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“The conceptions of great and small exist in our minds only, and in relation to ourselves, and for this reason the structures of almost imperceptible insects are in reality just as admirable as those of animated masses of colossal size.”—*Osten Sacken*.

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INDEX.

	PAGE
CONTRIBUTORS.....	i
GENERAL INDEX.....	ii
SPECIAL INDEX—	
Coleoptera	vii
Diptera	viii
Hemiptera	ix
Hymenoptera	x

	PAGE
SPECIAL INDEX (<i>continued</i>)—	
Lepidoptera.....	x
Neuroptera	xi
Orthoptera	xi
GENERA AND SPECIES NEW TO SCIENCE...	xii
" " " " " BRITAIN...	xiii
EXPLANATION OF PLATES	xiv
ERRATA	xiv

INDEX TO CONTRIBUTORS.

	PAGE
Adams, F. C., F.E.S.	255
Babington, P. L.	88
Bailey, W. E., F.L.S.	37
Bankes, Eustace R., M.A., F.E.S....	30, 39, 80, 112, 125, 188, 210, 275
Barrett, C. G., F.E.S....	88, 113, 161, 211, 217, 249, 265
Beare, T. Hudson	234, 276
Beaumont, Alfred, F.E.S.	40, 64, 259
Bennett, W. H.	63, 64
Bergroth, Ewald, M.D.	111
Bethune-Baker, G. T., F.L.S.	235
Bignell, G. C., F.E.S.	185, 255
Blandford, W. F. H., M.A., F.Z.S.	228
Bloomfield, Rev. E. N., M.A., F.E.S.	185
Bouskell, Frank, F.E.S.	139
Bradley, R. C.	17, 63, 116, 164
Briggs, C. A., F.E.S.	186, 236
Bromilow, Frank, F.E.S.	38, 114
Butler, E. A., B.A., F.E.S....	235
Campbell, W. Howard	211
Carlier, E. W., M.D.	235
Carpenter, George H., B.Sc.	129, 164
Champion, G. C., F.Z.S....	86, 100, 114, 115, 135, 185, 225, 258, 259
Chapman, T. A., M.D., F.E.S....	54, 163, 258
Christy, W. M., F.E.S.	275
Cockerell, T. D. A., F.Z.S.	57
Day, F. H.	62
Donisthorpe, H. St. J., F.E.S. ...	63, 136, 162
Douglas, J. W., F.E.S.	17, 28, 40, 73, 87, 136, 154
Druce, Hamilton H., F.Z.S.	9

	PAGE
Eaton, Rev. A. E., M.A., F.E.S. ...	22, 87, 98, 133, 162, 194, 261
Edwards, James, F.E.S.	101
Fowler, Rev. Canon W. W., M.A., F.L.S....	22, 68, 92, 168, 284
Fraser, Mrs. Jane.....	146
Freer, Richard, M.B.....	37
Gardner, J., F.E.S.	111
Gardner, Willoughby	212
Goss, Herbert, F.L.S. ...	22, 43, 65, 68, 91, 92, 120, 168, 264, 283, 284
Griffiths, G. C., F.E.S.	9
Halbert, J. N.....	64
Hey, Rev. W. C., M.A.	115
Hudson, G. V., F.E.S.	11
Jacoby, Martin, F.E.S.....	16
Johnson, Rev. W. F., M.A., F.E.S.....	10, 38, 62, 134, 236, 258
Jones, Albert H., F.E.S.....	175
Keys, James H.	210, 279
King, J. J. F. X., F.E.S.	257, 275
Klapálek, Prof. F., F.E.S.	121, 123
Knaggs, H. G., M.D., F.L.S. ...	5, 60, 75, 101, 130, 164, 201, 252, 274
Lemann, F. C., F.E.S.....	220, 246
Lewis, George, F.L.S.	32, 244
McLachlan, Robert, F.R.S....	39, 52, 85, 164, 173, 185, 186, 238, 270
Maskell, W. M.	171
Mason, P. B., F.L.S.	231
Matthews, Coryndon, F.E.S.....	39
Meade, R. H.....	69, 107, 136, 156
Meldola, Prof. R., F.R.S.	161

	PAGE		PAGE
Merrifield, F., F.E.S.	112	Still, Major J. N., F.E.S.	211
Meyrick, E., B.A., F.Z.S.	230	Sule, Karel ...	87
Milton, F.	85	Swale, Harold, M.B.	16, 124
Morice, Rev. F. D., M.A., F.E.S.	259	Taylor, E. H.	111
Morton, K. J., F.E.S. ...	62, 212, 257	Thornley, Rev. A., M.A., F.E.S.	280
Newstead, R., F.E.S.	179, 204, 232	Thurnall, A. ...	183, 184
Nicholson, W. E., F.E.S.	220, 246	Tillett, B. C.	211
Norris, A.	202	Tomlin, B.	135
Ormerod, Miss E. A., F.E.S.	169	Turner, H. J., F.E.S. ...	43, 67, 90, 119, 139, 167, 188, 216, 237, 263, 283
Packard, A. S., M.D., Hon.F.E.S.	155	Verrall, G. H., F.E.S.	76, 88, 140
Piffard, A.	213	Wainwright, C. J. ...	20, 41, 66, 118, 138, 166, 172, 187, 237, 262, 281
Pierce, F. N., F.E.S. ...	21, 41, 89, 118, 262, 281	Walker, James J., R.N., F.L.S. ...	13, 115, 133, 162, 163, 207, 216
Porritt, G. T., F.L.S.	12, 223, 231	Walsingham, Lord, M.A., LL.D., F.R.S. ...	5C, 199
Prideaux, R. M.	132	Watkins, W.	38, 211
Richardson, N. M., B.A., F.E.S.	213	Watts, Charles W.	12
Rye, Bertram G., F.E.S.	276	Webb, Sydney ...	61
Saunders, E., F.L.S.	35, 115, 196, 254, 260	Williams, H.	67
Sharp, D., M.A., M.B., F.R.S.	31, 84, 163, 225, 256	Wilson, G. F., F.R.S.	4
Shipp, J. W.	15, 245	Wood, J. H., M.B.	1, 43, 93, 150, 272
Skinner, Percy F.	276	Wood, Rev. Theodore, F.E.S.	277, 278
Smith, W. W.	54		

GENERAL INDEX.

	PAGE
<i>Adicella filicornis</i> , Pict., in the New Forest ...	185
<i>Adimonia celandica</i> , Boh., at Westward Ho! ...	278
<i>Aëpophilus Bonnairei</i> , Sign., in the Isle of Wight ...	258
<i>Agriotypus armatus</i> , Curtis, in Perthshire ...	62
<i>Aleochara maculata</i> , Bris., at Guildford ...	185
<i>Aleurodes</i> , A new species of, 73; brassicæ, Walk., Great abundance of, 39; from Dorset, On two species of, 154; proletera, &c., 40; rubicola, Dgl. ...	87
<i>Aleuropteryx lutea</i> , Löw, identical with <i>Coniopteryx lutea</i> , Wallengr.?, Is ...	121
<i>Andrena cineraria</i> and <i>fulva</i> in the imago state in December, 63; <i>rosæ</i> , var. <i>Trimmerana</i> , A black variety of ...	236
<i>Anisolabis annulipes</i> , Luc., at Tavistock: an earwig unrecorded for Britain ...	124
<i>Aphodii</i> , Notes on ...	276
<i>Aphodius consputus</i> , Creutz ...	115
<i>Aporia cratægi</i> introduced at Windsor ...	112
<i>Arhopala</i> from Borneo, Description of a new, and note on a species of <i>Lampides</i> ...	9
Armagh, Lepidoptera at, in 1893 ...	38
<i>Aspidiotus destructor</i> , Sign.?, What are the specific limits of ...	57
Asymmetry of markings in the <i>Uraniidæ</i> ...	9
<i>Bactra furfurana</i> bred, with a description of the larva, 183; The food-plant of: a correction ...	211
Belfast district, Lepidoptera in the ...	12
<i>Bittacus chilensis</i> , Cave-frequenting habit of ...	39

Bluebottle Fly in New Zealand, The European	54, 136
<i>Bolitophila luminosa</i> , Observations on the New Zealand glow-worm	202
<i>Bombus soroensis</i> , Fab., at Ilfracombe	260
<i>Butalis chenopodiella</i> , 184; hitherto undetermined, Note on a	112
Butterflies, About some Samoan	146
<i>Callimorpha Hera</i> at home in South Devon	223
<i>Calocampa vetusta</i> in January	62
<i>Carpocapsa nimbana</i>	184
<i>Catocala fraxini</i> , L., at Norwich	235
Cave-frequenting habit of <i>Bittacus chilensis</i>	39
<i>Ceuthorrhynchus suturellus</i> , Gyll., &c., at Snodland	133
<i>Chæræas graminis</i> , Linn., in the South of Scotland, Abundance of caterpillars of the Antler Moth	169
<i>Cheimatobia brumata</i> and its destruction	4
Chigoe in Asia, The	228
<i>Chirotica maculipennis</i> , Gr.: a species of <i>Ichneumonidæ</i> new to Britain	40
<i>Chrysophanus dispar</i> and <i>Noctua rubroscæ</i> , The present market value of	11
<i>Cionus longicollis</i> , Ch. Brisout: an addition to the British List	100
<i>Cloantha perspicillaris</i> at Norwich... ..	88
<i>Clunio marinus</i> , Halid.	129, 164
Coccidæ, Notes on some British and Exotic (No. 27), 28; Observations on (No. 8), 179; (No. 9), 204; (No. 10)	232
Coccids associated with Ants	87
<i>Coccus rubi</i> of Schrank	17
Cockchafer (<i>Melolontha vulgaris</i>) decreasing in numbers in this country?, Is the	164
<i>Coleophora potentillæ</i> , Stn., under an alias	112
Coleoptera at Maidstone, 63; at Weymouth and Portland, 234; from Herefordshire, 279; from the Lake District, 280; in 1893, Rare, 63, 162; in 1894, 276, 277; in Hampshire, Essex, and Kent, 207; in the New Forest, 225; in the Oxford district, 15; in the Plymouth District, 279; near Cardiff, 135; Stray notes on Kentish	13
Congratulatory to John William Douglas... ..	265
Controlling the sexes	164
Cornwall, Lepidoptera of	37
<i>Coræbus</i> (<i>Buprestidæ</i>) from Japan, A new species of	244
<i>Crambus ericellus</i> in Cumberland	113
<i>Crioceris asparagi</i> , L., Curious locality for	115
<i>Decticus albifrons</i> , F., at Ramsgate	236
<i>Deilephila euphorbiæ</i> , L., abundant near Biskra, Algeria	133
<i>Deiopeia pulchella</i> , L., Aberration of	114
Devon, Notes on Lepidoptera from	211
Devonshire, Two new species of <i>Ichneumonidæ</i> from	255
<i>Diastata</i> new to Britain, Species of the Dipterous genus, 64; The supposed new British species of	88
Diptera, A second hundred new British species of, 76, 140; in 1893, Rare, 16; Mimicry in, 177; Two new British	255
Douglas, John William, Congratulatory to	265

Dytiscus dimidiatus at Askham Bog	115
Echinomyia ursina	116
Energy, Do male moths require more than females?	69
Entomology of a London bakehouse, The	85
Ephestia elutella, Notes on the larva of	185
Epunda lutulenta, var. sedi, in Cumberland	62
Erebia Epiphron in Scotland, The typical	211
Eriogaster lanestris in Devon, Note on	235
Eriopeltis Lichtensteinii and Signoretia luzulæ in Scotland	17
Eros (Platyceis) minutus in Nottinghamshire	280
Essex, Coleoptera in Hampshire, Kent, and	207
Eumicrus rufus near Shirley	136
Eumolpopsis, Jacoby, a new name for Pseudeumolpus	16
Exochlænus, Shipp: a new genus of Leucospidæ	245
France, Notes on Lepidoptera in the South of	175
Gracilaria, Accidental transposition of figures of two	112
Grease, 37; in old specimens of Lepidoptera, 61; Moth, An attempt to account for, with notes on its cure by ether, 5; solvents, A comparison of Moth-	201
Hampshire, Essex, and Kent, Coleoptera in	207
Heliophobus popularis in the North of France, Great abundance of the larvæ of	235
Hemimerus, Dr. Hansen on	256
Hemiptera, An addition to the list of British, 254; British: additions and corrections, 101; in Ireland, Lygus atomarius and other	64
Hepialus humuli in Lanarkshire, Occurrence of the yellow male of, 212; virescens and other early spring insects in New Zealand, Notes on	11
Herefordshire, Coleoptera from	279
Heydenia, Hfm., A new genus separated from, with description of a new English species	199
Homalota (Aleuonota) rufotestacea, &c., at Guildford	135
Hymenoptera, Additions and corrections to the list of British Aculeate, 35, 196; in Shetland and Orkney, 259; Rare Aculeate	259
Ichneumonidæ from Devonshire, Two new species of, 255; new to Britain, Chirotica maculipennis, Gr., A species of	40
Japan, On new species of Trogositidæ from	32
Kent, Coleoptera in Hampshire, Essex, and	207
Kentish Coleoptera, Stray notes on	13
Kyanizing	130
Lake District, Coleoptera from the	280
Lampides, Note on a species of, and description of a new Arhopala from Borneo	9
Larva of Mamestra anceps, The	111
Latheticus oryzæ, C. O. Waterh.	259
Lecanium rubi, Schrank	136
Lepidoptera at Armagh in 1893, 38; at Morecambe, 12; of Cornwall, 37; from Devon, Notes on, 211; in the Belfast district, 12; in the South of France, Notes on, 175; Micro-, from Norfolk and Scotland, including an addition to the British List, 50; Preoccupied generic names in, 230; Scarcity of, 258; Spring	132

List of British Tachiniidæ, Supplement to Annotated	69, 107, 156
“ Liste des Anthicidæ,” par M. Pic	86
Lita instabilella, Dgl., and its nearest British allies, 80, 125, 188; <i>suædella</i> not found in Lancashire	275
Lithocolletis triguttella, Stn., a variety of <i>L. faginella</i>	30
Lithosia complana in the North of Ireland	211
Lophopteryx carmelita in the New Forest	210
Lygus atomarius, Mey., and other Hemiptera in Ireland	64
Mamestra anceps, The larva of	111
Merodon equestris, Notes of	164
Mesoleius Bignellii, Bridgman, at Pitlochry	40
Metæcus paradoxus in one wasp’s nest, Large number of	235
Microrrhagus pygmæus in the Plymouth district	210
Mimicry in Diptera	177
Molannodes Zelleri, McL., On the probable case of, and some notes on the larva	123
Morecambe, Lepidoptera at	12
Musca (Calliphora) vomitoria in New Zealand	54, 130
Myrmeleonidæ from Aden, Palpares Walkeri, a remarkable new species of ...	173
Nepticula confusella, a new birch-mining species	272
Nepticulæ, with a view to their better recognition, Notes on the earlier stages of	1, 43, 93, 150
Neuropterous Fauna of New Zealand, Some additions to the; with notes on certain described species	238, 270
New Forest, Coleoptera in the	225
New Zealand, Some additions to the Neuropterous fauna of, with notes on certain described species, 238, 270; the European Blowfly in ...	54, 136
Norfolk and Scotland, Micro-Lepidoptera from, including an addition to the British list	50
Nothochrysa capitata in Surrey, 186; in Yorkshire	231
OBITUARIES:—Carden, Major-General George, F.E.S., 65; Hagen, Prof. Herman August, Hon. F.E.S., 18; Hearder, George Jonathan, M.D., 65; Lethierry, Lucien François, 137; Machin, William, 214; Spångberg, Dr. Jacob, 137; Weir, John Jenner	116
Odontæus mobilicornis at Woking... ..	163
Odour of Olophrum piceum	16
Olcate of Copper	75
Olophrum piceum; Odour of	16
Osphys bipunctata at Chattenden, Kent	163
Palpares Walkeri, a remarkable new species of Myrmeleonidæ from Aden ...	173
Papilio Machaon L., in the Ziban, Algeria, Food-plants of	162
Pararge Megæra in October	10
Patent Postal Box without packing	101
Pentaria Oberthüri, Champ.	115
Pericoma from Delagoa Bay, Description of a new species of, 194; <i>revisenda</i> , Etn., and <i>Psychoda erminea</i> , Etn., near Sherborne, Dorsetshire	261
Perlidæ, Why are large, resident in Scotch but not in Swiss lakes?	87
Phibalapteryx lapidata, Hb., in Glen Messin, Argyleshire, 275; in South Argyleshire, 275; in South Lanarkshire; Stirlingshire	257

	PAGE
<i>Phylloxera punctata</i> , Licht., at Hereford	258
<i>Pieris rapæ</i> , Early appearance of	88
Pin, An improved Entomological, 252; the new nickel	274
<i>Platycephala Olivieri</i> , Montr., Note on	31
<i>Plusia gamma</i> , Abundance of <i>Vanessa cardui</i> and, 162; <i>moneta</i> at Eastbourne, 211; at Tonbridge, 88; in Norfolk	211
<i>Plutella cruciferarum</i> , Abundance of	210
Plymouth District, Coleoptera from the	279
Preoccupied Generic names in Lepidoptera	230
<i>Pselaphus dresdensis</i> at Armagh	134
<i>Pseudeumolpus</i> , Jacoby, renamed <i>Eumolpopsis</i>	16
<i>Pseudonosoderma</i> , v. Heyd., The genus	114
Psocidæ, new to Britain, Two species of	243
Psyche and its allies, The British species of the genus, 217, 249, 265; <i>albida</i> v. <i>Millièrella</i> , B.	38
Psychodidæ, Synopsis of British	22
Psylla, On a new species of... ..	171
<i>Plomaphagus varicornis</i> , Rosenh., &c., at Guildford	259
<i>Pyrameis cardui</i> , L., in Ziban, Algeria, Abundance of, 98; (2nd notice)	133
Pyrenees, A holiday in the	220, 246
<i>Pyrochroa pectinicornis</i> in Herefordshire... ..	163
<i>Raphidia notata</i> , F., and <i>R. maculicollis</i> , Steph., common in the New Forest... ..	186
REVIEWS:—"The Butterflies of North America, 3rd Ser., Pt. xiv.:" by W. H. Edwards, 17; "Alternating Generations; a biological study of Oak Galls and Gall Flies.:" by Hermann Adler, M.D., translated and edited by C. R. Straton, F.R.C.S., F.E.S., 136; "The Butterflies of North America.:" by W. H. Edwards, 214; "Abstract of Proceedings of the South London Entomological, &c., Society for 1892 and 1893," 215; "Coleotteri Italiana.:" del Dott. A. Griffini	215
Samoan Butterflies, About some	146
Scotland, Micro-Lepidoptera from Norfolk and, including an addition to the British list	50
<i>Signoretia luzulæ</i> and <i>Eriopeltis Lichtensteinii</i> in Scotland	17
<i>Smironyx cæcus</i> , Boh., at Portland	210
SOCIETIES:—Birmingham Entomological Society 20, 40, 66, 117, 137, 165, 187, 236, 262 280	
Entomological Society of London ... 21, 43, 68, 90, 119, 167, 264, 283	
Lancashire and Cheshire Entomological Society ... 20, 41, 89, 118 262, 281	
Leicester Literary and Philosophical Society (Entomology) ... 138	
South London Entomological, &c., Society 41, 66, 89, 118, 139, 166, 187, 215, 237, 262, 282	
<i>Solenopsis fugax</i> , Latr., &c., near Weymouth	213
Stylopized ♀ of <i>Andrena Gwynana</i> , race <i>bicolor</i> , captured in cop.	213
Subaquatic Curculionidæ in the Hastings district	64
<i>Syrphus guttatus</i> , Fall., new to Britain	39
Tachiniidæ; Supplement to Annotated list of British	69, 107, 156

Thermobia domestica and its occurrence in the United States, Note on, 155 ; furnorum, Rovelli, at Hastings, 185 ; a heat loving Thysanuran, in London Bakehouses, 52 ; Note on, 84, 111 ; and Lepismodes inquilina, Newman	85
Throscus elateroides, Heer, at Chatham	163
Tinea pallescentella in a wasp's nest	113
Tinodes unicolor, Pict., in Ireland	236
Trioza centranthi, Vall., in England ; Discovery of	231
Trogositidæ from Japan, On New Species of	32
Uraniidæ, Asymmetry of markings in the	9
Vanessa Atalanta and urticæ at Christmas, 38 ; cardui, Abundance of, 210 ; and Plusia gamma, Abundance of	162
Vespa austriaca, Panz.	212
Weymouth and Portland, Coleoptera at	234
Wing expansion in a butterfly delayed by low temperature	54
Winter Moth (Cheimatobia brumata) and its destruction	4
Xanthia ocellaris alive at Wimbledon, 111 ; at Twickenham, 161 ; Bork., a British insect	161

SPECIAL INDEX.

COLEOPTERA.		PAGE	
	PAGE		
Acupalpus flavicollis	207	Cistela ceramboides	277
Adimonia celandica	278	Coccinella 5-punctata	279
Agaricophagus cephalotes	15, 259	Colon rufescens, 259 ; viennense	259
Aglycyderes (Platycephala) Olivieri	31	Coræbus niponicus (sp. n.), Lewis'	244
Agrilus viridis	226	Coryphium angusticolle	14
Aleochara maculata	185	Dasytes niger	63, 278
Anaspis Garneysi	228, 277	Drilus flavescens	63
Anchomenus livens	15, 208	Drypta dentata	207
Anitys rubens	227	Dytiscus dimidiatus	115
Anoplodera sexguttata	228	Elaphrus uliginosus	278
Anthaxia nitidula	63	Elater lythropterus, pomonæ	227, 277
Anthicides, Species of, referred to	86	Eirirhinus tremulæ	279
Anthribus albinus	63	Eumierus rufus	136, 276
Aphanisticus pusillus	15	Eumolpopsis	16
Aphodius consputus, 115 ; fætens, sub- terraneus, 276 ; Zenkeri	15, 276, 277	Euryporus picipes	207
Aseum striatum	277	Gnorimus nobilis	227
Athous rhombens	227	Gymnusa brevicollis	134
Bagous frit, &c.	64	Hallomenus humeralis	208
Balaninus cerasorum	277	Haplocnemus impressus	276
Cænopsis fissirostris	228, 276, 279	Harpalus discoides, 63 ; servus	209
Calodera umbrosa	135	Hister merdarius, 226 ; stercorarius	135
Carcinops 14-striata	209	Homalota hepatica, 226 ; pagana, 15, 135 ; rufotestacea	135
Ceuthorrhynchus resedæ, 63 ; suturellus, 133 ; urticæ	208	Hydræna gracilis, pygmaea	279
Cicones variegatus	227	Hydroporus oblongus, 116 ; scalesianus	116
Cionus longicollis	100	Ischnodes sanguinicollis	63
		Ischnomera sanguinicollis	228, 276
		Latheticus oryzae	259

	PAGE		PAGE
Leptidea brevipennis	279	Anthrachophaga frontosa	146
Leptinus testaceus	279	Aphria angustifrons (sp. n.), Meade	70
Lixus paraplecticus	277	Aporotachina	109
Mecinus circulator	207	Aulacigaster rufitarsis	145
Microrrhagus pygmaeus	210, 227	Baumhaueria albocingulata	158
Mycetophagus piceus, 207, 227, 277; quadriguttatus	208	Bithia cinerea (sp. n.), Meade, frontata, spreta	71
Myrmondia collaris	134	Blepharoptera ruficornis	144
Nossidium pilosellum	15	Bolitobia luminosa	202
Ocypus pedator	277	Bombylius canescens, 17; major	16
Odontæus mobilicornis	163	Brachycampta alternans, 77; amœna, 78; bicolor, 77; griseicollis, hastata, se- rena	78
Olophrum piceum	16	Brachycoma erratica	110
Omosita depressa	277, 279	Cacoxenus indagator	146
Oncomera femorata	16	Calliphora erythrocephala	54, 136
Opilo mollis	208	Callomyia amœna	16
Ospya bipunctata	163	Calobata adusta, trivialis	145
Ostoma higonina, valida (spp. n.), Lewis ..	34	Cephalops villosus	141
Pediacus dermestoides	227	Ceratopogon alipes, bicolor, candidatus, ruginosus, solstitialis, unimaculatus ..	140
Philonthus addendus	14	Chilosia grossa, 16; plumulifera	141
Phytœcia cylindrica	63	Chlorops puncticollis	146
Platycis minutus	14, 280	Clidogastra apicalis, punctipes, tarsea, vit- tata	144
Plegaderus dissectus	134	Clunio marinus	129, 164
Polydrusus flavipes	228	Conops versicularis	17
Potamius substriatus	280	Cordyla flaviceps, semiflava	77
Pselaphus dresdensis	134	Cordylura umbrosa	143
Pseudeumolpus	16	Cricotopus pilitarsis	79
Ptenidium Gressneri, 226; turgidum	227	Criorrhina berberina, floccosa, oxyacanthæ ..	17
Pytomphagus varicornis	259	Degeeria Dali (sp. n.), Meade, 159; pul- chella	158
Pyrochroa coccinea, 228; pectinicornis ..	163	Diastata basalis, funipennis, 64, 89; ni- gripennis, 89; obscurella	64, 89
Quedius truncicola	226	Dioctria atricpella	17
Saprinus virescens	14, 209	Drosophila obscura	145
Silusa rubiginosa	208	Dryomyza decrepita	144
Smicronyx cæcus	210	Dynastosoma nigricoxa	77
Sphodrus leucophthalmus	85	Echinomyia ursina	116
Staphylinus latebricola	208, 226	Empis brevicornis, prodromus	140
Synaptus filiformis	277	Epicamocera ambulans	142
Synchita juglandis	227	Eristalis ænea, 17; cryptarum, 39; sepul- chralis	17
Tenebrioides ocellaris (sp. n.), Lewis	34	Exechia interrupta, spinigera, tenuicornis ..	78
Throscus elateroides	163	Exorista libatrix	107
Thyamis agilis	134	Germaria ruficeps	72
Thymalus laticeps, parviceps, punctidor- sum (spp. n.), Lewis	33	Gonia divisa	72
Triarthron Märkeli	277	Goniomyia schistacea	140
Trichopteryx angusta	279	Gymnochæta viridis	17
Velleius dilatatus	225	Haplegis divergens	146
Zeugophora flavicollis	277	Helophilus hybridus, lineatus, trivittatus ..	16
		Hilara canescens, cornicula	141

DIPTERA.

Aciura rotundiventris	145
Allodia crassicornis, ornaticollis	77
Anatella ciliata	78

	PAGE
<i>Hydrotæa deutimana</i>	143
<i>Hyetodesia boleticola, quadrinotata</i>	142
<i>Hylemyia penicillaris</i>	143
<i>Hypostena procera</i>	158
<i>Lispe crassiuscula, gemina, pulchella, uliginosa</i>	143
<i>Lonchoptera fuscipennis</i>	141
<i>Loxocera fulviventris</i>	145
<i>Macquartia affinis</i>	107
<i>Macrocera crassicornis</i>	79
<i>Mallota erystaloides</i>	255
<i>Masicera interrupta, virilis</i>	157
<i>Meigenia majuscula</i>	157
<i>Melanostoma quadrimaculata</i>	16
<i>Merodon equestris</i>	17, 164
<i>Milichia ornata</i>	146
<i>Mycetaulus bipunctatus</i>	145
<i>Mycetophila lineola, luctuosa, obscura, vittipes</i>	76
<i>Myobia vetusta</i>	156
<i>Myxexorista macrops</i>	142
<i>Næra atra</i>	73
<i>Nemoræa glabrata, 107; quadraticornis (sp. n.), Meade</i>	160
<i>Nepherocera flavicornis</i>	255
<i>Edalea Holmgreni</i>	141
<i>Oncomyia nigra</i>	17
<i>Pachymeria palparis</i>	141
<i>Pachyrrhina crocata</i>	17
<i>Paragus lacerus</i>	141
<i>Pelidnoptera nigripennis</i>	145
<i>Pelotachina</i>	109
<i>Pericoma meridionalis (sp. n.), Eaton</i>	195
<i>Phalacrocera replicata</i>	17
<i>Phorocera pumicata</i>	159
<i>Phronia basalis, cinerascens, crassipes, 78; dubia, flavipes, 79; forcipula, Girschneri, 78; splendida</i>	79
<i>Phyllomyia securicornis</i>	146
<i>Phyto melanocephala, niger</i>	160
<i>Pipunculus varipes</i>	141
<i>Platychirus fulviventris, 17; latimanus, 16; spathulatus</i>	141
<i>Platyura cincta, nana, semirufa</i>	79
<i>Plesina nigrisquama</i>	159
<i>Pœcilstola punctata</i>	17
<i>Porphyrops nasata, penicillata</i>	141
<i>Psychodidæ, Distribution of</i>	22—26, 261
<i>Rhamphomyia costata, filata, gibba, sciarina</i>	140
<i>Rhymosia eristata</i>	77
<i>Sapromyza biumbata, flaviventris</i>	145
<i>Sarcopsylla penetrans</i>	228

	PAGE
<i>Scatopse pulicaria</i>	79
<i>Sciomyza pallida, simplex</i>	144
<i>Sepedon sphegeus</i>	17
<i>Sepsis pilipes</i>	145
<i>Sericomyia borealis, lappona</i>	17
<i>Simulium latipes, nanum, ornatum</i>	79
<i>Spilogaster protuberans</i>	143
<i>Spilographa abrotani</i>	145
<i>Stomphastica decora</i>	144
<i>Syrphus arcticus, barbifrons, 142; guttatus</i>	39
<i>Tanypus griseipennis, lentiginosus, ornatulus, trifascipennis</i>	79
<i>Tephritis proboscidea</i>	145
<i>Tephrochlamys flavipes</i>	144
<i>Thryptocera latifrons</i>	72
<i>Tipula vittata</i>	17
<i>Xylota abiens, lenta, sylvarum</i>	17

HEMIPTERA.

<i>Aepophilus Bonnairei</i>	258
<i>Aleurodes avellanæ, 154; brassicæ, 39, 40; prolella, 40; rubicola, 87; spirææ (sp. n.), Douglas</i>	73, 154
<i>Anthocoris confusus</i>	65
<i>Aspidiotus abietis 179; Blackburniana, cocotis, 58; destructor, fallax, 57; nerii, 58; palmarum</i>	58
<i>Cicadula Dahlbomi, 104; livida (sp. n.), Edwards</i>	104
<i>Coccidæ, Migration of</i>	28
<i>Coccus rubi</i>	17
<i>Corixa selecta</i>	101
<i>Deltocephalus distinguendus, Falleni, Flori, paleaceus, 105; Panzeri</i>	106
<i>Dicyphus stachydis</i>	65
<i>Eriopeltis Lichtensteini</i>	17
<i>Exæretopus (g. n.) formiceticola (sp. n.), Newstead</i>	204
<i>Fiorinia Sulcii (sp. n.), Newstead</i>	232
<i>Gerris argentata, 64; Costæ</i>	65
<i>Iassus morio</i>	104
<i>Lecanium hesperidum, lauri, 29; perforatum (sp. n.), Newstead, 233; rubi, 17, 136</i>	
<i>Lecanopsis formicarum</i>	206
<i>Leucaspis pini</i>	181, 232
<i>Limnotettix aurantipes (sp. n.), Edwards, 103; 5-notatus</i> ..	104
<i>Lygus atomarius</i>	64
<i>Nabis flavomarginatus</i>	65
<i>Phylloxera punctata</i>	258
<i>Plagiognathus (Agalliaestes) evanescens</i>	254
<i>Pollinia grandis (sp. n.), Newstead</i>	182
<i>Prosopophora, genus</i>	30
<i>Pseudococcus aceris</i>	87

	PAGE
<i>Psylla acaciæ</i> (sp. n.), Maskell.....	171
<i>Pulvinaria oxyacanthæ</i>	28
<i>Salda cincta</i> , morio, orthochila	65
<i>Scolopostethus neglectus</i>	64
<i>Signoretia luzulæ</i>	17
<i>Thamnotettix cyanæ</i> , 104; <i>striatulellus</i> (sp. n.), Edwards	102
<i>Trioza centranthi</i>	231

HYMENOPTERA.

