Fab., fished out of a burn. This species proved afterwards to be very common. Sweeping the edge of this burn produced numerous *Pithanus maerkeli* H. S., and a single *Livilla ulicis* Curt. from some rushes. On the alders fringing the burn, *Psylla alni* Linn. and *Oncopsis alni* Schr. were common. By sweeping the dry sheep pastures the following species were met with:—*Philaenus spumarius* Linn., *P. lineatus* Linn., *Cixius nervosus* Linn., *C. cunicularius* Linn., *Athysanus sordidus* Zett., *Delphax difficilis* Edw., *Dicranotropis hamata* Fieb., *Deltocephalus pulicaris* Fall., *D. distinguendus* Flor., *Leptopterna ferrugata* Fall. (very commonly), *Miris holsatus* Fab., *Megaloceraea ruficornis* Fourc., and *Nabis flavomarginata* Scholtz. *Rhopalotomus ater* Linn. was also swept in these pastures. These were the form with red head and pronotum. In Cumberland, where this insect is also common, I have only met with the black form. By beating shallows, *Oncopsis flavicollis* Linn. and its var. No. 4 of Edwards's "Homoptera" occurred, along with *Plesiocoris rugicollis* Fall., in plenty. A few scarcely mature *Dichroscytus rufipennis* Fall. were beaten from fir, along with plenty of *Psylla nigrita* Zett. *Psylla mali* Schmdbg. was not uncommon on crab-trees. *Psyllopsis fraxini* Linn. occurred in plenty on one young ash-tree near the King's House Farm, a few *P. fraxinicola* Först. bearing them company. A large wood on the Bellingham Road yielded

some good captures: *Calocoris alpestris* Mey. sparingly on raspberry, and *Phylus palliceps* Fieb. on oak. From various trees came *Anthocoris nemorum* Linn., *A. nemoralis* Fab., both commonly, and one specimen of *Microphysa pselaphiformis* Curt. *Psallus lepidus* Fieb. was very common on ash all over the district; *P. ambiguus* Fall. not rare on hazel, *P. betuleti* Fall. fairly plentiful on birch, *P. varians* H. S. common on oaks, and *P. variabilis* Fall. was also common. A pair of *Plesiodytes pinetellum* Zett. were probably the most interesting of my captures. Mr. E. A. Butler has kindly helped me with the names of some of the above.—JAS. MURRAY, 2 Balfour Road, Carlisle: October 10th, 1918.

On Halictus arnoldi E. Saunders.—This name was given to a few specimens of *Halictus*, captured near Eastbourne by Mr. Arnold in 1908, by Edward Saunders, who considered them to belong to an undescribed species. In Arnold's collection three examples, two males and one female, represented the species, and, after a careful examination some years ago, I came to the conclusion that these were certainly only slight varieties of the widely-distributed *H. minutissimus* Kirby, and by no means more aberrant than others taken by myself at colonies of this minute bee. These males were two of the three specimens which Saunders had before him when he described the species, but the female, as I found out subsequently, was not the type of that sex, but must have been placed with the males by Arnold himself, since the only one mentioned by Saunders is the example in his collection now at S. Kensington. The female in the Arnold collection is a rather large example of *minutissimus*, with the basal abdominal segment more punctured than is usual, but less so than in some other examples that I have, and it does not agree with the description of *arnoldi*. The two males (cotypes) have a slightly immature appearance (reddish) as is not rare in *minutissimus* and some other *Halicti* and, as is well known, this immaturity is frequently correlated with other slight abnormalities in sculpture. The chief distinction given for *arnoldi* was the shorter antennal joints, but this appearance was, I believe, largely, if not entirely, due to the antennae being stuck down on card. On removing the two specimens from the gum and cleaning and straightening the antennae, a notable difference was produced in the appearance of the joints. The genital armature on dissection of the specimens appears to me identical with that of *minutissimus*. When at the British Museum on other business some time ago, at the last moment before leaving it occurred to me to examine the type of *arnoldi*, and I then for the first time became aware that the female example in Arnold's collection was not the type of that sex. Though unable to examine the actual type very minutely or to compare it thoroughly with other forms, it appeared to me certain that it could not be rightly mated with the described male, but belonged *sensu restricto* to another group in *Halictus*. Probably the ♀ type of *arnoldi* will prove to be a small and aberrant example of *nitidiusculus*. I have looked at the small black *Halicti* collected by Arnold at Hellingly near Eastbourne and dated August 14th, 1908, and I find that these consist of all the examples of *arnoldi* Saunders and the ♀ ascribed to this by Arnold, ordinary *minutissimus* not placed with the former, and a number of *minutus* and *nitidiusculus*. It is rather suggestive that a male of the latter sent to Saunders was returned with this name and "small" written on the label. It therefore seems probable that Saunders was misled, partly by the appearance

of the specimens due to their having been gummed on card, and partly by his assuming that the female individual was the same species as the three males sent to him. In spite of the great reliance I place on determinations made by the describer, I think *H. arnoldi* will be found to be based on slightly aberrant ♂♂ of *minutissimus* and a minute and somewhat aberrant ♀ *nitidiusculus*.—
R. C. L. PERKINS, Paignton: September 30th, 1918.

Obituary.

W. F. de Vismes Kane, M.A., M.R.I.A., F.E.S.—On April 18th last this distinguished Irish entomologist and naturalist passed away at his seat, Drumreaske House, County Monaghan, in his 79th year.

De Vismes Kane was born near Exmouth, Devon, in 1840, and came of ancient Irish and French lineage. He was educated at Cheltenham College and at Trinity College, Dublin. Inheriting property near Monaghan, he purchased the neighbouring demesne of Drumreaske House, and settled there. But being fond of the sea and of yachting, he spent his earlier years between that place and Monkstown, in Dublin Bay. As a boy he made collections of insects, etc., and when he grew up he began to devote himself seriously to natural history studies. Although his interests were wide, his favourite subject was Entomology, in which he became an authority on the *Lepidoptera*.

Travel and residence during several years upon the Continent, necessitated by ill-health, gave great opportunities for studying the European *Rhopalocera*. Realising the want of a handy text-book on the subject, he conceived and compiled his "Handbook of the Butterflies of Europe," published in 1885. This excellent and useful 8vo volume for the traveller-naturalist contains a condensed description of all the European species on the lines of "Stainton's Manual," with the addition of localities, and good illustrations by the then new process of isochromatic photography.

Returning to Ireland he enthusiastically studied the *Lepidoptera* of his native land. On his frequent yachting excursions round the west coast, he visited many out-of-the-way districts and islands and made numerous interesting captures and discoveries, including a remarkable melanic race of *Cumptogramma bilineata* from the Blasquets. Based upon these researches he contributed some forty papers to the current Entomological magazines, as well as to the "Irish Naturalist" and the "Proceedings of the Royal Irish Academy." Eventually he did a notable service to science by publishing in 1901 his "Catalogue of the *Lepidoptera* of Ireland." This work involved a huge amount of correspondence and investigation, for he scrupulously verified all important records by personal inspection. In 1904 he presented his collection of *Lepidoptera*, containing many remarkable local varieties, to the National Museum at Dublin.

But besides Entomology, de Vismes Kane had many other pursuits. As a keen sportsman and fisherman, he had good opportunities for field-work, and he published in several papers valuable observations upon the vertebrate fauna of Ireland. Dredging in the great loughs was a favourite occupation, and he made many notable studies and discoveries among the *Entomostraca*, *Cladocera*,

and other *Crustacea*, as recorded in a series of papers contributed to the "Irish Naturalist" and the "Proceedings of the Royal Irish Academy." Though he wrote nothing upon the subject, his knowledge of botany was considerable. His special hobby was landscape gardening, and he enriched his beautiful demesne at Drumreaske with many trees, shrubs and decorative plants which he imported from Japan and elsewhere. Archaeology also had its attractions for him, and he described many Irish antiquities in the "Proceedings of the Royal Irish Academy" and the "Royal Historical and Archaeological Society of Ireland."

While thus devoting a long life to scientific pursuits, he was also a keen worker for his county and country. He served twice as High Sheriff and was a Justice of the Peace. As an ardent Churchman he was a member of the General Synod and Representative Body. For the development of the canal system in Ireland, he did excellent work, and also for various agricultural and other bodies. An accomplished and most courteous country gentleman, he did a good work in his generation for the Ireland which he loved. He suffered a serious loss by the death of his only son in 1897.—WILLOUGHBY GARDNER.

Society.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY:
September 12th, 1918.—Mr. R. ADKIN, F.E.S., Vice-President, in the Chair.

Mr. Ashdown exhibited series of the Homopteron *Ledra aurita*, with living larvae; some females had the frontal horns more developed than in the males. Mr. Blair, two very similar beetles, *Coccinella distincta* and *C. septempunctata*, the former associated with ants, and pointed out their differences. Mr. Bowman, four successive broods of *Dysstroma (Cidaria) truncata*: (1) an average wild female, (2) including the yellow clouded and dark diffused forms, (3) more or less typical, October and November, (4) also more or less typical; (3) and (4) quite as large as the parent. Mr. Sich, the Micro-Lepidoptera *Cacoccia podana*, ab. *sauberiana*, bred from ivy; *Pandemis ribeana*, with very faint markings; *P. heparana*, a dark specimen bred from rose; *Enarmonia woeberiana*, a dark specimen, Bath; *Acalla contaminana*, the aberrations *ciliana* and *rhubana* and the form which has been provisionally named *omicron*. Mr. Barnett, a series of *Aricia medon*, one underside striated on the fore wings, Chipstead. Mr. B. W. Adkin, a series of *Nisoniades tages*, some finely-marked varied females and a remarkable khaki-coloured form. Mr. Sperring, eight specimens of *Abraxas grossulariata* from Aberdeen, bred, gradations of the dark suffused local race, also the ab. *fulvaticata* form from S.E. London, and two very dark ones bred from suburban larvae. He also showed ten specimens of *Arctia caja* bred this year from S.E. London, including aberrations with orange hind wings, predominance of white on fore wings, forms with banded fore and hind wings, and much suffused specimens. Mr. F. B. Carr, series of Royston *Agriades coridon*, 1918, including ab. *roystonensis*, ab. *semisyngrapha*, and specimens close to ab. *syngrapha* with several underside aberrations. Mr. Dennis, heads of the common rush on which the very young larvae of *Coleophora caespititiella* had made their cases since the heads were

gathered. Mr. H. Moore and Mr. H. J. Turner, a large number of Japanese Rhopalocera. Mr. Turner read a short paper: "Notes on the Butterflies of Japan." Reports on the season were given. The broom was flowering again, butterflies were scarce in Essex, remarkable aberrations had turned up in the New Forest, *Pararge megaera* 2nd brood was common locally, and *Epinephele tithonus* was plentiful.

September 26th, 1918.--Dr. T. A. CHAPMAN, F.R.S., in the Chair.

The decease of Mr. W. F. de Vismes Kane was announced.

Mr. Main, for Mr. Carr, exhibited mines of the Sawfly *Phyllotoma vagans* in alder leaves from Blackheath. Mr. Moore, specimens of a second brood of *Sphinx ligustri*, Aug. and Sept. emergence. Mr. Main, living examples of *Dytiscus circumcinctus*, a water-beetle without secondary sexual characters. Mr. Bunnnett, galls of *Rhodites eglanteriae* and *R. rosae*. Mr. West, examples of the "fire-beetle," *Melanophila acuminata*, from Crowthorne, Berks. Mr. B. W. Adkin, aberrations of *Pararge megaera*, with large ocelli, with small ocelli, with suffused area between central lines, from Dartmoor. The remainder of the evening was devoted to the exhibition of lantern-slides, Mr. Main showing resting positions of native species of Mosquitoes and Gnats.—HY. J. TURNER, *Hon. Editor of Proceedings*.

NEW AND LITTLE-KNOWN SALTATORIAL DASCILLIDAE.

BY G. C. CHAMPION, F.Z.S.

(Continued from p. 225.)

39.—*Scirtes sulcigerus*, n. sp.

Oval, flattened on the disc, shining, clothed with very fine, pruinose, greyish-brown pubescence; nigro-piceous or piceous, the antennal joints 1-3, the basal margins of the prothorax and elytra, the knees, tibial spurs, and apices of the tarsi, testaceous, the head and prothorax sometimes reddish brown, the maxillary palpi and the rest of the antennae black, the latter paler in ♀; very densely, minutely, uniformly punctate. Head broad, the eyes large; antennae moderately long, a little stouter in ♂ than in ♀, joint 3 slender, not longer than 2, 4-11 each twice the length of 3. Prothorax hollowed in front opposite the eyes, the sides arcuately converging from the base. Elytra long, rounded at the sides, narrowly margined, with traces of very shallow longitudinal grooves on the disc, the one next the suture the most distinct; each elytron in ♀ with a short, deep, oblique sulcus near the suture a little before the tip, and the suture itself triangularly depressed in front of this. Posterior coxal plates subquadrangle. Legs rather stout, the posterior pair long, with broad femora, widened, sharply carinate tibiae, and long upper tibial spur.

Length $3\frac{1}{10}$ - $3\frac{1}{4}$, breadth 2- $2\frac{1}{2}$ mm. (♂ ♀.)

Hab. BORNEO, Mt. Matang, W. Sarawak, alt. 1000 feet (*G. E. Bryant*: 1.ii.1914).

One female and three males, varying a little in the colour of the head and prothorax, the antennae, too, in ♀ paler than in ♂. This species is clothed with a very fine pruinose pubescence, and the puncturing of the elytra is extremely fine and close; the apical sulciform foveae of the ♀ are characteristic.

40.—*Scirtes auriculatus*, n. sp.

♀. Oblong-elliptic, rather broad, somewhat depressed, shining, thickly clothed with brown pubescence; piceous, the antennal joints 1-3, the basal margins of the prothorax and elytra, the suture and the swollen anterior edges of the apical foveae of the latter, the apices of the femora, the tibiae and tarsi, and the under surface in part, testaceous; densely, very finely punctate. Antennae with joint 3 very short, not longer than 2, the following joints each twice as long as, and much stouter than, 3. Prothorax rapidly, arcuately narrowing from the base, hollowed in front opposite the eyes. Elytra long, rounded at the sides, somewhat acuminate at the tip, with traces of shallow longitudinal grooves on the disc; each elytron with two narrowly separated, curved, deep, oblong foveae adjacent to the suture just before the tip, the anterior margin of the outer fovea tumid, ear-like, and clothed with ochreous hairs. Posterior coxal plates sharply rectangular. Posterior femora broad, the tibiae stout and deeply grooved, the upper spur long, the basal joint of the tarsi longer than the others united.

Length $4\frac{1}{2}$, breadth $2\frac{4}{5}$ mm.

Hab. PERAK (*Doherty, ex coll. Fry*).

One female, with ovipositor exposed. Larger and more elongate than the Bornean *S. sulcigerus* ♀; the apical foveae differently shaped, the outer one ear-like, and very conspicuous, due to the pallid tumid space bordering the fovea anteriorly; the surface-puncturing not so fine, the suture of the elytra testaceous; the antennae a little stouter. *S. fossilifer* Bourg. (1890), from Cambodia, a smaller, flavo-testaceous insect, also has a deep, double fovea at the apex of the elytra; Bourgeois evidently did not suspect that this character was peculiar to the ♀.

41.—*Scirtes lacunosus*, n. sp.

♀. Oval, shining, thickly clothed with rather coarse, long, decumbent pubescence; brownish-piceous above, the margins of the prothorax, under surface, antennae, palpi, and legs (the infuscate posterior knees excepted) testaceous; densely, finely punctate. Head without foveae; antennae very long, extremely slender, joints 2 and 3 short, subequal in length, 4-11 elongate, filiform. Prothorax very short, hollowed at the apex opposite the eyes, rapidly narrowed from the base. Elytra long, rounded at the sides, narrowly margined, broadly depressed along the suture for some distance below the base, and also with a small, oval, foveiform depression adjacent to the suture

towards the apex, and an elongate, curved, deep excavation on the disc before the tip, the post-basal depression with an indication of two faintly-impressed longitudinal grooves. Posterior coxal plates transverse, angular. Legs long, slender, the posterior pair unusually elongate, with broad femora and long upper tibial spur.

Length $2\frac{1}{10}$, breadth $1\frac{0}{10}$ mm.

Hab. BORNEO, Kuching, Sarawak (*G. E. Bryant*: 29.xi.1913).

One female, with ovipositor extruded. An obscurely coloured, oval insect, with very slender, long, testaceous antennae; the elytra each with an extremely deep, curved, oblong excavation near the apex, indicative of the sex mentioned; the posterior coxae with a small plate.

42.—*Scirtes excavatus*, n. sp.

♀. Oval, shining, closely pubescent; piceous above, the antennae, palpi, under surface and legs testaceous; densely, very finely punctate. Antennae very long, extremely slender, joint 3 about as long as 2. Prothorax convex, rapidly narrowed from the base, hollowed in front opposite the eyes. Elytra broadly flattened anteriorly, sharply margined, each elytron with a very deep, oblique, curved excavation on the disc at some distance before the apex, the space in front of it tumid, the suture unimpressed posteriorly. Posterior coxal plates subrectangular. Posterior femora very stout, the tibiae thickened, carinate, the upper spur long.

Length 3, breadth 2 mm.

Hab. BORNEO, Sarawak (*A. R. Wallace, in Mus. Oxon.*).

One specimen. This insect has a very deep, oblique excavation on the disc of the elytra towards the apex, much as in the same sex of *S. lacunosus* from the same island, the excavation in the present species being placed much further forward and preceded by a tumid space, and the smaller one near the suture is wanting; the antennae, too, are equally long and slender, and entirely testaceous.

43.—*Scirtes lutescens*.

Scirtes lutescens Waterh. Cist. Ent. ii, p. 572 (1880).

Hab. JAVA.

Waterhouse omitted to note the acuminate bifoveate apices of the elytra (the two small, deep foveae on each elytron being placed one before the other, the anterior one the more conspicuous) in the type (♀) of this insect, which has the ovipositor extruded, the sex thus being clearly indicated.

44.—*Scirtes sexfoveatus*, n. sp.

♀. Short, oval, shining, thickly pubescent, obscure testaceous, the antennae, palpi, and legs wholly testaceous; densely, finely punctate. Antennae long, very slender, joint 3 small, narrow, not longer than 2, 4-11 moderately elongate. Prothorax hollowed in front opposite the eyes, arcuately narrowed from the base. Elytra narrowly margined, each with three deep foveae at the apex—two placed longitudinally along the suture and one immediately exterior to the lower one, the latter rounded and with its margin apparently raised. Posterior legs rather short, the femora extremely broad, the tibiae curved, the first tarsal joint thickened, longer than the upper tibial spur.

Length $1\frac{4}{5}$, breadth $1\frac{1}{5}$ mm.

Hab. BORNEO, Mt. Matang, W. Sarawak (*G. E. Bryant*: xii.1913).

One female, with ovipositor extruded. A very small, broad-oval form, with the general facies of a *Scymnus*; the elytra each with a cluster of three deep foveae at the apex, which would of course be wanting in the male.* *S. pallidus* Waterh. (1880), type from Penang, is a somewhat similar, larger insect.

45.—*Scirtes bifoveatus*, n. sp.

♀. Oblong-oval, subtruncate behind, shining, closely, finely pubescent; piceous, basal joints of the antennae, the tibiae and tarsi in part, and in two specimens the sides of the prothorax and the humeri also, testaceous; densely, very finely, the head and prothorax a little more sparsely and minutely, punctate. Antennae moderately long, slender, slightly thickened towards the tip, joint 3 small, not longer than 2, 11 oval, longer and stouter than 10. Prothorax convex, rapidly, arcuately narrowed from the base, feebly hollowed in front opposite the eyes. Elytra obliquely truncate at the tip and with the sutural angles sharp; each elytron with a large, deep fovea at the apex, and the suture slightly depressed between the foveae. Posterior legs comparatively short, the femora broad, the tibiae narrow, the spurs slender, the upper one shorter than the first tarsal joint.

Length 2, breadth $1\frac{1}{4}$ - $1\frac{1}{3}$ mm.

Hab. CEYLON, Horton Plains, alt. 6000 feet (*G. Lewis*; 18-20.iii. 1882).

Four females, three of which are labelled as having been taken on the Horton Plains. Larger and more oblong than *S. sexfoveatus* from Sarawak, the antennae not so slender and partly infusate, the elytra in the ♀ obliquely truncate at the apex, and each with a single large, deep

* In the British Museum there is also a ♀ of an allied insect from the Andaman Is., captured by Capt. Wimberley, too imperfect for description.

fovea just before the tip. The following species is still more nearly allied, both having the general facies of a *Scymnus*.

46.—*Scirtes quadrifoveatus*, n. sp.

Extremely like *S. bifoveatus*, but slightly smaller, the elytra more rounded at the tip in ♀; piceous, the prothorax, humeri, basal joints of antennae, and legs (the bases of the femora excepted) testaceous; the elytra in ♀ each with a deep, rounded fovea just before the apex, an oblique, sharply-defined depression on the outer part of the disc in front of this, and the suture angularly depressed between the foveae; the other characters as in *S. bifoveatus*.

Length $1\frac{3}{4}$, breadth 1 mm. (♂ ♀.)

Hab. CEYLON, Dikoya, alt. 3800–4200 ft. (*G. Lewis*: 6.xii.1881–16.i.1882).

One male and two females. The male agrees fairly well with the description of *S. axillaris* Motsch., from Mt. Patannas, Ceylon, which is similarly coloured; but the latter seems to have the sides of the body more arcuate than in the insect before me.

47.—*Scirtes dichrous*, n. sp.

Oblong-elliptic, shining; nigro-piceous, the antennal joints 1–3, the head, prothorax, scutellum, knees, tibial spurs, and apices of the tarsi, testaceous; closely, finely pubescent, the hairs on the elytra fuscous; densely, minutely, the elytra much more distinctly, punctate. Antennae with joint 3 short, not longer than 2, the following joints moderately elongate and rather stout. Prothorax feebly hollowed in front opposite the eyes, arcuately narrowing from the base. Elytra oblong, moderately rounded at the sides, with traces of shallow grooves on the disc. Posterior tibiae moderately widened, feebly carinate.

Length $3\frac{1}{8}$, breadth 2 mm. (♂?)

Hab. BORNEO, Mt. Matang, W. Sarawak (*G. E. Bryant*: ii.1914).

One specimen, apparently taken with *S. sulcigerus* on Mt. Matang, from which it differs in its narrower, more oblong shape; the entirely testaceous head, prothorax, and scutellum; the unequal puncturing of the upper surface (that of the elytra being coarser and less dense than in *S. sulcigerus*); the stouter antennae; and the less developed posterior legs.

48.—*Scirtes crassicornis*, n. sp.

♂. Oval, convex, robust, shining, clothed with very fine fuscous pubescence; black, the antennae with joints 1–3 and the tip of 11, the tips of the tarsi, and tibial spurs testaceous; densely, finely punctate. Antennae moderately long, stout, tapering towards the tip, joints 2 and 3 short, 4–11 longer and stouter, gradually decreasing in length. Prothorax hollowed in

front opposite the eyes, rapidly, arcuately narrowing from the base. Elytra sharply, conspicuously margined, with an indication of a faint groove along the suture. Legs long, stout, the posterior pair with very broad femora, curved, widened tibiae, and long upper tibial spur.

Length $3\frac{1}{5}$, breadth 2 mm.

Hab. PENANG (*G. E. Bryant*: 31.x.1913).

One male, with the genital armature partly extruded. More convex than the Bornean *S. sulcigerus*, the antennae stout and tapering, black, except at the base and tip, the puncturing of the upper surface much stronger. The stout antennae, oval body, and robust build separate *S. crassicornis* from the various other black species of the genus known to me. The female is almost certain to have the elytra foveate or sulcate towards the apex.

49.—*Scirtes scaphiformis*, n. sp.

Elongate, subparallel, shining, thickly and rather coarsely pubescent; brown, the antennae, palpi, legs, and under surface testaceous or rufo-testaceous; densely, finely, the elytra rugosely, and the under surface very densely, minutely, punctate. Head broad, the eyes large; antennae long, rather slender, joints 2 and 3 short, equal, 4-11 elongate, each a little thickened towards the tip. Prothorax very broad, rapidly, arcuately narrowing from the base, deeply hollowed in front opposite the eyes, the anterior angles deflexed. Elytra unusually elongate, subparallel (♀?), or gradually narrowed from a little below the base (♂?), conjointly rounded at the tip, flattened on the disc and with indications of obsolete costae, the reflexed margin prominent to about the middle. Prosternum with a long, narrow, spiniform process, which is received in a deep groove in the mesosternum. Metasternum very short. Abdomen elongate. Posterior coxal plates transversely subquadrate, arcuato-emarginate behind. Posterior femora enormously developed; posterior tibiae short, straight, broad, sharply carinate, the spurs curved, stout, the long upper one shorter than the first tarsal joint.

Length $4\frac{1}{4}$ - $4\frac{1}{2}$, breadth $2\frac{1}{10}$ mm.

Hab. INDIA, Sunderbans, Bengal (*F. W. Champion*).

Described from three specimens recently captured by one of my sons in India. There is also an example of it in Fry's collection, labelled "Malay (*Casteln.*)," perhaps in error. This species should perhaps be taken as the type of a separate genus, owing to the long prosternal process, the short, straight posterior tibiae (about reaching the apex of the elytra when the legs are pushed backward), and the unusually elongate elytra and abdomen. *S. longipennis* Pic (1915), from Java, may be allied to it; but in the "description abrégée" nothing is said about the structural characters. *S. elongatus* Waterh., from Hong Kong, is perhaps the nearest form known to me.

50.—*Scirtes elongatus*.

Scirtes elongatus Waterh. Cist. Ent. ii, p. 571 (1880).

Hab. CHINA, Hong Kong [type] (*J. C. Bowring*), Tygosan, Nyew-tew, and Chusan Islands (*J. J. Walker*).

Waterhouse omitted to compare this insect with the extremely closely allied *S. japonicus* Kies. (1874), from which it is separable by its rather more elongate form and the less prominent elytral margins. A pair from the Chusan Is., with the armature partly extruded in each sex, shows that the ♀ has the elytra more depressed along the suture anteriorly, the suture itself thus appearing somewhat raised, except at the base, in that sex.

51.—*Scirtes rufotinctus*, n. sp.

♀. Oblong, robust, rather broad, depressed, shining, finely pubescent; testaceous, the elytra red, the palpi, eyes, and antennae (joints 1–3 excepted) black, the tarsi (except at the tip), the anterior and intermediate tibiae (except at the base), the ridges on the posterior tibiae, and wings, infuscate; densely, finely punctate. Head broad; antennae with joints 2 and 3 equal in length, short, those following broader and more than twice the length of 3. Prothorax broad, hollowed in front opposite the eyes, gradually narrowed from the base. Elytra oblong, compressed at the sides below the humeri, narrowly margined, with traces of very shallow grooves on the disc, including an almost obsolete sutural stria, the disc without subapical impressions. Beneath densely, minutely punctate, the puncturing more diffuse on the ventral segments 1 and 2. Posterior coxal plates subquadrate. Legs stout; posterior pair moderately elongate, with sharply carinate tibiae, and the upper tibial spur about twice as long as the lower one.

Length $4\frac{1}{4}$, breadth $2\frac{1}{2}$ mm.

Hab. BORNEO, Mt. Matang, W. Sarawak, alt. 1000 feet (*G. E. Bryant*: 13.ii.1914).

One female, with ovipositor extruded. An oblong, depressed, pallid form, with reddish elytra, the antennae black (joints 1–3 excepted), the palpi, tibiae, tarsi, and wings more or less infuscate.

52.—*Scirtes grandis*.

Scirtes grandis Motsch. Bull. Mosc. 1863, 1, p. 483 (*nec* Bourgeois and Nowrojee).

Oval, somewhat acuminate posteriorly in ♂, robust, shining, closely cinereo-pubescent; brown above, rufo-testaceous beneath, the eyes black, the antennae, palpi, and legs testaceous, the antennal joints 4–11 fusco-annulate, the posterior femora also infuscate at the apex; densely, very finely, striguloso-punctate, the punctures on the elytra not coarser than those on the rest of the upper surface. Head rather small, the eyes large; antennae long, slender, a

little shorter in ♀, joints 2 and 3 short, subequal in length. Prothorax rapidly narrowed from the base, deeply hollowed in front opposite the eyes, the anterior angles sharp. Elytra with a faint sutural groove and indications of three obsolete costae on the disc, the margins narrow. Posterior coxal plates rectangular, hollowed behind. Posterior legs elongate, the femora very broad, the tibiae widened, the spurs long, curved, and stout, the upper one as long as or longer than the first tarsal joint.

Length $4\frac{2}{3}$ – $5\frac{1}{5}$, breadth $2\frac{9}{10}$ – $3\frac{1}{10}$ mm.

Hab. CEYLON, Nuwera Elia [Nura Ellia] (*Motschulsky*), Dikoya, alt. 3800–4200 ft., Bogawantalawa, alt. 4900–5200 ft. (*G. Lewis*: xii.1881–iii.1882).