<i>Andrena apicata</i> , 197; <i>cineraria</i> , 63; <i>fucata</i> , 197; <i>fulva</i> , 63; <i>Gwynana</i> , 213; <i>helvola</i> , 197; <i>rosæ</i>	197, 236
<i>Bombus agrorum</i> , <i>cognatus</i> , <i>muscorum</i> , 198; <i>nivalis</i> , 260; <i>Smithianus</i> , 198, 259; <i>soroensis</i> , 261; <i>variabilis</i> , <i>venus-</i> <i>tus</i>	198
<i>Cerceris emarginata</i> , <i>quadricincta</i>	36
<i>Chirotica maculipennis</i>	40
<i>Crabro lituratus</i>	36
<i>Exochlænus</i> (gn. n.), Shipp	245
<i>Megachile versicolor</i>	197
<i>Mesoleius Bignellii</i>	40
<i>Miscophus concolor</i>	35
<i>Myrmecina Latreillei</i>	213
<i>Pemphredon Shuckardi</i> , <i>Wesmaeli</i>	35
<i>Pimpla Bridgmani</i> (sp. n.), Bignell	255
<i>Pompilus acuminatus</i> , <i>sericeus</i>	35
<i>Praon absinthii</i> (sp. n.), Bignell	255
<i>Prosopis Masoni</i> (sp. n.), Saund.	196
<i>Salius notatulus</i>	35
<i>Solenopsis fugax</i>	213
<i>Sphecodes divisus</i>	196
<i>Stigmus Solskyi</i>	35
<i>Vespa austriaca</i>	36, 212

LEPIDOPTERA.

<i>Abraxas pantaria</i>	248
<i>Acidalia imitaria</i> , 212; <i>ornata</i>	176
<i>Apamea fibrosa</i> , 12, 13; <i>ophiogramma</i> ...	13
<i>Arctia villica</i> , 211; <i>purpurea</i>	248
<i>Argynnis Daphne</i> , <i>pales</i> , <i>Pandora</i>	247
<i>Arhopala elopura</i> (sp. n.), Druce.....	10
<i>Atella Bodenia</i>	149
<i>Bactra furfurana</i> , 183, 211; <i>lanceolana</i> ..	184
<i>Boarmia repandata</i> , var. <i>conversaria</i>	212
<i>Botys asinalis</i> , 212, 224; <i>lancealis</i>	212
<i>Butalis cheupodiella</i> , 184; <i>dissimilella</i> , <i>grandipennis</i>	113
<i>Callimorpha Hera</i>	223
<i>Calocampa vetusta</i>	62
<i>Carpocapsa nimbaana</i>	184

	PAGE
<i>Cataplectica Farreni</i>	200
<i>Catocala fraxini</i>	235
<i>Charæas graminis</i>	169, 236
<i>Cheimatobia brumata</i>	4
<i>Chrysophanus Alciphron</i> , 246; <i>dispar</i> , 11; <i>dorilis</i> , <i>virgaureæ</i>	246
<i>Cirrhædia xerampelina</i>	13, 38
<i>Cloantha perspicillaris</i>	88
<i>Cænonympha (Edipus)</i>	221, 248
<i>Coleophora potentillæ</i>	112
<i>Colias Edusa</i> , 175, 223; <i>Hyale</i> , 175, 223; <i>Phicomone</i>	223
<i>Crambus ericellus</i>	113
<i>Cyclopides Morpheus</i>	221, 248
<i>Danaus Plexippus</i>	149
<i>Deilephila euphorbiæ</i> , 133; <i>livornica</i>	212
<i>Deiopeia pulchella</i>	114
<i>Deragena Schmelzii</i>	147
<i>Doritis Apollina</i>	54
<i>Drepana unguicula</i>	132
<i>Elachista archæonoma</i>	11
<i>Enychia cingulalis</i>	13
<i>Ephestia elutella</i> , 185; <i>Kühniella</i>	86
<i>Epichnopteryx calvella</i> , <i>fusca</i> , 249; <i>reti-</i> <i>cella</i> , 250; <i>undulella</i>	251
<i>Epinephile Janira</i> , 248; <i>Pasiphaë</i>	176
<i>Epunda lutulenta</i> , var. <i>sedii</i>	62
<i>Erebia Epiphron</i> , 211; var. <i>pyrenaica</i> , 247; <i>epistygne</i> , 176; <i>Euryale</i> , 248; <i>Evias</i> , 176, 247; <i>lappona</i> , <i>Manto</i> , var. <i>Cecilia</i> , <i>Melas</i> , var. <i>Lefebrei</i> , 247; <i>Geme</i> , 247; <i>Pronoë</i> , var. <i>pyrena-</i> <i>ica</i> , 248; <i>Stygne</i> , 247; <i>Tyndarus</i> , var. <i>Dromus</i>	248
<i>Eriogaster lanestris</i>	212, 235
<i>Euchloë euphenoides</i>	176, 221, 222
<i>Fumea betulina</i> , 267; <i>crassiorella</i> , 265; <i>intermediella</i> , <i>roboricolella</i> , 266; <i>sa-</i> <i>licolella</i> , <i>tabulella</i>	268
<i>Glyphipteryx equitella</i>	13
<i>Gonepteryx Cleopatra</i> , 175, 223; <i>rhamnii</i> , 132, 175, 223	223
<i>Gracilaria Kollariella</i> , <i>ononidis</i>	112
<i>Hadena contigua</i>	13
<i>Heliophobus popularis</i>	235
<i>Hepialus humuli</i> , 212; <i>virescens</i>	11
<i>Hibernia leucophæaria</i>	132
<i>Homœosoma senecionis</i>	13
<i>Hypolimnas bolina</i> , var. <i>otaheitæ</i>	147
<i>Junonia velliâ</i>	149
<i>Lampides cœrulea</i>	9
<i>Lampronia luzella</i>	13
<i>Leucophasia Duponchelii</i> , <i>sinapis</i>	175

	PAGE
<i>Lita atriplicella</i> , 83, 191, 192; <i>instabil- lata</i> , 81, 126, 191; <i>obsoletella</i> , 125, 192, 193; <i>ocellatella</i> , 81, 127, 191; <i>plantaginella</i> , 82, 191, 194; <i>sal- icornia</i> , 80, 188; <i>suadella</i> ... 81, 191, 275	275
<i>Lithocolletis faginella</i> , <i>triguttella</i>	30
<i>Lithosia complana</i>	211
<i>Lophopteryx carmelita</i>	216
<i>Lycæna Amanda</i> , <i>Arion</i> , <i>Argiades</i> , <i>bœtica</i> , 246; <i>communis</i> , 148; <i>melanops</i> , 175; <i>orbitulus</i> , var. <i>pyrenaica</i> , 246; <i>Orion</i> , 176; <i>Woodfordi</i>	148
<i>Mamestra anceps</i>	111
<i>Melanargia Lachesis</i> , 221, 247; <i>Syllius</i> ...	176
<i>Melanitis Leda</i>	148
<i>Melitæa Artemis</i> , var. <i>Merope</i> , 247; var. <i>provincialis</i> , 176; <i>Deione</i> , <i>Parthenie</i> 247	247
<i>Nemeobius Lucina</i>	132, 176, 246
<i>Nemeophila plantaginis</i>	211
<i>Nepticula anomalella</i> , 3; <i>atricollis</i> , 93; <i>betulicola</i> , 96, 98; <i>confusella</i> (n. sp.), Wood, 272; <i>continuella</i> , 97, 98; <i>dis- tinguenda</i> , 96, 98; <i>fulgens</i> , 49; <i>gra- tiosella</i> , 2, 47, 48; <i>ignobilis</i> , 47, 48; <i>lapponica</i> , 95, 98, 273; <i>luteella</i> , 97, 98; <i>minusculella</i> , 94; <i>oxyacan- thella</i> , 48, 94; <i>pygmaella</i> , 47; <i>pyri</i> , 94; <i>regiella</i> , 48; <i>salicis</i> , 3; <i>septem- brella</i> , 1; <i>subinnaculella</i> , 153; <i>Tity- rella</i> , 49; <i>woolhopiella</i>	2
<i>Noctua subrosea</i>	11
<i>Nyctalemon Orontes</i>	9
<i>Cecophora lambdella</i>	51
<i>Olindia ulmana</i>	13
<i>Oxyptilus parvidactylus</i>	13
<i>Pamplusia mercuriana</i>	13
<i>Papilio Godeffroyi</i> , 148; <i>Machaon</i> , 162; <i>Podalirius</i> , var. <i>Feisthamelii</i>	222
<i>Pararge Megæra</i>	10
<i>Paruassius Apollo</i> , <i>Mnemosyne</i>	222
<i>Peronea variegana</i>	258
<i>Phragmatobia fuliginosa</i>	133, 212
<i>Pieris Callidice</i> , 222; <i>Daplidice</i>	175, 222
<i>Phycis carbonariella</i> , <i>dilutella</i>	13
<i>Phibalapteryx lapidata</i>	13, 257, 275
<i>Platyptilia isodactyla</i>	13
<i>Plusia festuæ</i> , 12; <i>gamma</i> , 162; <i>moneta</i> , 88, 211	88, 211
<i>Plutella cruciferarum</i>	210
<i>Pœcilocampa populi</i>	212
<i>Psyche albida</i> , 38; <i>graminella</i> , 219; <i>Les- chenaultii</i> , 248; <i>muscella</i> , 219; <i>opa- cella</i> , 218; <i>villosella</i>	217
<i>Pyrameis cardui</i>	12, 98, 133, 162, 210, 246
<i>Satyrus Alcyone</i> , 248; <i>Arethusa</i> , 221, 248; <i>Briseis</i> , 248; <i>Dryas</i> , 221; <i>sta- tilius</i>	221, 248

	PAGE
<i>Scoparia ingrattella</i>	13
<i>Sericoris palustrana</i>	50
<i>Spilothyrus alcææ</i> , 176; <i>althææ</i> , 248; <i>lavateræ</i>	176
<i>Stilbia anomala</i>	13
<i>Syrichthys alvens</i> , 248; <i>sidæ</i>	176
<i>Tæniocampa miniosa</i> , 132; <i>opima</i>	12
<i>Thais rumina</i> , var. <i>Medesicaste</i> , 175, 222; <i>Polyxena</i> , var. <i>Cassandra</i>	176
<i>Thecla ilicis</i> , <i>quercûs</i> , 246; <i>roboris</i>	221
<i>Tinagma betulæ</i>	51
<i>Tinea nigripunctella</i> , 50; <i>pallescentella</i> ...	113
<i>Tirumala hamata</i>	147
<i>Urania fulgeus</i> , <i>Leilus</i> , <i>Rhipheus</i> , <i>Sloanus</i>	9
<i>Vanessa Egea</i>	176
<i>Venusia cambrica</i>	13
<i>Xanthia ocellaris</i>	111, 161
<i>Xylophasia polyodon</i>	258
<i>Xystophora servella</i>	51
<i>Zygæna anthyllidis</i> , 248; <i>loniceræ</i> , 38; <i>Sarpedon</i> , <i>scabiosæ</i>	248

NEUROPTERA.

<i>Adicella filicornis</i>	185
<i>Æschna brevistyla</i>	272
<i>Aleuropteryx Löwii</i> (sp. n.), <i>Klap.</i> , 122; <i>lutea</i>	121
<i>Bittacus chilensis</i>	39
<i>Cæcilus Kolbei</i>	244
<i>Chrysopa phyllochroma</i> , <i>tenella</i>	186
<i>Ephemera Hudsoni</i> (sp. n.), <i>McLach.</i>	270
<i>Hemerobius concinnus</i> , <i>elegans</i> , <i>inconspi- euus</i>	186
<i>Molannodes Zelleri</i>	123
<i>Myopsocus Novæ-Zelandiæ</i>	270
<i>Nothochrysa capitata</i>	186, 231
<i>Cœnesus maori</i>	239
<i>Olinga</i> (n. n.), <i>McLach.</i> , 240; <i>Feredayi</i> ...	241
<i>Palpares Walkeri</i> (sp. n.), <i>McLach.</i>	173
<i>Pseudecones</i> (n. g.), <i>McLach.</i> , 239; <i>minus</i> (sp. n.), <i>McLach.</i> , 239; <i>stra- mineus</i> (sp. n.), <i>McLach.</i>	240
<i>Psocus major</i> , <i>sempunctatus</i> , 243; <i>Zeal- audicus</i>	270
<i>Rhaphidia maculicollis</i> , <i>notata</i>	186
<i>Stenosmylus citrinus</i> , <i>incisus</i> , 242; <i>latius- culus</i> (sp. n.), <i>McLach.</i>	241
<i>Sympetrum bipunctatum</i> , var. n., <i>novæ zealandiæ</i> , <i>McLach.</i>	271
<i>Thermobia domestica</i> , <i>furnorum</i> , <i>inqui- lina</i>	52, 84, 85, 111, 155, 185
<i>Tinodes unicolor</i>	236
<i>Xanthagrimon sobrinum</i>	272

ORTHOPTERA.

<i>Anisolabis annulipes</i>	124
<i>Decticus albifrons</i>	236
<i>Hemimerus</i>	256

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

COLEOPTERA.	PAGE	PAGE	
Cionus longicollis, <i>Brisout</i>	100	Hylemyia penicillaris, <i>Rnd.</i>	143
—			
DIPTERA.			
Aciura rotundiventris, <i>Fln.</i>	145	Liopse crassiuscula, <i>Lw.</i> , gemina, <i>v. d.</i> <i>Wulp.</i> , pulchella, <i>Lw.</i> , uliginosa, <i>Fln.</i> ..	143
Anatella ciliata, <i>Winn.</i>	78	Lonchoptera fuscipennis, <i>Boh.</i>	141
Anthraxophaga frontosa, <i>Mg.</i>	146	Loxocera fulviventris, <i>Mg.</i>	145
Aphria angustifrons, <i>Meade</i>	70	Macquartia affinis, <i>Sch.</i>	107
Baumhaueria albocingulata, <i>Fln.</i>	158	Macrocera crassicornis, <i>Winn.</i>	79
Bithia spreta, <i>Mg.</i>	71	Mallota eristoloides, <i>Lw.</i>	255
Blepharoptera ruficornis, <i>Mg.</i>	144	Masicera interrupta, <i>Mg.</i> , virilis, <i>Rnd.</i> ...	157
Brachycampta alternans, <i>Winn.</i> , 77; am- œna, <i>Winn.</i> , griseiocollis, <i>Stäg.</i> , hastata, serena, <i>Winn.</i>	78	Meigenia majuscula, <i>Rnd.</i>	157
Brachycoma erratica, <i>Mg.</i>	110	Milichia ornata, <i>Zett.</i>	146
Cacoxenus indagator, <i>Lw.</i>	146	Mycetaulus bipunctatus, <i>Fln.</i>	145
Calobata adusta, trivialis, <i>Lw.</i>	145	Mycetophila luctuosa, <i>Mg.</i> , obscura, <i>Dz.</i> , vittipes, <i>Zett.</i>	77
Cephalops villosus, <i>v. Ros.</i>	141	Myobia vetusta, <i>Mg.</i>	156
Ceratopogon albipes, <i>Winn.</i> , bicolor, <i>Mg.</i> , candidatus, rubiginosus, solstitialis, <i>Winn.</i> , unimaculatus, <i>Mcq.</i>	140	Myxexorista macrops, <i>B. and B.</i>	142
Chilosia plumulifera, <i>Lw.</i>	141	Nœera atra, <i>Dsv.</i>	73
Chlorops puncticollis, <i>Zett.</i>	146	Nemorœa glabrata, <i>Mg.</i> , 107; quadrati- cornis, <i>Meade</i>	160
Clidogastra punctipes, <i>Mg.</i> , tarsea, <i>Fln.</i> , vittata, <i>Mg.</i>	144	Nephrocera flavicornis, <i>Zett.</i>	255
Cordyla semiflava, <i>Stäg.</i>	76	Edalea Holmgreni, <i>Zett.</i>	141
Cordylura umbrosa, <i>Lw.</i>	143	Pachymeria palparis, <i>Egg.</i>	141
Cricotopus pilitarsis, <i>Zett.</i>	79	Paragus lacerus, <i>Lw.</i>	141
Degeeria Dalii, <i>Meade</i>	159	Pelidnoptera nigripennis, <i>F.</i>	145
Diastata basalis, <i>Fln.</i> , 64; fumipennis, <i>Mg.</i> (= nigripennis, <i>Lw.</i> ?, 89)	64	Phorocera punicata, <i>Dsv.</i>	159
Drosophila obscura, <i>Fln.</i>	145	Phronia basalis, cinerascens, crassipes, <i>Winn.</i> , 78; dubia, <i>Dz.</i> , flavipes, <i>Winn.</i> , 79; forcipula, <i>Winn.</i> , Girschneri, <i>Dz.</i> ...	78
Dryomyza decrepita, <i>Zett.</i>	144	Phyllomyza securicornis, <i>Fln.</i>	146
Dynatosoma nigricoxa, ,,	77	Pipuncula varipes, <i>Mg.</i>	141
Eupis brevicornis, prodromus, <i>Lw.</i>	140	Platychirus spathulatus, <i>Rnd.</i>	141
Epicamptocera ambulans, <i>Mg.</i>	142	Platyura cineta, <i>Winn.</i> , uana, <i>Mcq.</i> , semi- rufa, <i>Mg.</i>	79
Exechia interrupta, <i>Zett.</i> , spiuigera, <i>Winn.</i> , tenuicornis, <i>v. d. Wulp.</i>	78	Plesina nigrisquama, <i>Zett.</i>	159
Exorista libatrix, <i>Mg.</i>	107	Rhamphomyia costata, filata, <i>Zett.</i> , gibba, sciarina, <i>Fln.</i>	140
Goniomyia schistacea, <i>Schum.</i>	140	Rhymosia cristata, <i>Stäg.</i>	77
Hilara canescens, <i>Zett.</i> , cornicula, <i>Lw.</i> ...	141	Sapromyza biumbata, <i>Lw.</i> , flaviventris, <i>Costa</i>	145
Hydrotœa dentimana, <i>Mg.</i>	143	Scatopse pulcariæ, <i>Lw.</i>	79
Hytodesia boleticola, <i>Rnd.</i> , 143; quad- rinotata, <i>Mg.</i>	142	Sciomyza pallida, simplex, <i>Fln.</i>	144
		Sepsis pilipes, <i>Lw.</i>	145
		Simulium latipes, <i>Mg.</i> , nanum, <i>Zett.</i> , ornatum, <i>Mg.</i>	79
		Spilogaster protuberans, <i>Zett.</i>	143

	PAGE
Spilographa abrotani, <i>Mg.</i>	145
Stomphastica decora, <i>Lw.</i>	144
Syrphus arcticus, <i>Zett.</i> , 142; guttatus, <i>Fln.</i>	39
Tanyus griseipennis, <i>v. d. Wulp.</i> , lenti- ginosus, <i>Fries.</i> , ornatus, <i>Mg.</i> , trifasci- pennis, <i>Zett.</i>	79
Tephritis proboscidea, <i>Lw.</i>	145
Tephrochlamys flavipes, <i>Zett.</i>	144
Thryptocerus latifrons, <i>Mcq.</i>	72

HEMIPTERA.

Aleurodes avellanæ, <i>Signoret</i> , 154; spirææ, <i>Douglas</i>	73, 154
Aspidiotus abietis, <i>Schrank</i>	179
Cicadula Dahlbomi, <i>Zett.</i> , livida, <i>Edwards</i>	104
Deltocephalus paleaceus, <i>J. Sahlberg</i> , 105; Panzeri, <i>Flor.</i>	106
Limotettix aurantipes, <i>Edwards</i>	103
Plagiognathus (Agalliasstes) evanescens, <i>Boheman</i>	254
Thamnotettix cyanæ, <i>Boheman</i> , 104; stri- tulellus, <i>Edwards</i>	102
Trioza centranthi, <i>Vallot</i>	231

HYMENOPTERA.

	PAGE
Cerceris emarginata, <i>Panz.</i>	36
Chirotica maculipennis, <i>Grav</i>	40
Pimpla Bridgmani, <i>Bignell</i>	255
Praon absinthii, „	255
Prosopis Masoni, <i>Saund.</i>	196

LEPIDOPTERA.

Argyresthia illuminatella, <i>Zeller</i>	50
Cataplectica Farreni, <i>Walsingham</i>	200
Lita salicorniæ, <i>Hering</i>	80
Nepticula confusella, <i>Wood</i>	272
Xanthia ocellaris, <i>Borkhausen</i>	111, 161

NEUROPTERA.

Cæcilius Kolbei, <i>Tetens</i>	244
Psocus major (<i>Kolbe</i>), <i>Loens</i>	243

ORTHOPTERA.

Anisolabis annulipes, <i>Luc.</i> (introd.)	124
Decticus albifrons, <i>F.</i> „	236

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

COLEOPTERA.

GENUS.	PAGE
EUMOLPOPSIS (n. n.), <i>Jacoby</i> (= PSEUDEUMOLPUS, <i>Jac.</i> , <i>olim.</i>)	16
SPECIES.	
Coræbus niponicus, <i>Lewis, Japan</i>	244
Ostoma higonía, „ „	34
valida, „ „	34
Tenebrioides ocularis, „ „	34
Thymalus laticeps, „ „	33
parviceps, „ „	33
punctidorsum, „ „	33

DIPTERA.

GENERA.	PAGE
APOROTACHINA (sub-g.), <i>Meade</i>	109
PELATACHINA (n. n.), „ (= HYRIA, <i>Dsv.</i>)	109
SPECIES.	
Bithia cinerea, <i>Meade, Austria?</i>	71
Degeeria Dalii, „ <i>England</i>	159
Nemoræa quadraticornis, <i>Meade, England</i>	160
Pericoma meridionalis, <i>Eaton</i> , <i>Delagoa Bay</i>	194

HEMIPTERA.		PAGE		PAGE	
GENUS.				SPECIES.	
EXÆRETOPUS, <i>Newstead</i>	204			Arhopala elopura, <i>Druce, Borneo</i>	10
SPECIES.				Cataplectica <i>Farreni, Walsingham,</i> <i>England</i>	200
Aleurodes spirææ, <i>Douglas, England</i> ...	73			Nepticula confusella, <i>Wood,</i> ..	272
Cicadula livida, <i>Edwards,</i> ..	104			—————	
Exæretopus formiceticola, <i>Newstead,</i> <i>Guernsey</i>	204			NEUROPTERA.	
Fiorinia Sulcii, <i>Newstead, Bohemia</i>	232			GENERA.	
Lecanium perforatum, ..	233			OLINGA (n. n.), <i>McLach. (= OLINX,</i> <i>McLach., olim.)</i>	240
Limotettix aurarotypes, <i>Edwards, England</i> 103				PSEUDÆCONESUS, ..	239
Pollinia grandis, <i>Newstead, Baluchistan</i> 182				SPECIES.	
Psylla acaciæ, <i>Maskell, N. Zealand</i>	171			Aleuropteryx Löwii, <i>Klap., Austria, &c.</i> 122	
Thamnotettix striatulellus, <i>Edwards,</i> <i>England</i> 102				Ephemera Hudsoni, <i>McLach., N. Zealand</i> 270	
HYMENOPTERA.				Palpares Walkeri, ..	173
GENUS.				Pseudæconesus minus, ..	239
EXOCHLÆNUS, <i>Shipp</i>	245			stramineus, ..	240
SPECIES.				Sympetrum bipunctatum, <i>Br., var. n.,</i> <i>novæ Zealandiæ, McLach.,</i> <i>N. Zealand</i> 271	
Pimpla Bridgmani, <i>Bignell, England</i> ...	255			Stenosmylus latiusculus, ..	241
Praon absinthii, ..	255			—————	
Prosopis Masoni, <i>Saunders,</i> ..	196			LEPIDOPTERA.	
LEPIDOPTERA.				GENERA.	
GENERA.				CATAPLECTICA, <i>Walsingham</i>	199
CATAPLECTICA, <i>Walsingham</i>	199			HIEROPHANTA (n. n.), <i>Meyrick</i> <i>(= MICRODONTA, Dup.)</i> 230	
HIEROPHANTA (n. n.), <i>Meyrick</i> <i>(= CLEODORA, Curt.)</i> 230				PALTODORA (n. n.), <i>Meyrick</i> <i>(= CLEODORA, Curt.)</i> 230	
PALTODORA (n. n.), <i>Meyrick</i> <i>(= CLEODORA, Curt.)</i> 230				STENOLECHIA (n. n.), <i>Meyrick</i> <i>(= PÆCILIA, Hein.)</i> 230	
STENOLECHIA (n. n.), <i>Meyrick</i> <i>(= PÆCILIA, Hein.)</i> 230					

EXPLANATION OF PLATES.

Plates i, ii, iii, iv—see page 27.

ERRATA.

Page 24, line 9 from bottom, for "Gilly," read "Silly."
" 114, " 27 " top, for "February," " "March."
" 133, " 11 " bottom, for "say," " "saw."
" 176, " 2 " top, " "Arion," " "Orion."

IX. 264
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IX. 267

THE *Sera fund*

ENTOMOLOGIST'S MONTHLY MAGAZINE.

SECOND SERIES—VOL. V.

[VOLUME XXX.]

NOTES ON THE EARLIER STAGES OF THE *NEPTICULÆ*,
WITH A VIEW TO THEIR BETTER RECOGNITION AT THIS PERIOD
OF THEIR LIFE.

BY JOHN H. WOOD, M. B.

(continued from Vol. iv [Second Series], page 274).

THE LARVA.

The adult larva is flattened; the head very small, flat and pointed, notched deeply behind, and nearly buried in the projecting 2nd segment; segment 2 is wide, 3 still wider, and thence onward to 10 or 11 the size continues uniform and then diminishes rapidly, the last two segments (13 and 14) being extremely small and somewhat telescoped. The legs are all of the proleg character, but without the usual hooklets, and decidedly more prominent in some species than in others; as regards their distribution—there are none on 2; present on 3 and 4, these being often the biggest in the series; absent on 5; and present on 6, 7, 8, 9, 10 and 11: eight pairs in all. The usual hairs, which serve the part of feelers, are well developed. Such is the general form of the *Nepticula* larva, but I have come across in *septembrella* an extremely interesting exception. As is well known, it makes a somewhat hollow or balloon-like blotch, characteristic of a *Micropteryx*, but quite unusual for a *Nepticula*, and so to meet the altered conditions the larva partakes much of the *Micropteryx* type: it has no legs, the segments are deeply incised and round in section instead of oval, and, most interesting of all, segments 3 and 4 are massive and distinctly square-shaped. For an internal feeder the larva is rather liberally furnished with characters, inasmuch as from the transparency of the tissues some of the internal organs are visible, which, in the ordinary run of larvæ, never come into view.

The characters arrange themselves under (1) the general colour;

(2) the colour of the head; (3) the marks on segment 2; (4) the chain of marks down the abdomen; (5) the intestinal canal; and (6) a pair of dark lines on the back of the 11th and 12th, or the 11th, 12th and 13th segments. The ground colours are yellow and green, in two or three different shades; both passing at one end of their variation into whitish. Occasionally the green is tinged with blue, as in the bluish-green or almost greenish-blue larva of *ulmivora*, and to a less extent in *pyri* and one or two more. As a rule each species preserves much the same colour all through, but here and there some fading of tint is noticeable as maturity is reached, and doubtless this largely accounts for those occasional errors and discrepancies which meet us in our note books, even if they do not find their way into print. It was on my authority that Mr. Stainton (Ent. Mo. Mag., xxiv, 62) described the larva of *woolhopiella* as "very pale green," whereas it is yellow—indeed, a deep yellow for the greater part of its life, but becoming paler towards the last, it borrows something of a greenish tinge from its surroundings, though its true colour is still yellow, as can be ascertained by removing it from the mine. The larva of *continuella* is a well known example of borrowed colouring, for so deep and pure a green does it look in the mine, that it is hard to believe that it is in reality a rich yellow.

THE HEAD.—The range of colour extends from pale brown or amber up to grey or black, the mouth parts being usually, if not always, red. A few species are apt to vary to some extent, but by far the greater number are very constant to one tint or shade, so that the value of it as a character is by no means slight. It was but the other day that it did me a very good bit of service. Some doubt has been thrown upon the existence of *gratiosella* as a good species, mainly from the circumstance that it has been given the larva of an allied species, whilst its own larva seems to have done duty for a presumed summer brood of *oxyacanthella*. It was noticing the very pale head of this summer-feeding larva that first made me question its identity with the dark headed larva which occurs late in the autumn, and which I knew, beyond dispute, to be the larva of *oxyacanthella*. Suspicion once aroused, other differences that had been overlooked or misunderstood before became apparent, until the conviction could no longer be resisted that two very similar larvæ and equally similar mines had been mixed up together as one. Subsequently, the breeding of the perfect insect completely settled the point, and proved that the green larva with the colourless head, feeding in the hawthorn leaves in July, belonged to *gratiosella*.

THE MARKS ON SEGMENT 2.—A square-shaped spot is frequently present on the under-side, but any remarks upon it, beyond observing that it is not of much practical importance, will come in more conveniently under the head of the ventral marks. Of great importance, however, are the marks on the upper-side. They are of two kinds, yet so alike in many ways that their dual nature was not at first suspected and long puzzled me, for they may on the one hand be deep seated internal organs, or on the other hand mere surface markings, shed at the moults like other markings and remaining visible in the cast skin. In both cases they appear about the middle of the segment as a pair of elongated dark marks, in line or nearly so with the posterior lobes of the head, and though in the former they are somewhat pear-shaped and lie just beyond the lobes, whilst in the latter they are equally wide at both ends and are placed rather more forward, so as to lie over the lobes when the head is retracted, yet the distinctions are none too obvious, and at times scarcely appreciable, unless the larva is removed from its mine. For obtaining a good idea of the surface markings there is no better moment than whilst a moult is proceeding, and if the process be near completion, it is quite possible, with a little manipulation, to tease off the old skin with the markings imprinted on it. These markings are unquestionably the equivalents of the two halves of an ordinary thoracic plate, in spite of the odd look given them by their elongated shape and the distance they are apart. They are particularly well shown in *anomalella*, being very black and of unusual size, so that in this insect they project well beyond the head. In *salicis* and a few others they are also black or blackish, and lying more or less over the posterior lobes, they help to give that especially dark appearance to the back part of the head which is characteristic of these species. But for the most part their colour is amber, and of so faint a tint, that it is only possible to see them under the microscope.

The internal organs are, as I have said, pear-shaped, sharply outlined and so firm in texture that they can be readily dissected out, and are placed immediately behind the head. They are visible in very many species, but not in all, and their size is so large in comparison with the creature itself, that the discovery that they are a part of the nervous system, in fact the cephalic ganglia, is at first quite startling. Their colour is some shade of black or brown, whilst their conspicuousness depends not so much upon the actual depth of the colour as upon the contrast it bears to that of the head. When the two happen to agree in this respect, the ganglia look part and parcel of the head, giving it an unusually elongated appearance, whereas, if they are differently

coloured, and especially if the advantage lies with the ganglia, as it commonly does, and often to a marked degree, then these bodies stand out clear and distinct. Hence, in our examination, attention must not only be directed to their presence or otherwise, and to the nature of their colouring, but still more to the relation of this colouring to that of the head: in this way they become one of the most useful characters we have for identifying these little creatures.

(*To be continued*).

THE WINTER MOTH (*CHEIMATOBI A BRUMATA*), AND ITS
DESTRUCTION.