The above description is taken from two specimens from Dikoya in very fresh condition, assumed to be males, and one, probably ♀ (with less acuminate elytra), from Bogawantalawa. They are from the same district as *Motschulsky*'s type, and almost certainly belong to the species named by him: he, however, says nothing about the faint elytral costae, and the size given is too small (long. 2, lat. $1\frac{1}{4}$ l.), but too much importance need not be attached to these details. The very finely, densely sculptured elytra and the fusco-annulate antennae are in accord with the diagnosis.

53.—*Scirtes canescens*.

? *Scirtes canescens* Motsch. Bull. Mosc. 1863, 1, p. 483.¹

Scirtes sericeus Waterh. Cist. Ent. ii, p. 570 (1880).²

Scirtes sp. (near *grandis* Motsch.), Bourg. Bull. Soc. Ent. Fr. 1896, p. 121.³

Scirtes grandis Nowrojee, Mem. Dept. Agric. India, Entom. Series, ii, 9, pp. 189–191 (April 1912), (*nec* Motsch.).⁴

Hab. INDIA, Belgaum,³ Chapra in Bengal (*H. E. Andrewes*), Pusa (*Nowrojee*⁴), Patkai Mts. in Assam (*Doherty*), Nilgiri Hills (*H. L. Andrewes*); CEYLON, Colombo (*Motschulsky*¹), Trincomalee (*Mus. Brit.*); BURMA (*coll. H. E. Andrewes*); SIAM.²

Numerous specimens before me from the above-mentioned localities seem to belong to one variable species, those from Chapra and Trincomalee agreeing quite well with the type of *S. sericeus*. They are separable from *S. grandis* Motsch., as here identified, by their smaller size (length, $3\frac{1}{2}$ – $4\frac{1}{2}$ mm.), the distinctly coarser puncturing of the elytra, and the non-annulate antennae. One of the Belgaum examples has the antennae slightly infusate, and two of those from the Nilgiri Hills have rougher, subcostulate elytra. Compared with the Bornean *S. uniformis* Waterh., the Indian specimens have the elytra less dilated at the sides,

and the antennae not so long. Motschulsky's type has probably been lost, but a representative from Ceylon is still available for comparison.* The larva, pupa, and imago of the present insect have been figured by Nowrojee,⁴ from specimens found in the drains around the college buildings at Pusa. Some of Mr. Andrewes's examples were captured "at light," and others taken from beneath the bark of *Eugenia jambolana* (order Myrtaceae), at Belgaum, Bombay.³

54.—*Scirtes uniformis*.

Scirtes uniformis Waterh. Cist. Ent. ii, p. 569 (1880).

Hab. BORNEO, Sarawak (*A. R. Wallace: Mus. Brit., Mus. Oxon.*).

Described from a single example, ♀, with the elytra depressed on the disc below the base. There are three others, males, also found by Wallace in Sarawak, in the Oxford Museum. A large, oval, shining, testaceous insect, with very long, slender antennae, strongly punctured, explanate elytra, and long, powerful posterior legs, the upper tibial spur long, stout and hooked, much as in *S. aequalis* Waterh., from the same locality. In one of the males the elytra are broadly infusate at the sides. The posterior coxal plates are transverse and hollowed behind. Four smaller, narrower, somewhat immature specimens from the same locality (*A. R. Wallace* and *J. E. A. Lewis*) with much finer elytral puncturing and more slender tibial spurs may belong here?

55.—*Scirtes floresianus*, n. sp.

♂. Elliptic, somewhat convex, shining, rather coarsely flavo-pubescent; rufo-testaceous, the elytral suture paler, the eyes black, the antennae and legs testaceous; densely, finely, the elytra a little more distinctly, punctate. Antennae moderately long, slender, joints 2 and 3 short, subequal. Prothorax relatively narrow, rapidly narrowing from the base, deeply hollowed in front opposite the eyes. Elytra with a distinct sutural groove, narrowly margined. Posterior coxal plates subrectangular. Posterior femora very broad, the tibiae broad, sharply carinate, the upper spur a little shorter than the first tarsal joint.

Length 4, breadth $2\frac{1}{2}$ mm.

Hab. FLORES (*A. R. Wallace*).

One specimen. A rufo-testaceous insect resembling a large *Cyphon*, with the prothorax a little less widened than in many of the allied forms, the body thus appearing more narrowed anteriorly. Compared with the Bornean *S. uniformis* Waterh., the elytra are less explanate at the sides and more convex, and the antennae much shorter.

* There is another *Scirtes* from Trincomalee (*C. B. Fletcher*) in the Museum, near *S. canescens*, too imperfect to describe, with much shorter and more slender antennae.

WATKINS & DONCASTER, Naturalists,

Keep in stock all Articles for Entomologists, Ornithologists, Botanists, &c.: Umbrella Net, 7/-; Folding Cane or Wire, 3/6, 4/-, 4/6; Plain Ring Net, 1/3, 2/-, 3/-; Pocket Boxes, 6d., 9d., 1/-, 1/6; Store Boxes, with Camphor Cells, 2/6, 3/6, 4/-, 5/-, 6/-; Zinc Pocket Boxes, 9d., 1/-, 1/6, 2/- Setting Boards, from 5d. to 1/10; Complete set of 14 boards, 10/6; Breeding Cages, 2/6, 4/-, 5/-, 7/6; Sugaring Tins, 1/6, 2/-; Sugaring Mixture, ready for use, 1/9 per tin; Setting Houses, 9/6, 11/6, 14/-; Glass Topped and Glass Bottomed Boxes, from 1/- per doz.; Zinc Killing Boxes, 9d., 1/-; Coleoptera Collecting Bottles, 1/6, 1/8; Collecting Box, containing 26 tubes (very useful for Coleopterists, Microscopists, &c.), 4/6; Brass Chloroform Bottle, 2/6.

Improved Pocket Pupa-digger in leather sheath (strongly recommended), 1/9; Steel Forceps, 1/6 to 3/- per pair; Pocket Lens, from 1/6 to 8/6.

Taxidermists' Companion, containing most necessary implements for skinning, 10/6; Scalpels, with ebony handles, 1/3; Fine Pointed Scissors, 2/- per pair; Brass Blow-pipes, 4d., 6d.; Egg Drills, 2d., 3d.; ditto, best quality, 9d. each; Botanical Vasculum, 1/6, 2/9, 3/6, 4/6; Label List of British Macro-Lepidoptera, with Latin and English Names, 1/6; List of British Lepidoptera (every species numbered), 1/-; or on one side for Labels, 2/-.

SILVER PINS FOR COLLECTORS OF MICRO-LEPIDOPTERA, &c., as well as minute insects of all other families.

We stock various sizes and lengths of these Silver Pins, which have certain advantages over the entomological pins usually employed.

For instance, insects liable to become greasy and verdigrisy, like Sesiidae, are best pinned on Silver pins, which will last much longer than the ordinary pins (whether enamelled black, or gilt, or silvered).

We shall be pleased to send pattern cards on application.

A large stock of British, European, and Exotic Lepidoptera, Coleoptera, and Birds' Eggs.

ENTOMOLOGICAL PINS.

The "DIXON" LAMP NET (invaluable for taking Moths off street lamps without climbing the lamp posts), 3s. 6d.

SHOW ROOM FOR CABINETS, &c.

36, STRAND, LONDON, W.C., ENGLAND.

Birds and Mammals, &c., Preserved & Mounted by first-class workmen.

Our New Price List (100 pp.) sent post free to any address on application.

FOR SALE.

16 NATURAL HISTORY CABINETS

BELONGING TO THE LATE DR. MASON,

ALSO

FOUR MICROSCOPICAL CABINETS,

Containing Microscopical Slides by G. R. VINE, of Sheffield.

ALSO

400 BRITISH BIRDS IN CASES.

Apply—Mrs. MASON, TRENT HOUSE, BURTON-ON-TRENT.

STEVENS' AUCTION ROOMS. Estd. 1760.

38 King Street, Covent Garden, London, W.C. 2.

TUESDAY and WEDNESDAY, DECEMBER 10th and 11th, AT 12.30 EACH DAY.

Mr. J. C. Stevens will sell by auction as above—

The Magnificent Collection of British Noctuae, Geometers, and Micros, formed by PERC. M. BRIGHT, Esq., containing many unique varieties and scarce and extinct species, including long series of *Eaulis*, *Subrosea*, *Barettii*, *Viduarina*, *Alpina*, and a grand series of *Grossulariata* varieties. (This collection includes the best varieties out of the Capper Collection, many of which are figured in "Barrett's Lepidoptera.") Together with Two First-class Mahogany Cabinets of 48 and 36 drawers respectively.

On view Monday and Tuesday, till 12 o'clock. Catalogues in course of preparation.

Scale of Charges for Advertisements.

Whole Page.....£3. Half Page.....£1 11s. 6d. Quarter Page.....17s.

Lowest charge, 7s. up to 5 lines; 1s. per line afterwards.

Repeated or continuous Advertisements per contract.

There is no charge for Lists of Duplicates and Desiderata.

All payments and applications for the above should be made to

E. W. LLOYD, I. 5, Albany, Piccadilly, W.

AUTHORS are requested to send their communications and proofs to either
J. J. WALKER, Aorangi, Lonsdale Road, Summertown, Oxford; or
G. C. CHAMPION, Broomhall Road, Horsell, Woking.

ENTOMOLOGICAL NEWS.

A forty-eight page illustrated magazine, issued monthly, except in August and September, devoted to the study of INSECT LIFE. It contains a resumé of the proceedings of a number of Entomological Societies, and also articles by the leading Entomologists in the United States and Canada. Valuable information for the beginner, the economic entomologist, and the systemist. TWO DOLLARS a year in advance. Single copies, 25 cents. Address—

ENTOMOLOGICAL NEWS,

The Academy of Natural Sciences,

1900 RACE STREET, PHILADELPHIA, PA.

THE CANADIAN ENTOMOLOGIST.

A MONTHLY MAGAZINE DEVOTED TO THE STUDY OF SCIENTIFIC ENTOMOLOGY.

Volume 50 is now in course of publication. Back volumes can be supplied. It is the oldest established Magazine of the kind in America, and has a world-wide circulation. Subscription, \$2 per annum, payable in advance, which includes a copy of the Annual Report of the Entomological Society of Ontario to the Legislature. Editor, Dr. E. M. Walker, Biological Department, University of Toronto, Toronto, Canada.

Address: Entomological Society of Ontario, Guelph, Canada.

WICKEN FEN.—The Custodians, the National Trust, appeal to Entomologists for assistance towards the providing of the Watcher who guards the Fen against abuse. This expense, which is absolutely necessary, is provided by voluntary subscriptions, and I am desired to ask for Contributions, which will be gratefully received, however small.—W. G. SHELDON, Honorary Treasurer of the Wicken Fund, Youlgreave, South Croydon.

A SYNOPSIS OF THE BRITISH SIPHONAPTERA, by the
 Hon. N. CHARLES ROTHSCHILD, M.A., F.L.S., illustrated by Eight Plates
 (issued in the Ent. Mo. Mag. for March, 1915, pp. 49-112), price 1s. 6d. Apply to
 the publishers.

THE BIOLOGY OF DRAGONFLIES

(ODONATA or PARANEUROPTERA)

By R. J. TILLYARD, M.A., B.Sc., F.L.S., F.E.S.

Demy 8vo. pp. xii + 398. With 4 plates and 188 text-figures. 15s net.

CAMBRIDGE ZOOLOGICAL SERIES.

"Never before has the group received such detailed and well-balanced treatment as Mr Tillyard has given. . . . Students of the anatomy and development of insects are much indebted to him for providing in this convenient form a trustworthy guide to the external and internal structure of dragonflies at various stages of their life-histories."—*Nature*

Prospectus on application

Cambridge University Press, Fetter Lane, London, E.C. 4, C. F. Clay, Manager

COLEOPTERA ILLUSTRATA,

CARABIDAE.

Vol. 1, No. 3.

CARABIDAE.

PRICE \$1.

CONTENTS.

PRICE \$1.

LEISTUS
ferrugineus Linn.

PLAPHRUS
aureus Mull.

LOBOCERA
pilicornis Fabr.

BROSCOSOMA
baldense Putz.

BEMBIDIUM
faeciolatum Duft.
articulatum Gyll.

CILLENUS
lateralis Sam.

THALASSOPHILUS
longicornis Sturm.

TRECHUS
discus Fabr.

ANOPHTHALMUS
hirtus Sturm.
v. rostratus Mots.

PTEROSTICHUS

lepidus Leske.
cupreus Linn.
infuscatus Dej.
puncticollis Dej.
crenatus Dej.
barbarus Dej.
carbonicolor Sols.
macer Marsh.
aterrimus Hrbst.
elongatus Duft.
oblongopunctatus Fabr.
angustatus Duft.
melanoscelis Chaud.
niger Schall.
vulgaris Linn.
nigritus Fabr.
minor Gyll.
interstinctus Sturm.
negligens Sturm.
subsinnatus Dej.
brevis Duft.
caespinus Men.
cognatus Dej.
aethiops Panz.
globosus Fabr.

PTEROSTICHUS

cylindricus Hrbst.
melas Creutz.

ABAX

ater Vill.
ovalis Duft.
schuppelii Pall.
v. rendschmidtii Germ.
corsicus Dej.

MYAS

chalybaeus Pall.

AMARA

ingenua Duft.

ZABRUS

chalconus Fald.
heros Fald.
seidlitzii Schaum.
graecus Dej.
blapoides Creutz.

ANISODACTYLUS

binotatus Dej.
signatus Panz.

ACCURATE ENLARGED PEN DRAWINGS, UNIFORM IN SIZE,
 ONE TO A PAGE 8vo.

COLEOPTERA ILLUSTRATA will be mailed upon receipt of price.

HOWARD NOTMAN, 136 JOSEPH STREET, BROOKLYN, N.Y., U.S.A.

Vol. I, Nos. 1 and 2, \$1 each.

CONTENTS.

	PAGE
Notes on the Derbidae in the British Museum Collection.—II. Derbinae (concluded).— <i>F. Muir, F.E.S.</i>	241
<i>Melanophila acuminata</i> De G. in Berkshire.— <i>W. E. Sharp, F.E.S.</i>	244
The Butterflies of the Oxford District.— <i>J. J. Walker, M.A., R.N., F.L.S.</i>	246
Coleoptera in the Plymouth District and from the Lizard, Cornwall.— <i>J. H. Keys, F.E.S.</i>	250
<i>Gentrupea typhoeus</i> in Flanders.— <i>Prof. T. Hudson Beare, B.A., B.Sc., F.R.S.E.</i> ..	251
Coleoptera captured in the garden of the Hospital of St. Jean, Arras, France.— <i>Id.</i>	251
Hemiptera in Northumberland.— <i>Jas. Murray</i>	252
On <i>Halictus arnoldi</i> E. Saunders.— <i>R. C. L. Perkins, D.Sc., M.A., F.E.S.</i>	253
OBITUARY.— <i>W. F. de Vismes Kane, M.A., M.R.I.A., F.E.S.</i>	254
SOCIETY.—South London Entomological Society	255
New and little-known saltatorial Dascillidae (continued).— <i>G. C. Champion, F.Z.S.</i>	255

THE NATURALIST:

A MONTHLY ILLUSTRATED JOURNAL OF

NATURAL HISTORY FOR THE NORTH OF ENGLAND

EDITED BY

T. SHEPPARD, M.Sc., F.G.S., F.R.G.S., F.S.A.Scot.,

THE MUSEUM, HULL;

AND

T. W. WOODHEAD, Ph.D., M.Sc., F.L.S.,

TECHNICAL COLLEGE, HUDDERSFIELD;

WITH THE ASSISTANCE AS REFEREES IN SPECIAL DEPARTMENTS OF

J. GILBERT BAKER, F.R.S., F.L.S., GEO. T. PORRITT, F.L.S., F.E.S.,

Prof. P. F. KENDALL, M.Sc., F.G.S. JOHN W. TAYLOR, M.Sc.,

RILEY FORTUNE, F.E.S.

The Journal is one of the oldest Scientific Periodicals in the British Isles, dating back to 1833, and is circulated widely amongst the principal Naturalists of the country.

LONDON: A. BROWN AND SONS, LIMITED, 5, FARRINGTON AVENUE, E.C.

And at Hull and York.

PRICE, SIXPENCE NET. BY POST SEVENPENCE.

Prepaid Subscription, 6s. 6d. per annum, post free.

The Annual Subscription for 1919 is 9/-.

[See p. 2 of Wrapper.]

Third Series, No. 48.] DECEMBER, 1918 [PRICE 1/- NET.
[No. 655.]

THE
ENTOMOLOGIST'S
MONTHLY MAGAZINE.

EDITED BY

G. C. CHAMPION, F.Z.S. J. E. COLLIN, F.E.S.

W. W. FOWLER, D.Sc., M.A., F.L.S.

R. W. LLOYD, F.E.S. G. T. PORRITT, F.L.S.

J. J. WALKER, M.A., R.N., F.L.S.

VOLUME LIV.

[THIRD SERIES—VOL. IV.]



"J'engage donc tous à éviter dans leurs écrits toute personnalité, toute allusion dépassant les limites de la discussion la plus sincère et la plus courtoise."—Lacourbière.

LONDON:

GURNEY & JACKSON (MR. VAN VOORST'S SUCCESSORS),

33, PATERNOSTER ROW, E.C. 4.

TAYLOR AND FRANCIS, RED LION COURT, FLEET STREET.

NOTICE.—Owing to the greatly increased cost of paper, printing, etc., the Editors of the Magazine are compelled to raise the subscription to 9s. per annum (post free). Subscriptions for the 1919 volume should be remitted as soon as possible to **B. W. LLOYD**, I. 5, Albany, Piccadilly, London, W.1.

The price of a single ordinary number is 1s.

CHANGE OF ADDRESS.

G. B. RYLE, from 15 Madeira Place, Brighton, to 6 Chesham Place, Kemp Town, Brighton.

C. J. WAINWRIGHT, from 45 Handsworth Wood Road, to 139 Hamstead Road, Handsworth, Birmingham.

REDUCED PRICES FOR BACK VOLUMES.

FIRST SERIES.

This can only be obtained in complete Volumes (bound or unbound).

A limited number of sets, from Vol. x to Vol. xxv can still be obtained at £2 15s. per set net (in parts), or of five consecutive Vols. at £1 per set net (if bound, 1s. per Vol. extra).

Certain of the Vols. i to ix can be had separately at 10s. each.

SECOND SERIES.

Vols. i to xv. are now offered at £3 per set net (in parts), or £1 2s. 6d. for five consecutive Vols. (if bound, 1/- per Vol. extra).

THIRD SERIES.

Vol. li (Third Series, Vol. i) can be supplied by the Publishers at 7/6 (8/6 if bound) per copy. Cover for binding, 1/-.

Vol. li (1915) contains 23 Plates (one coloured), a complete Monograph of the British Siphonaptera, and numerous extra pages of text.

Apply to the Publishers.

MEETINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON, 11, Chandos Street, Cavendish Square, W.—Wednesday, December 4th, January 15th, 1919 (Annual Meeting).

The Chair will be taken at 8 o'clock in the evening precisely.

The Library is open daily from 9 a.m. to 6 p.m. (except on Saturdays, when it is closed at 2 p.m.), and until 10 p.m. on Meeting nights.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge. The Second & Fourth Thursdays in each month, at 7 p.m. The lantern will be at the disposal of Members for the exhibition of slides.

The Chair will be taken punctually at 8 o'clock.

THE LONDON NATURAL HISTORY SOCIETY, which meets at 7 p.m. on the 1st and 3rd Tuesdays in each month, at Room 20, Salisbury House, Finsbury Circus, E.C., will be glad to welcome at its Meetings any French or Belgian entomologists now staying in this country, and to give them the benefit of its library and collections. Communications should be addressed to the Secretary, Salisbury House, E.C.

Hon. Sec., **J. ROSS**, 18, Queen's Grove Road, Chingford, N.E.

Chingford Branch. The Chingford Local Branch meets at the Avenue Café, opposite Chingford Station, at 8 p.m., on the 2nd Monday in each month.

56.—*Scirtes retusus*, n. sp.

Broad, elliptic, rather convex, shining, thickly pubescent, rufo-testaceous, the eyes black, the sides of the elytra indeterminately, and the posterior knees, infuscate, the antennae with joints 4–11 distinctly darker than the others; densely, finely punctate. Head broad, the eyes large; antennae long, slender, joint 3 very small, not longer than 2. Prothorax very broad, short, arcuately narrowing from the base, slightly hollowed in front opposite the eyes, the anterior angles obtuse. Elytra rounded and sharply margined at the sides, bluntly rounded at the tip, without grooves or costae. Fifth ventral segment transversely depressed in the middle. Posterior coxal plates rectangular. Posterior femora very broad, the tibiae stout, widened, not very elongate, and sharply carinate, the spurs thickened, the upper one curved, and nearly as long as the first tarsal joint.

Length $3\frac{1}{2}$, breadth $2\frac{1}{2}$ mm. (♂.)

Hab. CERAM (*A. R. Wallace, in Mus. Oxon.*).

One specimen, obviously ♂. Near the Bornean *S. uniformis* Waterh., the elytra more finely punctate, shorter, less acuminate, and bluntly, conjointly rounded at the apex; the antennae and posterior legs not so long; the prothorax relatively broader. It is the first *Scirtes* to be recorded from Ceram.

57.—*Scirtes atrifrons*, n. sp.

Oval, somewhat depressed, shining, rather coarsely pubescent; brownish-testaceous, the head and prothorax black, the antennae piceous, with the three basal joints obscurely rufescent, the legs (the slightly infuscate posterior knees excepted) and under surface testaceous; closely, conspicuously punctate, the punctures on the elytra rather coarse. Head short, the eyes large; antennae long, rather slender, joint 3 perceptibly longer than 2, those following elongate, filiform. Prothorax very short, convex, rapidly, arcuately narrowing from the base, hollowed in front opposite the eyes. Elytra long, rounded and sharply margined at the sides, with an indication of a shallow sutural groove. Posterior coxal plates transverse, hollowed behind, sharply angulate. Posterior legs long, stout, the tibiae widened, almost straight on their inner edge, sharply carinate, the upper spur very long, about equalling the elongate first tarsal joint.

Length $5\frac{3}{4}$, breadth $3\frac{3}{8}$ mm. (♂?)

Hab. SUMATRA, Sungei Kumbang, Korinchi, alt. 4500 ft. (*Robinson-Kloss Expedition: iv.1914*).

One specimen. Larger than the Bornean *S. uniformis* Waterh., the head and prothorax black, the elytra more elongate, the antennae piceous, the upper posterior tibial spur longer, less curved, and not so stout. The very short, black head and prothorax, and the long testaceous elytra, are the chief characters of this insect.

58.—*Scirtes acuminatus*, n. sp.

♂. Acuminate oval, depressed, shining, thickly, rather coarsely pubescent; rufo-testaceous, the scutellum and elytra, and the posterior femora in part, nigro-piceous or piceous; densely, very finely punctate. Head broad, the eyes large; antennae long, slender, joints 2 and 3 short, equal, those following elongate, filiform. Prothorax arcuately narrowing from the base, deeply hollowed in front opposite the eyes, the anterior angles prominent. Elytra long, rapidly narrowing from a little below the base, becoming narrow at the apex, sharply margined. Posterior coxal plates angular. Posterior femora very broad, the tibiae stout, curved, the two spurs very long, the upper one about one-third longer than the other, and almost as long as the first tarsal joint.

Length 4, breadth $2\frac{1}{4}$ mm.

Hab. BORNEO, Sarawak (*A. R. Wallace*).

One male, injured by pinning, with the genital armature extruded. It is advisable to name this insect, as the long, acuminate elytra, and the greatly developed lower posterior tibial spur, render *S. acuminatus* easy of recognition.

59.—*Scirtes patkainus*, n. sp.

Oval (♂), a little widened posteriorly (♀), rather broad, robust, shining, finely pubescent; obscure castaneous, piceous, or nigro-piceous, the antennal joints 1 and 2, the tips of the tarsi, and the tibial spurs testaceous; closely, minutely, the elytra much more distinctly, punctate. Head broad, the eyes large; antennae long, joints 2 and 3 short, equal in length, 4-11 elongate, moderately slender, filiform. Prothorax arcuately narrowed from the base, hollowed in front opposite the eyes. Elytra with very faint impressed lines on the disc, the one along the suture the most distinct, rounded and sharply margined laterally in ♂, more oblong in ♀. Posterior coxal plates rectangular. Legs long; posterior tibiae feebly curved, broad, carinate, the long upper spur much shorter than the first tarsal joint, the latter elongate.

Length $3\frac{1}{2}$, breadth $2\frac{1}{5}$ - $2\frac{1}{4}$ mm. (♂ ♀.)

Hab. ASSAM, Patkai Mts. (*Doherty, ex. coll. Fry*).

Described from two males and one female. A larger male (length, 4 mm.) from the same locality, with the antennae a little more slender, probably belongs here. The chief characters of *S. patkainus* are, the shining, obsoletely grooved, conspicuously punctured elytra, without apical foveae in ♀, the fine pubescence, the long antennae with the joints 3-11 infuscate, and the elongate basal joint of the posterior tarsi,

60.—*Scirtes curvipes*, n. sp.

Oval, rather convex, finely pubescent, shining, piceous, the two basal joints of the antennae, the tips of the tarsi, and the tibial spurs testaceous; the head and prothorax sparsely, minutely, the rest of the upper surface closely and conspicuously, punctate. Head broad, the eyes large; antennae very long,

rather stout, joint 3 small, a little shorter than 2. Prothorax rapidly, arcuately narrowed from the base, hollowed in front opposite the eyes, the anterior angles deflexed. Elytra without trace of impressed lines or costae, narrowly margined. Posterior coxal plates rectangular. Legs long, the posterior pair especially, the latter with widened, carinate, arcuate tibiae, and the upper spur much shorter than the first tarsal joint.

Length $2\frac{2}{3}$, breadth $1\frac{3}{4}$ mm. (σ ?)

Hab. ASSAM, Patkai Mts. (*Doherty, ex coll. Fry*).

One specimen. An oval, shining, piceous insect, with unusually long legs and antennae, arcuate posterior tibiae (as in the Bornean *S. matan-ganus*, No. 66), the head and prothorax much smoother than the elytra, and the marginal carina of the latter not very prominent.

61.—*Scirtes malayanus*, n. sp.

Oblong oval, finely pubescent, shining, piceous, the head, prothorax, and humeri obscurely rufescent in one example, the antennal joints 1-3, and the legs in part, testaceous; closely, finely, the elytra much more distinctly, punctate. Head broad, the eyes large; antennae rather slender, moderately long, joint 3 small, about as long as 2. Prothorax arcuately narrowed from the base, feebly hollowed in front opposite the eyes. Elytra without grooves or costae, narrowly margined. Fifth ventral segment emarginate in the middle in σ . Posterior coxal plates rectangular. Posterior legs long, the tibiae moderately curved, the upper spur shorter than the first tarsal joint.

Length $2\frac{1}{2}$ -3, breadth $1\frac{1}{2}$ - $1\frac{3}{4}$ mm.

Hab. PERAK (*Doherty, ex coll. Fry*).

Three specimens, one of which is assumed to be σ . Separable from the nearly allied *S. curvipes*, from Assam, by the shorter and more slender antennae, the closer and stronger puncturing of the prothorax, that of the elytra being also distinctly coarser, the less rounded sides of the elytra, and the relatively narrower and less curved posterior tibiae. The stronger puncturing of the upper surface, much smaller size, etc., distinguish *S. malayanus* from the similarly coloured *S. patkainus*. *S. consobrinus* and *S. ovatulus* Lewis, from Japan, and *S. nigricans* Waterh., from China, have the elytra more finely punctate.

62.—*Scirtes melas*, n. sp.

Oval, shining, finely fusco-pubescent; black, the antennal joints 1-3, the knees, apices of tarsi, and tibial spurs testaceous, the under surface piceous; densely, finely punctate. Antennae long, rather slender, joint 3 small, barely as long as 2. Prothorax arcuately narrowed from the base, hollowed in front opposite the eyes. Elytra transversely depressed on the disc below the base, and with a distinct groove along the suture, sharply, narrowly margined, the apices unimpressed. Posterior coxal plates angulate externally. Posterior legs long.

the femora very broad, the tibiae arcuate and rather broad, the upper spur much shorter than the first tarsal joint, the latter thickened.

Length $2\frac{1}{2}$ -3, breadth $1\frac{1}{5}$ -2 mm. (σ ?)

Hab. INDIA, Nilgiri Hills (*H. L. Andrewes*).

Three specimens. Broader and a little less elongate than the insect identified by me as *S. fouqueti* Pic, from Saigon, the upper surface more finely punctured, the posterior coxae with distinct angular plate. The transverse depression on the elytra below the base is broader and deeper than usual in the females of certain allied forms, and may be common to the two sexes. The surface-puncturing is coarser than in the Bornean *S. sulcigerus*, which has the elytra sulcate near the apex in ♀, and finer and closer than in *S. patkainus* and *S. curvipes* from Assam. *S. fouqueti* is here placed under the genus *Ora*, *antea*, p. 144.

63.—*Scirtes nigricans*.

Scirtes nigricans Waterh. Cist. Ent. ii, pp. 567 (1880).