BY GEORGE F. WILSON, F.R.S., &c.

We finished banding the fruit trees at Oakwood, Wisley, on 23rd October, perhaps a week or fortnight sooner would have been safer, but we were busy; the first moth was caught on October 30th; on November 3rd, 54; by the 16th we counted 220 females. On December 2nd there were 44 males and females on one tree, and on its neighbours from 30 to 40; these trees are only about six inches in diameter; we have about 300 trees, but some of them are much less than the above. Our mode of procedure is this:—a band four inches deep of the Willesden Paper Co.'s 4-ply paper is first put round, then the same depth of the Co.'s rot proof DD extra brown canvas, these are then made secure to the trees by tarred twine, the canvas is then well smeared over with "B best white" cart grease; a second smearing is desirable in about a fortnight after the first, especially if there has been much rain, and another smearing about once a month till the end of March. I should have said that the use of the paper is to prevent the grease soaking through to the tree. In the evening the garden now swarms with male winter moths. In 1888, our fruit trees, especially apple, had almost all their leaves eaten by caterpillars, and the trees much injured thereby, this led us, in 1889, to adopt the bands. I believe this season the moths are more abundant than we have ever before had them; one year we banded the trees at our two gardens at Weybridge, but caught so few moths that the banding has not been repeated. From some cause the Wisley garden seems to be favourable to these moths, whether from the abundance and description of wood (mainly oak), or for other reasons, I cannot say.

Heatherbank, Weybridge Heath:

December 4th, 1893.

AN ATTEMPT TO ACCOUNT FOR MOTH-GREASE, WITH NOTES ON
ITS CURE BY ETHER.

BY H. GUARD KNAGGS, M.D., F.L.S.

Moth-grease, I take it, is a fuel food stored up chiefly by larvæ as a provision against starvation on the one hand, and as a protection against the effects of cold and wet on the other, and no doubt also as a reserve of energy to be used up in the violent exertion of flight, &c., and those species which lay in the biggest stock of it give most trouble to collectors. Of these, first come the internal feeders which inhabit wood, bark, stems, roots, fruits, seed-heads, also those which eat fungi or make galleries in dried fruits, fabrics, furs, nests of *Hymenoptera*, refuse, &c.; the majority of all these pass the winter in the larval state: next come those which feed underground *on* roots, or which pass a large portion of their time below ground, or conceal themselves under sods, stones, and similar situations; these, too, generally hibernate as larvæ. All the preceding live more or less in the dark, secluded from the air, and restricted in their movements. Web-makers, the imagines of which also have a tendency to grease, come under the category, but to a less extent: then other larvæ, generally hibernators, produce *Bombyces*, most of which family are deficient in suctional power, and the males of which are most vigorous on the wing; these would fare ill had they not, as caterpillars, stocked themselves with an ample supply of fuel food. Another set of larvæ which do not hibernate have to make preparation for the time when they will have to appear in the imago state in the colder months of the year; these generally accumulate considerable quantities of fatty matter; the autumn batch, in the winged state, procuring additional stores of nutriment more particularly from the blossoms of the ivy to enable them to tide over the winter months, and resume their orgies at the fallows that bloom in the spring.

Males are more affected with grease than females, which may be accounted for by the male larva stocking intuitively a considerable supply of reserved energy in readiness for its arduous exertions in the winged state, while the female being of a more sedate turn is content with a moderate amount. Then, again, bred specimens go greasy far more frequently than those which have been taken on the wing. It has also been suggested to me by a correspondent that insects which have paired rarely grease, and those which have paired a second time never. Now, as no one, except for breeding require-

ments, allows bred insects to pair or to fly, it naturally follows, from the above, that the males of those which have been reared in confinement will contain most grease.

Though grease is inherent in most if not all species from the egg onwards, the ultimate amount may be considerable, moderate, or trifling, and in the latter instances it may remain quiescent in a cold, dry situation until, perchance, a too heated temperature, a damp atmosphere, the relaxing box or laurel jar, or the vapour of camphor, naphthaline, benzine, &c., brings it to the surface, where its manifestation becomes an eyesore and a nuisance, which, if not promptly attended to, may cause much trouble and annoyance.

So much for grease: now for the cure. The extraction of moth-grease made but little headway till the discovery of benzole marked a new era in its progress. At first, probably from timidity as to the effect the new detergent might have upon their specimens, collectors but imperfectly carried out the process, and consequently met with but partial success; then the Rev. Joseph Greene conceived the heroic idea of eviscerating his specimens through a triangular opening on the under-side of the abdomen; this, of course, was an effectual preventive against any recurrence of the grease, though it was not an improvement to the specimen. The next plan was that of Dr. Alexander Wallace, who, by boiling out the grease in benzine heated on a water bath, slitting the bodies occasionally where he considered it necessary, instead of cutting out the triangular pieces, undoubtedly advanced matters, but people felt shy of boiling such an inflammable fluid as benzine, the vapour of which might, at any moment, cause an explosion, and so it was not largely adopted. Of late, however, the more effective and safe procedure of soaking the specimens or their abdomina in repeated baths of benzine until every trace of grease has been eradicated, has produced results as perfect as can possibly be obtained from that liquid.

There is, however, another fluid far cheaper than benzine, which has at least double the power to extract moth-grease, and which has the further merit of leaving the fur of the specimen fresh and bright, owing to the rapidity with which it volatilizes. Its name is Methylated Ether; and why this has not hitherto been used for the purpose by Entomologists is a puzzle to me, for its action upon insect grease has long been known to Chemists, by whom, indeed, it has been employed to extract the unctuous active principle of the blistering beetle (*Cantharis vesicatoria*). Its superiority over benzine is easily demonstrated by evaporating fluid containing moth-grease to the consistence of new

cheese, then putting two portions of the residue of exactly equal weight and shape, say five grains, into separate half-ounce phials and filling one with benzine, the other with ether. It will be found that the ether has dissolved the mass in a quarter of an hour, while the benzine has taken more than half an hour to do its work. My experiment was tried with grease which had been extracted partly by ether, partly by benzine, the two fluids were mixed and evaporated. This I find was unfair to the ether, the action of which *after benzine* is unsatisfactory—had I used grease extracted by ether for the ether experiment, and by benzine for the benzine experiment, the result would certainly have been still more favourable to the ether. There is not time to go over it again now; perhaps some of your readers may think it worth while to do so.

Ether is used in the same way as benzine, *i. e.*, by subjecting the greasy insects to repeated baths of it until the grease is thoroughly eradicated, two soakings of from three to ten days each, according to the size and state of the insects and bodies, are generally quite sufficient, but it is also advisable to give a third shorter bath for the purpose of rinsing off any surface grease which may remain from the previous baths. We can easily ascertain whether the insects are properly cleansed by observing whether the last bath is discoloured or turbid, and by “feeling” the interiors of the abdomina with a thin wire. When we have satisfied our minds upon this point, the more rapidly we dry our specimens the fresher and brighter will be their appearance, and for this purpose a warm temperature of not over 80° and fanning, or a thorough draught will be of great assistance. Ether will not affect the most delicate colours, even the sensitive green of *Iodis vernaria*, nor will it mat the cilia, on the contrary, if these are already entangled with grease it will liberate and restore them.

When wings and thoraces are only superficially affected they are soon cleaned by bedding them on to magnesia, saturating them with ether, covering over quickly with more magnesia, and leaving till the next day. After repeating this process three or four times, all trace of grease will generally have disappeared. It is when the grease has extended to the interior of the thorax and especially to the pin that the great mischief is done, for the green salt of copper which is formed so distends and distorts the thorax and displaces the wings, that unless it be a rarity, it is not worth while to attempt a cure. *Le jeu ne vaut pas la chandelle.*

When the wings and thoraces have been freed from grease, and after the powder has been shaken and blown off, and they have had a

brush up with a camel's hair pencil, it is always advisable to give them a final spraying with ether, fanning the while to assist evaporation, with a spray apparatus, the bellows part of which will be useful for preserving larvæ according to Lord Walsingham's plan.

Mr. Edmunds, of Windsor, with whom my advertisement for greasy *Lepidoptera* has brought me into correspondence, informs me that he has for some time past used the Chloride of Ethyl (*Chlorûre d'Ethyle*) for renovating specimens, and he kindly sent me a most ingenious little instrument containing it, consisting of a test tube, the mouth end of which is drawn out into a fine tube and bent to form a blowpipe. When required for use the tip of the elongated part has to be broken off and the body of the test tube held in the fist, when the warmth of the hand causes the contents to be ejected in the form of spray; its wonderful solvent powers and the rapidity with which it volatilizes raise the pile of the fur of the specimen sprayed in an astonishing manner. In another communication my correspondent, whose experience in cleansing insects with benzine must be immense, writes me as follows:—"On the 10th of this month (November) I had no good *Sphécia crabroniformis* left, but some hundred greasy specimens. I put a dozen up in a test tube and filled it with anæsthetic ether, and left them till the 18th. I have noticed in these specimens that the ether has entirely dissolved the whole contents of the bodies, and I must say left them in lovely condition. I gave two baths of ether to cleanse them from the first ether, and they dried out lovely and cannot possibly grease again. I think they are the most successful specimens I have touched. To-morrow I intend to put a lot of species to the test, for in these *crabroniformis* the entire contents of the abdomina have dissolved and formed a heavy sediment in the eight days ether. Benzoline does not do this, it will kill grease, but not dissolve the contents of the body."

If the fore part of this paper excites discussion it will have served its purpose; as for the latter part, it will give me great pleasure to afford any information in my power as to details, either privately, or, if of sufficient interest, publicly in your pages.

I take this opportunity to again thank those gentlemen who have so kindly assisted me by supplying me with the greasy material which has enabled me to satisfy myself as to the vast superiority of ether over benzine, and of the non-necessity for any external mutilation of specimens.

ASYMMETRY OF MARKINGS IN THE *URANIIDÆ*.

BY G. C. GRIFFITHS, F.E.S.

In examining recently a considerable number of specimens of *Uraniidæ*, particularly *U. fulgens* and *U. Sloanus*, I have been struck by a peculiarity which I do not remember to have seen mentioned in any of the literature relating to that singular group. We find as an almost invariable rule in the *Lepidoptera* that the markings of the right wings of a specimen have their exact counterpart in those of the left, but, as far as my material goes, I find that in the two species above referred to a perfectly evenly marked individual is the exception, not the rule: the metallic markings of both fore- and hind-wings being nearly always asymmetrical. The same peculiarity obtains in the nearly allied *U. Leilus*, and there is a similar irregularity in the black spots which occur upon the brilliant glowing patch on the hind-wings of *U. Rhipheus*, also in a smaller degree in some of the black spots of *Nyctalemon Orontes*.

43, Caledonia Place, Clifton, Bristol:
December, 1893.

NOTE ON A SPECIES OF *LAMPIDES*,
RECENTLY DESCRIBED BY MR. DE NICÉVILLE, AND DESCRIPTION
OF A NEW *ARHOPALA* FROM BORNEO.

BY HAMILTON H. DRUCE, F.Z.S., F.E.S.

LAMPIDES CÆRULEA.

Cupido cærulea, Druce, P. Z. S., 1873, p. 349, pl. xxxii, fig. 6.

Lampides bochides, de Nicéville, Journ. B. Nat. Hist. Soc., 1891, p. 367, pl. F, fig. 15, ♂.

Mr. de Nicéville has lately described and figured a butterfly under the name of *L. bochides*, which, on careful examination, proves to be the *C. cærulea* described by Mr. Herbert Druce in 1873.

We possess a ♂ collected in Elopura, N. Borneo, by Mr. Pryer, which I have compared with the type (now in Messrs. Godman and Salvin's collection) and found to be identical.

The good figure and clear description given by Mr. de Nicéville at once prove that he is dealing with the insect referred to by Mr. Druce. Mr. de Nicéville has himself (Butt. India, iii, p. 164) expressed the opinion that without reference to the type of the species, it would be impossible to exactly determine it, but has apparently described his *bochides* without having done so. Mr. Druce's description is correct, so far as it goes: "Upper-side bright morpho-blue," which can scarcely be said of any other of the group.

It bears considerable resemblance to the blue of some specimens of *Morpho Adonis*, Cr.

Unfortunately, the plate on which *L. cærulea* is figured is so bad that it is absolutely misleading, and I propose at no very distant date to publish a short account of the *Lycænidae* described in that paper in the P. Z. S., together with some satisfactory figures.

ARHOPALA ELOPURA, *sp. n.*

♂. Allied to *A. Rafflesii*, de Nicév. Upper-side: both wings slightly glistening, dark violaceous-blue, very narrowly bordered with black, scarcely extending beyond the cilia, except towards the anal angle, where it becomes wider. A pale silvery anteciliary line extending from the apex to the anal angle, common to both wings, but broadest in the hind-wing. Anal margin to about end of abdomen light shining brown. Tail rather short, black, and tipped with white. Under-side: ground colour paler than *A. Rafflesii*, with the spots generally rather larger, and with their interiors scarcely darker than the ground colour. The spots and fascia arranged as in *A. Rafflesii*, but the band beyond the cell in the fore-wing straight (not slightly curved inwards, as in that species), and with its central spot further towards the outer margin. Thorax and legs concolorous with wings, abdomen brownish above, paler below. Palpi whitish, tipped with brown.

♀. Fore-wing violet, graduating into blue towards the base, with the costal margin narrowly to the end of the cell, then widely, and with the apex and outer margin broadly dark fuscous. Hind-wing violet, graduating into blue towards the base, with the costal and outer margins broadly fuscous, but not so dark as in fore-wing; anal margin to about the end of the abdomen light shining greyish-brown. Under-side as ♂, but ground colour rather darker, and metallic scales at anal angle more prominent.

Expanse, ♂ ♀, $1\frac{3}{8}$ in.

Hab.: Elopura, N. Borneo (*Pryer*). Mus. Druce.

This species, although allied to *A. Rafflesii*, is, I think, quite distinct; as, first, it has nothing like such a rich shade of blue; secondly, the silvery line is a character which I have seen in no other of the genus; and, thirdly, the ♀ has very much less blue than Mr. Nicéville's figure shows, especially on the hind-wing.

I have long possessed this species, and as I have been unable to find any description which fits it, have ventured to name it.

London: November, 1893.

Pararge Megæra in October.—Mr. Clarke's note in this month's (December) Ent. Mo. Mag., reminded me that I had also met with this insect in October. On the 30th of that month, as I was returning from school at 2 p.m., one of my pupils drew my attention to a specimen of *P. Megæra*, which was fluttering in the street. He captured it and brought it to me, and, except that he had damaged one of its wings, it was in good condition.—W. F. JOHNSON, Armagh: December 4th, 1893.

The present market value of Chrysophanus dispar and Noctua subrosea.—At the recent sale (at Stevens' Rooms) of a portion of the late Rev. H. Burney's collection, the highest price obtained for *C. dispar* was £6 10s. per specimen, and for *N. subrosea*, £6 6s. per pair. Both of these are extinct, so far as regards the British (and typical) form, and the prices probably indicate a real market value. Well authenticated specimens of very rare British species found ready purchasers at high prices; but there was a significant variation of confidence shown as between individual specimens of the same species.—EDS.

Notes on Hepialus virescens, and other early spring insects in New Zealand.—On the 24th instant, I made the first Entomological expedition of the season, chiefly in search of the pupæ of *Hepialus virescens*. The collecting ground selected was a deep ravine, situated between high hills. On each side of the little stream, which ran at the bottom of this ravine, numerous specimens of the winberry tree (*Aristolelia racemosa*) were growing, in the stems of which plant the larvæ of *H. virescens* reside. The first burrow noticed was situated close to a branch in one of the trees, and the extraction of the enclosed pupa was difficult, the wood being very tough, and refusing to split in the required direction. After considerable trouble, I succeeded in getting out the pupa, and observed with much regret that I had apparently injured its anterior portions. I placed the specimen on the ground near the foot of the tree, and resumed work on some others close by. On returning about an hour later, I saw, to my great astonishment and delight, that the insect was in the act of emerging, all the anterior horny plates of the pupa were separated, the beautiful green thorax of the moth appearing through the interstices. In a few seconds the legs were thrust forwards, and, by a prodigious effort, the insect finally drew itself clear of the pupa. The moth now rapidly ascended the tree, until it reached an elevation of about four feet from the ground, where the stem was slightly curved, which thus enabled the insect to place its wings in a favourable position for development, viz., backwards and somewhat downwards. These organs were still extremely small, and much crumpled, especially towards the tips, and it seemed incredible that they could ever assume their proper shape and dimensions. They, however, grew with marvellous rapidity, and the creases were forced outwards to the extreme tips, and finally disappeared. During this stage of the transformation the wings were held vertically, but as soon as their development was completed, they were closed over the back in the usual position of *P. rapæ*. The moth now rested quietly on the tree-trunk where it would no doubt have remained until nightfall. It was very inconspicuous, notwithstanding the large size of the specimen, which reached upwards of five inches in the expansion of its wings. When thus seen in its full perfection, this giant *Hepialus* was a superb object, and although familiar with the insect and its habits, the sight is one which I shall never forget.

On the same day the following species were also noticed :—*Vanessa Gonerilla*, one only (hibernated); *Sestia humeraria* and *Simaëthis combinatana*, one very pale specimen of each, also evidently hibernated; *Xanthorhoë semifissata*, one only, apparently fresh; *Erechthias erebiotis*, one only; *Elachista archæonoma*, common amongst grass in the sunshine, seen fully a month ago; several *Perlidaë*, *Ephemeridaë*, *Tipulidaë*, &c.—G. V. HUDSON, Karori, Wellington, N. Z.: September 27th, 1893.

Lepidoptera, &c., at Morecambe.—August 11th to 31st last I spent at Morecambe, on the Lancashire coast, and, in company with Mr. G. C. Dennis, of York, paid some attention to the entomology of the neighbourhood. We found very little to encourage us, however, and although in a season where everything had appeared exceptionally early, most August species were no doubt over, we were obliged to regard the district as one of the very worst we had ever collected in. Most of our work was done in Heysham Moss, and the adjoining ditches and ground, a promising enough spot about two miles from Morecambe, and a mile inland, but exceedingly disappointing in its results. Nine of the commonest autumn butterflies were on the wing in the daytime, including perfectly fresh *Vanessa cardui*, which species appears to have been very scarce in most parts of Britain this year, and an occasional *Macroglossa stellatarum* occurred with them. At dusk, *Plusia festucae* occurred on all the ditches, and was not uncommon, and a few worn *Apamea fibrosa*, of which both forms appeared equally common, occurred with them. Sugar was an almost complete and inexplicable failure, and it was certainly not from any absence of common sugar-loving *Noctuae*, as the following fact, among similar instances, will prove. One to all appearance likely evening we sugared the stems and flowers of various plants along the side of a very promising ditch, but not a single moth of any description visited the sweets. But on lighting up the lamps after dark, and getting into the ditch (which was dry, owing to the long drought) we at once saw *Noctuae* in profusion, sitting on the stems and flowers (mostly the dead and dry flowers) of various plants. Nor had they flown there, for we had been closely working the ditch at dusk for *Plusia festucae*, and had the *Noctuae* been on the wing, we could not have failed to have seen them. They had simply crawled up the stems from the bottom of the ditch! *Hydræcia micacea* (not a sugar visitor, however) was most numerous, but there were scores of others, comprised of *Agrotis suffusa*, *A. segetum*, *Tryphæna orbona*, *Noctua plecta*, *N. c-nigrum*, *Xanthia ceraeo*, *X. silago*, *Phlogophora meticulosa*, &c., many of which, had sugar been attractive at all, would have been found ravenously feasting on it. On August 28th, a perfectly fresh *Hadena oleracea* was taken, without doubt, a "second brood" specimen. *Crambus geniculellus* did come freely to sugar the only evening we tried it directly on the coast, but the *Noctuae* would not come even there, and the ragwort flowers, both on the coast and on the "Moss," were almost as unproductive. Nor were the *Neuroptera* and *Trichoptera* any better represented. Of the former, *Ischnura elegans* and one or two common species of *Hemerobius* were the only things netted; and *Colpotaulius incisus*, *Glyphotælius pellucidus*, *Limnophilus marmoratus*, *L. flavicornis*, *L. lunatus* (the most abundant species), and *L. affinis* represented the *Trichoptera*. As elsewhere, wasps occurred in profusion the first few days of our visit, and I was much interested in noticing what an attraction to them were some blue artificial flowers in Mrs. Porritt's bonnet. They repeatedly followed these flowers long distances, flying about them and trying to settle on them all the way, thus showing that these insects are quite as much attracted by colour and appearance as by scent.—GEO. T. PORRITT, Huddersfield: October 13th, 1893.

Lepidoptera in the Belfast district.—The season in this district has been unusually good, and I have been fortunate in adding some good species to my list. *Taniocampa opima* occurred sparingly at fallows, near Belfast, at the end of March; the

males were very skittish, and all those captured were netted as they flew off the bushes. A single specimen of *Apamea ophiogramma* was taken flying over rushes in a marsh by the river Lagan, where *A. leucostigma* and *Miana literosa* were abundant; the *M. literosa* are darker and less rosy than specimens from Howth. A specimen of *Hadena contigua*, taken in the Mourne Mountains, offered a remarkable example of evanescent colouring; at the time of capture it was evidently just out from the pupa, all the darker parts of the fore-wings were of a deep rose-pink, while the pale hind marginal band, the reniform and the base of the wing were strongly suffused with bronzy-green, altogether a most beautiful insect: these colours gradually faded, and by the time I was able to send the specimen to Mr. Barrett the green had nearly disappeared. The best capture of the year was *Phibalapteryx lapidata*, of which species five specimens were taken in a reedy spot in the Belfast Hills on September 3rd; the males were much worn, but the females were quite fresh. As there are many miles of similar ground on the Antrim Hills, the species probably occurs in other places. *Cirrhædia xerampelina* occurred in Castlewellan Park, *Venusia cambricaria* in Donard Demesne, and *Stilbia anomala* in a valley in the Mourne Mountains. Of the *Pyralides*, *Scoparia ingrattella* occurred on Knockagh, near Carrickfergus, together with *Ennychia cingulata* and *Oxyptilus parvidactylus*. *E. cingulata* has a particular liking for the steep slope at the extreme edge of the cliff, so that its capture is rather exciting work. Of *Platyptilia isodactyla* a single specimen was taken at the same time and place as *Phib. lapidata*; *Senecio aquaticus* is abundant all over the ground. *Homœosoma senecionis* was taken at Newcastle, Co. Down, *Phycis fusca (carbonariella)* in the Silent Valley and Bloody Bridge Valley in the Mourne Mountains, and *Phycis subornatella (dilutella)* at Island Magee. *Peronea hastiana* (hibernated) was taken near Belfast, *Olindia ulmana* in Donard Demesne, and *Pamplusia mercuriana* was fairly common at the top of Slieve Bingian (2500 feet). *Glyhpteryx equitella* was found in swarms at several spots along the cliffs of Island Magee on June 4th, and one specimen of *Lampronia luzella* in a lane near Belfast.—CHARLES W. WATTS, Belfast: October 6th, 1893.

Stray notes on Kentish Coleoptera.—Since my return to England, in the middle of July last, I have had numerous opportunities of revisiting many old collecting grounds in Kent, as well as of trying some new ones, in search of *Coleoptera*. Some of the former, I regret to say, have sadly deteriorated since I first knew them, twenty or more years ago, and the phenomenal drought and heat of the past summer have been most prejudicial to beetle life. Never in all my previous experience of collecting have so few really good insects rewarded such constant work, and a similar complaint reaches me from correspondents in many parts of the south of England.

One exception to the general scarcity of beetles in the Isle of Sheppey has been the abundance of the *Coccinellidæ*, especially during the latter half of July. On certain evenings in that month, with a gentle south-westerly breeze and high temperature, ladybirds might have been swept off the grass on the edge of the cliffs literally by pints, and I remember to have only once before seen them in equal or greater profusion, during the summer of 1869. The predominating species were, as might have been expected, *Coccinella 7-punctata*, *variabilis*, *11-punctata*, and *bi-punctata*, but along with these several others, which were previously rare or not met with at all in the island, were to be found more or less commonly, such as *C. ocellata*,

oblongo-guttata, *obliterata*, *mutabilis*, and *14-guttata*. In damp places *C. (Anisoticta) 19-punctata*, new to my local list, was quite common, and *C. 22-punctata*, previously quite a rarity, was found at Elmley, by sweeping, in great profusion. *Chilocorus similis*, by no means an abundant insect in my experience, was this year quite plentiful, turning up in all sorts of places until quite the end of October.

Very few other beetles were to be obtained by cliff sweeping, the evenings being as a rule too hot and dry; but on one occasion *Bagöus subcarinatus* was quite common, at a distance of fully five miles from the very restricted locality where alone it had previously been found. *Bruchus canus* is an addition to the Sheppey list, but it occurred only singly.

Early in August, in a dried-up ditch quite close to Sheerness, on a few water-cress plants swarming with *Phædon cochleariæ* and its larva, I found three beautiful specimens of *Saprinus virescens*, a veritable wolf in sheep's clothing. The close superficial resemblance of the *Hister*, in size, colour, and general aspect, to the *Chrysomelid*, renders the two species by no means easy to separate in the field, or, rather, the ditch; and in one instance at least the *Saprinus* was evidently making a meal of the helpless grubs of the *Phædon*. In the same spot I met with *Phytobius velatus*, new to Sheppey; and a casual specimen of the red-legged var. *melanocornis* of *Chlænium nigricornis* excited for the moment a wild idea that I had at last got hold of the rare *C. Schrankii*.

In large *Boleti* growing on elm trees, *Homalium deplanatum* occurred in fair numbers in September and October, accompanied by *H. concinnum* (common), *Hapalaræa pygmæa* (rare), *Endomychus coccineus*, *Triphyllus suturalis* (abundant), *Coninomus nodifer*, *Tetratoma fungorum*, and other fungus feeders; *Cis bidentatus* being also very plentiful in these *Boleti* when hard and dry. *Coryphium angusticolle* again turned up, after the lapse of many years, this time in an old apple tree stump, in company with *Homalium iopterum*.

At Elmley, five miles from Sheerness, in a fresh-water ditch choked with a luxuriant growth of *Sparganium ramosum*, I found *Telmatophilus brevicollis* quite commonly by sweeping this plant. Curiously enough, this species was apparently restricted to a space not more than five yards in length, while its commoner relative, *T. caricis*, abounded from one end of the ditch to the other. Here, too, *Bagöus subcarinatus* again occurred, with *Hippodamia 13-punctata* (taken by Mr. Champion in September), *Poöphagus sisymbrii*, *Apion Hookeri*, &c.

The thorny rest-harrow (*Ononis spinosa*), at Elmley and elsewhere, produced *Apion Bohemani* in great profusion in August, with *Sitones ononidis*, just as rarely. *A. limonii*, formerly so plentiful in many places round the shore of the island, now seems to be confined to a very limited spot on one of the "saltings" near Queenborough, having apparently disappeared from nearly all its old localities.

Turning now to the Chatham district, Cobham Park was, of course, visited at an early date, but this usually productive locality had suffered even more from the prolonged drought than the Isle of Sheppey; and scarcely a beetle worth bottling resulted from several days' collecting. I found that *Platycis (Eros) minutus* still lingered in the old ash tree, where it occurred in 1889, as I took half a dozen specimens one evening at the end of July; but its companion in the tree, *Abraeus granulum*, had evidently quite vanished. *Philonthus addendus*, Sharp, and *Gnath-*

onus nannetensis, in fungus; *Homalota pagana* and *Lathridius elongatus*, by sifting dead leaves; and *Nossidium pilosellum*, not rarely about a *Cossus*-burrow in oak, with a solitary *Agaricophagus cephalotes*, the only *Anisotomid* met with by evening sweeping, are alone worth mentioning. *Aphodius Zenkeri* was quite scarce this year (though found not rarely at Mickleham), its place being apparently taken by *A. sticticus*.

At Rainham, in October, *Apion lævicolle* was found plentifully in a haystack on the marshes; *Thyamis agilis* again turned up, but very rarely, on *Scrophularia aquatica*, at Snodland; and *Licinus depressus* occurred on two or three occasions under flints on the chalk hills at Queendown Warren, near Rainham, and at Boxley, near Maidstone.

I went twice to Deal in September, but found the sand-hills devoted to the "royal and ancient game" of golf to such an extent that collecting was carried on at no small risk, in the midst of a miniature bombardment of hard balls flying in every direction. On both occasions the evening was unfavourable for sweeping, and I failed to find *Anisotoma pallens*, which species was the chief inducement of my visits. I was able, however, to ascertain that many of the well-known specialities in *Coleoptera* of this famous locality were still to be had for the working, and obtained, in addition, a good series of *Nitidula rufipes* and *4-pustulata*, under a bone lying on the bare sand.

A visit to Faversham, in quest of *Liosomus troglodytes* in its original locality, was unsuccessful as regards its main object, though I took a fine ♂ of its almost equally rare congener, *L. oblongulus*, with *Apteropeda globosa* in moss, as well as *Stenus major* and *S. incrassatus* in the marsh at Ospringe, where these species had been previously obtained.—JAMES J. WALKER, 23, Ranelagh Road, Sheerness: November 29th, 1893.

Coleoptera in the Oxford District.—During the past season I have met with several interesting species of *Coleoptera* in the neighbourhood of Oxford, some of which have, perhaps, not hitherto been recorded from the district. The localities which I worked were Bagley Wood, Shotover, and the backwaters of the river below the city; Dorchester, which is situated near the confluence of the Thame and Thames, was also a favourite hunting-ground for beetles.

Elaphrus uliginosus, one specimen, running on a mud-bank in a stream near Stadhampton; *Pterostichus oblongopunctatus*, in some numbers, in Hen Wood, near Oxford; *Oodes helopioides*, near Marston, sometimes to be found in numbers at the roots of grass on the high banks after the floods have subsided; *Anchomenus livens*, a few specimens in flood refuse, near Mesopotamia; *Oxyporus rufus*, a long series from decaying fungus at Dorchester; *Coccinella obliterata*, in crevices of bark in Hen Wood; *Alexia pilifera*, by sweeping, at Dorchester; *Carpophilus hemipterus*, several specimens, in a rotting branch in Bagley Wood, but, unfortunately, most of them were lost; *Cercus bipustulatus* and *C. pedicularius*, swarming on the river banks; *Cychranus luteus*, sweeping in Bagley Wood; *Lathridius lardarius*, a large series, by sweeping at Dorchester; *Geotrupes mutator*, one specimen at Shotover; *Agrilus laticornis*, by sweeping in Bagley Wood; *Aphanisticus pusillus*, in moss at

Bagley; *Elater balteatus*, not rare on hazel, Bagley Wood; *Ischnodes sanguinicornis*, some dead specimens, in a rotting log at Dorchester; *Corymbites pectinicornis*, Bagley Wood; *C. quercus* and var. *ochropterus*, by beating young oaks in Bagley Wood; *C. metallicus*, one specimen, by sweeping in Magdalen College grounds; *Malachius æneus*, by sweeping in damp places at Dorchester; *Xestobium tessellatum*, found attacking large numbers of willow trees at Oxford; *Ptilinus pectinicornis*, commonly on ash at Dorchester; *Ochina hederæ*, on dead ivy in Magdalen College grounds; *Hedobia imperialis*, by sweeping at Dorchester; *Clytus mysticus* and *Leiopos nebulosus*, by beating hawthorn in Bagley Wood; *Callidium violaceum*, common in parts of Bagley; *Chrysomela didymata*, one specimen, by sweeping nettles at Cowley; *C. gattingensis*, one specimen, on Frilford Heath; *Melandrya caraboides*, in old willows at Oxford; *Notoxus monoceros*, in a sandy ditch at Cowley; *Oncomera femorata*, a single specimen, captured flying in the city; *Asclera cærulea*, rarely, on hawthorn in early spring; *Sitaris muralis*, on an old wall at Wolvercot.—JOHN W. SHIPP, University Museum, Oxford: November, 1893.