Short oval, convex, finely cinereo-pubescent, very shining; black or piceous, the antennae (except towards the tip), palpi, and legs (the femora in part excepted) testaceous; closely, minutely, the elytra more distinctly punctate. Head broad; antennae long, a little shorter in ♀, slender, joints 2 and 3 very short, equal. Prothorax rapidly narrowed from the base, hollowed in front opposite the eyes. Elytra narrowly margined, conjointly rounded at the tip. Posterior coxal plates rectangular. Posterior legs moderately long, the tibiae broad, curved, sharply carinate, the upper spur shorter than the first tarsal joint.

Length $2\frac{1}{2}$, breadth $1\frac{3}{4}$ -2 mm. (σ ♀.)

Hab. CHINA, Hong Kong (*J. C. Bowering*), Tygosan Island (*J. J. Walker*).

The type of *S. nigricans*, an imperfect ♀, was from "China" (*Bowering*), the second specimen from "Java," probably belonging elsewhere. Four other examples in the Museum—one from Hong Kong, two from "China" (*Bowering*), and one from Tygosan Island (σ ?)—are doubtless referable to the same species. These Chinese insects are almost intermediate between the Japanese *S. ovatulus* and *S. conso-brinus* Lewis, differing from the first-named in the rather more slender antennae and less oblong shape, and from the latter in the less rounded sides of the elytra. More material is required to establish the status of the Japanese forms.

64.—*Scirtes holosericeus*, n. sp.

Oval, moderately shining, testaceous, the head, prothorax, and posterior femora sometimes infusate, finely sericeo-pubescent; densely, minutely punctate. Head broad, the eyes large; antennae moderately long, joint 3

very small, shorter than 2, 4-11 filiform, elongate, not very slender. Prothorax rapidly narrowing from the base, hollowed in front opposite the eyes. Elytra with an indication of a faint sutural stria, feebly margined laterally, the reflexed margin only just visible from above. Posterior coxal plates rectangular. Posterior tibiae broad, feebly curved, sharply carinate, the upper spur shorter than the elongate first tarsal joint.

Length $2\frac{3}{4}$ -3, breadth $1\frac{1}{5}$ -2 mm.

Hab. BORNEO, Pengaron (*Doherty*), Kuching (*J. E. A. Lewis*).

Four specimens, varying in the colour of the head and prothorax, the three from Kuching almost certainly including the two sexes. The feebly margined, densely, minutely punctate elytra, filiform antennae, with minute third joint, and broad posterior tibiae, are the chief characters of this pallid *Scirtes*. It is nearly related to the Javan *S. pellucidus* Waterh., which is a more elongate insect.

65.—*Scirtes cyphonoides*, n. sp.

Oblong-elliptic, somewhat convex, shining, thickly, rather coarsely pubescent; testaceous, the head, a broad space on the disc of the prothorax, a large, oblique, indeterminate patch at the sides of the elytra at about the middle, and joints 5-11 of the antennae in part, piceous or infusate; densely, minutely, the head and prothorax a little more sparsely, punctate. Head broad, the eyes moderately large; antennae long, rather slender, joint 3 very small, short, barely as long as 2. Prothorax arcuately narrowed from the base, hollowed in front opposite the eyes. Elytra rather convex, narrowly margined, without grooves or costae. Posterior coxal plates rectangular. Legs long; posterior tibiae feebly curved, widened, sharply carinate, the long upper spur much shorter than the first tarsal joint.

Length 3, breadth 2 mm.

Hab. BURMA, Ruby Mines (*Doherty, ex coll. Fry*).

Two specimens, sex not ascertained. Near the Bornean *S. holosericeus*, and mainly distinguishable therefrom by its somewhat oblong shape (due to the less rounded sides of the elytra), the coarser pubescence, the smoother head and prothorax, and the infusate outer joints of the antennae. The oblique infuscation of the sides of the elytra is indefinite, as in various species of *Cyphon*, and may not be constant. The only described *Scirtes* from Burma is *S. quadrimaculatus* Waterh.*

66.—*Scirtes matanganus*, n. sp.

Short oval, somewhat convex, shining, thickly, rather coarsely pubescent; reddish-brown, the eyes black, the legs, antennae, and palpi testaceous, the under surface rufescent; closely, conspicuously punctate. Antennae long, slender, filiform, joint 1 stout, 3 very small, narrow, not so long as 2, 4-11

* There are two others, from Tharrawaddy, in Mr. Andrewes's collection, too imperfect for description.

elongate, more than twice the length of 3, filiform. Prothorax rapidly narrowed from the base, hollowed in front opposite the eyes. Elytra without grooves or foveae, the lateral margins rather broad, conspicuous from above. Posterior coxal plates rectangular. Posterior legs very long, the femora greatly developed, the tibiae curved and sharply carinate, the first tarsal joint much longer than the upper tibial spur.

Length $2\frac{2}{5}$, breadth $1\frac{3}{5}$ mm.

Hab. BORNEO, Mt. Matang, W. Sarawak (*G. E. Bryant*: xii.1913).

One specimen, possibly male. A small, oval, rather convex form, with the upper surface conspicuously punctured, the elytral margins prominent, the antennae very slender, and the posterior legs much elongated, their tibiae arcuate. Smaller and shorter than *S. holosericeus* (from Kuching and Pengaron), the upper surface more shining and not so finely punctured, the elytra more broadly margined, the antennae much more slender, the posterior tibiae narrower and more curved.

67.—*Scirtes sumatranus*, n. sp.

♀. Short oval, rather broad, shining, thickly pubescent, testaceous, the head and antennae (joints 1-3 excepted) infusate; densely, minutely, the elytra much more distinctly, punctate. Head broad, the eyes large; antennae long, joint 3 very small, shorter than 2, 4-11 elongate, flattened, comparatively stout. Prothorax very short, rapidly, arcuately narrowed from the base, hollowed in front opposite the eyes, the anterior angles deflexed and somewhat obtuse. Elytra strongly rounded at the sides, sharply margined, without grooves or foveae, a faintly impressed sutural line excepted. Posterior coxal plates rectangular. Posterior legs long, the tibiae feebly curved, widened, and sharply carinate, the upper spur about as long as the first tarsal joint.

Length $2\frac{4}{5}$, breadth 2 mm.

Hab. SUMATRA, Engaño Island (*Doherty, ex coll. Fry*).

One female, with the tip of the ovipositor exposed. A short oval, shining, testaceous form, with the elytra strongly rounded at the sides and conspicuously punctured, the antennae unusually elongate and comparatively stout. Broader and more robust than the Bornean *S. matanganus*, the posterior legs less elongate, the posterior tibiae less curved, the antennae much thicker. *S. pallidus* Schauf. (1887) (nec *pallidus* Waterh., 1880, from Penang), diagnosed in six words, and recorded doubtfully as from Atchin, Sumatra, cannot be conspecific with *S. sumatranus*.

68.—*Scirtes marginatus*.

Scirtes marginatus Waterh. Cist. Ent. ii, p. 570 (1880).

Hab. INDIA, Bombay (*Capt. Downes*: type), Sunderbans, Bengal (*F. W. Champion*); NICOBAR IS. (*Roepstorff*).

The type of this insect, ♀, is labelled "Bombay," India only having been given for it by Waterhouse. Three specimens—two females and one male—have recently been sent me from Bengal, and there are two others from the Nicobar Is. in the Museum. An oblong-oval, depressed form, piceous or blackish above, with the lateral margins of the prothorax, a broad stripe down the disc of each elytron (the two stripes confluent along the suture in the type), the legs, basal joints of antennae, and under surface in part, testaceous. The example from Bengal assumed to be ♂, with longer antennae, has joints 4–11 black.

69.—*Scirtes longiusculus*, n. sp.

♂. Oblong-oval, shining, rather coarsely pubescent; brownish-piceous, the antennae, palpi, basal and lateral margins of prothorax, elytral suture, legs, and under surface testaceous; closely, conspicuously punctate. Antennae slender, joint 3 very small, narrow, not longer than 2, the following joints moderately elongate. Prothorax rapidly arcuately narrowing from the base, hollowed in front opposite the eyes. Elytra long, without definite grooves or foveae, sharply margined. Fifth ventral segment emarginate at the apex. Posterior coxal plates rectangular. Posterior legs long, the tibiae feebly curved and sharply carinate, the spurs strongly curved, the longer upper one shorter than the first tarsal joint.

Length $2\frac{1}{2}$, breadth $1\frac{1}{2}$ mm.

Hab. BORNEO, Mt. Matang, W. Sarawak (*G. E. Bryant*: 31.i.1914).

One specimen, assumed to be ♂. More elongate and slightly narrower than *S. matanganus*, in great part infusate above, the basal joint of the antennae not so stout, the elytra less rounded at the sides, the posterior legs shorter, the tibiae straighter, the spurs strongly curved, the puncturing of the upper surface perceptibly finer.

70.—*Scirtes melanurus*, n. sp.

Elliptic, depressed, shining, closely, finely pubescent; testaceous, the eyes, antennae (joints 1–3 excepted), palpi, a broad space along the outer margin of the elytra from the middle to the apex, the under surface, and the legs in part, black or piceous; densely, minutely punctate. Antennae with joint 3 small, narrow, not so long as 2, 4–10 slightly longer than broad. Prothorax hollowed in front opposite the eyes, arcuately narrowing from the base. Elytra with traces of longitudinal grooves on the disc, narrowly margined. Posterior legs long, the femora broad, the tibiae rather narrow and feebly carinate, the upper spur twice the length of the lower one, and shorter than the elongate first tarsal joint.

Length $2\frac{1}{10}$, breadth $1\frac{1}{3}$ mm. (? ♂.)

Hab. BORNEO, Mt. Matang, W. Sarawak (*G. E. Bryant*: 28.i.1914).

One specimen. Recognizable by the pallid, densely, minutely punctate upper surface, the elytra broadly bordered with black along

their outer posterior half; the antennae black, except at the base. One of nine species of *Scirtes* obtained by Mr. Bryant on Mt. Matang, and very different from the rest, the present insect having the general facies of a small *Psylliodes*, fam. Halticidae. Compared with *S. difficilis* Waterh., from Penang, etc., *S. melanurus* may be known by its much less elongate shape, the more slender, darker legs, and the laterally extended blackish apical patch.

71.—*Scirtes difficilis*.

Scirtes difficilis Waterh. Cist. Ent. ii, p. 571 (1880).

Hab. PENANG (*Bowring*); CHINA (*Bowring*), Pwanche, Chusan Archipelago (*J. J. Walker*: 17.vii.1892).

A narrow, elongate form, testaceous in colour, with the apex of the elytra infusate or black. The specimen from Pwanche agrees well with the type. The posterior coxal plates are rectangular, as in *S. hemisphaericus*. The two examples in the Museum from the Bowring collection are labelled Penang (the type) and China respectively, the Penang locality requiring confirmation.

72.—*Scirtes nilgiriensis*, n. sp.

Short oval, rather convex, shining, closely pubescent; variable in colour—piceous, with the basal and outer margins of the prothorax, or the prothorax entirely, the elytral suture or humeral margin in some examples, two or more of the basal joints of the antennae, the legs in great part or entirely, and occasionally the head and basal half of the elytra (indeterminately) also in ♂, testaceous; closely, minutely, the elytra a little more distinctly, punctate. Antennae slender, moderately long, joint 2 very small, shorter than 3. Prothorax arcuately narrowed from the base, hollowed in front opposite the eyes. Elytra with an indication of a faint groove along the suture, narrowly margined; in ♀ with a shallow depression at the apex just within the sutural angle, which is more acute than in ♂. Posterior coxal plates rectangular. Posterior tibiae moderately widened, the elongate upper spur shorter than the first tarsal joint.

Length 2–2½, breadth 1⅓–2⅔ mm. (♂ ♀.)

Hab. INDIA, Nilgiri Hills (*H. L. Andrewes*, *Sir G. F. Hampson*).

A long series, varying in colour, including numerous females with the ovipositor protruding, apparently all referable to one species. An obscure, small form, not unlike the equally variable *S. suborbiculatus*, from Central America, but narrower, and with more slender antennae, etc. Compared with *S. pallidus* Waterh., from Penang and Siam, the present insect is a little more convex and has less densely punctate elytra. *S. nilgiriensis* would perhaps have been better placed in the group including Nos. 39–46.

AUSTRALIAN SPECIES.

73.—*Scirtes exoletus*.

Scirtes exoletus Waterh. Cist. Ent. ii, p. 573 (1880).

Hab. W. AUSTRALIA.

Waterhouse omitted to note that his type of *S. exoletus* was a female. The elytra having each a large shallow fovea near the suture towards the apex, a character indicative of that sex, and corroborated by the extruded ovipositor. No other specimen has since come to hand. One other species from Australia has been described, *S. helmsi* Blackb., the type of which is now in the British Museum.

Alphabetical numbered list of the species of *Prionoscirtes*, *Ora*, and *Scirtes* enumerated in this paper, the generic names indicated of those placed under *Prionoscirtes* and *Ora*; the new names marked with an asterisk:—

- | | | |
|---------------------------|-----------------------|------------------------------|
| *acuminatus 58. | exoletus, 73. | nigropunctata (Ora), 18. |
| *africanus, 21. | *flavocinctus, 29. | *nilgiriensis, 72. |
| *andamanus, 37. | *flavoguttatus, 30. | *patkainus, 59. |
| *angularis (Ora), 24. | *flavomaculatus, 2. | picta (Ora), 16. |
| *antiqua (Ora), 15. | *flavomarginatus, 13. | *quadrioveatus, 46. |
| *atrifrons, 57. | *flavonotatus, 35. | *reliquus (Prionoscirtes), 1 |
| *atrosignata (Ora), 17. | *floresianus, 55. | *retusus, 56. |
| *auriculatus, 40. | *forticornis, 12. | *rufotinctus, 51. |
| *bifoveatus, 45. | fouqueti (Ora), 23. | *rugipennis (Ora), 14. |
| *bifoveifrons (Ora), 13. | *gamma (Ora), 4. | *rugosissima (Ora), 19. |
| *bipustulatus, 28. | *gibbosa (Ora), 20. | *scaphiformis, 49. |
| *bituberculata (Ora), 6. | grandis, 52. | *sexfoveatus, 44. |
| brevenotata (Ora), 5. | grayi, 1. | *sphaericus, 27. |
| *buckleyi, 7. | *helodinus, 24. | *strigosus, 16. |
| *calcarata (Ora), 9. | *helvolus, 14. | *subcostatus, 18. |
| canescens, 53. | *holosericeus, 64. | *subulatus, 25. |
| *cassidiformis (Ora), 10. | *lacunosus, 41. | *sulcigerus, 39. |
| cayennensis, 5. | *laevicollis, 17. | *sumatranus, 67. |
| *cincticollis, 4. | *longiusculus, 69. | testaceicollis, 9. |
| *cinnamomea (Ora), 7. | *lutens, 6. | *tetrastigma, 33. |
| complanata (Ora), 2. | lutescens, 43. | thoracicus, 11. |
| *compressa (Ora), 21. | *macropus (Ora), 11. | *trinitatis, 10. |
| *coronata (Ora), 22. | maculatus, 32. | *triradiata (Ora), 1. |
| *crassicornis, 48. | *malayanus, 61. | uniformis, 54. |
| *curvipes, 60. | marginatus, 68. | *validus, 20. |
| *cyphonoides, 65. | marmorata (Ora), 3. | *vigintiguttata (Ora), 12. |
| *decemguttatus, 31. | *matanganus, 66. | *vittifrons, 22. |
| *decemnotatus, 36. | *melanurus, 70. | *zambesianus, 19. |
| *dichrous, 47. | *melas, 62. | |
| difficilis, 71. | *multiguttatus, 3. | SYNONYMS. |
| *dispersus, 15. | *nigeriensis, 23. | albomaculatus, 38. |
| elegans, 38. | *nigrans, 8. | bourgeoisii, 32. |
| elongatus, 50. | nigricans, 63. | irregularis (Ora), 18 |
| *ephippiatus, 34. | nigricornis (Ora), 8. | sericeus, 53. |
| *excavatus, 42. | *nigrolimbatus, 26. | sexmaculatus, 1. |

Horsell, Woking.

April 1918.

ON SOME SPECIES HITHERTO ASSIGNED TO THE GENUS *CERCYON*
(COLEOPTERA, HYDROPHILIDAE).

BY D. SHARP, M.A., F.R.S.

The little insects to which I am calling attention differ from the other species of *Cercyon* by a character that has hitherto escaped attention. The *Cercyons* possess a peculiarity in having on the metasternum an area in the middle differently sculptured from the rest of the sternite. In the *C. minutus* group, this area becomes much elevated in front, and stretches forwards to the strongly-elevated mesosternal lamina, with which in most of the species it comes in contact, thus leaving above the point of conjunction a peculiar lumen, or little vacant space. In order to appreciate this character it is necessary to view the under surface of the insect in profile. In addition to this peculiarity of the structure, there is also a distinction from ordinary *Cercyon* inasmuch as the diffuse punctuation of the elytra is reduced to vestiges of a few obsolete punctures irregularly placed. Also the species are never found in dung. These points would justify us in separating the group as a distinct genus. Rey placed them in his subgenus *Cerycon*, of which he says: "ce sous-genre remarquable se distingue, en outre, par son aire mesosternale plus brusquement et plus fortement relevée" ("Palpicornes," p. 344). But he missed the important points of a similar elevation of the metasternum, and the correlative relations of the two parts. He also placed *C. bifenestratus* in the subgenus, but as I have never seen that species I cannot speak of it. On the whole it appears to me that it will be best to treat *Cerycon* as a distinct genus, amending Rey's definition and leaving it doubtful whether *C. bifenestratus* belongs to it. Rey gives the mesosternal lamina as being "ovale ou naviculaire," but he missed the fact that it is narrow in *C. lugubris*. *C. minutus* may be taken as the type, it being the best known of the species, though structurally it is the least advanced of the genus, the little *C. sternalis* being the most differentiated.

I desire to thank Mr. Champion and Commander Walker for lending me their collections of these rare little insects.

1.—*Cerycon minutus*, Fabr.

This species is easily enough distinguished from all the others by the obsolescence of the striae towards the extremity of the elytra; the sutural stria is continued to the apex, but the others quite fade away; the apex is very indefinitely and obscurely paler than the last; the striae at the base are well-marked and their punctures distinct. The palpi are piceous, or flavo-piceous. The mesosternal lamina is rather broad, very

prominent, and is longitudinally convex, and it is separated from the strongly-elevated front point of the raised metasternal area by a distinct chink: this character and the elytral striation separate the species absolutely from all the following forms. The length with the head extended is usually quite $2\frac{1}{2}$ mm., but the species is a little variable, some specimens being rather smaller, and more pointed behind, and the metasternal chink somewhat reduced. At present it is unnecessary to distinguish these by a separate name. The male is distinguished by the dilatation of the apices of the lateral lobes from that of *C. lugubris*.

The name *minutus* by which this species was known for several generations has been changed on insufficient grounds by some authorities, but the proposal to do so does not appear to meet with general acceptance, being rejected by Seidlitz, Kuwert, and Rey.

Though far from abundant *C. minutus* is widely distributed in England and Scotland.

2.—*Cerycon granarius*, Er.

Readily distinguished from small *C. minutus* by the more shining elytra, the serial punctuation of which is distinct at the apex. The species is very like small *C. analis*, though the structure of the sterna is very different in the two, and in *granarius* the diffuse punctuation of the elytra is wanting. On the under surface the mesosternal plate is shorter than in *C. minutus*; it is oval, rather broad, and pointed behind; the metasternal anterior point very nearly touches the mesosternal lamella, indeed the two appear to be in contact, but a careful examination shows that there is a distinct gap between them.

From the following species *C. granarius* is distinguished by the shining elytra and the more inflated second joint of the palpi, as well as by the broader mesosternal lamella; the palpi are piceous-yellow.

I have only one specimen, which was given to me by G. R. Crotch at the time the species was first distinguished in this country (Ent. Annual, 1869, p. 38); it is a female, and has the elytra vaguely paler on the apex.

There is no reason to doubt the distinction of *granarius* from *lugubris*. C. J. Thomson was the first to point out the difference in the mesosternal lamina of the two (Skand. Col. ix, 1867, p. 126).

3.—*Cerycon lugubris*, Payk.

Extremely like the smallest specimens of *C. minutus*, but besides having the elytra striate at the tip, the structure of the sterna is quite

different. The mesosternal lamina is comparatively narrow, about three times as long as broad, the advanced angle of the metasternal area touches it, though seen in profile there is a minute lumen, or space, above the point of contact. In the male the lateral lobes are not dilated at the tip, the median lobe is blunt at the apex; the encasement is robust, and one of the lateral chitinisations is more sinuate than the other.

Hammersmith Marshes, Dec. 30th, 1862; New Forest, Aug. 10th, 1908; Lee, Kent, a long series (*Champion*); marsh, near Greenford (*E. A. Newbery in coll. Walker*).

Cerycon lugubris, var. *intermixtus*, var. n.

Ovalis, valde convexus, minus latus; niger, palpis fusco-testaceis, antennis, pedibus elytrorumque apice testaceis; mesosterni lamina angusta, contigua ad apicem metasterni. Long. capite extenso fere 2 mm.

Extremely similar to typical *C. lugubris*, but narrower, very convex, head especially narrower; the sternal structure almost the same. The male characters are a little different, being more delicate in *intermixtus*, the median lobe narrower and therefore more pointed, and the chitinisations, or sclerites, of the encasement very slender.

Weybridge, June 30th, 1864, two specimens; Turner's Wood, Hampstead, Jan. 24th, 1864, two specimens; with *lugubris* in several localities.

In *Champion's* collection there are two specimens of a doubtful species very near the var. *intermixtus*, but even smaller and narrower, one from Lee, the other from Walton-on-Thames.

4.—*Cerycon sternalis*, sp. n.

Ovalis, convexus, niger; palpis, antennarum basi, pedibus elytrorumque apice sordide testaceis, elytris sericeo-subopacis, striatis, striis ad apicem profundis; mesosterni lamina sat protuberante, sat lata, apice ad metasterni apicem contiguo. Long. capite extenso 2 mm.

Very similar to the smallest specimens of *C. minutus*, easily distinguished by the striation of the apex of the elytra and by the sternal structure. The front of the metasternal area is strongly elevated and overlaps the tip of the mesosternal lamina, hence the lumen, or space, above their conjunction is large. The mesosternal lamina is broad and, like the metasternal area, strongly punctured.

From *C. lugubris* and var. *intermixtus* this species is easily distinguished by the structure of the sterna, the mesosternal lamina being markedly broader.

Hammersmith Marshes, Feb. 25th, 1863; also two specimens given to me by Dr. Power as *C. lugubris*, and probably from the same locality; Sheppey (*Walker*).

Five specimens from Slapton Ley (*J. H. Keys in coll. Walker*) may be a variety of *C. sternalis*, but they have the mesosternal lamina a little smaller.

5.—*Cercyon pumilio*, sp. n.

Ovalis, angustus, valde convexus, niger, palpis antennarum basi, pedibus elytrorumque apice testaceis; elytris sericeo-subopacis, striatis, striis ad apicem profundis; mesosterni lamina sat protuberante, sat lata, basi ad metasterni apicem contigua; pedibus gracilibus. Long. capite extenso vix $1\frac{1}{2}$ mm.

This minute insect is only as large as *Cercyon pygmaeus*; though closely allied to *C. sternalis*, I do not think it will prove to be a variety of that; it is only one-fourth the bulk thereof, is of a slightly different shape, and the mesosternal lamina is not quite so broad.

Hammersmith Marshes, March 9th, 1863, one specimen.

Brockenhurst.

October 30th, 1918.

ON A NEW SPECIES OF *CAMPODEA* (*C. DEVONIENSIS*, SP. N.)
FROM SOUTH DEVON.

BY RICHARD S. BAGNALL, F.L.S.

Amongst a small collection of *Campodea* I had recently the opportunity of making in the neighbourhood of Torquay is a smallish species which cannot be identified with any described form. It belongs to the third section of the genus, which is distinguished by the absence of the macrochaetae at the hind angles of both the meso- and metanotum. This section may be further subdivided, the one group containing those wherein both pairs of the anterior (submedian and sublateral) macrochaetae are present in the mesonotum and the submedian anterior pair present in the mesonotum, and the other group containing those in which the submedian anterior pair of macrochaetae is absent in both the meso- and metanotum.

In this second group Silvestri places two species, *C. emeryi*, which retains the sublateral anterior macrochaetae in the mesonotum, and *C. ribauti*, wherein both anterior pairs in the mesonotum are lost.

Campodea devoniensis, sp. n.

Length 2.5-3.0 mm. Belonging to the second subdivision of the third section of the genus and having the notal macrochaetae numbered as in

C. emeryi Silv. Pronotal macrochaetae much as in *emeryi*, but with only 3-4 points: normal microchaetae moderately long and pointed. Abdominal tergites without submedian macrochaetae; segments 8 and 9 with lateral, and 7-9 with posterior, sublateral macrochaetae present. Cerci 8-10 segmented, similar to those in *C. emeryi*, but with the upwardly directed macrochaetae broadly bifurcated at apex, and, in the basal cercal joints, usually with a further bifurcation of the main arm in addition to two or three subsidiary branches or points below the secondary arm. Antennae 17-20-jointed (I have only seen young examples with perfect antennae, my mature specimens being mutilated in this respect). Apical seta of stylus as in *C. staphylinus*.

Hab. Torquay and neighbourhood, October 1918.

This species can only be compared with *C. emeryi*, from which it differs sharply in the arrangement of the abdominal macrochaetae; in the structure of the macrochaetae of the pronotum, abdomen, and cerci, and in the type of stylus.

Rydal Mount, Blaydon-on-Tyne.

October 26th, 1918.

HORMOPEZA OBLITERATA ZETTERSTEDT ASSOCIATED WITH
MELANOPHILA ACUMINATA DE G. ON BURNING PINES IN BERKSHIRE.

BY J. E. COLLIN, F.E.S.

Mr. W. E. Sharp in his paper on "*Melanophila acuminata* De G. in Berkshire" in the last number of this Magazine (p. 244), referred to a Dipteron as being the only other living creature besides the beetle, capable of living in, and apparently enjoying, the very high temperature caused by the immediate proximity of burning peat and glowing pine-stumps. Two specimens of this fly, both of them males, were sent to me for identification, and I was surprised and delighted to find that they were representatives of the very little known Empid genus *Hormopeza*.

This genus was erected by Zetterstedt in 1840 for the new species *obliterata* from Lapland, and there is still no other known Palaearctic species. It has been recorded from Finland by Bonsdorf and Frey, while the "Novum Empidarum genus" described and figured (but not named) by Becker in 1900 in his "Beitrag zur Dipteren Fauna Sibieriens" (Acta Soc. Sc. Fenn. xxvi, No. 9) from a single damaged male specimen taken by Sahlberg on the Island of Nikander, was undoubtedly *Hormopeza obliterata*. I know of no other record of its occurrence.

The genus may be recognised by its venation coupled with the shape of the antennae.

The venation somewhat resembles that of *Hilara*, but the branches of the cubital fork widely diverge; the subcostal vein is not thickened towards its end and there is no darkened "stigma" below the tip of this vein; the lower branch of postical fork is more angulated at its junction with the anal vein; costal pubescence only microscopic except at extreme base, where there are a few yellow hairs and a strong yellow bristle. The antennae are short; the first two joints very much fused together, third joint large, ovate, but rather more convex below than above; style very short, three jointed, the first two joints stout (first joint very short and indistinct), third joint shorter than second and spine-like.

The eyes are closely approximated though not actually touching on the frons in the male, with the facets of equal size. Proboscis short, normally directed diagonally forwards and slightly projecting. Thorax longer than broad, not much arched, dusted greyish. All bristles and hairs yellowish. Acrostichals short, biserial; dorsocentrals rather longer, uniserial, ending in 2-3 pairs of longer bristles behind; scutellum with a fringe of yellow bristles of which six are long. Hypopleura bare.

Abdomen longer than thorax, not very broad, slightly narrowed before the hypopygium, black and shining. Pubescence yellowish, short and scattered on disc, longer on hind margins, especially at sides. Hypopygium globular, shining black with an opening above between the two side lamellae, from the base of this opening two long flattened papillae, placed close together and clothed with short hairs, project upwards; side lamellae bearing several long yellowish bristles.

Wings longer than the abdomen; veins yellowish, those about tip and on lower half of wing faint. Halteres yellow.

Legs simple and rather elongate, dark brownish-black and rather shining, end of coxae, the trochanters, tip of femora, and base of tibiae, yellowish brown, most distinctly so on anterior pairs. Femora short-haired. All tibiae with short yellowish-brown bristles, longest and almost spinose on hind tibiae. Tarsi all slightly longer than their respective tibiae and short-haired.

The dusted thorax with its yellow hairs and bristles, together with the shining black abdomen, makes the insect superficially somewhat resemble a species of *Tachydromia*, from which, however, it is of course abundantly distinguished by the venation.

Zetterstedt placed the genus in his *Hybotinae* (which also included what are now known as the *Ocydrominae*) between the genera *Trichina* (which he afterwards called *Microphorus*) and *Iteaphila*. In Kertész's "Katalog" it is placed in the *Empidinae* between *Iteaphila* and *Rhagas*, followed by *Hilara*.