Odour of Olophrum piceum.—Last Thursday, December 7th, I sifted some dead leaves by the side of the Canal and brought home the siftings. On examination (as soon as the contents of the bag were warm enough to restore energy to the half frozen beetles), I perceived a most disagreeable smell, worse than the ordinary *Hemiptera* can produce. I went on boxing a few beetles, but finding no bugs, and a few minutes after my wife called my attention to the smell (she was sitting at the other end of the room). I finished and threw the leaves away, noticing, however, that the smell had disappeared. An hour afterwards I opened one of the boxes, and was greeted with the same smell. The box contained nothing but two specimens of *Olophrum piceum*, Gyll. I killed them promptly with boiling water, but the smell hung about them for some time, even after carding. Has this smell been noticed before? I can find no mention of it.—HAROLD SWALE, 3, Abbeymead, Tavistock: December 9th, 1893.

[A similar objectionable odour is emitted by many species of the group *Homaliina*.—Eds.]

Pseudeumolpus, Jacoby, renamed *Eumolpopsis*.—My attention having been called to the fact that the name *Pseudeumolpus*, proposed by me in the last number of this Magazine (p. 276) for a genus of Phytophagous *Coleoptera*, is pre-occupied (Kraatz, 1890), I now change it to *Eumolpopsis*.—M. JACOBY, 7, Hemstall Road, West Hampstead: December, 1893.

Rare Diptera in 1893.—This season has been a very favourable one for *Diptera*, several rare species having occurred rather freely. My first capture worth noticing was *Chilosia grossa* in Sutton Park on March 27th. Early in April *Bombylius major* swarmed at Trench Woods, at the same time I captured *Gonia lateralis*. *Callomyia amana*, one specimen in my garden. *Syrphus barbifrons*, *Melanostoma quadrimaculatum*, *Platychirus latimanus*, were very common in Sutton Park in April. *Helophilus lineatus*, *hybridus*, and *trivittatus*, all occurred in the Park, the

first named freely. *Sericomyia borealis* and *lappona*, very common, the former unusually large specimens. *Criorrhina berberina*, *oxyacantha*, and *floccosa* (Sutton), the last being taken in my garden before breakfast. *Xylota abiens* (Sutton), ten specimens, all males, were taken in close proximity to a dead tree, some on the trunk itself. *X. sylvorum* also occurred, and *X. lenta* was taken on the Cotswold. *Merodon equestris*, seven specimens taken in my gardens (four distinct varieties), and I have heard of other captures; this insect is no doubt increasing in the country. *Dioctria atricapilla*, one from the Cotswold. *Gymnocheta viridis*, Sutton and Cotswold, one from each locality. *Conops vesicularis* (1) and *Bombylius canescens*, Wyre Forest, where I also captured a fine var. of *Volucella bombylans*, combining the two forms, the thorax being yellow and the tail red; this might well be called var. *intermedia*. At the end of July, by sweeping rush heads at Sutton, I took an immense quantity of *Platyichiridæ*, among which were two specimens of *P. fulviventris*. *Eristalis ænea*, taken freely at Weymouth in August, also *sepulchralis* (1), this was also taken at Sutton. *Oncomyia nigra* (1) and *Sepedon sphaegeus*, from Wyre Forest in September. Among the Daddies, *Tipula vittata*, *Pachyrrhina crocata*, *Pæcilotola punctata*, all occurred in my garden, the last named so freely that I could take half a dozen with one stroke of the net, it also varied much in colour from pale grey to black. *Phalacroceræ replicata*, this was not uncommon in a bog in Sutton Park on May 14th; on getting home at mid-day and finding it was a prize, I went again in the afternoon, but none were to be seen.—RALPH C. BRADLEY, Holly Bank, Sutton Coldfield, Warwickshire: December, 1893.

Coccus rubi of Schrank.—In this Magazine, vol. xviii, p. 275, the late M. Lichtenstein states that he had identified the long-lost *Coccus rubi*, Schrank, in a species of *Dactylopid*, living on the leaves of *Rubus discolor*; but I think he was mistaken. Schrank's description points clearly to a hemispheric *Lecanium*, ♀, and I have referred to it a like species of that genus (cf. Ent. Mo. Mag., iii, n. s., p. 105); whereas Lichtenstein states that his dissimilar ♀ *Coccid* is "fringed and spotted with snow-white woolly secretion, and has 8-jointed antennæ." He also adds, in his description of the male, that it has "four white tails or setæ, the interior pair as long as the entire insect, the exterior as long as the wings. This latter character induces me to term the genus *Tetrura*." It may, incidentally, be observed that Geoffroy says his *Coccus adonidum*, ♂, "has the four white filaments of its tail snow-white." The late E. T. Atkinson, in his "Insect Pests," Calcutta (1886), has noted the proposed genus "*Tetrura*" without any remark. All I wish to contend for now is that Lichtenstein's *Tetrura ulmi* cannot, by the evidence adduced, be the same as the *Coccus ulmi*, Schrank, and that the latter is correctly identified as a *Lecanium*, as stated above.—J. W. DOUGLAS, 153, Lewisham Road, S.E.: November 6th, 1893.

Eriopeltis Lichtensteinii and *Signoretia luzulæ* in Scotland.—I have received from Dr. T. A. Chapman some of the sacs of *Eriopeltis Lichtensteinii* on grass-stems, and of *Signoretia luzulæ*, on the leaves of a *Luzula*, all taken in Argyleshire. These are interesting on account of the northern locality; both species having hitherto been found not north of Cheshire.—ID.

Review.

THE BUTTERFLIES OF NORTH AMERICA: by W. H. EDWARDS. Third Series, Part xiv, with three Coloured Plates. Boston and New York: Houghton, Mifflin, and Co. London: Trübner and Co. 1893.

This Part commences with a consideration of *Neoninois Ridingsii*, Edw., an alpine Satyrid allied to *Chionobas*. The details concerning it occupy eight 4to pages, illustrated by a plate on which are about 30 figures. Otherwise the Part is, like its predecessor (*cf.* Ent. Mo. Mag., 1893, p. 49), occupied by the genus *Chionobas* itself, and the species treated on are *Ch. Eno*, Boisd., of which *assimilis*, Butl., is considered a variety, *Macounii*, Edw., which appears practically peculiar to the Dominion of Canada, and of which the transformations are elaborately detailed and equally elaborately figured.

Obituary.

Prof. Hermann August Hagen, Hon. F.E.S., was born at Königsberg, East Prussia, on May 30th,* 1817, and died at Cambridge, Mass., U.S.A., on November 9th, 1893. He was the son of K. H. Hagen, one of the Professors at the University of Königsberg, and after preliminary education entered the University as medical student, where Rathke was Professor of Natural History, and it is possible that this association had much to do with his turning his attention to Entomology; but I have evidence that his father, although he appears to have written nothing on the subject, was an entomologist, for in 1865 Hagen sent me a pair of the still rare dragon-fly, *Epitheca bimaculata*, "as a true token of my friendship," inasmuch as they had been captured by his father, who gave them to him at the age of 15, with advice to study such insects. In 1839 he sent a List of the Dragon-flies of East Prussia to a local publication, and in the same year he appears to have accompanied Rathke on a journey to Sweden, Norway, Denmark, &c., where the principal collections and Museums were visited. In 1840 he wrote his "Dissertatio Inauguralis," the subject of which was the synonymy of European Dragon-flies, proving unmistakably that talent for bibliographical research for which he subsequently became so famous. Once fairly launched as a writer, articles from his pen followed in rapid succession, and at the time of the attack which ultimately proved fatal, they numbered many hundreds, mainly on *Neuroptera*, including, for many years, critical reviews on all papers on the subject that appeared, and also notices of old and nearly forgotten works on entomology. Fossil *Neuroptera* engaged his attention continuously. Undoubtedly he was the pioneer of modern Neuropterology in its broad sense, and of Trichopterology in particular. About 1841 his work attracted the attention of Baron de Selys-Longchamps, and the life-long friendship then formed showed fruit in the production of the "Revue des Odonates d'Europe" (1850), which was in part written by him, and to which he contributed nearly all the illustrations of details, for he was a ready draughtsman, and his letters were always rendered the more valuable on account of the intercalated sketches. With de Selys he was also associated in the "Monographie des Caloptérygines" (1854) and "des

* In his "Inaugural Dissertation" (1840) he gives the date somewhat vaguely as "ante tertium diem Jun., anno 1817," showing that, at that time, he was slightly uncertain.

Gomphines" (1857), and in the various synopses of Odonate Families and their additions that are so well known to all Neuropterists. From 1855 to 1858 he was engaged on a Synopsis of the European *Cicadæ*, and from 1855 to 1860 on his "Monographie der Termiten," which in many respects is perhaps his masterpiece, dealing as it does, in a wonderfully detailed manner, with what is probably the most difficult of all Families of Insects. In 1861 appeared his "Synopsis of the *Neuroptera* of North America" (Smithsonian Institution), which was intended to be followed later by a Monograph on the same subject, but this latter, unfortunately, never appeared in a collective form. I say "unfortunately," because several important groups, such as the *Planipennia* and *Trichoptera*, were not worked out in the Synopsis with his usual detail. For several years prior to this Hagen had been engaged in compiling the "Bibliotheca Entomologica," which appeared in two vols. in 1862 and 1863, giving a List of all works and papers on Entomology that had appeared from the earliest times. That work, as affording a means of ready reference (rendered still more useful by the analytical register at the end of the second vol.), almost revolutionized the science, and it was truly said that having got it, the wonder was how we existed so long without it. Omissions and errors have naturally been detected since—that these are so few is a marvel.

All this time Hagen had been labouring at his profession as a medical man in his native town, and adding to his small income by occasional literary work; but his letters to me at one time were despondent as to his future. However, in 1867, he was asked by Louis Agassiz, the Director of the Zoological Museum of Harvard University, Cambridge, Mass., to take charge of the Entomological Section. He accepted the position, and finally left Europe in the autumn of 1867 to undertake his new duties (a portion of his collections being destroyed *en route*, to his great grief). Once installed there, he set to work with a will, and put in order that which had been comparative chaos, turning his attention especially to illustrating the life-histories of insects, a feature for which the Museum has become renowned. He became Professor of Entomology at the University. In America it was almost necessary he should devote much attention to economic entomology, and he suggested a means of destroying noxious insects by means of inoculation with the yeast fungus. In 1882 (then at the age of 65) he joined a long and arduous exploring expedition, and accumulated much materials, one outcome of which was a paper on the genus *Colias*, which attracted much attention and occasioned much controversy. These duties, necessities of his office, left him little time for his Neuropterous studies, but he continued to publish on the Order. He revisited Europe for a brief period on two occasions, and on the second of these I met him at Southampton when on his return—the last time I saw him. In September, 1890, he was stricken with paralysis, and an attack of influenza in the following January rendered his recovery hopeless. He lingered on for nearly three years in a deplorable state, helpless as an infant, conscious of his condition, with his bodily functions unimpaired, yet reduced to a skeleton (he was formerly a very heavy man), kept alive by the devoted care of his wife (whom he married when quite young, but had no family). I cannot but echo the expression of one of his oldest friends in America—a happy release for both of them!

In conclusion it becomes necessary to say a few words as to my personal connection with Hagen. I was most emphatically his pupil. When he was in London

engaged on the compilation of his "Bibliotheca," I met him for the first time. He took the opportunity when here of making an examination of the various collections of *Neuroptera*, and one result was a series of Synopses of the British species (all excepting *Per'ida*), published in the "Entomologist's Annuals" for several years. That on the *Phryganidæ* (1859—61) attracted my attention, and induced me to study these insects (of which I had already collected a few), and to enter into correspondence with the author. My first letter from him is dated 18th February, 1861, and from that time until just before his illness we were in almost constant communication. Naturally there were points on which we were not quite of the same opinion: but I venture to think that this long co-operation was of value to both of us, and, let me hope, also to succeeding students of the subjects in which we were both so warmly interested! Hagen was Honorary Member of most of the prominent Entomological Societies, of that of London since 1863.—R. McLACHLAN.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *November 20th*, 1893.—Mr. R. C. BRADLEY in the Chair.

The following were exhibited:—By Mr. E. C. Rossiter, insects from Arley, including *Aplecta tinctoria*, *Hadena contigua* and *Proteus*, and one specimen of *Xylophasia scoloparina* from Shut Mill. By Mr. A. H. Martineau, *Macroglossa stellatarum* from Solihull and Abersoch, N. Wales, and one specimen of *Sesia cynipiformis* from Wyre Forest; also *Bombus muscorum*, *syllarum*, and *cognatus*, ♂, all from Nevin, N. Wales, species almost identical in appearance. By Mr. R. C. Bradley, males, females, and neuters of *Vespa crabro* from Astwood Bank; also *Ammophila sabulosa* from Cannock Chase; a species which Mr. Saunders, in part iii of his "Hymenoptera Aculeata," says he has not heard of from the midlands. By Mr. W. Harrison, a nest of *Bombus cognatus* from Harbarne, with males, females, and neuters; also a box of *Lepidoptera* taken during the Society's Cotswold trip in June last, and including, in addition to species taken by the other members, *Nemeobius Lucina*, *Euchelia jacobææ*, *Nemophila plantaginis*, ♂ and ♀, &c. A paper was communicated by Mr. F. W. Urich, of Trinidad, entitled, "Wayside Notes of a Naturalist," in which was described a walk in the neighbourhood of Port of Spain, with many observations upon the habits of the insects, &c., met with. A number of photographs of the district, &c., were shown; also a box full of insects which had been collected, to show what might be done in the course of one walk there: it included about 50 dragon-flies, and over 130 *Lepidoptera*.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY: *December 11th*, 1893.—Mr. S. J. CAPPER, F.L.S., President, in the Chair.

Mr. C. H. Schill, of Manchester, gave "A few introductory remarks on the genus *Vanessa* and its allies," and showed the ease with which exotics could now be obtained from friends residing abroad. He stated that it was almost necessary to work single groups and become specialists thereon, rather than attempt to form gigantic collections of whole Orders, of which it was almost impossible to obtain a

complete knowledge. He then described the chief points of difference for separating the genera and species, illustrating his remarks by a number of closely connected species of the genus. Mr. C. G. Barrett, of London, explained and discussed Mr. Merrifield's recent experiments on the effect of temperature on the genus *Vanessa*. Mr. C. E. Stott read a few remarks upon *Amnophila lutaria*, Fab., and showed a specimen captured near Blackpool in July, 1892; Mr. Harker, living specimens of a *Corynetes*, feeding in Copra, from Singapore, and *Sesia scolioformis*, from the north of Scotland; Mr. Newstead, a nest of *Vespa vulgaris*, from Malpas, Cheshire, which was built to a rafter inside an outhouse, a most unusual position; and *Sinodendron cylindricum*, L., and larvæ, from a pear tree near Chester. Mr. J. Herbert Stott, a curious variety of *Celæna Haworthii*, from Bolton, 1893. Mr. Gregson, a specimen of *Heliothis peltigera*, captured at Wallasey in 1887. Mr. Watson, *Parnassius Apollo* and *P. Phæbus* = *Delius*, showing the female pouches; also *Euryeus Cressida*.—F. N. PIERCE, Hon. Sec., The Elms, Dingle, Liverpool.

ENTOMOLOGICAL SOCIETY OF LONDON: December 6th, 1893. — HENRY JOHN ELWES, Esq., F.L.S., F.Z.S., President, in the Chair.

Mr. W. F. Kirby exhibited, for Dr. Livett, a series of specimens of a moth taken at Wells, which Dr. Livett considered to be varieties of *Dasycampa rubiginea*, but which many entomologists present thought were varieties of *Cerastis vaccinii*. Mr. Kirby added that similar specimens had been taken rather freely during the past autumn in Berkshire, and it was suggested that they might be hybrids between *D. rubiginea* and *C. vaccinii*.

Mr. Lovell Keays exhibited, for Mr. A. L. Keays, a series of *Lycæna Alexia*, with confluent spots on the under-sides of the fore-wings. He drew attention to the fact that the insects were all taken within a short radius, and probably were in the ratio of about one in forty with reference to the ordinary form. All the examples, with one exception, were females. He had some years ago met with a similar brood near Weymouth, in which the confluent spots were, as far as the specimens collected by him extended, entirely confined to females, and the proportion was much higher. Professor S. H. Scudder, of Cambridge, Mass., U. S. A., stated that he had observed the occurrence of broods with suffused spots in America, but they were not confined to any special locality.

Mr. C. O. Waterhouse exhibited the type-specimen of *Coptomia opalina* of Gory, from the Hopeian Collection at Oxford, and pointed out that it was quite distinct from *C. mutabilis*, W. The distinct punctuation of the whole insect, and the striolate pygidium in *C. opalina*, were sufficient to distinguish it at once. Mr. Waterhouse called attention to this, as some French entomologists maintain that these insects are the same species. He also called attention to *Silpha atomaria* of Linnæus (Syst. Nat., ed. xii, i, p. 574), a Swedish species which appeared to have escaped notice, and was not included in any catalogue. The type is still extant in the Linnean cabinet, and Mr. Waterhouse said he was of opinion that it is the *Olibrus geminus* of our collections, but he had not had an opportunity of making a critical examination. He also exhibited male and female specimens of a *Helopeltis* (the Tea-Bug), which he considered a distinct species, and stated that it had occurred only in Assam.

Mr. M. Jacoby exhibited certain species and varieties of the genus *Ceroglossus* from Chili, and Dr. D. Sharp, Mr. J. J. Walker, and Mr. Champion made remarks on their geographical distribution.

Prof. Scudder exhibited the type-specimen of a fossil butterfly—*Prodryas Persephone*—found in beds of Tertiary Age (*Oligocene*) at Florissant, Colorado. He said the species belonged to the *Nymphalidæ*, and the specimen was remarkable as being in more perfect condition than any fossil butterfly from the European Tertiaries. He also stated that he had found a bed near the White River on the borders of Utah, in which insects were even more abundant than in the Florissant beds. Dr. Sharp, Mr. Kirby, Mr. H. Goss, and the President took part in the discussion which ensued.

Mr. Goss exhibited hibernating larvæ of *Spilothyrus alceæ*, which had been sent to him by Mr. F. Bromilow from St. Maurice, Nice.

Mr. W. F. H. Blandford read a paper, entitled, "The Rhynehophorous Coleoptera of Japan. Part iii. Scolytidæ." The President, Dr. Sharp, Mr. Champion, Mr. McLachlan and Mr. J. J. Walker took part in the discussion which ensued concerning the distribution of the group and the admixture of Palæartic and Oriental forms in Japan.

Mr. G. T. Bethune-Baker read a paper, entitled, "Notes on some Lepidoptera received from the neighbourhood of Alexandria," and exhibited the specimens. Mr. McLachlan suggested that the scarcity of insects in lower Egypt was possibly to be accounted for by the fact that much of the country was under water for a portion of the year, and Dr. Sharp said that another cause of the scarcity was the cultivation of every available piece of land for centuries past. The President and Mr. J. J. Walker continued the discussion.

Mr. C. O. Waterhouse read a paper, entitled, "Further Observations on the Tea-Bugs (*Helopeltis*) of India."

Dr. F. A. Dixey communicated a paper, entitled, "On the Phylogeny of the *Pierinæ*, as illustrated by their wing-markings and Geographical Distribution."—H. Goss and W. W. FOWLER, *Hon. Secretaries*.

A SYNOPSIS OF BRITISH *PSYCHODIDÆ*.

BY THE REV. A. E. EATON, M.A., F.E.S.

(concluded from vol. iv, page 130).

THE GEOGRAPHICAL DISTRIBUTION OF *PSYCHODIDÆ*

can here be treated of only in a very summary manner, owing to the small amount of information available. Many species have been described from countries exterior to Europe, under the generical name of *Psychoda*; but it is probable that the name was applied to them in a comprehensive popular sense that throws no light upon the range of this genus. A magazine-drawer in one of the British Museum cabinets contains a single ♀ *Psychoda*, captured by the author at Capetown in 1874; a *Pericoma* allied to *P. ocellaris*, obtained by

Wollaston in the island of Madeira ; and several specimens of another species, related either to *P. notabilis* or *P. fusca*, from German East Africa.

Turning to continental Europe, the information obtainable from foreign authors concerning the range of British species of *Psychodidæ* is very limited. Latreille and Macquart refer to six of the species as indigenous to the north of France: *Pericoma canescens* (Meigen?), *trifasciata*, *ocellaris*, *fusca*; *Psychoda phalænoides* and *sexpunctata*. Van der Wulp (who has seen English specimens of nine of them) records eleven of the species from the Netherlands, which are also included by Schiner in the Austrian fauna: *Ulomyia fuliginosa*; *Pericoma palustris*, *nubila*, *canescens*, *ocellaris*, *fusca*; *Psychoda albipennis*, *phalænoides*, *sexpunctata*, *humeralis*; and *Trichomyia urbica*. Zetterstedt reckons nine of these last mentioned species amongst the Scandinavian *Diptera* (omitting *U. fuliginosa*, and the *P. canescens* of Schiner), and includes a tenth species—*P. trifasciata*. This apparently exhausts the modern record.

Six British species extend to Algeria: *Pericoma ambigua*, *ustulata*; *Psychoda erminea*, *sexpunctata*, *humeralis*; and *Sycorax silacea*.

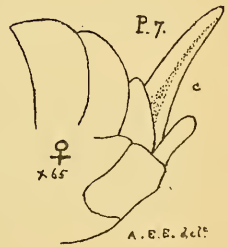
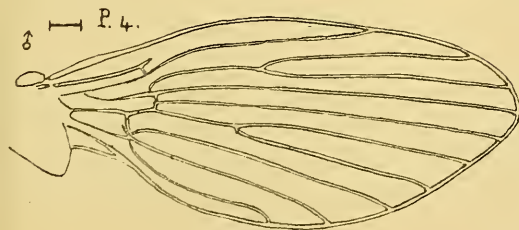
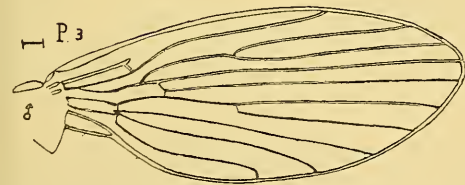
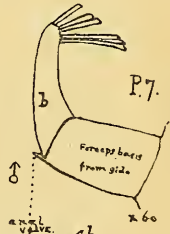
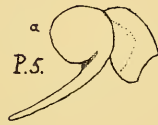
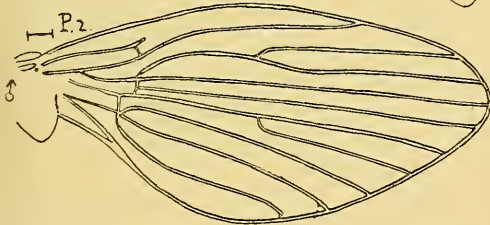
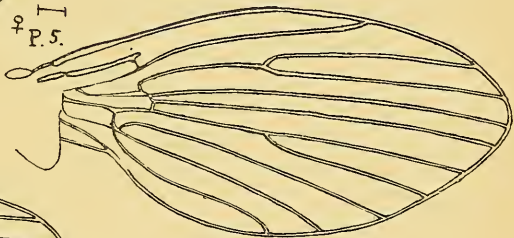
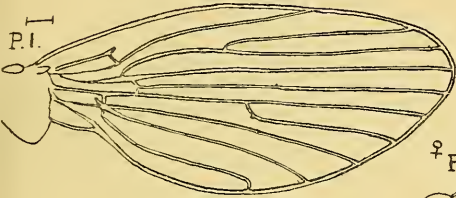
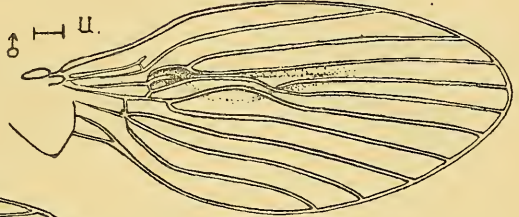
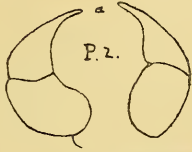
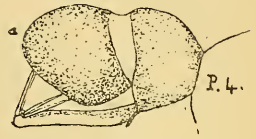
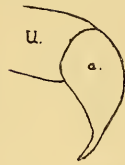
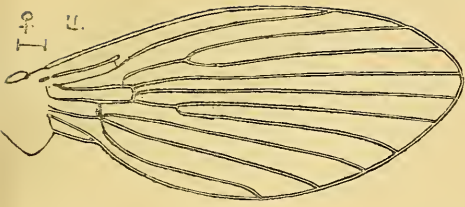
The local distribution of *Psychodidæ* within the British Islands has been so little investigated that it is as well not to enter here into details on this subject. It will be of more practical advantage to close this article with some topographical notes indicative of the nature of sites affected by certain species. The character of suitable "stations" can usually be recognised at a glance by their vegetation and surroundings.

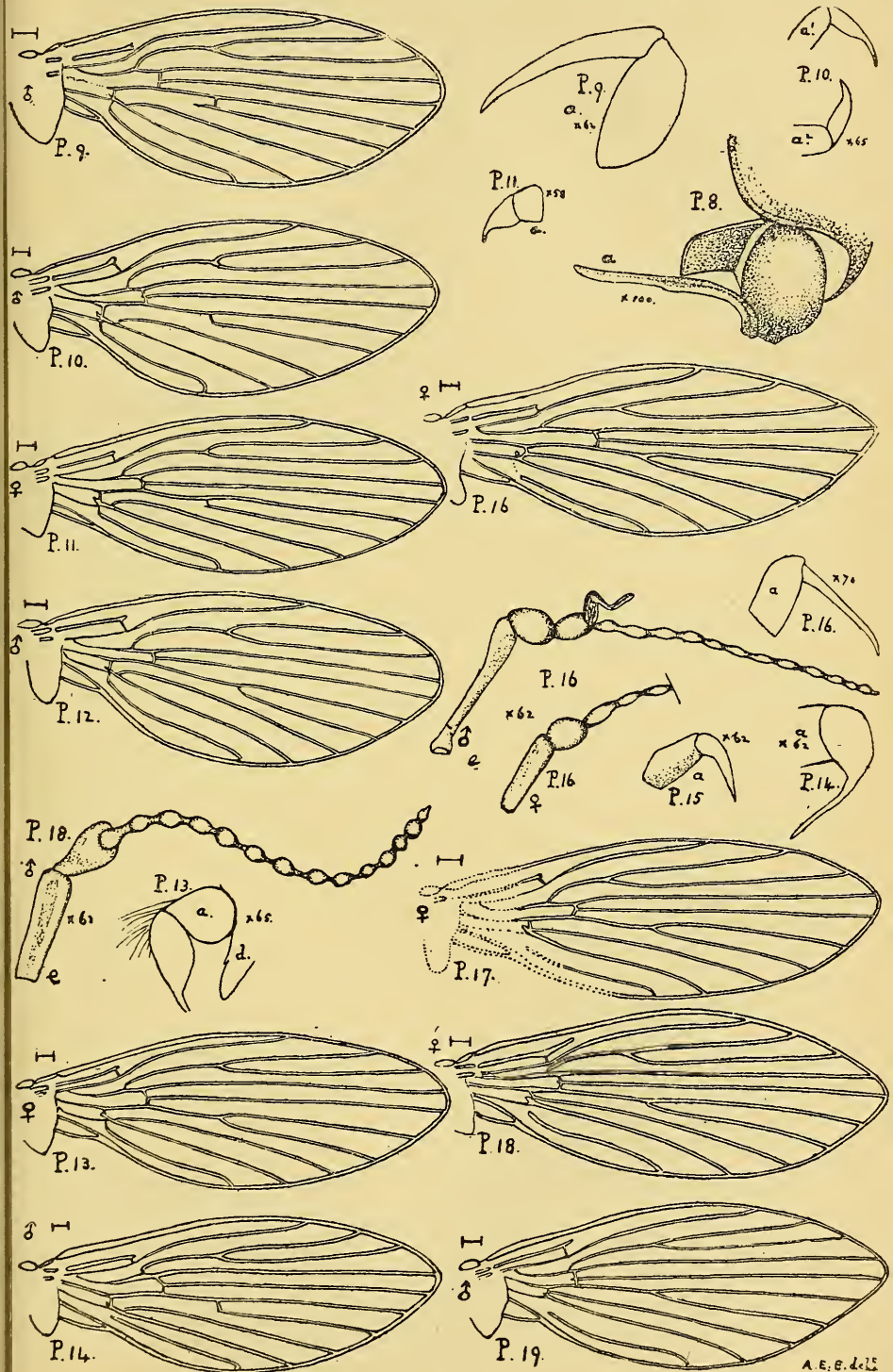
The ancient forest of Selwood formerly extended along a range of hills, exterior to the chalk, on the border of Wilts and Somerset, in the neighbourhood of Witham and Bruton. Several streamlets, tributary to the Brue and Stour, there take their rise in swampy dells, shaded by alders and carpeted with such plants as *Viola palustris*, *Chrysosplenium*, and *Hydrocotyle*, decked here and there with *Caltha* and ferns, such as lady-fern and *Lustrea dilatata*. These are haunts of *Pericoma cognata* and *Psychoda lucifuga*, in May and September, and of *P. mutua*, in June and July.

Between Bruton and Wincanton the small hamlet of Stoney Stoke nestles in a hollow close to Redlynch Park. A short lane, shaded by trees and hedges, leads to the hamlet from a gate at the nearest corner of the park wall. *Pericoma revisenda* hitherto has been found only in this lane. It shelters under hazel and maple leaves, chiefly in the right-hand hedge going down the hill, at the

beginning of September. Where the left-hand hedge-bank is wet and foundering, *P. palustris* and *gracilis* harbour among nettles and on hazel, in May; and the latter in autumn is associated with *extricata* and *compta*. Towards the foot of the hill on the same side the bank is strengthened by a retaining wall, open to the sun and coated with *Marchantia*, where water leaks through from the field, or trickles from a rustic spout overhung by *Geranium* and *Scolopendrium*. Here, from May onwards, *P. pulchra* and *trifasciata* are to be found. The drainage from the lane and spout ripples down a shallow trench amongst *Spiræa ulmaria*, *Helosciadium*, and *Mentha aquatica*, mingled with rotting leaves; *Uromyia* is in profusion, in company with *P. trivialis*. On entering the hamlet, the road divides, and the right-hand turning, bordered on each side by a shallow ditch of gently flowing water, is flanked by a garden hedge on the left, facing the sun, opposite a high, damp, shady bank, much encumbered with nettles, and partly bordered with *Chrysoſplenium*. The herbage by this shady ditch, early in June, sheltered plenty of *P. notabilis* and *morula*, with *fusca* sparingly. The sunny ditch opposite, choked with *Veronica beccabunga* and watercress, abounds with *P. canescens* and *trivialis*, and during early summer and autumn with *P. fratercula*. In the pastures nearest to the hamlet, by the stream into which the lane and ditches drain, *P. soleata* was common in June at one or two miry places by the water near a rustic bridge, among *Epilobium hirsutum* above the bridge, and in a swampy hollow under some oak trees just below. *P. ocellaris* is common all over this district, especially along wet hedge-ditches, not too much obstructed with rotting leaves. Sometimes it abounds in wet meadows and lanes amongst *Juncus communis* and *Iris pseudacorus*.