I feel convinced that its correct position is in the *Ocydrominae*, to which subfamily, indeed, *Rhagas* should also be transferred; but I hope to deal more fully with this question on some future occasion.

Finally, my thanks are due to Mr. W. E. Sharp for enabling me to

become acquainted with this interesting Empid genus and remarkable addition to our List of British Diptera, also for generously placing the specimens unreservedly at my disposal.

Sussex Lodge, Newmarket.

November 14th, 1918.

Amarochara bonnairei Fauv. (*glabriventris* Rye) at Box Hill.—Among some beetles sent to me to look over by my friend Mr. W. West were a few specimens of the above-named rare Staphylinid. They were taken by sweeping between 5 and 6 P.M. in July 1916. Mr. West tells me that there was a bees'-nest in the vicinity, but this may or may not have any connection with the *Amarochara*, which, according to Continental authorities, is associated with *Lasius fuliginosus* and *brunneus*, and is very rare. First taken in Britain by Dr. Power in the runs of *Lasius fuliginosus* at Mickleham in May and June 1863, and described in February 1865, by Rye, under the name of *Oxypoda glabriventris* (Ent. Mo. Mag. i, p. 212), its rediscovery near the old locality is very interesting, since Fowler (Col. Brit. Isls. ii, 1888, p. 47) states that "it has not since been captured," nor have I any recollection of any subsequent record*. The insect is remarkable on account of the short 4th antennal joint, which is a flat plate more than twice as broad as long.—E. A. NEWBERY, 13 Oppidans Road, N.W. 3: Nov. 13th, 1918.

Vanessa antiopa in the north of Essex.—Mr. Guy Maynard, Curator of the Museum at Saffron Walden, has kindly supplied the following particulars of the capture of a "Camberwell Beauty" last spring. The butterfly was seen on April 3rd, 1918, sunning itself on the pavilion in the playing-fields of the Friends' School at Saffron Walden. It was captured by C. F. and P. W. Tebbut, boys of the school, by whom it has been presented to the Saffron Walden Museum. It measures $3\frac{1}{2}$ inches across the wings. The surface is slightly rubbed and dull, and the border blanched to a creamy white, indicating a hibernated specimen, and probably an immigrant from the Continent. Mr. Maynard adds that, knowing the school and the science master in charge of the boys, he has every faith in the account given, and there is, consequently, no evidence against the assumption that the specimen was a genuinely wild one.

[The parts of the coast nearest to Saffron Walden lie more or less south of east, and from 35 to 45 miles distant.—EDS.]

* Mr. E. G. Elliman (Ent. Mo. Mag. xxxiii, p. 279) mentions the capture of two specimens of "*Ilyobates glabriventris*" on June 6th, 1897, by sweeping in a wood in the Chilterns district.—EDS.

WATKINS & DONCASTER, Naturalists,

Keep in stock all Articles for Entomologists, Ornithologists, Botanists, &c.: Umbrella Net, 7/-; Folding Cane or Wire, 3/6, 4/-, 4/6; Plain Ring Net, 1/3, 2/-, 3/-; Pocket Boxes, 6d., 9d., 1/-, 1/6; Store Boxes, with Camphor Cells, 2/6, 3/6, 4/-, 5/-, 6/-; Zinc Pocket Boxes, 9d., 1/-, 1/6, 2/- Setting Boards, from 5d. to 1/10; Complete set of 14 boards, 10/6; Breeding Cages, 2/6, 4/-, 5/-, 7/6; Sugaring Tins, 1/6, 2/-; Sugaring Mixture, ready for use, 1/9 per tin; Setting Houses, 9/6, 11/6, 14/-; Glass Topped and Glass Bottomed Boxes, from 1/- per doz.; Zinc Killing Boxes, 9d., 1/-; Coleoptera Collecting Bottles, 1/6, 1/8; Collecting Box, containing 26 tubes (very useful for Coleopterists, Microscopists, &c.), 4/6; Brass Chloroform Bottle, 2/6.

Improved Pocket Papa-digger in leather sheath (strongly recommended), 1/9; Steel Forceps, 1/6 to 3/- per pair; Pocket Lens, from 1/6 to 8/6.

Taxidermists' Companion, containing most necessary implements for skinning, 10/6; Scalpels, with ebony handles, 1/3; Fine Pointed Scissors, 2/- per pair; Brass Blow-pipes, 4d., 6d.; Egg Drills, 2d., 3d.; ditto, best quality, 9d. each; Botanical Vasculum, 1/6, 2/9, 3/6, 4/6; Label List of British Macro-Lepidoptera, with Latin and English Names, 1/6; List of British Lepidoptera (every species numbered), 1/-; or on one side for Labels, 2/-.

SILVER PINS FOR COLLECTORS OF MICRO-LEPIDOPTERA, &c., as well as minute insects of all other families.

We stock various sizes and lengths of these Silver Pins, which have certain advantages over the entomological pins usually employed.

For instance, insects liable to become greasy and verdigrisy, like Sesiidae, are best pinned on Silver pins, which will last much longer than the ordinary pins (whether enamelled black, or gilt, or silvered).

We shall be pleased to send pattern cards on application.

A large stock of British, European, and Exotic Lepidoptera,
Coleoptera, and Birds' Eggs.

ENTOMOLOGICAL PINS.

The "DIXON" LAMP NET (invaluable for taking Moths off street lamps without climbing the lamp posts), 3s. 6d.

SHOW ROOM FOR CABINETS, &c.

36, STRAND, LONDON, W.C., ENGLAND.

Birds and Mammals, &c., Preserved & Mounted by first-class workmen.

Our New Price List (100 pp.) sent post free to any address on application.

FOR SALE.

16 NATURAL HISTORY CABINETS

BELONGING TO THE LATE DR. MASON,

ALSO

FOUR MICROSCOPICAL CABINETS,

Containing Microscopical Slides by G. R. VINE, of Sheffield.

ALSO

400 BRITISH BIRDS IN CASES.

Apply—Mrs. MASON, TRENT HOUSE, BURTON-ON-TRENT.

STEVENS' AUCTION ROOMS. Estd. 1760.

38 King Street, Covent Garden, London, W.C. 2.

IMPORTANT NOTICE.

Mr. J. C. STEVENS regrets to inform his clients that the Sale of the Collection of British Noctuae, etc., etc., advertised to take place on Tuesday, December 10th. has been CANCELLED.

Scale of Charges for Advertisements.

Whole Page.....£3. Half Page.....£1 11s. 6d. Quarter Page.....17s.

Lowest charge, 7s. up to 5 lines; 1s. per line afterwards.

Repeated or continuous Advertisements per contract.

There is no charge for Lists of Duplicates and Desiderata.

All payments and applications for the above should be made to

R. W. LLOYD, 1 5, Albany, Piccadilly, W.

AUTHORS are requested to send their communications and proofs to either
J. J. WALKER, Aorangi, Lonsdale Road, Summertown, Oxford; or
G. C. CHAMPION, Broomhall Road, Horsell, Woking.

ENTOMOLOGICAL NEWS.

A forty-eight page illustrated magazine, issued monthly, except in August and September, devoted to the study of INSECT LIFE. It contains a resume of the proceedings of a number of Entomological Societies, and also articles by the leading Entomologists in the United States and Canada. Valuable information for the beginner, the economic entomologist, and the systemist. TWO DOLLARS a year in advance. Single copies, 25 cents. Address—

ENTOMOLOGICAL NEWS,

The Academy of Natural Sciences,

1900 RACE STREET, PHILADELPHIA, PA

THE CANADIAN ENTOMOLOGIST.

A MONTHLY MAGAZINE DEVOTED TO THE STUDY OF SCIENTIFIC ENTOMOLOGY.

Volume 50 is now in course of publication. Back volumes can be supplied. It is the oldest established Magazine of the kind in America, and has a world-wide circulation. Subscription, \$2 per annum, payable in advance, which includes a copy of the Annual Report of the Entomological Society of Ontario to the Legislature. Editor, Dr. E. M. Walker, Biological Department, University of Toronto, Toronto, Canada.

Address: Entomological Society of Ontario, Guelph, Canada.

WICKEN FEN.—The Custodians, the National Trust, appeal to Entomologists for assistance towards the providing of the Watcher who guards the Fen against abuse. This expense, which is absolutely necessary, is provided by voluntary subscriptions, and I am desired to ask for Contributions, which will be gratefully received, however small.—W. G. SHELDON, Honorary Treasurer of the Wicken Fund, Youlgreave, South Croydon.

A SYNOPSIS OF THE BRITISH SIPHONAPTERA, by the
 Hon. N. CHARLES ROTHSCHILD, M.A., F.L.S., illustrated by Eight Plates
 (issued in the Ent. Mo. Mag. for March, 1915, pp. 49-112), price 1s. 6d. Apply to
 the publishers.

THE BIOLOGY OF DRAGONFLIES

(ODONATA or PARANEUROPTERA)

By R. J. TILLYARD, M.A., B.Sc., F.L.S., F.E.S.

Demy 8vo. pp. xii+398. With 4 plates and 188 text-figures. 15s net.

CAMBRIDGE ZOOLOGICAL SERIES.

"Never before has the group received such detailed and well-balanced treatment as Mr Tillyard has given. . . . Students of the anatomy and development of insects are much indebted to him for providing in this convenient form a trustworthy guide to the external and internal structure of dragonflies at various stages of their life-histories."—*Nature*

Prospectus on application

Cambridge University Press, Fetter Lane, London, E.C. 4, C. F. Clay, Manager

COLEOPTERA ILLUSTRATA,

CARABIDÆ.

Vol. I, No. 4.

CARABIDÆ.

PRICE \$1.

CONTENTS.

PRICE \$1.

OMOPHRON

limbatum Fabr.

NOTIOPHILUS

biguttatus Fabr.

DYSCHIRIUS

nitidus Dej.

salinus Schaum.

globosus Hrbst.

LAEMOSTENUS

complanatus Dej.

SPHODRUS

leucophthalmus Linn.

juvencus Ball.

CALATHUS

caucasicus Chaud.

fuscipes Goeze

erratus Sahl.

DOLICHUS

halensis Schall.

viridithorax

PLATYNUS

scrobiculatus Fabr.

ANCHOMENUS

assimilis Payk.

nyaneus Dej.

AGONUM

sexpunctatum Linn.

marginatum Linn.

mulleri Hrbst.

scitulum Dej.

CELBANARIUS

dorsalis Pontopp.

PTEROSTICHUS

nimbatus Morav.

euryomorpha Tsch.

depressidorsis Btrr.

findelli Dej.

zieglerii Duff.

metallicus Fabr.

panzerii Panz.

fasciatuspunctatus

justusii Redt. [Grentz]

dufourii Dej.

ambiguus Fairm.

rhilensis Rttbg.

swanekicus Rtrr.

lacunosus Chaud.

PTEROSTICHUS

reiserii Gangl.

validiusculus Chaud.

caucasicus Men.

bicolor Arag.

cribratus Dej.

variolatus Dej.

fossulatus Quens.

ABAX

passerinii Dej.

PSEUDOPERCUS

politus Dej.

MOLOPS

elatus Fabr.

piceus Panz.

TANYTHRIX

senilis Schaum.

CORSYRA

fusula Fisch.

MASOREUS

egyptiacus Fej.

LESIA

chlorocephala Hoffm.

WITH INDEX FOR VOL. I., COMPLETE.

ACCURATE ENLARGED PEN DRAWINGS, UNIFORM IN SIZE,

ONE TO A PAGE 8vo.

COLEOPTERA ILLUSTRATA will be mailed upon receipt of price.

HOWARD NOTMAN, 136 JORALEMON STREET, BROOKLYN, N.Y., U.S.A.

CONTENTS.

	PAGE
New and little-known saltatorial Dascillidae (<i>concluded</i>).— <i>G. C. Champion, F.Z.S.</i>	265
On some species hitherto assigned to the genus <i>Cercyon</i> (Coleoptera, Hydrophilidae).— <i>D. Sharp, M.A., F.R.S.</i>	274
On a new species of Campodea (<i>C. devoniensis</i> , sp. n.) from South Devon.— <i>R. S. Bagnall, F.L.S.</i>	277
<i>Hormopeza obliterated</i> Zetterstedt associated with <i>Melanophila acuminata</i> De G. on burning pines in Berkshire.— <i>J. E. Collin, F.E.S.</i>	278
<i>Amarochara bonnairei</i> Fauv. (<i>glabriventris</i> Rye) at Box Hill.— <i>E. A. Newbery</i> ..	280
<i>Vanessa antiopa</i> in the north of Essex.— <i>Eds.</i>	280
TITLE-PAGE, INDEX, ETC.	i-xix

THE NATURALIST:

A MONTHLY ILLUSTRATED JOURNAL OF

NATURAL HISTORY FOR THE NORTH OF ENGLAND

EDITED BY

T. SHEPPARD, M.Sc., F.G.S., F.R.G.S., F.S.A.Scot.,
THE MUSEUM, HULL;

AND

T. W. WOODHEAD, Ph.D., M.Sc., F.L.S.,
TECHNICAL COLLEGE, HUDDERSFIELD;

WITH THE ASSISTANCE AS REVISERS IN SPECIAL DEPARTMENTS OF

J. GILBERT BAKER, F.R.S., F.L.S., GEO. T. PORRITT, F.L.S., F.E.S.,
Prof. P. F. KENDALL, M.Sc., F.G.S. JOHN W. TAYLOR, M.Sc.,
RILEY FORTUNE, F.Z.S.