About a mile and a half from Wincanton, the railway to Bath passes Moorhays Farm; and shortly beyond that is a level crossing leading to Knowle Park Farm. The ditch on the left-hand of the railway embankment, where it is shallow and the water ripples gently amongst *Sparganium ramosum* and *Helosciadium* along its clayey channel, is the resort of *P. soleata*, *morula*, and *fratercula*, in May and June, and of the last species in August and September. Near the culverts, further on, through which the water crosses under the line, *P. incerta* occurs in May, June, and August. Along streams and rivulets in this neighbourhood, and in Blackmoor Vale, *P. exquisita*, *fallax*, *blandula*, and *trifasciata*, are plentiful from May onwards, especially near clay banks, &c., clad with *Marchantia*, where the flow of water is brisk. In September, *P. compta* is common on hazel in





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An attempt to account for Moth-grease, with notes on its cure by Ether.— <i>H. Guard Knoggs, M.D., F.L.S.</i>	5
Asymmetry of markings in the Uraniidæ.— <i>G. C. Griffiths, F.E.S.</i>	9
Note on a species of <i>Lampides</i> , and description of a new <i>Arhopala</i> from Borneo.— <i>Hamilton H. Druce, F.Z.S., &c.</i> ..	9
Pararge <i>Megæra</i> in October.— <i>Rev. W. F. Johnson, M.A., F.E.S.</i>	10
The present market value of <i>Chrysophanus dispar</i> and <i>Noctua subrosea</i> .— <i>Eds.</i> ..	11
Notes on <i>Hepialus virescens</i> and other early spring insects in New Zealand.— <i>G. V. Hudson, F.E.S.</i>	11
Lepidoptera, &c., at Morecambe.— <i>G. T. Porritt, F.L.S.</i>	12
Lepidoptera in the Belfast District.— <i>Charles W. Watts</i>	12
Stray Notes on Kentish Coleoptera.— <i>James J. Walker, R.N., F.L.S.</i>	13
Coleoptera in the Oxford District.— <i>John W. Shipp</i>	15
Odour of <i>Olophrum piceum</i> .— <i>Harold Swale, M.B.</i> ..	16
<i>Pseudemolpus</i> , <i>Jacoby</i> , renamed <i>Eumolpopsis</i> .— <i>Martin Jacoby, F.E.S.</i> ..	16
Rare Diptera in 1893.— <i>Ralph C. Bradley</i>	16
<i>Coccus rubi</i> of Schrank.— <i>J. W. Douglas, F.E.S.</i> ..	17
<i>Eriopeltis Lichtensteinii</i> and <i>Signoretia luzulæ</i> in Scotland.— <i>Id.</i> ..	17
REVIEW.—The Butterflies of North America, 3rd Series, Part xiv: by <i>W. H. Edwards</i>	17
OBITUARY.—Prof. Hermann August Hagen, Hon. F.E.S.— <i>R. McLachlan, F.R.S.</i> ..	18
SOCIETIES.—Birmingham Entomological Society	20
Lancashire and Cheshire Entomological Society	20
Entomological Society of London	21
A Synopsis of British Psychodidæ (<i>continued</i>).— <i>Rev. A. E. Eaton, M.A., F.E.S.</i> ..	22

The Explanation of Plates I and II will appear in the February No. We are unavoidably obliged to defer the publication of several important papers, some already in type, and others in hand.

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the lane skirting Redlynch Park, near Knowle Park Farm (above referred to), and also in a lane on the further side of the park leading from Godminster to Bruton. At the same season, *P. extricata*, *cognata*, and *gracilis* can be obtained at Godminster Wood, and in Holywater Copse, near Godminster Farm. *P. advena* is described from a unique specimen captured at Bratton Seymour, near Wincanton, the 31st May, 1892. It was on a hazel leaf beside a surface-well at the side of the lane below the church, just above the last cottage. The overflow from the well descends by a gutter at the edge of the road, bordered with *Helosciadium*, *Veronica beccabunga*, &c., dominated by a high wet bank, overgrown with *Spiræa ulmaria*, *Juncus communis*, and other rank herbage harbouring *Pericoma palustris*, *ocellaris*, *morula*, and several other *Psychodidæ* that have already been noticed.

Ashcot is the station next to Glastonbury, westwards, amidst the turf-moors. On the left of the railway, just before the station, are some old turf-holes, near a wood, that are full of water, in which grow *Utricularia*, and other aquatic plants. *Pericoma consors* resorts to the borders of these pits, and was especially plentiful on a little patch of quaking bog amongst *Typha* in August. *P. ustulata* is met with occasionally by ditches in this neighbourhood, but not so commonly as near the sea: it abounds at the moist sandy margins of ditches near the golf-links at Minehead, and can be beaten, with *P. caliginosa*, out of clumps of coarse grass at the base of the low cliffs at Weymouth, Dorset, between Sandsfoot Castle and the Nothe, throughout summer and autumn.

Dunster is near Minehead, in the west of Somerset. At the exit of the town, going towards Dulverton, is a small street to the left, with a shallow water-course on one side of it, serving for the relief of the mill-conduit and the conveyance of sewage from some cottages, and bordered with nettles. Here *Pericoma nubila*, *trivialis*, and *neglecta* abound. A few miles further along the Dulverton road, below a village named Cutcombe, is a roadside spout near a house designated Gilly in the ordnance map. *Psychoda erminea* is described from a single specimen beaten out of a bush close to the spout on the 30th September, 1890. Only one other specimen has as yet been captured in England, and this (in poor condition) occurred on a window at Holwell, Dorset, in December. The species probably frequents wet shady banks in the woodlands. *Pericoma extricata* abounds under *Salix caprea* growing on the miry slopes of the combe below Dunkery Hill Gate, near the outskirts of the deer covert, at an elevation of about 1300 ft.

In the adjoining county of Devon, half-way between Exeter and Sidmouth, is a district of gravelly heaths, part of which is called Aylesbeare Common. Near some of the boggy spots, suitable for *Narthecium ossifragum* and cotton-grass, or certain species of *Juncus*, along the verge of the enclosures, watery places in the hedge-ditches, overhung with lady-fern and other ferns, are resorts of *Pericoma labeculosa*. Farther to the east, at Seaton, on the coast, is the only known locality for *P. decipiens*. It frequents a boggy piece of ground on Haven Cliff, overgrown with *Equisetum telmateja*, in June and July, together with *P. fusca*. At the base of the cliff, *P. pulchra* occurs by the streamlet that tumbles down the cliff. *P. ambigua* is found at the same season on Axminster Heath or Shute Hill, among alder bushes in a *Sphagnum* swamp; also amongst *Juncus* at Aylesbeare Common, and other places. *P. fusca* abounded in May between Marston and Mudford (a low-lying district) in the left hand ditch of the main road going to Yeovil, where the water was rippling. But it also resorts to the shadiest part of a small, clean, cattle pond, almost completely embowered in a plantation at Westrow, Holwell. Macquart found it in a wood.

Pericoma Dalii, up to the present time, has been taken only by Mr. C. W. Dale on his estate at Mullet's Copse, Glanvilles Wootton, among *Equisetum telmateja*, at the end of May.

The author has in preparation a Synopsis of Algerian *Psychodidæ*, in which opportunity may be taken to amend weak points in the leading steps of the tabulations in the present Synopsis, which recent observations have revealed. The two Groups of Genera need re-definition; a clause noting exceptions should be added to step 2a, vol. iv, p. 32, and the tabulation of Species of the 3rd Section of *Pericoma*, commencing at p. 123, should be slightly modified, so as to bring No. 24, *P. advena*, into juxtaposition with No. 18, *P. notabilis*, each typifying a group of species.

EXPLANATION OF PLATES I, II, III AND IV.

Figures of details all enlarged, drawn under the microscope with *camera lucida* from specimens denuded (with scarcely an exception) of hair or scales. Hair-lines indicate the natural lengths of the wings; and numerals, preceded by the sign of multiplication, written small, show the scale of diametrical enlargement of other details. Larger letters (U., P., and Ps.) serve to distinguish the genera *Ulomyia*,

Pericoma, and *Psychoda*. Italics *a* to *e* denote each a particular detail. The numerals prefixed in the tabulations to the names of the species of *Pericoma* and *Psychoda* are used in the Plates to denote the illustrations that concern the same species.

PLATE I.

U. and P.—*Ulomyia fuliginosa* (Vol. iv, p. 32, step 4) and species of the 1st Section of *Pericoma* (Vol. iv, p. 120):—1, *palustris*; 2, *mutua*; 3, *cognata*; 4, *compta*; 5, *extricata*; 6, *nubila*; 7, *trivialis*.

Wings of U., ♂ and ♀, and P. Nos. 1 to 5.

a—Superior genital appendage, ♂, of U. and P. Nos. 2 and 4 to 7.

b—Inferior genital appendage and forceps basis, ♂, of P. No. 7.

c—External genitalia, ♀, from the side, of P. No. 7.

PLATE II.

P.—Species of the 2nd Section of *Pericoma* (Vol. iv, p. 122) and of part of the 3rd Section (Vol. 4, p. 123):—[2nd Section], 8, *neglecta*; 9, *canescens*; 10, *exquisita*; 11, *fallax*; 12, *gracilis*; 13, *blandula*; 14, *trifasciata*; 15, *pulchra*; [3rd Section], 16, *ocellaris*; 17, *Dalii*; 18, *notabilis*; 19, *ambigua*.

Wings of P. Nos. 9 to 14 and 16 to 19; the dotted part in No. 17 supplied from a nearly related foreign species.

a—Superior genital appendage, ♂, of P. Nos. 8 to 11 and 13 to 16.

b—Antenna of P. Nos. 16 ♂, 16 ♀ part, and 18 ♂.

PLATE III.

P.—Species of the remainder of the 3rd Section of *Pericoma* (Vol. iv, p. 123) and species of the 4th Section (Vol. iv, p. 127):—[3rd Section continued], 20, *decipiens*; 21, *soleata*; 22, *consors*; 23, *labeculosa*; 24, *advena*; 25, *morula*; [4th Section], 26, *fratercula*; 27, *ustulata*; 28, *caliginosa*; 29, *incerta*; 30, *revisenda*.

Wings of P. Nos. 20 to 30. Two figures are given of No. 21 to illustrate individual variation in extremities of basal cells.

a—Superior genital appendage, ♂, of P. No. 27.

PLATE IV.

P.—The species of the 5th Section of *Pericoma* (Vol. iv, p. 32, step 5):—31, *fusca*.

Ps.—Species of the 1st Section of *Psychoda* (Vol. iv, p. 129) and of the 2nd Section (p. 33, steps 6*a* and 7):—[1st Section], 1, *lucifuga*; 2, *phalænooides*; 3, *albipennis*; 4, *sempunctata*; 5, *erminea*; [2nd Section], 6, *humeralis*.

Wings of P. No. 31, ♂ and ♀, and of Ps. Nos. 1, 2, 3 and 6. The thinness of the neuration in Nos. 1 and 2 may be due to the direction of the light when they were drawn. Two figures of No. 3 are given to illustrate individual

variation (noted by Schiner) in the condition of the forked nervures; the relative strength and weakness of nervures in these figures is in agreement with their natural proportions, and is referred to at Vol. iv, p. 8.

a, b, d—Genitalia, ♂ : *a*, superior appendage; *b*, inferior appendage; *d*, penis, of P. 31 (*a, d*) in two positions; Ps. Nos. 2 (*a, b, d*), 3 and 4 (*a*), 5 (*a, d*), and 6 (*b*).

c—External genitalia, ♀, from the side, of Ps. No. 6.

Algeria: 1893.

NOTES ON SOME BRITISH AND EXOTIC COCCIDÆ (No. 27).

BY J. W. DOUGLAS, F.E.S.

THE MIGRATION OF COCCIDS.

On June 5th, 1891, I found, at the distance of a mile from here, on a small bush of hawthorn, several gravid females of *Pulvinaria oxyacanthæ*, Linn., with ovisacs full of eggs and larvæ, and transferred some of these masses to a hawthorn-bush growing in the boundary-hedge of my garden, on which no *Coccids* existed, hoping thus to establish the species here by the next year. In the spring of 1892, however, the terminal shoots of the bush, on which the *Coccids* would naturally be situate, were cut off, and so I feared ended my expectations, for subsequently I could not find any scales; but there must have been some undetected, for on the 2nd inst., that is, a month before the usual time of year, I saw two full-grown females on the bush, but I had not been on the alert early enough to notice their development. The transfer of a species from one plant to another of the same kind at a distance being quite practicable, some persons may possibly be induced to experiment with other species than that mentioned, with a view to watching the development of these singular insects, of which the life-history presents many interesting features. The female forms of the *Lecaniidæ*, it is true, are not attractive, but the males are wonderful in form and beautiful in appearance, in these respects rivalling the small *Lepidoptera*; they are so short-lived, and so rarely obtained, except by rearing, that those of many species have never been observed; indeed, it has been questioned if in some they exist at all in an external appreciable form. The rearing of *Lecaniidæ* in gardens on trees which are already there, or to be planted for the purpose, would doubtless bring to light the knowledge of many recondite points in the economy of several species. No harm to the trees would accrue, for it is only when *Coccids* are in excessive numbers that they are injurious, and in such experimental cases as these would be, they could easily be regulated.

The late A. Foerster had a theory, which was also supported by the late J. Lichtenstein, that certain similar forms of *Lecaniidæ*, which he enumerated (*cf.* Ent. Mo. Mag., xxiii, pp. 25, 26), found on different trees, and which have received distinctive specific names, are only one and the same species; but adverting to the structural discrepancies in the insects, especially in the antennæ and legs, which have been discovered in later time, this view is not tenable. Yet trial might be made in a home experimental station, constantly under the survey of an investigator to ascertain decisively whether all *Coccids* would live on trees totally different from those on which they usually feed. Some can, and do naturally, but they retain all their structural characters, and thus can be identified.

LECANIUM HESPERIDUM and L. LAURI.

In *Lecanium lauri*, on which, with the assistance of Mr. Newstead, I gave a note in this Magazine, vol. ii, n. s., with a view to show that it is distinct from *L. hesperidum*, one special point of dissimilarity is in the structure of the digitules of the feet, and it is further noticed that, in this country, *L. hesperidum* is found only on orange and lemon trees under glass, and *L. lauri* only on bay trees. Mr. Maskell, however, has noticed (vol. iv, p. 103) a reverse order, inasmuch as in New Zealand *L. hesperidum* occurs on laurel, ivy, holly, and other plants, and in Australia *L. lauri* lives on citrus. This is very curious. The validity of the differences pointed out is admitted, yet the inference that there is a distinction of species is demurred to, and the belief is expressed that there is really but one. I do not wish to have a controversy with one who has had long and varied experience in the microscopical investigation of *Coccids*, but I hardly think that his reasons are conclusive. We come back to the doubt of how much or how little of structural character is sufficient to determine a difference of species. In *Coleoptera* and *Hemiptera*, for instance, a small variation in sculpture, striation, puncturation, hairiness or spinosity, form or length of the joints of antennæ or feet, are held to be good differential specific characters. Size and colour do not count for much, and in *Lepidoptera* especially, where they used to be greatly used to differentiate species, they have had to be abandoned as unavailable for that purpose; yet they still have at times a value subsidiary to considerations of structure of adult and larva. With regard to *L. hesperidum* and *lauri* there may be the hypothesis that they are representatives of divergence from one prior form, as yet not differentiated beyond the stage of "racc," and hereafter destined to become more decidedly separate.

THE GENUS PROSOPOPHORA.

Mr. Maskell (vol. iv, p. 104) objects to "surface with granular raised lines" being considered to be a generic character of the scales (σ and φ), contending that it is only specific. In this case it may be so; I do not wish to argue, all the more that Mr. Maskell says he has two new species destitute of the raised lines which, *cæteris paribus*, will fit into the genus. It is very difficult in a new form to determine which of its characters are generic, and which are specific. Other species may exist in which, as in *P. dendrobii*, there may be raised lines yet in a different pattern; then the character would, I think, be generic. We see in other Orders of insects some one leading structural character admitted to be of value in estimating generic rank, while its variation in respect of pattern, density, complexity or other quality, exemplified in a group of forms is held to indicate specific difference, *i. e.*, fixity for the time being in departure from a primitive stem.

153, Lewisham Road :
1893.

LITHOCOLLETIS TRIGUTTELLA, STN., A VARIETY OF
L. FAGINELLA, Z.

BY EUSTACE R. BANKES, M.A., F.E.S.

Lithocolletis triguttella was originally described, in the "Zooologist" for 1850, p. 2896, by the late Mr. H. T. Stainton from a single specimen taken at Sanderstead in May by Mr. J. W. Douglas, but from the following evidence I think it will be clear that it is nothing more than a variety of *faginella*, and that for the future the synonymy should be:—*Lithocolletis faginella*, Zell., Stn., var. *triguttella*, Stn.

Early in 1892, when, through the kindness of the present owner, Mr. P. B. Mason, I was examining Mr. Douglas's collection, I made an entry to the effect that the unique example of *L. triguttella* looked to me in every respect like a genuine *faginella*, σ , except that, owing either to the union of the typical third and fourth white costal streaks, or to the absence of the fourth, while the third was unusually large, there were only three such streaks instead of four. On reaching home I examined for the first time a long series of *faginella*, bred in the previous year from larvæ collected here, which showed that the white streaks vary greatly in size and shape, and, to some extent, in position; one φ , entirely forgotten since it was set, was a veritable "*triguttella*," for the third and fourth costal streaks had, on both

fore-wings, coalesced into one. This specimen was shown to Mr. Stainton in May, 1892, and, after inspecting it, he quite allowed that *triguttella* could not stand as a distinct species. It will be noticed that in Mr. Stainton's descriptions of *faginella* the white basal streak is said to be "un-margined," whereas in *triguttella* it is given as "dark-margined on both sides," but, as I pointed out to him, *faginella* frequently has the white basal streak dark-margined on the upper-side, and occasionally on both sides, and I have seen many in which it is quite as darkly-margined as in Mr. Douglas's *triguttella*. Last spring, when looking through the numbers of *faginella* in Mr. Mason's collections, I came upon a most interesting and extraordinary variety of that insect. On the right fore-wing there are only three white costal streaks: the first and second almost unite, and there is but little dark scaling between the second and the third, which latter is abnormally large, being formed by the coalition of the typical third and fourth streaks. The left fore-wing has the first costal streak as usual, but the second, third, and fourth have *all* coalesced, and form one long white patch, which occupies a large portion of the costal area and of the disc towards the apex. On both fore-wings the usual first and second white dorsal streaks are present, but the third cannot be separately traced, because the entire portion of the wing, as well as the fringes, round the anal angle is pure white! From the setting I feel pretty sure that the specimen was bred by the late Mr. John Sang, but am afraid that the locality will remain unknown.

The Rectory, Corfe Castle, Dorset :
November 8th, 1893.

NOTE ON *PLATYCEPHALA OLIVIERI*, MONTR.

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

This genus and species was established (Ann. Soc. Ent. Fr., 1861, p. 268) by Montrouzier for an insect found "under bark" in the island of Lifu, New Caledonia. It was placed by Montrouzier in *Lathridiidae*, "near *Monotoma*." M. Fauvel, in his interesting work on the *Coleoptera* of New Caledonia, stated (Rev. d'Ent., x, p. 154) that this insect belongs to the genus *Proterhinus*, recently established by me for some insects believed to be peculiar to the Sandwich Islands. My attention having been by this attracted to the subject, I applied to M. Fauvel for some further particulars, and he kindly placed me in communication with M. Grouvelle, in whose possession is the type of Montrouzier's description. Mr. Grouvelle has indeed been so kind

as to send me this specimen so that I may be able to speak in a more positive manner than I could do if I had only the brief descriptions of Montrouzier to rely on.

The insect is not a *Proterhinus*, but an *Aglycyderes*, very closely allied to the New Zealand *A. Wollastoni*. So close indeed is the resemblance that at first I thought the New Caledonian insect would probably prove to be a very large example of *A. Wollastoni*. Unfortunately, the Montrouzier type is in a very fragmentary state, owing to having been when fresh impaled on a large pin; there is, therefore, some difficulty in speaking with confidence as to its characters, but I think it may be distinguished from *A. Wollastoni* as follows:—*A. Olivieri* is larger, has somewhat longer antennæ, the head is remarkable for its size, and the anterior part, or clypeus, is larger in proportion to the posterior part than it is in *A. Wollastoni*. This latter character is of some importance, and prevents me from deciding that the two forms are merely races of one species.

As regards the generic name *Platycephala*, I may remark that it was established in the Ann. Soc. Ent. Fr. for 1861, while Westwood's description of *Aglycyderes* appeared in the Proc. Ent. Soc. Lond. for 1863, so that the name proposed by the French savant has a slight priority. It cannot, however, be adopted, as it appears from Scudder's list to have been used several times. It must, therefore, be abandoned, and the species should be known as *Aglycyderes Olivieri*, though ultimately the New Zealand and New Caledonian insects will be generically separated from the Madeiran one.

Montrouzier described the feet as composed of only two joints, the first being bilobed. This is a mistake, the feet are really three-jointed, and it is the second joint that is lobed. He also described the antennæ as 10-jointed, but this, too, is erroneous, as they are clearly 11-jointed; the basal joint, owing to its mode of insertion, might readily be overlooked; and this, no doubt, gave rise to the error.

Cambridge: November 24th, 1893.

ON NEW SPECIES OF *TROGOSITIDÆ* FROM JAPAN.

BY G. LEWIS, F.L.S.

The richness of the Japanese islands in arboreal *Coleoptera* is now well known, and it is further illustrated by the occurrence of three species of *Thymalus* in the Archipelago. With these, I believe, only eight species of *Thymalus* have been recorded from all parts of the world, the species being:—

<i>Thymalus limbatus</i> , F.	<i>Thymalus Aubei</i> , Lév.
<i>laticeps</i> , sp. n.	<i>fulgidus</i> , Er.
<i>punctidorsum</i> , sp. n.	<i>oblongus</i> , Reitt.
<i>subtilis</i> , Reitt.	<i>parviceps</i> , sp. n.

The males of *Thymalus* are distinguished from the females in having the last segment of the abdomen hairy.

THYMALUS LATICEPS, sp. n.

Breviter ovalis, brunneus, supra submetallicus, pubescens; capite thoraceque punctatis; antennis (basi excepta) infuscatiss; pedibus obscure brunneis.
Long., 6—7 mm.

Short oval, brown, slightly metallic above; the head somewhat wide, irregularly and sparingly punctulate, the punctures much finer than those of *T. parviceps*; the thorax punctured more closely than the head, dilated behind the middle; the elytra punctate, the punctures arranged in rows, each puncture well separated from another, the nodules not very conspicuous, the margins dilated like those of *T. limbatus*; the antennæ with the basal joint enlarged and with the second, reddish-brown, the rest infusate; the legs dark brown, tarsi paler.

Hab.: Chiuzenji, Oyama, Fujisan, Sawara, and Junsai.

The head of this species is one-third wider than that of *T. parviceps*. It resembles *T. limbatus* very closely, but is much larger.

THYMALUS PUNCTIDORSUM, sp. n.

T. laticipiti similis sed thorace parum dense punctulato et elytris profunde punctatis, punctis approximatis; antennis articulo primo haud expanso.
Long., $7\frac{1}{2}$ mm.

This species resembles *T. laticeps* very closely; the basal joint of the antennæ is enlarged a little, but not widened out; the head distinctly punctate; the thorax somewhat densely punctulate; the elytra punctate, the punctures being very deep, and closely set together, the nodules well raised.

Hab.: Yuyama. One example.

THYMALUS PARVICEPS, sp. n.

Ovalis, brunneus, pubescens, supra æneo micans; capite punctato; thorace elytrisque marginibus brunneis; antennis clava nigra. Long., $4\frac{1}{4}$ —5 mm.

Brown, shining, pubescent, thorax and dorsal area brassy, with the margins brown or ferruginous; the head rather small, irregularly punctured (punctuation varying in individuals); the thorax finely and sparingly punctulate; the elytra punctate, the punctures set in rows, each puncture being well separated from another, at the base midway between the scutellum and the humeral angle is a large and very distinct nodule, the margins narrowly dilated; the antennæ with the basal joints red, 2—7 reddish-brown, three terminal black, the basal joint much less enlarged than that of *T. laticeps*.

Hab.: Junsai, Sawara, Ontaki, and Chiuzenji. Twelve specimens.

The type of *T. oblongus*, Reitt., is in the collection of Mr. J. R. H. Neervoort van de Poll, but I have a second example, lent to me by the kindness of Herr E. Reitter, from Lake Baikal, which is believed

to be of the same species. It differs from *T. parviceps* in being more oblong, the punctuation of the thorax much closer and larger, and by the antennæ being much less robust. The elytral nodule also is less elevated. *T. parviceps* is also similar to *T. fulgidus*, Er., especially in colour, but the outline of the latter is more circular.

OSTOMA VALIDA, *sp. n.*

I find on a very close examination that the specimens referred to, Ent., 1893, p. 150, do not correspond exactly with *O. gigantea*, Reitt.; the thorax is more explanate; the scutellum more transverse, and much more sparingly punctured; and the interstices of the elytral carinæ less rugose. This species measures 14 to 20 mm., and is relatively wider than *O. grossa*, L.

Hab.: Komagatake and Junsai. Eight examples.

OSTOMA HIGONIA, *sp. n.*

Ovalis, rufo-brunnea, subnitida; fronte in medio angulariter producta; antennis clava triarticulata, articulis haud compressis. Long., 6½ mm.

Oval, dull reddish-brown, antennæ and legs paler; the head widely impressed between the eyes, with a small angular process in the middle of the frontal carina, sparingly punctured, eyes rather prominent; the thorax transverse, arched laterally, anterior angles obtusely produced outside the eyes, sides explanate, punctate, punctures coarser and closer than those of the head, except on the disc; the scutellum apparently divided into three parts, hinder portion angulate in front, semicircular behind, sparsely punctured; the elytra punctate-striate, with an intermediate row of larger punctures evenly set on the interstices, sides rather more explanate than the thoracic margins; the antennæ with the club rather lax, 3-jointed, terminal joint conical.

Hab.: Yuyama. One specimen.

TENEBRIOIDES OCULARIS, *sp. n.*

Elongatus, niger, nitidus; capite plano distincte punctato, oculis parum prominulis; thorace lateribus subparallelo, angulis anticis obtuse productis. Long., 6¾ mm.

Elongate, depressed, black, shining; the head flat, not densely, but unevenly punctate, eyes clearly visible from above; the thorax with the anterior angles well-produced, sides before the base somewhat parallel, punctured like the head, with a narrow smooth space before the scutellum; the elytra punctate striate, interstices in certain lights feebly rugose; the antennæ and legs pitchy-red.

Hab.: Sapporo. Two specimens found under loosened bark of oak, August 13th, 1880.

This species has the facies of *T. mauritanicus*, L., but the sides of the thorax are more parallel and the eyes are clearly visible from above. In regard to the eyes, it more nearly resembles *T. castaneus*, Mels.

Inner Park Road, Wimbledon:
November 22nd, 1893.

ADDITIONS AND CORRECTIONS TO THE LIST OF BRITISH
ACULEATE HYMENOPTERA.

BY EDWARD SAUNDERS, F.L.S.

In going through our British Aculeates, I find a good many alterations, and a few additions, which are requisite to our list, to bring it up to date, and I thought it would be convenient to collect them into a short note, which could be easily referred to by Hymenopterists. The following are those chiefly worthy of notice:—

POMPILUS SERICEUS, V. d. Lind (ACUMINATUS, Smith).

To this must be referred the two ♀ specimens on which Smith based his *acuminatus*; these have long been a puzzle to me, but I have recently carefully re-examined them, and have no doubt that they are very large examples of *sericeus*; except in size I can detect no difference between them and continental specimens.

SALIUS, Fab., = PRIOCNEMIS, Schiödte.

Priocnemis can only be considered as a division of the very extensive genus *Salius*, and, therefore, although all the British species belong to this sub-genus, I think it is better to adopt *Salius* as the generic name, in conformity with continental views.

PR. NOTATULUS, Saund. (NOTATUS, Saund., olim, Smith, &c., nec Rossi).

As our species is clearly not the same as that described by Rossi, it is necessary to re-name it.

MISCOPHUS CONCOLOR, Dahlb. (BICOLOR, Smith, Saund., &c., nec Jurine).

A careful study of Kohl's description of the species of this genus makes it clear that the species which we have hitherto called *bicolor* is not the true *bicolor* of Jurine, but the *concolor* of Dahlbom; *bicolor*, Jurine, is larger than our species, with the mesopleuræ very densely punctured, and generally with three segments at the base of the abdomen red in the ♀, and two in the ♂.

STIGMUS SOLSKYI, Mor. (PENDULUS, Smith, Shuck., Saund., &c., nec Panz.).

Here again the British species has been referred to the wrong name; *pendulus*, Panz., has the tubercles of the prothorax black, and the mesopleuræ shining; whereas in our species the tubercles are pale, and the mesopleuræ rugose on their upper half. It is quite likely, however, that *pendulus* may occur in this country, but I have not seen any specimens that could be referred to it.

PEMPHREDON SHUCKARDI, Mor., and WESMAELI, Mor.

In Shuckard's collection I find both these species mixed under *unicolor*; they appear to be quite distinct by the characters given below. As it seems to be quite doubtful which of these represents the *unicolor* of Fabricius, or whether both are included in it, I have followed Morawitz and Kohl in abandoning the Fabrician name, at any rate until it can be shown what species it represents.

Shuckardi is, I feel sure, far the commoner species of the two, as I have only seen a very few specimens of *Wesmaeli* from Shuckard's collection, and can record no exact locality for them. In *Shuckardi* the puncturation of the mesonotum in both sexes is sparse and shallow, the post-scutellum is shining and largely punctured, and in the ♀ the clypeus is produced in the centre with its apex slightly elevated, the

elevated apex being easily seen when the face is looked at from the side ; in *Wesmaeli* the mesonotum is much more largely, closely, and deeply punctured, the post-scutellum is dull, closely and rugosely punctured, and the clypeus in the ♀ is neither raised nor produced, but has its apical margin deeply emarginate, the vertex of its head is also more quadrate than that of *Shuckardi*.

ARPACTUS, Panz., GORYTES, Latr., HOPLISUS, Lep.

Following the views of Handlirsch (Monogr. der mit Nysson und Bembex, verwandten Grabwespen), *Arpactus* and *Hoplisus* should be treated as sub-genera of *Gorytes*.

CERCERIS EMARGINATA, Panz. (SABULOSA, ♂, Shuck., Saund., Synopsis, Smith?).

This species was introduced into our list by F. Smith, Ent. Ann., 1861, p. 43, on a specimen he captured at Kingsdown, near Deal, but he omitted it from his Catalogue published by the Entomological Society, and so it escaped my attention, and I have not recorded it either in my Synopsis or Catalogues. Dr. Mason has kindly sent me the original specimen to examine, it is labelled "Kingsdown," and is undoubtedly referable to this species ; the ♂ specimen standing in Shuckard's collection under *sabulosa* is also referable to *emarginata*, and this has served for the description of *sabulosa*, ♂, in his "Fossorial Hymenoptera," in my Synopsis, and, I think, also in Smith's "Fossorial Hymenoptera;" the species is really very distinct, as the second ventral abdominal segment is semicircularly raised at the base ; the only other British species in which this character exists is *ornata*, Schöff., which may be known at once from *emarginata* by the shining basal area of its propodeum, which, in *emarginata*, is dull and deeply striated.

C. QUADRICINCTA, Panz. (SABULOSA, Smith, ♀, Saund., &c.).

I adopt this name in compliance with the views of Schletterer (Die Hym. Gatt., *Cerceris*, Latr., &c.).

CRABRO LITURATUS, Panz. (KOLLARI, Dahlb.).

Panzer's name is the oldest, and should, therefore, be retained. *Vestitus*, Smith, is the ♂ of this species.

VESPA AUSTRIACA, Panz. (ARBOREA, Smith).

It is only lately that I have had a copy of André's Hymenoptères d'Europe, &c., in my hands ; in this he treats *arborea*, Smith, as a variety of the above, and I feel no doubt that he is correct ; the continental specimens of *austriaca*, which I have seen, are much darker than ours, and it never occurred to me that the two species could be identical ; still, I can find no structural character to distinguish them apart, and the mere matter of colour is hardly important in a genus where colour varies so much in most of its species. The ♂ and ♀ only of *austriaca* are known, and it is suggested that it may be an inquiline on other wasps, as *Psithyrus* is on *Bombus*. The remark of F. Smith, Cat. Brit. Foss. Hym., &c., 1858, p. 219, "First discovered by myself in 1836, near Wakefield, Yorkshire, building nests in fir trees," at first sight seems to be against this theory, but an inquiline might be laying its eggs in the nest of the other wasp, and so apparently be its rightful owner, and give the idea that it was building the nest. I am very glad to think that this species has now in all probability found its proper position.

(To be continued.)

GREASE.

I read Dr. Knaggs' article on grease in the last number of the Magazine with considerable interest. Some four or five years ago I investigated the subject with a view to finding a satisfactory method of preventing its formation, mostly by means of antiseptic and other injections, but with no success. I now adopt a method of removing it very similar to that of Dr. Knaggs, using ether. It is, however, not with its prevention but with its formation that I am now concerned.

Dr. Knaggs seems to have overlooked the fact that grease is the result of death, a product of putrefaction. Fat in the recent state consists of cells with proteid walls and fatty contents bound together by connective tissue. As a result of putrefaction the cell walls break down, and the fatty contents are liberated; moreover, the fat itself is disorganized to some extent, it is more fluid and oily than when recent, in fact, rancid, and it is in a most suitable form for permeating the tissues. In this way our insects become greasy.

Dr. Knaggs has also advanced a theory to account for males becoming greasy more readily than females, and asserts that males require more energy than females. That a male insect, with its light body and its insignificant share in procreation, should require and acquire more vital energy than the heavy bodied female, with all the duties of maternity before her, seems indefensible at first sight. In fact, all our modern theories and collected facts directly contradict it. Geddes and Thompson* have thoroughly threshed the matter out, so I need write no more about it. The real reason is, I think, that the oviducts with their contents take up such a lot of room in the abdomen of the female, that her abdominal fat becomes almost nil, and that, therefore, her chances of becoming greasy are relatively smaller.

Now with regard to internal feeders. Some people tend to lay on fat by reason of their employment and habits, so do the internal feeders lay on more fat by reason of their habits, and having done so are more liable to grease.

When a Frenchman wants to fatten up a capon he puts it in a dark room. Now an internal feeder lives all its life in a dark room, moreover, it takes very little exercise; its food contains more carbo-hydrates than that of an external feeder, and carbo-hydrates are the only sources of fat, with very few exceptions, for caterpillars; and lastly, it uses up none of its energy to lay on pigment or to grow bristles or other appendages for protective purposes. No wonder, then, that it grows fatter than its less favoured brethren.

The great prophylactic against grease is of course drought. With the exception of the most inveterate, my insects seldom grease, and disarticulation by verdigris is a rarity among my Micros, although I use gilt pins, which I believe have a bad name in connection with verdigris. I am, however, most scrupulously careful about keeping the room in which the insects are as dry as possible, and I find a piece of seaweed of great use as a tell tale.—RICHARD FREEE, Rugeley, Staffordshire: *January, 1894.*

Lepidoptera of Cornwall.—I am compiling for publication in the Transactions of the Penzance Natural History and Antiquarian Society a List of Cornish *Lepidoptera*, and shall be glad of information from entomologists who may have recently collected in the County.—W. E. BAILY, Porth Enys Museum, Paul, near Penzance: *January, 1894.*

* Evolution of Sex. Contemporary Science Series, 1889.

Vanessa Atalanta and *urticæ* at Christmas.—The beautiful spring-like weather enjoyed here during the Christmas week enticed both *V. Atalanta* and *urticæ* from their winter quarters. The former I saw disporting itself near the Town Hall at mid-day on December 22nd, whilst on the following day the latter flitted merrily about the busy shopping folks in the Terminus Road, who seemed much amused at such an unusual sight as a butterfly at Christmas time.—WILLIAM WATKINS, Eastbourne: *January 3rd*, 1894.

Lepidoptera at Armagh in 1893.—The long, fine summer, following an unusually fine and dry spring, might have been expected to produce something remarkable, and I was in great hopes that some rarities would turn up. However, expectation is a thing always exposed to disappointment, and in my case this was partially so. I did not meet with *Colias Edusa*, though a friend of mine saw one a short five miles from this, nor *Vanessa cardui*, though it also was seen in the vicinity. *Macroglossa stellatarum* was only represented by a dead specimen, which I picked up in the Cathedral! However, I was not doomed to total shattering of glowing anticipations. *Vanessa Atalanta* appeared in unexampled numbers, and I had the pleasure of gazing on its beauties without feeling a furious desire to capture, kill, and set it. A fine specimen of *Chærocampa Elpenor* emerged on June 9th. *Zygæna loniceræ* was at the same time appearing in numbers, both in Mullinure and in my breeding cages; I had obtained numbers of larvæ and pupæ, and these gave me a very handsome series of the insect.

Sugar was a total failure in June. I got, however, some nice *Plusia pulchrina* and *P. iota* in my garden, also a specimen of *Mania typica*. In August and September sugar was very satisfactory, and I obtained two species that I had not met with here before, viz., *Agrotis saucia* and *Cirrhædia xerampelina*; besides these were numbers of *Phlogophora meticulosa*, *Agrotis suffusa*, *Noctua c-nigrum*, and, what puzzled me a good deal till Mr. Barrett came to my assistance, a second brood of *Noctua rubi*. Besides these, I obtained *Noctua brunnea*, a single specimen; *Xanthia silago*, several; *Triphæna fimbria*; and a nice fresh *Plusia festuæ*, which I found sitting on a hop plant at my back door on August 30th. A good many *Hydræcia micacea* also came to sugar, and exhibited a considerable variation in both colour and size.

The earliest butterfly observed by me was *Pieris rapæ* on March 29th. *Vanessa urticæ* did not turn up till April 7th. The autumn brood of the latter were very common, and if 1894 be favourable they should be very numerous.

Though I have not been able to enumerate any very rare species, I do not feel that I need complain: for in the first place, Armagh is not a very good locality for *Lepidoptera*, and in the next place I did not give anything like all my attention to them.—W. F. JOHNSON, Armagh: *December 11th*, 1893.

Psyche albida v. *Millièrella*, B.—During a stay of over two months at Canssols in the Alpes Maritimes (3960 feet above sea level), I collected over sixty larvæ of a *Psyche* which Herr Ernst Heyne, of Leipzig, to whom I sent some empty "cases," kindly identified for me as "*Psyche albida*, Esp., probably v. *Millièrella*, B., since this variety usually replaces the type in mountain regions." These caterpillars, which I took back with me to Nice, have, unfortunately, since all died, from improper

nourishment, I fear. My cousin, E. C. Casey, was the first to be so favoured as to find the species on August 8th last, feeding on the tips of *Genista cinerea*, with which the hill sides were covered; he also found the insect on a scabious (*Scabiosa*). These are, I believe, new food-plants, as grass and *Ulex* only are given as the usual ones.—F. BROMILOW, Nice, France: *January 2nd*, 1894.

Cave-frequenting habit of Bittacus chilensis.—In a letter just received from Mr. E. C. Reed, of Baños de Cauquenes, Chile, there is a note concerning the habits of *B. chilensis*, the finest species of the genus, which is certainly worth placing on record. He says:—"Twice I have found our *Bittacus* in caves. Last year I found swarms in an old mine; this week (towards end of November) ditto in a deep hole. Otherwise specimens are rare." My personal experience is limited to *B. tipularius*, and (on one occasion only) *B. Hagenii*, the two European species. They frequent herbage, much after the style of their allies the *Panorpæ*, and their flight is similar to that of the *Tipulæ* they mimic. So far as I am aware no previous observation as to cavernicolous habits has been recorded for any species.—R. MCLACHLAN, Lewisham: *January 9th*, 1894.

Syrphus guttatus, Fall., new to Britain.—On looking through specimens of the genus *Syrphus* taken last summer, and put aside for subsequent examination, I have just found one ♀ of this rare species; the insect is not included in Mr. G. H. Verrall's List of British *Diptera*, and apparently has not been hitherto recorded as British. The striking and well defined white lines along the sides of the thorax and the two white spots in front of the scutellum, render this species very distinct from any other *Syrphus*; my specimen corresponds exactly with Schiner's description, except that the black line said to extend from the crown to the middle of the forehead is reduced to a single black dot. Two very distinct features which I do not see noticed either in Schiner's or Zetterstedt's descriptions are a line of intensely silvery white hairs along the hinder margins of the eyes, and two tufts of white hairs on each side of the thorax. The insect was taken on June 11th, 1893, in Stowford Cleave, Ivybridge, South Devon, near the ground where *Eristalis cryptarum*, Fbr., occurs.—CORYNDON MATTHEWS, Erme Wood, Ivybridge: *January*, 1894.

Great abundance of Aleurodes brassicæ, Walk.—In an interesting note in the "Entomologist," xxvi, p. 357, Mr. C. W. Dale records the extraordinary abundance last year of this little snow-white insect at Glanvilles Wootton, in the North-West part of Dorset. Here, too, in the South-East corner of the same County, it has been a regular pest for months past, and in our garden appeared in swarms on the cabbages, broccoli and Brussels sprouts: the under-sides of many of the leaves are still more or less white with large numbers of dead, and smaller numbers of living, specimens, and even during the intensely cold weather experienced during the first week of the present year, it required but a touch or a puff of breath to rouse the latter into activity. Mr. T. B. Jefferys says ("Entomologist," xxvii, p. 31) that this species has also been over abundant in many gardens round Langharne, in Carmarthenshire, and that the Brussels sprouts have been much affected by them there.—EUSTACE R. BANKES, The Rectory, Corfe Castle, Dorset: *January 17th*, 1894.

Aleurodes proletella, &c.—In all the British Catalogues *Aleurodes proletella*, Linn. (*A. chelidonii*, Latr.), which lives on *Chelidonium majus*, is given as a native of Britain, yet it so happens that I have never seen a specimen from that plant, nor indeed as reputed from any other. So I now write to enquire if there is any real knowledge of the species having been found in Britain on the celandine. Réaumur, writing of the species, says that it lives on the *Chelidonium*, but adds, “On trouve encore des Papillons très semblables à ceux de l'éclair (celandine) sur une plante plus généralement connue, sur le dessous des feuilles de chou ; mais je n'y en jamais autant vu que sur l'éclair.” This shows that he distinguished two different forms, one special to each plant, yet, nevertheless, Linné long afterwards said, when he described and named the species (*proletella*), and quoted Réaumur (Mém. ii, 7), “Habitat in Brassica, *Chelidonio* ; an etium in quercu ?,” showing that he did not differentiate the species. Westwood (Introd., ii, 443, fig. 118, 1) gives as the food-plants “*Chelidonium*, the cabbage, oak, &c.,” but equally incorrectly, for the cabbage feeder has been described as distinct by Walker, Koch and Signoret, and the oak feeder by Signoret ; the latter giving the characters of the larva of the three species ; these in all cases are more appreciable than those of the perfect insects. It may also be noticed that Westwood's figure of *chelidonii* does not accord with the original description of the species, it having only one dark spot on the fore-wings instead of two, and he gives no description of his own. It is true that Walker says of his *brassicæ* “Perhaps a variety of *chelidonii* ;” but Frauenfeld says that this remark is erroneous, and he considers that, according to Koch's figure and description, it is a good species.

I have recently received a number of fresh or living examples of an *Aleurodes* taken off cabbages by Mr. C. W. Dale and Dr. Chapman, and these entirely agree with the description of *A. brassicæ*. It now only remains to get authentic specimens of *A. proletella* in Britain from the celandine. Réaumur says that where the plants abound it is not seen on every one, but when it does occur it is in dozens. Walker says it swarms on the celandine till near the end of November.—J. W. DOUGLAS, 153, Lewisham Road, S.E. : November 10th, 1893.

Chirotica maculipennis, Gr. : a species of *Ichneumonidæ* new to Britain.—On the 29th July, 1893, at Chobham, I captured a single specimen of this *Ichneumon*. The Rev. T. A. Marshall says it is new to Britain, but he had taken it in the South of France.—A. BEAUMONT, 153, Hither Green Lane, Lewisham : January 2nd, 1894.

Mesoleius Bignellii, Bridgm., at *Pitlochry*.—On September 5th, 1892, I took two examples of this rare species.—ID.

SOCIETIES.

BIRMINGHAM ENTOMOLOGICAL SOCIETY : December 18th, 1893.—Mr. G. H. KENRICK, F.E.S., Vice-President, in the Chair.

Mr. R. C. Bradley showed a short but very variable series of *Polyommatus Phlæas* from Sutton and Knowle. Mr. G. T. Bethune-Baker referred to Mr. F. Merrifield's breeding experiments with *Phlæas* as recently described before the Entomological Society of London, and said that Mr. Merrifield found that he got

darker and duller colours with heat and paler and brighter colours with cold; Mr. Bradley had, however, taken some very light forms in September and October, and they must, therefore, have been bred during hot months. Mr. Bradley also showed five species of *Diptera* all new to the British list, namely, *Dactylolabis gracilipes*, Lw., *Gonomyia jecunda*, Lw., *Ephelia varinervis*, Ztt., *Clinocera lamellata*, Lw., and *Didea fasciata*, Macq. Mr. G. T. Bethune-Baker showed *Crambus furcatellus*, *C. ericellus*, and *Psodos coracina*, all from Rannoch. Mr. G. H. Kenrick showed a box full of insects taken by himself in Sutherlandshire this autumn, including *Calocampa solidaginis*, *C. vetusta* (common), *C. exoleta*, *Epunda nigra*, *Noctua umbrosa*, *Agrotis suffusa*, &c.; he said that the specimens of *C. solidaginis*, of which he took a nice series, were lighter and greyer than the Cannock forms. Mr. W. Harrison showed three boxes of *Hymenoptera* taken during the year, and including *Andrena Trimmerana* from a spot in Edgbaston, where he had seen it for several years; this year, for the first time, he has seen and taken the parasite, *Nomada alternata*, and it was commoner than its host; there were also in the boxes *Halictus Smeathmanellus*, *Mimesa Dahlbomii*, *Crabro unicolor*, *Cælixys vectis*, *Osmia bicolor*, &c. Mr. A. H. Martineau showed also a box of *Hymenoptera* taken this year, including *Crabro interruptus* taken at Middleton Woods, *Mimesa Dahlbomii* from Wyre Forest, and *Agenia variegata* from Selsby, Gloucester. Mr. Wainwright showed three boxes from his collection, containing the Family *Syrphidæ*. Mr. G. W. Wynn showed a box of *Lepidoptera* taken this year, including *Notodonta chaonia*, *Hadena genistæ*, *Thecla rubi*, &c., from Wyre Forest. Mr. H. J. Sands showed some fine specimens of *Vespa crabro* from Alvechurch, where it has been unusually abundant; also a series of *Demas coryli* from the Chilterns, Oxfordshire, *Botys hyalinalis* from Wyre, &c. Mr. E. C. Rossiter showed *Polia chi*, *Melanippe hastata*, *Chærocampa porcellus*, *Aspilates strigillaria*, *Cerigo matura*, &c., all from Wyre Forest, also *Calymnia affinis* from Clent.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—ANNUAL MEETING:
January 8th, 1894.—Mr. S. J. CAPPER, F.L.S., President, in the Chair.

The following officers were appointed: President, Mr. S. J. Capper; Vice-President, Dr. J. W. Ellis; Secretary, Mr. F. N. Pierce; Treasurer, Mr. C. E. Stott; and Librarian, Mr. H. Lock. The President, in the course of a short address, thanked the Members for the honour they had bestowed upon him in re-electing him as President. This was the seventeenth time he had acted in such a capacity. He congratulated the Society on its continued success. They were now entering on their seventeenth year, and it was most gratifying to state that they had never been in a more prosperous condition than at present. The sudden death, a few months ago, of the Rev. H. H. Higgins, deprived them of one of their most prominent Members. The retiring Vice-President, Mr. W. E. Sharp, delivered the annual address; the subject was, "The New Entomology," and the writer after briefly sketching the origin and historical development of entomology, drew attention to the manner in which this study had been influenced by the modern methods of scientific enquiry. In the course of the evening a number of exhibits were displayed.—F. N. PIERCE, *Hon. Sec.*, 7, The Elms, Dingle, Liverpool.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY :
November 23rd, 1893.—J. JENNER WEIR, Esq., F.L.S., President, in the Chair.

Mr. Carpenter exhibited captured specimens of *Argynnis Paphia* from the New Forest, one male and one female having a portion of the right primary with a whitish ground, also a non-metallic intermediate var. *Valezina*. Mr. Frohawk, specimens of *A. Paphia* and var. *Valezina*, which had emerged on November 20th and 21st, having been kept at the ordinary temperature. He also reported having bred *Vanessa Atalanta* this month, and that the *Apatura Iris* of Mr. Watson had emerged, but was a cripple. A long discussion ensued regarding the second broods of the *Argynnidae*. The general opinion being that temperature by itself had very little influence. Mr. Sauzé, *Coleoptera* taken by himself this year. Mr. Weir, *Lycæna trochilus*, from the S. African Republic, sent by Dr. Rendall; *Lycæna exilis*, taken at Las Cruces by Prof. Cockerell; and our British *Lycæna minima* for comparison. Mr. Adkin, two specimens of *Polygonmatus Phlæas*, in one the copper band of the hind-wings was all but obliterated, and in the other represented by narrow streaks on the wing rays.

December 14th, 1893.—The President in the Chair.

Mr. South exhibited continental specimens of *Argynnis Adippe*, var. *Cleodoxa*, and var. *Chlorodippe*, both from S. Europe; a variety of *Thecla rubi* from Ireland; also *Syrichthus malvæ*, var. *taras*, from Exeter, where it was stated to be not uncommon. Mr. Pearce, a long series of *Chrysophanus hypophleas*; series of *Colias Philodice*, with pale var. of the female; *Terias Nicippe*, with yellow form of male; *Pieris rapæ*, and various species of *Lycænidæ*; all from Alleghany Co., U. S. A.; also *Nathalis Iole* from Colorado; Mr. Weir, *Planema Euryta*, an *Acraëne* butterfly, in which the sexes differed materially in colour, and still more in shape, yet in each of these respects it was mimicked by the corresponding sexes of *Pseudaeræa Pirce*, a Nymphaline species, all from the Cameroons. Mr. Turner, a long bred series of *Thera juniperata*, arranged to show the varied interruption of the band across the fore-wings. Mr. Billups, the rare Dipteron, *Diasitata basalis*, from Bromley, Kent, and hitherto unrecorded as British; also the following species of *Ichneumonidæ*, bred by the members: *Ichneumon fuscipes*, bred from larvæ of *Acronycta myricæ*, by Mr. Short; *Rhizarcha areolaris*, from the Dipterous larvæ of *Phytomyza aquilegiæ*, by himself; *Colas dispar*, from larvæ of *Melitæa Aurinia*, by Mr. Frohawk; *Ichneumon pyrropus* from *Eupithecia helveticaria*, *Glypta bicornis* from *Tortrix palleana*, *Anomala cervinops* from *Heliothis dipsacea*, and *Lissonota sulphurifera* from *Sesia scoliæformis*, all bred by Mr. Adkin. Mr. Adkin, a varied series of *Tæniocampa gothica* from Rannoch; also yellow varieties of *Zygæna trifolii* from Cambridge.

January 11th, 1894.—The President in the Chair.

Mr. Adkin exhibited several series of *Thera juniperata*, L., from various Scotch localities, contrasting them with those from Purley. Mr. Oldham, varied series of *Hybernia defoliaria*, L., *H. aurantiaria*, Esp., from Epping Forest, and a specimen of the local *Libellula quadrimaculata*, L., from Cambridgeshire. Mr. South, some remarkable vars. of *Cerastis vaccinii*, L., taken in Kent and Surrey, with British and continental specimens and varieties of *C. spadicea*, Hb., and a specimen of *Acronycta*

aceris, var. *infuscata*, Haw. Mr. W. A. Pearce, some very beautiful *Rhopalocera* from Alleghany, U. S. A., taken in 1893. Mr. Auld, *Vanessa Io*, which had been cleaned by Dr. Knaggs with methylated ether, and which had regained its pristine appearance. Mr. Tugwell sent for exhibition a long series of *Spilosoma lubricipeda*, Esp., and its varieties and local races, especially of var. *radiata*, St., = *zatima*, Cr., and communicated notes, in which he described the York city form as var. *fasciata*; he also sent for exhibition a pair of *Plusia moneta*, Fab., bred by Mr. Mathew; two varieties of *Arotia villica*, L., from Harwich; three dark Irish forms of *Agrotis lucerneae*, L.; a long series of *Liparis monacha*, L., from New Forest ova, some of which were very dark; six of the dark Sheffield form of *Boarmia repandata*, L.; vars. of *Lycæna Ægon*, Schiff., from Westmoreland; four *Dicranura bicuspis*, Bork., from Tilgate; a series of *Callimorpha Hera*, L., bred from Starcross ova; a pair of *Pachetra leucophæa*, View., taken by Mr. Hanbury on the North Downs, and others.—HY. J. TURNER, *Hon. Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON—61st ANNUAL MEETING: *January 17th*, 1894.—Mr. FREDERIC MERRIFIELD, Vice-President, in the Chair.

An abstract of the Treasurer's accounts, showing a balance in the Society's favour, having been read by Mr. Jenner Weir, one of the Auditors, the Secretary, Mr. H. Goss, read the Report of the Council. It was then announced that the following gentlemen had been elected as Officers and Council for 1894:—President, Mr. Henry J. Elwes, F.L.S.; Treasurer, Mr. Robert McLachlan, F.R.S.; Secretaries, Mr. Herbert Goss, F.L.S., and the Rev. Canon Fowler, M.A., F.L.S.; Librarian, Mr. George C. Champion, F.Z.S.; and as other Members of the Council, Mr. Walter F. H. Blandford, M.A., F.Z.S., Mr. Charles J. Gahan, M.A., Mr. Frederic Merrifield, Prof. Edward B. Poulton, M.A., F.R.S., Colonel Charles Swinhoe, M.A., F.L.S., Mr. George H. Verrall, Mr. James J. Walker, R.N., F.L.S., and the Right Hon. Lord Walsingham, LL.D., F.R.S. Mr. Merrifield then read the President's Address. A vote of thanks to the President was proposed by Colonel Swinhoe, seconded by Mr. Jenner Weir, and carried unanimously; Mr. Merrifield replied for the President. Lord Walsingham proposed a vote of thanks to the Officers of the Society; this was seconded by Mr. Waterhouse, and carried unanimously. Mr. McLachlan and Mr. Goss replied, and the proceedings terminated.—H. Goss, *Hon. Sec.*

NOTES ON THE EARLIER STAGES OF THE *NEPTICULÆ*,
WITH A VIEW TO THEIR BETTER RECOGNITION AT THIS PERIOD
OF THEIR LIFE.

BY JOHN H. WOOD, M. B.

(Continued from page 4).

THE VENTRAL MARKS.—They are present under two forms, either as a chain of narrow, spindle-shaped or almost linear marks down the middle of the abdomen, or as large square-shaped and very conspicuous spots which cover a large part of the ventral area. The two forms represent two essentially different things, for the same conditions

prevail here as were present in the 2nd segment ; but whereas it was often a delicate operation there to distinguish between the internal organ and what was merely a staining of the skin, here the diagnosis is made for us by the unmistakeable difference in the shape of the marks. The large square-shaped spots are the surface markings ; though to be strictly accurate, they are rather transversely oblong, with the corners rounded, than square-shaped. Their size and deep black colour make them extremely conspicuous, but curious to say, they disappear with the last moult from all the segments save the 2nd, and allow the other series of marks, or the nerve cord, which had previously been concealed, to come into view. Both in their general appearance and in the circumstance of being limited to the middle life of the larva (for I should add they are not present from the first), they remind one of the ventral spots in some of the *Micropteryges*. Comparatively few species, however, seem to possess them. The only ones I know of are the members of the *angulifasciella* group, *subbi-maculella*, *argentipedella*, and if my memory serves me, *quinquella*, but the last named does not occur here, and it is some years since I was indebted to the kindness of Mr. Warren for the opportunity of seeing it. The general tendency of the 2nd segment to exhibit pigmentation is not only shown by the retention of its ventral spot in these cases, but also by the frequent presence of a grey mark in species which never possessed the complete chain. For instance, it is very distinct in *glutinosa*, serving to distinguish it from *alnetella* before the two mines have acquired their distinctive characters, and it enables one, at the same time, to draw the inference that the larva is lying venter-up in the mine.

The nerve-chain is known by the linear character of its links or ganglia. Of its structure I need not speak, further than to observe, that the three thoracic ganglia, and especially the 1st, are wider, that is, more oval than the eight abdominal ones ; that all the eleven can generally be counted by the aid of a good lens, though the 1st is sometimes hidden by the ventral spot of segment 2 ; and that the bands connecting them are, in some species at least, double in the abdominal as well as the thoracic regions. Invisible in many species, they are particularly so in those of a green colour—in fact, I cannot call to mind a single bright green larva that shows even a trace of them, so that it would seem that there is a sort of incompatibility between this colour and the development of pigmentation in the nerve centres. Again, it is interesting to notice that the cephalic ganglia may be plainly visible on the upper-side of segment 2, and yet no

trace of the ventral cord be discoverable on the under-side of the body. And so frequently was this the case with the material first examined, that I almost came to the conclusion that the presence of the former presupposed the absence (of course only apparent) of the latter. Now, strange to say, the want of agreement in the colour of the supra- and infra-oesophageal parts of the nervous system was found to be connected with the position of the larva in the mine. Like many leaf-miners, a large number, probably one-third, of these larvæ mine upside down, I mean with the venter uppermost, and where this was the case, there it was that the ventral cord was over-coloured and visible, whilst when the back was uppermost, then the cephalic ganglia were the parts to have their colour intensified. What is the meaning of this? Light being unquestionably the most general and potent factor in the production of pigmentation, it is reasonable to imagine, that pouring in through the transparent tissues of these small creatures on to the nerve ganglia, it will, in the course of generations, exaggerate or intensify their colour, and the more readily, because some amount of pigmentation is always present in these parts, and appears to be essential to their constitution. Hence, when the head is uppermost, the light falls upon the cephalic ganglia and in long process of time blackens them, but cannot so well reach the ventral cord, which is protected by the contents of the intestinal canal and so retains its primitive colouring; on the other hand, when the venter is uppermost, the condition of things is reversed, and the cephalic ganglia remain unchanged or only slightly affected, whilst the ventral cord is darkened.

I have already hinted that the rule is not invariable, and that in many larvæ both cephalic ganglia and ventral cord are visible, but even then there is a difference in the depth of colour, and the darker of the two is the one which, by being uppermost, is the most exposed to the light. Such, then, I venture to suggest, has been the action of light upon the tissues; equally interesting has been the action of the tissues upon the light, for it is here, I believe, we shall find the reason for the high colouring of the nerve centres in so many of the yellow larvæ, and its remarkable absence in the bright green ones (the ventral cord, so far as my experience goes, is always quite imperceptible, and the cephalic ganglia are only faintly discernible in one or two of them). The tissues, as the colours of the animals testify, break up the light into its component parts, retaining and appropriating some of the rays, and rejecting and throwing off the others. In the green larvæ it is the actinic or chemical rays that are rejected, whilst they are the ones that are retained in the yellow larvæ. Consequently, it seems to me

that the light must be largely robbed of its power to produce pigmentation in the former class, but remains unaffected as regards this property in the latter class.

Position also seems to be at the bottom of the ventral surface markings. All the species that possess them lie venter up in the mine, so do the *Micropteryges*, and so also do certain leaf-mining beetles that have on the under-side of their thoracic segments conspicuous black marks, very similar to those of the Lepidopterous larvæ.

THE INTESTINAL CANAL.—The feature here is the colour, which may be red, yellow, or green in various shades. Frequently the fore part is of a different colour to the hind part. In *anomalella* and *assimilella*, for instance, the canal is green in front and yellow behind. Occasionally it is so like in tint to the rest of the body, that its demonstration is next to impossible, but usually it stands out conspicuously—its vivid green colour in several of the birch-feeders is very striking—and may come in to help us at a pinch. In collecting the mines of *pyri*, I commonly find myself taking the red intestinal canal as the first critical step in separating it from *oxyacanthella*, which is equally, if not more, common in the pear leaves, but has a yellowish canal. The colour does not, of course, reside in the canal itself, but in the contained food, which has been altered and discoloured by the secretions. And it is certainly curious that we should find, in such an out of the way quarter as the secretions of the intestines, good distinguishing characters; for since the food is the same, the difference in the colour must be due to a difference in the secretions.

THE PAIR OF BROWN OR BLACK LINES AT THE HINDER END OF THE BODY.—These again are internal organs, which I take to be the kidneys. They are situated one on each side the intestinal canal, and are best seen from the ventral surface. Under the microscope each is resolved into a long wavy or tortuous tube, bent upon itself in such a way that the two ends lie close together at the anal extremity. I first noticed them in *distinguenda*, where they can be seen very plainly, even when the larva is *in situ*. They are besides quite discoverable in some others, but I am inclined to think only in such as show an excess of pigmentation somewhere else, as in the head or nervous system.

I will now pass to a part of my subject more interesting, perhaps, to the generality of readers, and shall hope to show how confidently certain species, not unlike in mine and larva, and feeding on the same kind of plant, can be distinguished from each other by attention to

one or more of the foregoing characters. Let me take first four species that feed on hawthorn (*Cratægus oxyacantha*). They divide themselves naturally into pairs, the one characterized by having bright green larvæ and gallery mines with coiled frass, and the other by yellow or yellowish larvæ and blotch mines.