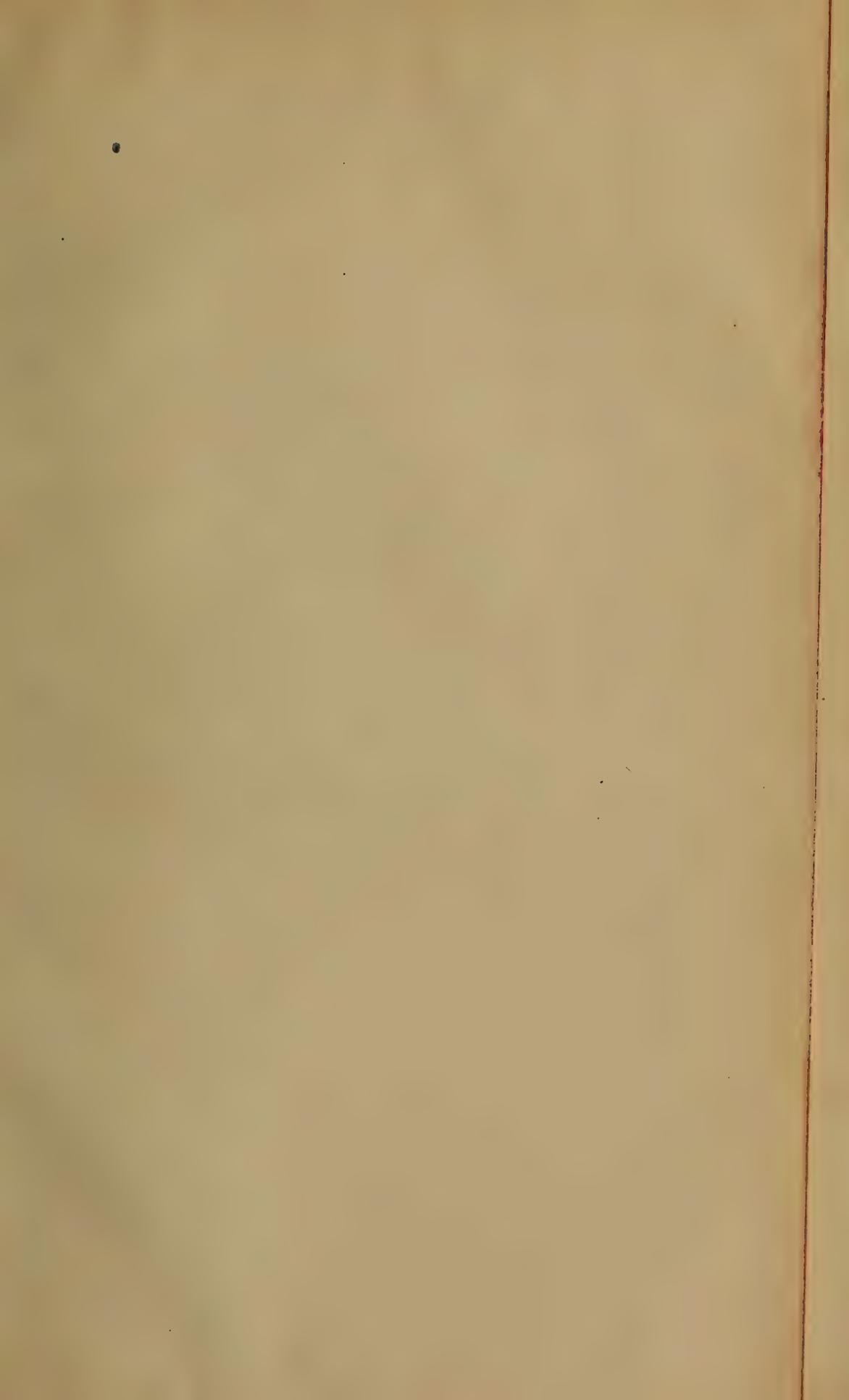
The Journal is one of the oldest Scientific Periodicals in the British Isles, dating back to 1833, and is circulated widely amongst the principal Naturalists of the country.

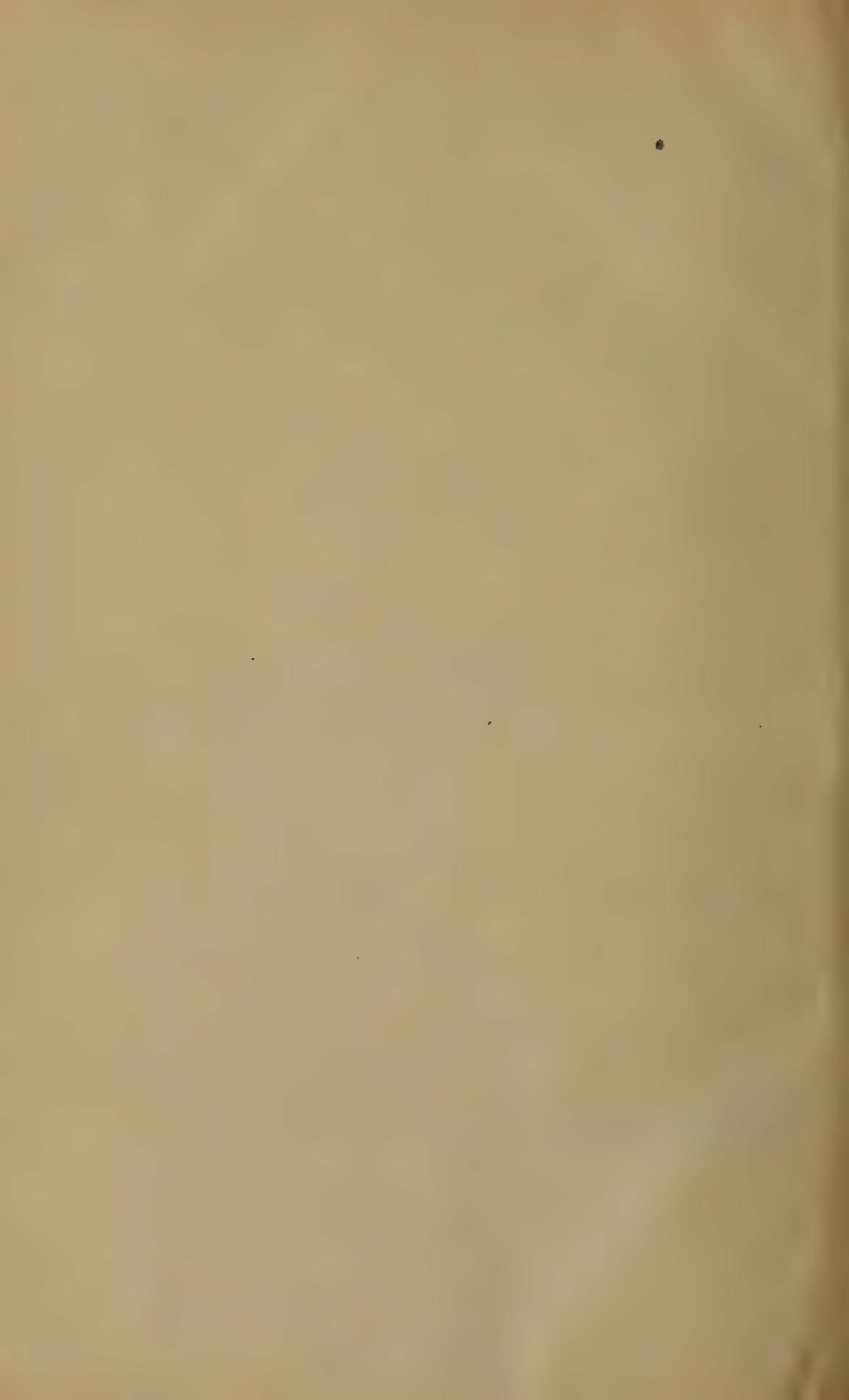
LONDON: A. BROWN AND SONS, LIMITED, 5, FARRINGTON AVENUE, E.C.

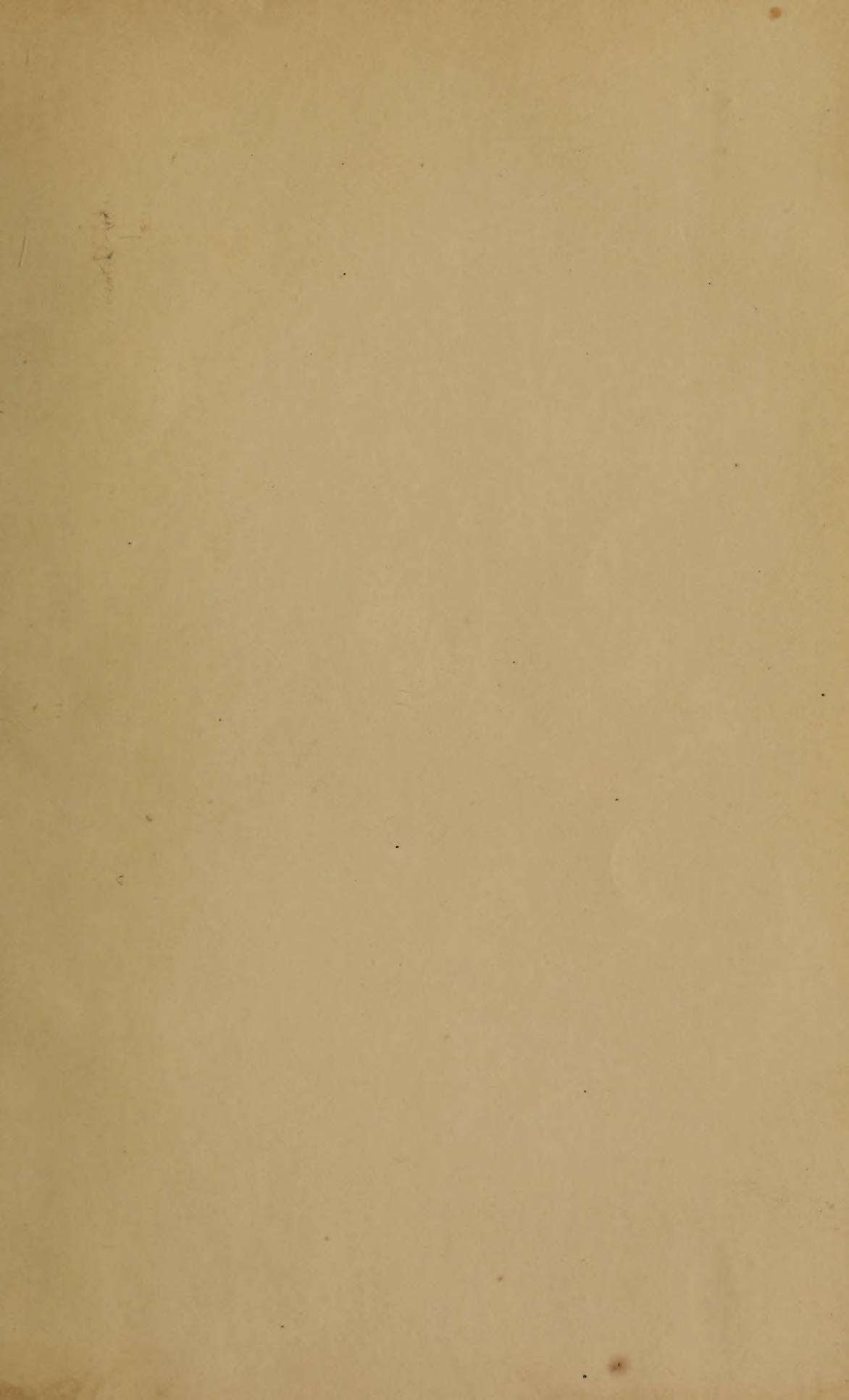
And at Hull and York.

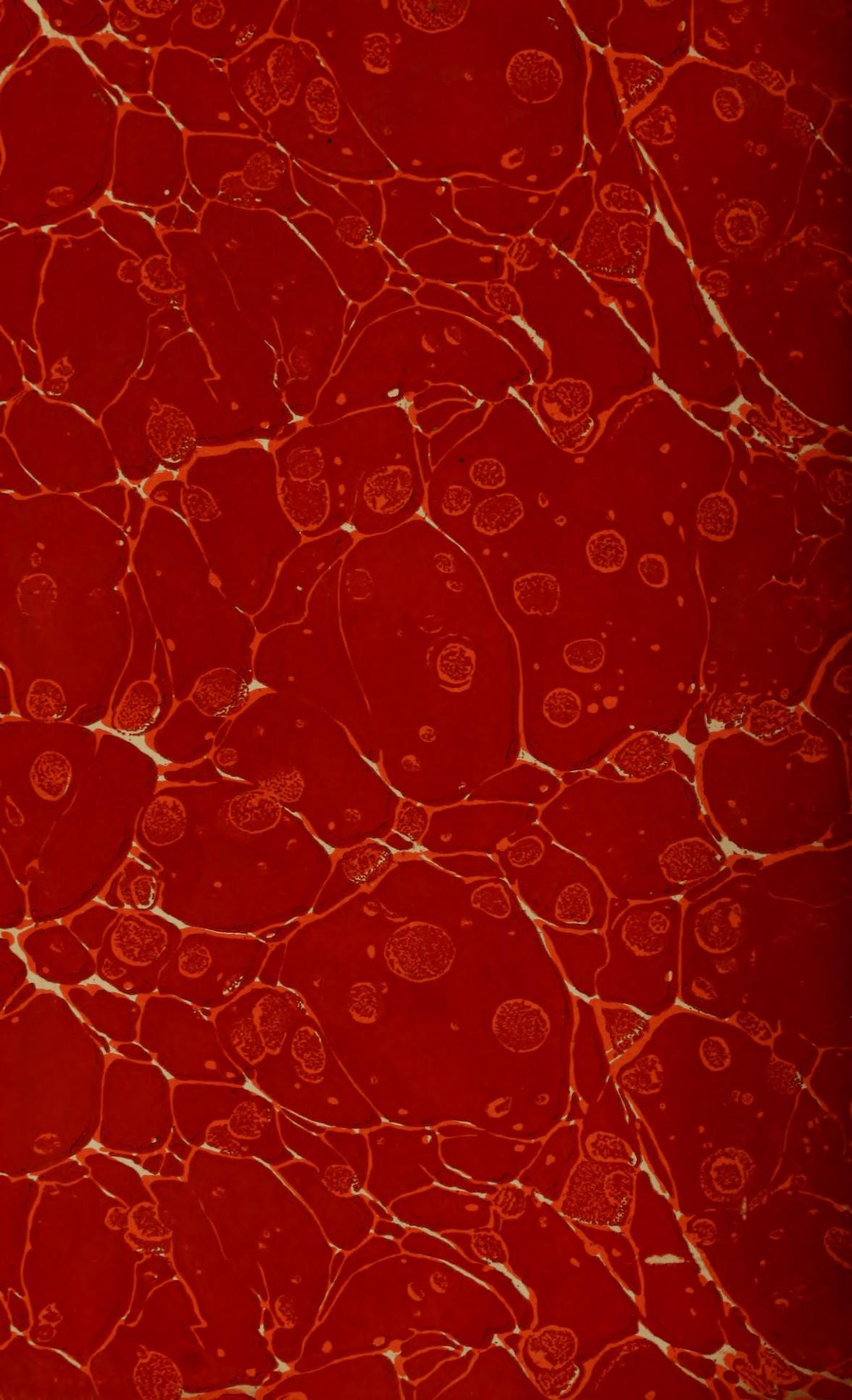
PRICE, SIXPENCE NET. BY POST SEVENPENCE.

Prepaid Subscription, 6s. 6d. per annum, post free.









AT
TI

JAN 17 1921

FEB 1 1920

BOALIST

2/29/53

2/29/53

8-21-54

Kingston

8-21-54

SMITHSONIAN INSTITUTION LIBRARIES



3 9088 00908 2363

BHL