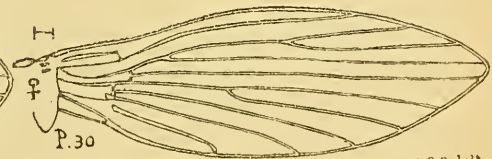
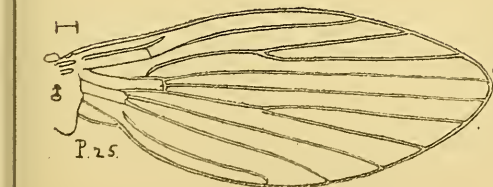
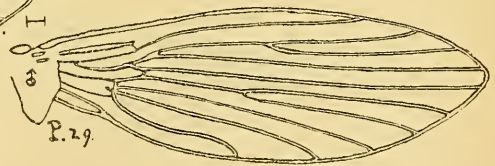
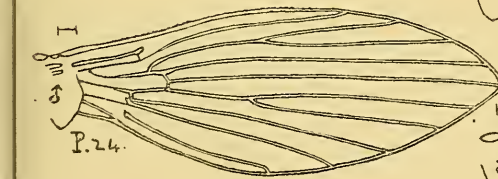
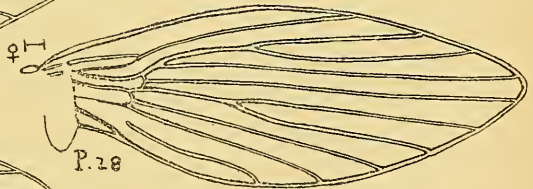
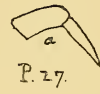
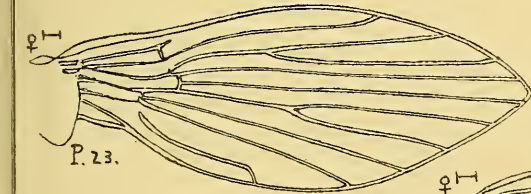
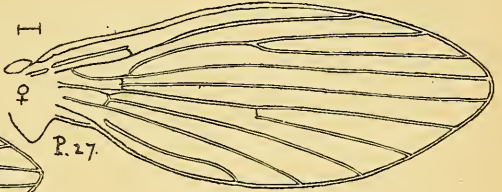
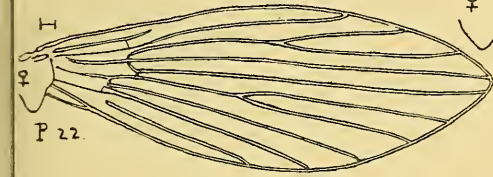
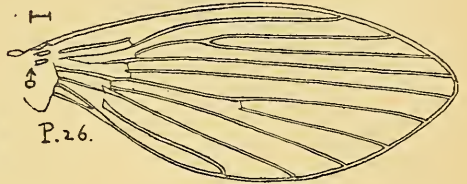
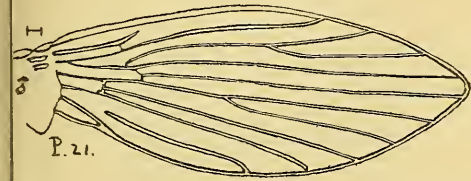
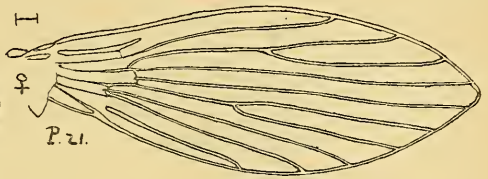
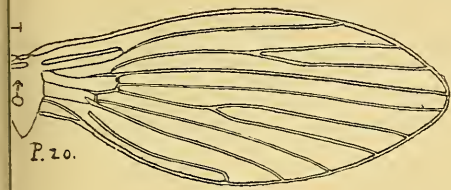
The gallery miners are *gratiosella* and *oxyacanthella*. With regard to the former the ground wants a little clearing first. Some years ago, in the pages of this Magazine, Mr. Threlfall suggested that *gratiosella* and *ignobilella* were the sexes of one and the same species. Subsequently, my own experience in breeding *ignobilella* appeared to confirm his view. From yellow larvæ collected in the autumn and carefully separated from the only two other yellow larvæ, viz., *regiella* and *pygmælla*, that could be found on the hawthorn (*gratiosella*, let it be remembered, was said to have a yellow larva and to feed in the autumn), I bred a long series of the perfect insect, some with red heads and some with black; as the former were all males and the latter females, they could clearly be nothing more than the sexes of one species, and *gratiosella* as a species seemed doomed. It was not, then, till the question arose what the green *oxyacanthella*-like larvæ, feeding in July and August, could be, and until moths were reared from them which answered accurately to the description of *gratiosella*, that its position was restored. The diagnosis in the "Manual" is perfect, so far as the inago goes. It is a smaller insect than *ignobilella*, with the head black in both sexes, and a violet rather than a purple hind margin to the fore-wings: on the other hand, the larva is bright green, not yellow as there described, and instead of feeding in September and October, as stated in the "Entomologist's Companion," is fed up and over by the end of August.

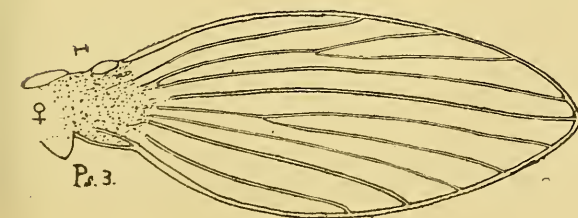
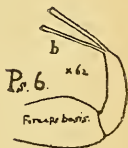
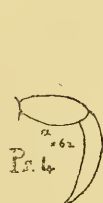
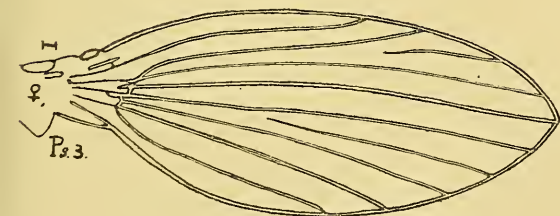
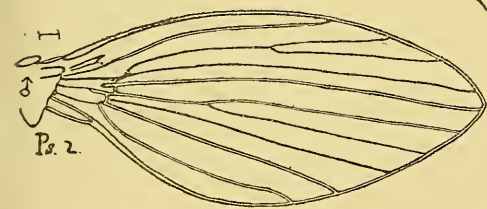
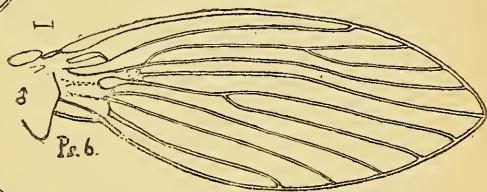
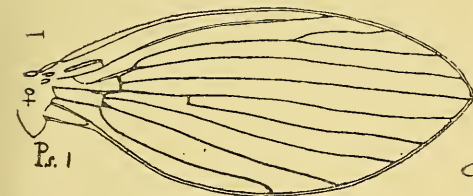
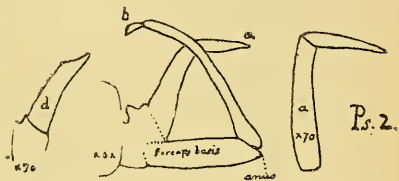
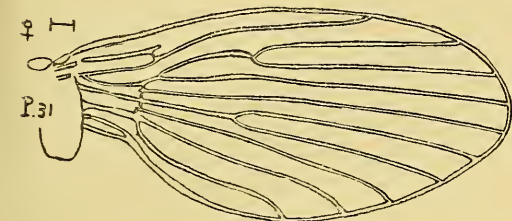
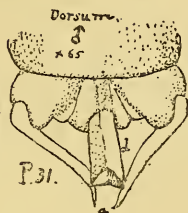
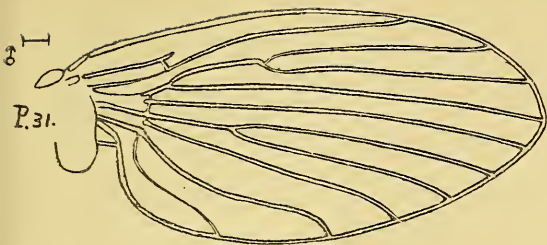
The general cut of its mine varies according as to where the egg is laid, and to some extent according to the size and fleshiness of the leaf. The favourite spot for the egg is underneath the leafy frill edging the stalk. The mine travels at first for a short distance down the stalk, I mean in the direction of the trunk, it then turns round and proceeds in the opposite direction till it reaches the blade, here it keeps accurately to the edge for some little way, and then makes one short turn back upon itself and ends, or, if the leaf be especially large and fleshy, the last turn is omitted. This form would be quite *sui generis*, were it not occasionally mimicked to a turn by *pygmælla*; still, as the one larva is green and the other yellow, there is no risk of confusing the full mines, whilst the empty ones, as I have already pointed out, may be told from the position of the eggs. Sometimes,

instead of a single turn back upon itself, two or three are made, if the leaf be small and thin, yet for all that the mine is so small that it manages to keep within the limits of the lobe. The other position for the egg is under one of the ribs. In this case the small twisting gallery keeps within a narrow compass in the middle of the leaf or in one of the lobes. To compare it now with *oxyacanthella*.

The eggs of both are laid upon the under-side, but whilst *gratiosella* prefers the stalk to a rib, *oxyacanthella* has a greater liking for the ribs. The mines are very similar. But *gratiosella*'s is smaller and its course more timid, the gyrations being short and keeping close together; whereas in *oxyacanthella* the curves are sweeping and pass across or round the lobes from one side of the leaf to the other, and even when the egg is laid upon the stalk and the mine comes out along the edge as in *gratiosella*, it turns off sooner or later into the body of the leaf and pursues its usual bold and wandering course. The best distinction, however, lies in the larvæ. The head of *gratiosella* is of the palest brown, so that little more than the mouth-parts are visible in the mine; that of *oxyacanthella* is grey or black, and is always distinct and sometimes very distinct; *oxyacanthella* also shows, but obscurely, the cephalic ganglia, of which there is no trace in the other. I think, too, that the ground-colour is more bluish in *gratiosella* than in *oxyacanthella*, but never having had the two side by side I speak doubtfully. In these parts, and I am fairly well south, both species are single brooded. I never find the larva of *oxyacanthella* in July and August, nor that of *gratiosella* in September and October, and I have given the hawthorn hedges a good deal of attention.

The blotch-miners, *regiella* and *ignobilella*. They occur together at about the same time, and are double brooded, feeding in the summer and again late in the autumn. The small blotches they make at the tips of the lobes, with their yellow or yellowish larvæ, are certainly most provokingly similar, unless attention be paid to one or more of the following points, when their discrimination becomes as easy and pleasant as it before seemed impracticable. In both the egg is laid on the under-side, in *regiella* quite on the edge, in *ignobilella* well away from it. As a consequence, the whole course of the primary gallery of the former runs along the edge, whereas the gallery of the latter wanders at first about the area of the lobe before it reaches and follows the edge, and though this wandering portion is afterwards absorbed by the blotch, the fine frass track remains undisturbed and an evidence of its former existence. Next, *regiella* deposits brown frass in its gallery and black in the blotch, whereas the dejecta of





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Notes on some British and Exotic Coccidæ (No. 27).— <i>J. W. Douglas, F.E.S.</i>	28
Lithocolletis triguttella, Stn., a variety of <i>L. faginella</i> .— <i>E. R. Bankes, M.A., F.E.S.</i>	30
Note on <i>Platycephala Olivieri</i> , Montr.— <i>D. Sharp, M.B., M.A., F.R.S.</i>	31
On new species of Trogositidæ from Japan.— <i>G. Lewis, F.L.S.</i>	32
Additions and corrections to the List of British Aculeate Hymenoptera.— <i>E. Saunders, F.L.S.</i>	35
Grease.— <i>Richard Freer, M.B.</i>	37
Lepidoptera of Cornwall.— <i>W. E. Bailey, F.E.S.</i>	37
<i>Vanessa Atalanta</i> and <i>urticæ</i> at Christmas.— <i>W. Watkins</i>	38
Lepidoptera at Armagh in 1893.— <i>Rev. W. F. Johnson, M.A., F.E.S.</i>	38
<i>Psyche albida v. Millièrella</i> , B.— <i>F. Bromilow, F.E.S.</i>	38
Cave-frequenting habit of <i>Bittacus chilensis</i> .— <i>R. McLachlan, F.R.S.</i>	39
<i>Syrphus guttatus</i> , Fall., new to Britain.— <i>Coryndon Matthews, F.E.S.</i>	39
Great abundance of Aleurodes brassicæ, Walk.— <i>E. R. Bankes, M.A., F.E.S.</i>	39
<i>Aleurodes prolella</i> , &c.— <i>J. W. Douglas, F.E.S.</i>	40
<i>Chirotica maculipennis</i> , Gr., a species of Ichneumonidæ new to Britain.— <i>A. Beaumont, F.E.S.</i>	40
<i>Mesoleius Bignellii</i> , Bridgm., at Pitlochry.— <i>Id.</i>	40
SOCIETIES.—Birmingham Entomological Society.....	40
Lancashire and Cheshire Entomological Society.....	41
South London Entomological, &c., Society.....	41
Entomological Society of London.....	43
Notes on the earlier stages of the Nepticulæ, with a view to their better recognition (continued).— <i>John H. Wood, M.B.</i>	43

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ignobilella are black in both gallery and blotch. Lastly, the head of *regiella* is pale brown, with the cephalic ganglia dark brown, and consequently far more conspicuous than the head; on the other hand, the head of *ignobilella* is blackish, overpowering the ganglia, which are of a paler colour. I should add that a pair of brilliant orange spots are frequently present on the front edge of the 2nd segment in *regiella*. I was inclined at one time to think that they might be a sexual distinction, but careful breeding lent no support to the idea. Thus, these species are distinguished by four distinct characters, gathered from egg, mine, frass (colour), and larva. All four are practically of much the same value, for all are equally constant and equally accessible to observation.

With regard to the pupation of these several insects. *Gratiosella* is subterranean, and makes a smooth blackish-brown cocoon. *Oxyacanthella* and *regiella* spin on (below?) the surface or above it, the former will sometimes climb up the sides of a glass vessel to pupate; both make smooth cocoons, *oxyacanthella* of a dark brown, *regiella* more of the colour of a dogskin glove. I have no cocoons of *ignobilella* to refer to, and have also forgotten to make any note of their appearance.

Tityrella and *fulgens*, the *Nepticulæ* of the beech (*Fagus sylvatica*), require perhaps a word. The mines might be fairly well sorted by their size, the smaller ones being referred to *Tityrella*, and the larger to *fulgens*; but in any large number there would always be some specimens that held an intermediate position, and could not be referred confidently to either division. Size alone is, therefore, not sufficient; neither is the form of their track, for though the mine of the former is a vermiform gallery confined to the space between two ribs, and that of the latter a more or less straight gallery which pays little regard to boundaries, yet sooner or later we should be landed in difficulties, since either will on occasion adopt the pattern of the other. Fortunately more trustworthy distinctions exist, and under no less than three heads, viz., egg, mine, and larva. (1) Egg—in *tityrella* they are laid on the under-side, among the tufts of hair that grow in the angles of the midrib—a most excellent example, I may add, of the precision which some of the species display; *fulgens*, on the contrary, is one of the rare instances of utter indifference in the matter, and lays on the open surface of upper- or under-side equally readily. (2) Mine—the great point here is the piece of “coiling” in the middle, which is always present in *fulgens*, and as invariably absent in *Tityrella*. (3) Larva—the head of *Tityrella* is black, especially its posterior lobes, the cephalic ganglia also black and looking like a part of the head, ventral

nerve cord fairly visible when the leaf is turned over; head of *fulgens* pale brown, cephalic ganglia and ventral cord invisible. Both insects are double brooded. Their cocoons are woolly; that of *Tityrella* is white in colour, that of *fulgens* brownish.

(To be concluded.)

MICRO-LEPIDOPTERA FROM NORFOLK & SCOTLAND: INCLUDING
AN ADDITION TO THE BRITISH LIST.

BY THE RIGHT HON. LORD WALSHINGHAM, M.A., LL.D., F.R.S., &c.

I received lately from Mr. E. A. Atmore, of King's Lynn, a box of interesting specimens taken by him in that neighbourhood, which included *Tinea nigripunctella*, Hw., a species of rare occurrence, formerly taken near Bristol.* I have recognised it among the late Mr. T. V. Wollaston's captures in Madeira; this is new to the Norfolk list. A specimen of a *Sericoris* agrees absolutely with examples of *Sericoris palustrana*, Z., in the Zeller collection, as also with a specimen received from Dr. Staudinger under this name. Zeller originally described the species (Isis, 1846, p. 230—not p. 630, as quoted in Staudinger's Catalogue, No. 972) as *palustrana*, Lienig. The MS. name given by Madame Lienig seems to indicate that her species was in some way connected with marshes, while Zeller says that it is taken in fir woods on high ground, and subsequent authors have followed him in identifying a species taken among firs as *palustrana*. Stainton, Wilkinson, Curtis and others have mentioned this species as occurring among pines in Scotland and the North of England, and I can find no mention of it as a marsh insect. The Lynn specimen (which if rightly identified is an addition to our Norfolk list) throws no light upon the subject; it was taken, as I am informed by Mr. Atmore, "by beating a fir tree on the verge of a marsh." It does not appear to agree precisely with Scotch specimens in my collection, but is certainly distinct from the allied form which stands in our cabinets under the name of *micana*, Hb.

I have next to notice a long series of specimens of an *Argyresthia* taken among *larches*, which can only be compared with *Argyresthia illuminatella*, Z. (Isis, 1839, p. 205), from typical examples of which they differ in the slightly more elongate and acuminate apex of the fore-wings. Three examples in my own collection from Forres,

* More than thirty years ago I found several examples of *Tinea nigripunctella* in the "retreat" of a house at Folkestone at which I was lodging. I have an idea that many localities other than Bristol, Folkestone, and King's Lynn can be named.—R. McLACHLAN.

collected by Salvage (for the possession of which I am indebted to Mr. J. H. Leech), do not exhibit this peculiarity. I have no hesitation in adding this species to the British lists on the strength of the Scotch specimens, but would urge Mr. Atmore to make further search, in the hope that he may find the larva feeding on larch, in which case its separation from the continental *illuminatella* would, I think, be fully justified. Since Hartmann (Mitth. Münch. Ent. Ver., IV, 7, 1880) mentions *Larix* as one of its food-plants, it may be that the two forms are included under one name on the continent. Collectors should examine their series of *Ocnerostoma piniariella*, and if they find some rather yellowish specimens with distinctly ochreous heads and longer palpi, they may recognise *Argyresthia illuminatella*.

I am quite unable to distinguish two specimens of a *Gelechia* in the same collection from examples of *Xystophora servella*, Z., in the Zeller collection (Isis, 1839, p. 201; 1846, p. 289). I mention it in the hope that the attention of collectors will be called to the matter, and that they may be able to verify the occurrence of this hitherto unrecorded species in England. It is of a uniform purplish-brown colour, with a few pale specklings around the apex and apical margin, and a single obscure dark spot at the end of the cell, the antennæ appear to have a series of three pale spots on their outer third, the outer one of which is a little before the apex; the cilia are somewhat paler than the wings, especially about the anal angle, and the hind-wings are shining slaty-grey with pale cilia tending to brownish-ochreous, the abdomen inclining to brownish-ochreous. Legs pale, apparently unspotted. Exp. al., 14 mm. It is slightly larger than *anthyllidella*, Hb., and somewhat resembles it in appearance, although generically distinct. Heinemann originally gave the name *Doryphora* to that section of the old genus *Gelechia* to which the species belongs, but recognising that the name was pre-occupied for a genus of *Coleoptera* [vide Hein., Schm. Deutsch. Tin. Tabelle der Gattungen, p. 6 (1877); Snell., Vlind. Ned., 684-5 (1882); Drnt., Bull. Soc. Ent. Fr., 1889, p. cxxiv], he replaced it by *Xystophora*. This correction being made in the posthumous part of Heinemann's work, was subsequent to the publication of Staudinger's Catalogue, and was overlooked by South when compiling his list.

While I am recording additions to the Norfolk list, I may here mention *Tinagma betulæ*, Stn., and *Æcophora lambdella*, Don. The description of the former at once enabled me to recognise a mine found in a birch leaf here, obviously that of a *Tinagma*, which had greatly puzzled me, as I had been unable to breed the insect. I noticed

it for the first time in the same year that the description was published [Ent. Mo. Mag., XXVI, 261-4 (1890)]. The *Æcophora* was also taken at Merton on June 18th, 1890, by Mr. J. H. Durrant, flying in the sunshine in the early morning about the branches of *Picea cephalonica*; it was evidently fresh from the pupa. It is remarkable that although its food-plant (*Ulex*) is abundant in the neighbourhood, my frequent search for this species, both in its larval and perfect stages, has hitherto been fruitless.

Merton Hall, Thetford :

February, 1894.

THERMOBIA FURNORUM, ROVELLI, A HEAT-LOVING *THYSANURAN*, IN LONDON BAKEHOUSES.

BY ROBERT McLACHLAN, F.R.S., &c.

In 1884 G. Rovelli, an Italian entomologist, published at Como, a brochure on a new species of Lepismid found *in ovens*. This publication I have never seen in the original. He proposed the name *Lepisma furnorum*, but stated the creature would form a new genus or sub-genus.

In 1887 Grassi (Bull. Ent. Ital., vol. xix) alluded to the insect, and applied to it the sub-generic name "*Termophila*, Rovelli," the chief distinction from *Lepisma* being its six-jointed maxillary palpi. *Termophila* was evidently an Italian rendering of *Thermophila*, there being practically no letter "h" in modern Italian, and in the same Bulletin, 1889 (vol. xxi), in a paper by Grassi and Rovelli combined, the sub-genus is correctly given as *Thermophila*.

In the "Tijdschrift voor Entomologie," vol. xxxii (1889), is a long paper on the insect, with a gigantic coloured figure, by Dr. Oudemans, on its discovery (given as *Thermophila furnorum*, Rov.) in Amsterdam, and he says it was found in all bakehouses that he examined, and in abundance, and that it had received familiar names from the bakers.

A short time ago Mr. F. Milton, of 184, Stamford Hill, London, sent me specimens of a Lepismid found in a London bakehouse. This is no doubt the same as Rovelli's and Oudemans' species. He says he has not found them in all bakehouses, but that in some they are known as "fire brats." They congregate round the oven's mouth.

At the Meeting of the Ent. Soc. Lond., September 2nd, 1885, Mr. R. Adkin exhibited a "*Lepisma*" found in an iron safe at Aldgate, London, and I have since ascertained from him that a bakehouse exists on the other side of the party-wall against which the safe was placed. No one recognised the insect, and I now suspect it was *Th. furnorum*.

I will now go more than thirty years back. In the "Zoologist" for 1863, p. 8496, Ed. Newman gave a small-type note on a "New Insect at the Friends' Institute," Bishopsgate Street, London. It refers to a Lepismid and its habits (but heat-loving is not specially noticed). All the description is:—"Its body is half an inch long, and it has antennæ and tails each about half an inch long or rather more, so that the entire length is rather more than an inch and a half." He proposed for it the name *Lepismodes inquilina*, showing that he recognised it as generically distinct from *Lepisma saccharina*. If any "types" still exist they are probably in the collection of the Entomological Club. I distinctly remember seeing the creature; but the name is not indexed in the Vol., and the note has been entirely overlooked so far as I am aware.

To turn to North America. In 1873 Dr. Packard published, in the 5th Annual Report of the Peabody Academy, a synopsis of the *Thysanura* of Essex Co., Mass., amongst which is a *Lepisma domestica*, n. sp., "common in houses about hearths and fireplaces," and which has six-jointed maxillary palpi. There is much in the descriptions to induce one to believe that his and Rovelli's insects are the same. And, in fact, Dr. Bergroth has considered them identical, and has re-named the genus *Thermobia*, in consequence of *Thermophila* being pre-occupied (Entomol. Americ., vi, p. 233, 1890). For the moment I prefer to call our insect *Thermobia furnorum*, Rovelli, substituting Packard's specific name if the identity be absolutely proved. Newman's much earlier *Lepismodes inquilina* I leave an open question, after having called attention to it. Furthermore, it must be remarked, that several old species of "*Lepisma*," principally by French authors, probably remain undetermined.

I give no description of *Th. furnorum*, because I have seen no examples really in good condition, but refer my readers to Dr. Oudemans' figure. Its mottled appearance and somewhat different form will at once separate it from *Lepisma saccharina*, independent of the structural characters: the antennæ and tails are extremely fragile, and the scales on the body that cause the mottling are very easily detached. It appears to revel in an amount of heat fatal to most other Arthropods, and I express an opinion that it will be found wide spread in this country.

The foregoing notes are necessarily somewhat laconic, and have been called forth by Mr. Milton's appeal for identification.

Lewisham, London :
February, 1894.

WING EXPANSION IN A BUTTERFLY DELAYED BY LOW
TEMPERATURE.

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

At 2 a.m. on January 19th, 1894, I found that a *Doritis Apollina*, whose pupa was in a tumbler on the mantelshelf of a room with a fire, and at a temperature of 73° or 74°, and at times higher, had emerged, and was so energetically searching for a place to settle to expand its wings, that it always left a good spot and got to one where it fell. I, therefore, put it in a muslin cage, and also for reasons of safety took it to a room with a temperature of 51°.

At 9 a.m. I found it seated quite quietly, but with wings absolutely unexpanded. I then took it back to the warm room, and, five minutes later, found the wings well advanced in development, and it shortly became a perfectly developed specimen.

I have not met before with so marked an instance of the effect of temperature on wing expansion. Some recorded instances of delayed expansion may be due to this cause. The instances I have myself met with have been chiefly in moths extracted untimely from their pupæ, as a result of a belief they had died; such moths usually fail to expand their wings, but I have known one do so nearly two days after.

Firbank, Hereford :

January, 1894.

MUSCA (CALLIPHORA) VOMITORIA IN NEW ZEALAND.

BY W. W. SMITH.

In 1889, Mr. G. V. Hudson announced the occurrence of *Eristalis tenax*, Linné, and *M. vomitoria*, in Wellington. After the announcement I resolved to watch carefully for the appearance of these Dipteron in this district. I have already recorded the occurrence and phenomenal increase of *E. tenax* in the South Island (Ent. Mo. Mag., 1890, pp. 240—242), and now proceed to record some facts respecting the dispersion of *M. vomitoria*. On November 8th, 1890, I captured the first specimen I met with in this district. Observing it entering the tube flowers of *Penstemon barbatus*, I closed the mouth of the tube and prevented its egress. In two months we had caught three more, and saw another which escaped. In 1891, we had no trouble in capturing several dozen specimens. In each succeeding year, including the present, it has more than doubled its

numbers, and is now very plentiful on the windows in dwellings, and on flowers and shrubs in gardens at Ashburton. Six weeks ago I wrote to a friend residing in Oamaru, requesting him to collect a number of flies for me that he probably would observe in his house and garden. On the 10th of the present month, I received a match box nearly full of specimens of several species collected in his garden. Amongst them were five fine specimens of *M. vomitoria*, and eleven of *Eristalis tenax*. Oamaru is a pretty little seaport town in North Otago, 100 miles south of Ashburton. In a similar way I have lately received two specimens of *M. vomitoria* from Mt. Somers, a village situated near the base of the mountains, thirty miles inland from Ashburton. Other non-entomological friends, residing in different districts in the South Island, have sent me numbers of flies, but these are the only localities so far that have yielded specimens of *M. vomitoria*. I have recently received specimens from Danvirke, Hawke's Bay, thus showing that the species is extending its area of distribution in the North Island.

The extremely rapid increase and dispersion of introduced insects, and their effects on the indigenous species of the group to which they belong, merits close attention. Although *M. vomitoria* is as plentiful as *Calliphora quadrimaculata* and *Sarcophaga læmica*, there is not, at the present time, any appreciable diminution in the numbers of these two common native species. It is, however, too early to speculate on the probable results of introduced Dipteron on the endemic Dipterous fauna. The large and handsome *Tabanus impar* soon vanishes from newly settled districts. *Comptosia bicolor*, and the recently described *C. virida*, Hudson, have increased somewhat in this district during the last ten years. A week ago I spent a forenoon collecting *Diptera* on a large flowering plant of the introduced *Buddlea globosa*. The highly-scented, orange-coloured flowers are a great attraction to *Diptera* and other insects, and have, for several years, enabled me to obtain a good series of different species. It is very pleasant to watch the larger *Diptera* chasing each other actively about the shrub, while the smaller native species may be seen in a perpendicular position, thrusting their heads down the short, narrow, staminal tubes of the flowers to reach the nectary. Although there were about a dozen species all busy at the flowers, *M. vomitoria* was much more numerous than any other present. Last summer I observed them abundant on several flowering plants of native *Vericonæ*, and, later, on the flowers of the introduced hybrid *V. Andersoni*. With few exceptions, the species was common on nearly all flowering plants during the last two

summers, and bids well to be more so in the present season. The rapidity at which introduced insects increase and disperse in New Zealand is unprecedented. Like *Eristalis tenax* and *M. vomitoria*, *Gastrophilus nasalis*, Linn., is another case in point. Four years ago this month it first attacked some draught horses at work at Chertsey, twelve miles from Ashburton. Since then it has spread with alarming rapidity from Auckland to the Bluff, and has caused serious loss and trouble among horses. Excepting the three forms of *Bombi*, now naturalized in New Zealand, all other insects are accidental introductions. I do not here include *Raphidia*, introduced by Mr. Koebele two years ago, as nothing is known, at present, respecting its success or failure, in establishing itself. It is remarkable that *M. vomitoria* has only been observed in New Zealand within the last few years. Since the direct mail service began between England and New Zealand, the facilities for transmission of the species have been more favourable than previously. In this connection it would be of interest to know if *M. vomitoria* has been observed at the several ports of call on the steamer's line of route, viz. : Teneriffe, Cape Town, and Hobart. Its recent occurrence and rapid increase in New Zealand seems to me to favour the probability of its introduction since the advent of the direct steamers arriving fortnightly from England.

In nearly every instance both the noxious and beneficial species now naturalized in New Zealand have been introduced unobserved. When once established, many species have increased at a marvellous ratio, and with disastrous results. Mr. Maskell's paper on "Migrations and New localities of some Coccids (Ent. Mo. Mag., xxviii, p. 69) is full confirmation, and is applicable to many species belonging to other groups.

In a valuable paper by Baron Osten Sacken on "Facts concerning the importation or non-importation of *Diptera* into distant countries" (Trans. Ent. Soc. Lond., 1884, pp. 489—496), the distinguished Dipterologist discussed the question of the transportation of *Diptera*. In harmony with his remarks I may safely say that the trans-oceanic migration of nearly all the exotic *Diptera* now flourishing in New Zealand has been accomplished artificially, and especially so by fast steamers during recent years. The genial climate of the islands, with long summers and mild winters, is extremely favourable to the habits and development of *Diptera* from colder climes. It is possible that fresh immigrants of previously introduced species may continue to arrive, especially if the fast steamers leave England or the ports of call during the summer months. I imagine that *M. vomitoria* may

have been naturalized in these intermediate countries before reaching New Zealand, but I have no data bearing on the question. Perhaps some resident entomologist at the Cape or Hobart can enlighten us on the subject. There would, however, be no difficulty in the fly travelling the whole voyage, which lasts about six weeks. It is of paramount importance to record the introduction and rate of increase and dispersion of exotic species in any zoological region.

After two days' warm rain, yesterday being calm and hot, I again visited the plant of *Buddlea globosa*. The magnificent shrub, 10 ft. high, and 12 ft. in diameter, in full flower, swarmed with *Diptera*. Along with other species, four or five individuals of *M. vomitoria* occurred on a single flower all over the shrub, all busy extracting the nectar. Are the flowers of this shrub so attractive to *Diptera* in England?

Ashburton, N. Z.:

November 25th, 1893.

WHAT ARE THE SPECIFIC LIMITS OF *ASPIDIOTUS DESTRUCTOR*,
SIGN.?

BY T. D. A. COCKERELL.

There is a puzzling group of supposed species of *Aspidiotus* found in tropical countries, mostly on palms, of which *Aspidiotus destructor* is one. In my list of West Indian *Coccidæ*, lately published in the Journal of the Institute of Jamaica, I have separated three forms, as *A. palmarum*, Bouché, *A. nerii*, Bouché, var., and *A. fallax*, n. sp. Having lately examined more material, I have come to the conclusion that all these, and also *A. cocotis*, Newst., must be included in a single species, namely, *A. destructor*; unless, as seems very probable, this falls before the earlier *A. palmarum* of Bouché. Further, I do not think that any of the forms are correctly referred to *A. nerii*.

These somewhat startling conclusions may well be disputed, and no one will be better pleased than I if the validity of *destructor*, *fallax*, and *cocotis* as distinct species can be established; but I think the evidence given below indicates clearly that there is more variability in certain characters held to be specific than is commonly estimated for.

The specimens examined by me are as follows:—

- (1) On cocoanut, Laccadive Islands, sent by Mr. Maskell: = *destructor*.
- (2) On banana, Port of Spain, Trinidad, from Mr. F. W. Ulrich: = *destructor*.
- (3) On mango, Antigua, from Mr. Barber: = *fallax*.
- (4) On *Terminalia catappa*, Antigua, from Mr. Barber: = *fallax*.
- (5) On *Cinnamomum camphora*, Antigua, from Mr. Barber: = *fallax*.

- (6) On cocoanut, from Barbados, received through Dr. Plaxton: = *palmarum* (Bouché, ?), Ckll., In. Inst. Ja., 1893.
- (7) On hysophorbe palm, Botanic Gardens, Grenada: = *cocotis*.
- (8) On *Areca rubra*, Antigua, from Mr. Barber: = *nerii*, var. (*neo* Bouché), Ckll., *l. c.*
- (9) On *Sabal Blackburniana*, Antigua, from Mr. Barber: = *nerii*, var. (*neo* Bouché), Ckll., *l. c.*
- (10) On a palm, garden of Colonial Bank, Kingston, Jamaica: = *nerii*, var. (*neo* Bouché), Ckll., *l. c.*

In the following descriptive notes the above specimens will be referred to by their numbers.

Scale.—The scale is flat, dirty white, with the exuviae *pale straw colour*, and larger than those of *nerii*. True *nerii*,* on oleander, looks quite different from the present species. In shape, our scale varies from circular to slightly oval.

Colour of female.—Pale yellow (1, 2) to yellow blotched with orange, or bright yellow (3), or orange with the terminal portion yellow (7).

Shape of female.—Nearly circular (2, 3) to broad pyriform (6, 10).

Lobes.—Normally three pairs, but in 6 I could see only two pairs, while in the type of *fallax* four pairs were visible. However, the fourth lobe of *fallax* is very little developed, and not constant; as on re-examining the original lot (3), I found a specimen with only three pairs of lobes. I cannot doubt that further material from Barbados would also show specimens with the normal three pairs.

The first pair of lobes is normally a little shorter than the second (1, 2, 4), but sometimes (6, 7, 10) this does not appear to be the case. The latter state might seem typical of *cocotis*, as distinguished from *destructor*, but that in Mr. Newstead's figure of *cocotis* the second lobe is slightly the longer.

The median lobes are often indented on the outer side (7, 10, and Mr. Newstead's description of *cocotis*), but frequently they seem entire (2, 3, 6). The former state belongs to *cocotis*, the latter to *fallax* and *destructor*, but I am convinced that the character is not a constant one. The second lobe may also be indented (7).

Plates.—The long serrate plates are practically the same in all the forms. In 2 I counted nine plates anterior to the third lobe, and two between each two adjoining lobes. *A. cocotis* is described as having three between the second and third, and seven or eight beyond.

Anal orifice.—Well away from the hind end, almost as in *nerii*. In Signoret's figure of *destructor* it is rather more posterior than I have seen it.

Grouped glands.—In *fallax* (3) I saw plainly four small groups of "spinnerets," caudolaterals of about seven, anterior laterals of about nine glands. However, in another specimen from the original lot of *fallax*, I failed to see the glands. In *cocotis* from Grenada (7) I made out that the glands were present, but could not see them well; Mr. Newstead found no grouped glands in the types of *cocotis* from Demerara. In 10, which is doubtless *cocotis*, no grouped glands were found; but in 6, from Barbados, they were clearly visible. The original

* The genuine *A. nerii* is unknown in the West Indies. I have lately found it at Las Cruces, New Mexico; and have received it from Guanajuato, Mexico (from Dr. Dugès), in both cases on oleander. I also have it from Europe.

types of *destructor* had four groups of glands, but I fail to see them in 1 or 2. It is, therefore, evident that the grouped glands are sometimes absent, or so obscure as to escape observation.

Wax ducts.—Comstock says of *palmarum*: “between the caudal margin and the groups of spinnerets are isolated spinnerets (wax ducts).” These are also seen in *nerii*, vide Mr. Morgan’s figure, Ent. Mo. Mag., Feb., 1889, pl. iii, fig. 1. They are quite plainly seen in the Grenada *cocotis* (7), and in *destructor* (1, 2).

Striation.—Several species of *Aspidiotus* (notably *ostreaformis*, *perniciosus*, and *punicæ*) show a fine striation of the skin of the terminal portion. This is very plain in *destructor* (1, 2), *cocotis* (7), and *fallax* (3).

Male.—I have only seen the ♂ of 2, 3, and 7. It is yellow and ordinary. The eyes are dark indigo-blue (7), or blue-black (2). The penis-sheath (3, 7) is longer than the abdomen; but in 2 it appeared quite short, doubtless owing to the fact that the only ♂ examined had not yet emerged from the puparium. The wings are of normal length.

Antennæ of ♂.—The antennæ (7) are 10-jointed as usual, the two basal joints short (the second shortest); 4 and 5 equal, and longer than 3; last joint very slender.

Legs of ♂.—Tarsus (7) very bristly, about three-fourths length of tibiæ; claw long and nearly straight; femur about as long as tibia.

Egg.—Pale yellowish (2). In *fallax* the egg seemed unusually elongate.

It would seem from the above that either all these insects belong to one species (as I believe), or else there are more species than the current names indicate. The latter view would be based on the assumption that the exact combination of characters seen in each race is constant, and of specific value, an opinion which seems to me contrary to all reasonable probability. It is true that Mr. Newstead states that there is no resemblance between *destructor* and *cocotis*, but I cannot believe that Mr. Maskell and I have wrongly identified the former species, or that I misunderstand Mr. Newstead’s clear description and characteristic figure of the latter. The species, therefore, must stand as *A. destructor*; unless it can be proved that *destructor* falls before the earlier *palmarum* of Bouché. This would seem almost certain, but for the reddish-yellow exuvix attributed to *palmarum*.

The food-plants, as indicated above, are various. In addition, Mr. Morgan (see Timehri, 1890, p. 370) has recognised *destructor* from Demerara on *Anona reticulata*; and Signoret records the same species as found in Bourbon on the date palm and guava.

Agricultural College,
Las Cruces, New Mexico, U. S. A. :
August 12th, 1893.

[I have carefully examined the specimens of *Aspidiotus destructor*, on banana

(2), sent by Mr. Cockerell, and find them to agree in every way with my *A. cocotis* (vol. iv, p. 186), which I still believe to be distinct from the *A. destructor* of Signoret. The entire absence of grouped glands, and the double row of marginal "wax ducts" or pores in my twenty types of *A. cocotis*, are, I think, sufficient distinctive characters to separate it from *A. destructor*, Sign. It is just possible, however, that Signoret, Cockerell, and myself have examined different stages of one species; if so, it will account for the variation of character noted; but this must be proved beyond doubt before my species can sink.—R. NEWSTEAD: *October 11th, 1893.*

GREASE:

DO MALE MOTHS REQUIRE MORE ENERGY THAN FEMALES?

My best thanks are due to Dr. Richard Freer for his kindly criticism of my paper on the above subject. It is by discussion that the wheat is sifted from the chaff, and the truth revealed. It often happens, too, that side issues crop up of even greater importance than the original topic; and thus are new ideas developed, and fresh channels opened up for thought.

Dr. Freer and I are agreed on many points, but there are one or two on which our opinions widely diverge, the chief of which is the question as to whether males have a greater necessity for energy than females. Dr. F. mentions Messrs. Geddes and Thompson's theory about the "Evolution of Sex" (by nutrition and temperature) as being fatal to mine. It is just about twenty years ago that I penned a few lines on a similar theory (*Ent. Ann.*, 1874, p. 152). Speaking of the more noticeable papers of the season, I wrote as follows:—"but, as Alice would say, the 'curiousest' paper of all is devoted to the subject of controlling the sexes by a process of starvation (the starvelings being males, and the healthy well-fed examples females). When it is taken into consideration that the writer is a lady, the whole affair looks very like a satire on the male sex generally." This article, by Mrs. Mary Treat, which was published in the "*American Naturalist*," vol. vii, p. 129, is endorsed by Messrs. Geddes and Thompson.

Still, though the *theory* is against me, the *facts* are for me. Take the following extract from Messrs. Geddes and Thompson's book, page 16:—"Let us begin with an extreme yet well-known case. The cochineal insect, laden with reserve products, in the form of the well-known pigment, spends much of its life a mere quiescent gall on the cactus plant; the male, on the other hand, in its adult state is agile, restless and short lived. Now, this is no mere curiosity of the entomologist, but in reality a vivid emblem of what is an average truth throughout the world of animals—the preponderating passivity of the females, the predominant activity of the males." Now, the reason of this excessive activity of the males is, to my fancy, a salutary provision for the healthy perpetuation of the species (see my remarks on the subject, *Ent. Ann.*, 1867, page 130).

Very well; activity cannot be kept up without force, nor force without fuel. Whence, then, comes this force? Surely, the answer must be, from the fuel food, of which, all collectors are painfully aware, the freshly emerged males, of vigorously flying species, contain such a superabundance. Dr. Freer has likened moths to man, but a more familiar illustration of both is the steam engine, since each (moth, man

and engine) is a machine for the evolution of force from fuel—the muscles being represented by piston rods (motors), the fat or fuel food by coal (motive power). Perhaps a comparison of migratory birds with their insect analogies would have been more appropriate, for in the latter case the feathered migrants stock themselves well with fuel food before undertaking their arduous flights (see Reports of the British Association Committee, on the migration of birds); and the males beat the females in the race (Harting: “Our Summer Migrants”).

Another point upon which I touched is, that after pairing and oviposition, one of the chief purposes for which energy was stored has been fulfilled, and the vigour of the insects begins to wane. This case bears a resemblance to that of fishes at the time immediately preceding the spawning season, when they are in plump condition; the milts of the males being then so charged with fat, that when thrown upon a fire, they will flare up and burn for a considerable time. After breeding, fish become flaccid and out of condition; with moths it is the same, but having scarcely any recuperative powers, they soon afterwards die.

On other points Dr. Freer and I agree in the main; we both concur in considering that internal feeders, which, as I observed, “live more or less in the dark, secluded from air, and restricted as to movements,” are among the most liable to go greasy, *i. e.*, to stock the largest quantity of fuel food; but these are comparatively only a small proportion of the bulk of “greasers,” a large number of which were disposed of in my suggestion that they stored fat for purposes of hibernation in the larval or perfect state, just as in the case of hibernating vertebrates. How does Dr. Freer account for the tendency to grease in many butterflies, all the Sphinges, most of the Bombyces, besides a large number in each of the other groups of moths, which do *not* spend their larval existence as internal feeders?

Then, of course, we agree that the fat gets out of the cells, but is it always by putrefaction? No doubt this takes place in a damp atmosphere, but, if I may be allowed to say so, there is another way, of still more common occurrence, namely, dessication, by which this result may be effected, and this would happen when the cabinet was kept, and the setting operations conducted, in a comfortably *warm* dry room. Here the cell walls would contract, the contained oleaginous matter would expand, and, as a consequence, the cells would be ruptured.

I quite agree that dryness is the greatest prophylactic against the outward appearance of grease, but it must be accompanied by coolness:—“on a hob” or “in a cool oven” would be “dryness,” but such a position would soon “start the grease.”—H. GUARD KNAGGS, Camden Road, London, N.W.: *February 3rd*, 1894.

Grease in old specimens of Lepidoptera.—Many of the insects of Mr. Gregson’s collection, which were in good order when they came to me five years ago, are now showing signs of grease, and must be treated by one of the modern cures. Some of these must be nearly *fifty years old!* Why they never showed any tendency before, and why it now happens, must probably arise from difference of atmosphere, either between Liverpool and Dover, or the heat of the room in which they have been kept. Mr. Gregson I know is a firm believer in a circulation of air around cabinets, and probably to this the long deferred evil may in great measure be attributed.—SYDNEY WEBB, Maidstone House, Dover: *February 13th*, 1894.

Calocampa vetusta in January.—On January 15th I received a specimen of *Calocampa vetusta* from my friend, Mr. W. J. Hamilton. He had taken it on Jan. 13th on Benbow Mountain, Manor Hamilton, Co. Leitrim. In reply to enquiries he tells me that the moth was wriggling on the heather with its wings closed, and seemed very lazy. The day was very mild, with a south-west breeze. The slight motion made by the moth attracted my friend's attention, and, being a smoker, he had a tin match box to which he consigned the insect, and in which it reached me. Evidently the mildness of the weather made the moth mistake the season.—W. F. JOHNSON, Armagh: *January 25th*, 1894.

Epunda lutulenta, var. *sedii*, in Cumberland.—On August 29th, 1893, I sugared at a place called Red Cat, about two miles south of Carlisle, and obtained *Hadena protea*, *Anchocelis litura*, *Agrotis segetum*, *Phlogophora meticulosa*, and a specimen of *Epunda lutulenta*, var. *sedii*. From that time I sugared the same trees repeatedly (there being no ivy about the place worth speaking of) until October, and though I took *Epunda nigra*, *Noctua glareosa*, many common species, and the ordinary form of *E. lutulenta*, I never saw the var. *sedii* again. A wood lies on one side of the road, and on the other side is a small heath bordered by the row of trees which I sugared. The greater number of the trees are Scotch fir, with a few oak and ash, the undergrowth of the wood consists of birch, willow, mountain ash, &c. The country round about abounds with Scotch fir woods, and heaths and waste land. A Member of our Society (Mr. Gilbertson) tells me that he also has in his possession an insect which exactly resembles my var. *sedii*. He took it at sugar about the year 1890 at Peastraw Wood, near Carlisle; so two specimens of this moth have been obtained in this locality.—F. H. DAY, 6, Cunock Terrace, Carlisle: *February 5th*, 1894.

[I attended an interesting meeting of young entomologists the other evening at Carlisle, and saw Mr. Day's specimen. It is a fine example of the form of *E. lutulenta*, which is of a rich slate-grey with a broad black band. I am not quite sure whether this variety has been obtained elsewhere in England; most of our specimens are from the West of Ireland.—C. G. B.]

Agriotypus armatus, Curtis, in Perthshire.—It may be worth recording the occurrence in Perthshire of this interesting parasite on Trichopterous larvæ. On May 1st last year, while collecting *Perlidae* on the shores of Loch Ard, I noticed that an *Ichneumon* was not uncommon, and on now examining the single example kept, I find it belongs to the above-named species. The identification is based on material kindly sent to me by Professor Klapálek of Prague, who gave a valuable account of the insect's life-history in vol. xxv of this Magazine, pp. 339—343. Curtis's examples came from the Clyde, near Lanark, where they were taken by Walker. I have never seen the species near that river, although it has been a favourite locality of mine for many years. Now that the insect's ways are better known to me, I hope to refind it at or near the original station. This record serves to confirm to some extent a point concerning which Klapálek was in doubt, namely, Holmgren's statement that the species was found on the shores of Swedish lakes. It seems that references to the conditions of water inhabited by various species of

aquatic insects must not always be too rigidly interpreted. For instance, Pictet's remarks about *Perlidae*: "celles qui appartiennent au genre des Perles" (which includes our genera, *Perla*, *Dictyopteryx*, and *Isogenus*) "recherchent exclusivement les eaux courantes" (*Perlides*, p. 17), and "notre lac n'en a point ou presque point" (*id.*, *op. cit.*, p. 20), cannot be applied to some of our Scottish lakes, on the stony shores of which examples of the three genera above alluded to may be found at times in the greatest abundance.—KENNETH J. MORTON, Carlisle, N. B.: *January*, 1894.

Andrena cineraria and *fulva* in the imago state in December.—On December 28th two *Andrena* (*cineraria* ♂ and *fulva* ♀) were brought to me out of Sutton Park; some navvies had been reducing the railway banks, and had turned them up with a number of grubs (pupæ?). The insects were in perfect condition; probably the warm weather at this period had caused them to assume the imago state, possibly also the extraordinary summer had caused them to feed up more rapidly than usual. Mr. Saunders informs me that Mr. Enock once dug up an *Andrena nigroænea* and *Nomada alternata* in December (*cf.* Ent. Mo. Mag., xxi, p. 231). It would be interesting to know if any other entomologist has met with them at such an extraordinary time.—R. C. BRADLEY, Sutton Coldfield: *January 24th*, 1894.

Rare Coleoptera in 1893.—During 1893 I captured the following *Coleoptera*, among many other species:—*Ichnodes sanguinicollis*, Bexley, May 14th; *Bruchus affinis*, Darenth Wood, May 14th; *Phytocia cylindrica*, Dorking, May 28th; *Anthrribus albinus*, Oxted, June 4th; *Telephorus translucidus*, Mickleham, June 8th; *Oodes helopioides*, Wicken Fen, July 23rd; *Dasytes niger*, Winchester, June 18th; *Harpalus discoideus*, Saltwood, Kent, August 24th; *Hippodamia 13-punctata*, Addington Park, Kent, September 3rd; *Molytes germanus*, Addington Park, Kent, September 10th.—HORACE DONISTHORPE, 73, West Cromwell Road, South Kensington: *February 4th*, 1894.

Coleoptera at Maidstone.—Last June I had four or five days' collecting near Maidstone, and met with the following species amongst others:—*Ochthebius exsculptus*, a single specimen in a small stream, clinging to the under-side of a stone, in company with *Elmis æneus*, *Volkmaria*, and *subviolaceus*; *Bolitochara bella*, in fungi; *Lathrobium angustatum*, on the banks of a stream, with plenty of *Calodera longitarsis*; and *Bledius longulus*, a single specimen by the road side near a sand-pit. In the cyanide bottle of a local entomologist I discovered a fine specimen of *Deleaster dichrous*. Evening sweeping produced *Anisotoma calcarata* and *badia*, *Hydnobius strigosus*, *Cyrtusa pauxilla*, *Liodes orbicularis*, *Calyptomerus dubius*, *Proteinus macropterus*, *Throscus dermestoides*, *Gymnetron melanarius*, and *Liosomus oblongulus* (3). By general sweeping I obtained *Campylus linearis*, *Dascillus cervinus*, *Drilus flavescens* (♂), *Anthocomus fasciatus*, *Magdalinus pruni* and *atramentarius*, *Metallites marginatus*, *Liophlæus nubilus*, *Barynotus obscurus*, *Lissodema 4-pustulatum*, *Mordellistena pumila*, *Sitones crinitus*, *Ceuthorrhynchus asperifoliarum* and *campestris*, and *Apion athiops*, *craccæ*, *hydrolapathi*, and *punctigerum*. Special plants yielded several good insects:—from *Reseda luteola* I took a nice series of *Ceuthorrhynchus resedæ*, and plenty of *Phyllotreta nodicornis*; *Xylocleptes bispinus*

was not uncommon in dead stems of clematis; *Melilotus officinalis* furnished me with a small series of *Apion meliloti* and swarms of *A. tenue*, as well as one or two *Tychius meliloti*; *Ochina hederæ* occurred in profusion in an old holly hedge; and *Phytobius comari* was locally abundant on a few plants of the willow herb, in the three stages of larva, pupa and imago. This last-mentioned species forms a loose membraneous cocoon attached to the under-side of the leaf near the midrib, resembling that of *Hypera rumicis* in shape. *Ceuthorrhynchus alliariae* occurred sparingly on the garlic mustard, and I got a few specimens of *C. picitarsis* from *Sisymbrium officinale*.—W. H. BENNETT, 11, George Street, Hastings: Feb., 1894.

Sub-aquatic Curculionidæ in the Hastings district.—During last season I paid a good deal of attention to the sub-aquatic weevils, and met with several not previously recorded from here. On April 9th, when collecting near Camber, I found *Eubrychius velatus* in plenty in a pond, and was much struck with its swimming powers. Previously, I had always found it clinging to the various aquatic plants; but on this occasion all the specimens I saw were swimming briskly about, and were apparently quite as much at home under water as the ordinary water beetles. *Litodactylus leucogaster* occurred at the same time and place, with plenty of *Phytobius notula*, but these, as usual, were found either on the aquatic plants (above the water), or on the margins of the ponds or ditches. Several species of *Bagous* were met with during the season. *B. collignensis** (= *lutulentus*) occurred in some numbers at Camber, near Pevensey, and near Newenden. I also took a fine series of *B. frit** and *B. tempestivus* at Camber, and a few specimens of *B. subcarinatus*. At Guestling, on Easter Monday, I swept a single specimen of *B. lutulosus** in a dry lane. Those marked * have not been previously recorded from the district.—ID.

Species of the Dipterous genus Diastata new to Britain.—I was at Albrighton, near Wolverhampton, on December 26th, 1893, and it being an unusually warm day I set to work to collect *Diptera* by beating *Coniferae*, and was rewarded with *Diastata fumipennis*, Mg., and from the heather thatch of an old summer house I obtained *D. basalis*, Mg. At Deal in July, 1892, I took *D. obscurella*, Fall., and at Pitlochry in August of the same year *D. nebulosa*, Fall., was swept from rushes. I have to thank Mr. Meade for naming the above, all of which, except *D. nebulosa*, are I believe new to Britain.—ALFRED BEAUMONT, 153, Hither Green Lane, Lewisham: January 29th, 1894.

Lygus atomarius, Mey., and other Hemiptera in Ireland.—Amongst my Hemipterous captures of last season there is an example of the above rarity; it was taken during September, in company with *L. rubricatus*, off Conifers, near Lucan, Co. Dublin. Mr. E. Saunders, who has most kindly assisted me in the identification of this and many other species, pronounces it to be undoubtedly *L. atomarius*, hitherto only recorded from one locality in England. The names of a few of the best *Heteroptera* collected during 1893 may prove interesting to those studying the Order. *Ischnorhynchus resedæ* and *Stygnus rusticus*, Enniskerry, Co. Wicklow. In the Dublin district I obtained, amongst many others, the following species:—*Cymus glandicolor*, *Scolopostethus neglectus*, *Gerris argentata*, in Royal Canal; *Salda*

morio, boggy heath, Dublin Mountains, *S. orthochila*, *S. cincta*, *Anthocoris confusus*, frequent; *Nabis flavomarginatus*, undeveloped; *Piezostethus oursitans*, *Phytocoris populi* and *P. longipennis*, *Dichroscytus rufipennis*, local on Conifers; *Dicyphus stachydis*, *Macrotylus Paykulli*, Portmarnock; *Harpocera thoracica*, *Psallus lepidus*, on ash at Portmarnock, and *P. Falleni*. On a short trip to the north during July I took *Gerris Costæ* in a small pool near the top of Slieve Gallion, Co. Armagh, and *Nabis flavomarginatus* near Dundalk.—J. N. HALBERT, 13, Nelson Street, Dublin: February 7th, 1894.

Obituary.

Major-General George Carden, F.E.S., died, after a few days' illness, from the effects of influenza, at Douglas Towers, Bromley, Kent, on Monday, the 12th February last, aged 56. He entered the Army in 1854, as an Ensign in the 77th foot, and served with his regiment in the Crimean War. He subsequently served with the 5th foot (now known as "the Northumberland Fusiliers") during the Indian Mutiny Campaign, and was Lieut.-Colonel commanding the regiment for some years.

Colonel Carden (who was granted a year's service for Lucknow, and was in receipt of a pension for "distinguished service") retired on half-pay in 1882, and received the rank of Major-General in 1887. On retiring from the Army in 1882, he took up his residence in Surbiton, and remained there until he left for Bromley in 1892. He joined the Entomological Society of London in 1890.

General Carden made no pretensions to be a scientific entomologist, but he was a close observer, and an active collector of *Lepidoptera* in various parts of the United Kingdom. His small collection consisted exclusively of insects obtained by himself in the woods and fields, or bred from larvæ which he had collected. During the past six years the writer of this notice made many pleasant excursions with him. In July and August, 1891, the deceased spent his annual holiday of six or seven weeks in South Devon, and obtained a long series of *Callimorpha Hera*, several of which he generously presented to the writer.

He was a good musician, both theoretically and practically. He was also an accomplished artist, and lost no opportunity, when away on his entomological excursions, of sketching and painting the most picturesque scenes amongst which his rambles led him. As a man of business he did good service, after his retirement from the Army up to the time of his death, as Secretary of the Rochester Diocesan Society, and he will be much missed at 49, Parliament Street.

Although apparently a shy, cold, and reserved man amongst strangers, intimate acquaintance proved him to be a kind hearted and genial companion, and his premature death makes a gap in a wide circle of friends which will not easily be filled up. The deceased leaves a widow and nine children to mourn the loss of an affectionate husband and father.—H. Goss.

George Jonalkon Hearder, M.D., died at Carmarthen on January 24th. He had long been Medical Superintendent of the Joint Counties' Asylum in that town, and previously held an analogous appointment at Worcester, where he worked at

British *Lepidoptera* in conjunction with the late Rev. E. Horton; many notes from his pen are to be found in the earlier Vols. of this Magazine. Latterly he had not done so much, but his interest in the subject remained as keen as ever. We believe his collection is for sale.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *January 15th, 1894.*—Mr. R. C. BRADLEY in the Chair.

Mr. G. T. Bethune-Baker showed *Agrotis ravida* from Wicken, and three specimens of *Tapinostola extrema*, Hb. (*concolor*, Gn.), taken near Wicken by Mr. Albert Houghton; Mr. Baker also showed a collection of *Lepidoptera* received from Alexandria; he said that the species showed a mingling of Mediterranean with Indo-Persic forms, there were no true Ethiopian forms amongst them; twenty-two of the species are new to science, and it is perhaps the largest collection of *Lepidoptera* yet received from Egypt. Mr. Bradley showed specimens of *Andrena fulva* and *cineraria*, which had been dug out of nests at Sutton by railway men on Dec. 28th, a date when they should have been pupæ; he had communicated with Mr. Saunders, who said that the only similar case of which he knew was that Mr. Enock had dug up an *Andrena* with a parasitic *Nomada* once in December.

ANNUAL MEETING, *February 5th, 1894.*—Mr. R. C. BRADLEY in the Chair.

Mr. W. Bowate, Portland Road, Edgbaston, was elected a Member.

Reports of the Treasurer and Council of the past year were presented, the former showing a small balance in hand. The Officers and Council for 1894—5 were elected as follows:—President, Mr. G. H. Kenrick; Vice-President, Mr. G. T. Bethune-Baker; Treasurer, Mr. R. C. Bradley; Librarian, Mr. A. H. Martineau; Secretary, Mr. Colbran J. Wainwright, 147, Hall Road, Handsworth; and remaining Members of Council, Messrs. P. W. Abbott and W. Harrison. Mr. P. W. Abbott showed a short series of *Acidalia humiliata* from the Isle of Wight, one of which was taken by himself in 1891, the remainder were sent to him by Mr. A. J. Hodges; he also showed *Caradrina superstes* from Guernsey, and said that a single specimen of that species had been taken at Sandown, Isle of Wight, last autumn by Mr. Prout; also *Hadena dentina* from Sutton and the Isle of Wight—the former a particularly dark specimen, the latter a chalk cliff form, very pale, and quite unlike the dark one in appearance; also a specimen of *Lobophora viretata* from Sutton, very small and pale, without the median bands, and other interesting insects. Mr. A. H. Martineau showed *Myrmica rufa* and *M. sanguinea*, workers only; of the latter species he had found a single nest at Wyre Forest last year. Mr. R. C. Bradley showed *Gonia lateralis* from Trench Woods. Mr. W. Harrison showed *Lycena Argiulus* and *Halias prasinana* from Frankling, near Harborne, &c.—COLBRAN J. WAINWRIGHT, *Hon. Secretary.*

ANNUAL MEETING, *January 25th*, 1893. —J. JENNER WEIR, Esq., F.L.S., President, in the Chair.

The Twenty-First Annual Meeting was held at the Society's Rooms, Hibernia Chambers, London Bridge. The Reports of the Council and Treasurer were adopted. The following gentlemen were then unanimously elected to fill the undermentioned offices for the ensuing year:—President, E. Step; Vice-Presidents, J. Jenner Weir, F.L.S., F.Z.S., F.E.S., &c., and Chas. G. Barrett, F.E.S.; Treasurer, Robt. Adkin, F.E.S., 4, Lingards Road, Lewisham, S.E.; Librarian and Reporting Secretary, H. J. Turner, F.E.S., 13, Drakefell Road, Hatcham, S.E.; Corresponding Secretary, S. Edwards, F.L.S., F.Z.S., F.E.S., &c., Kidbrook Lodge, Blackheath, S.E.; Curator, W. West, 8, Morden Hill, Lewisham Road, S.E.; Council, T. R. Billups, F.E.S., C. A. Briggs, F.E.S., J. H. Carpenter, F. E. Filer, F. W. Frohawk, F.E.S., J. Henderson, and R. South, F.E.S. Mr. J. J. Weir, the retiring President, before delivering his Annual Address, presented a handsome Album to the Society, containing three of his photographs at different ages, and said he hoped that all the Members would contribute their own photos, as such a collection would in the future probably possess great historical value and interest. Votes of thanks to all the Officers for their services during the past year brought the proceedings to a close.—H. WILLIAMS, *Hon. Secretary*.

February 8th, 1894.—E. STEP, Esq., President, in the Chair.

Mr. Carpenter exhibited *Xylophasia monoglypha*, Hufn. (*polyodon*, L.), both the dark and intermediate forms; also a form of *Agrotis cursoria*, Bork., not distinguishable from a southern form of *A. tritici*, all from Aberdeen. Mr. W. F. Warne, a case of nearly two dozen species of *Rhopalocera* taken near Rockhampton in Queensland, representing one morning's captures; they included *Anosia Plezippus* and *Deiopeia pulchella*. Mr. W. A. Pearce, series taken by himself in Alleghany, U. S. A., during 1892—3, of *Pyrameis Atalanta*, L., *P. Huntera*, Fab., *Vanessa Antiopa*, L., *Polygonia interrogationis*, Fab., *P. comma*, Harr. (the two broods), and bred series of *Telea Polyphemus*, L., and *Samia Cecropia*, L.: a discussion ensued as to the singularity of a species like *V. Antiopa* being gregarious in the larval stage, while the imagines were seldom met with in company. Mr. R. Adkin, examples of *Crambus ericellus*, Hb., *C. dumetellus*, Hb., *C. pratellus*, L., *C. myellus*, Hb., *C. pinellus*, L., *C. furcatellus*, Zett., and *C. margaritellus*, Hb., and pointed out characters by which the closely allied species might be easily separated. Mr. Dennis, a specimen of *Vanessa Io*, L., with a small additional ocellus on each secondary, while below the central costal blotch on the primaries was a smaller dark blotch. Mr. H. Williams, specimens of *Pieris brassicae*, L., curiously tinted from contact with liquid ammonia. Mr. J. Jenner Weir, on behalf of Mr. Adye, a specimen of *Plusia moneta*, Fabr., taken at Christchurch in 1893, and a nearly black specimen of *Venilia macularia*, L., from the New Forest; also, on behalf of himself, *Eucheira socialis*, Westw., perhaps the most archaic form of the *Pierine* sub-family extant, and contributed notes. Mr. Frohawk, a bred series of *Argynnis Euphrosyne*, L., which were nearly eleven months in the larval stage. Mr. Billups, on behalf of Mr. Sauzú, a large number of *Diptera* captured in 1893. Mr. Manger, an example of a land crab (*Ocyropa cursor*) from Lagos, which was so nimble as only to be obtained by shooting it.—HENRY J. TURNER, *Hon. Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON: *February 7th*, 1894.—HENRY JOHN ELWES, Esq., F.L.S., President, in the Chair.

The President announced that he had nominated the Rt. Hon. Lord Walsingham, LL.D., F.R.S.; Professor Edward B. Poulton, M.A., F.R.S.; and Colonel Charles Swinhoe, M.A., F.L.S.; Vice-Presidents of the Society for the Session 1894—95.

Mr. Walter F. Baker, of 18, Hyde Terrace, Leeds; Mr. Percy M. Bright, of Rocca-bruna, Bournemouth; Professor Lewis Compton Miall, F.R.S., of the Yorkshire College, Leeds; and Mr. Edwin Wilson, of Cherry Hinton Road, Cambridge; were elected Fellows of the Society.

Mr. Jenner Weir exhibited, on behalf of Mr. J. M. Adye, a specimen of *Plusia moneta*, Fabr., which had been captured at Christchurch, Hants, and remarked that this species, which had been found in this country for the first time so recently as June, 1890, was apparently becoming a permanent resident here, as it had since been taken in several of the southern counties. The food-plant, *Aconitum napellus*, though rare in England as a wild plant, was very common in gardens. Mr. Jenner Weir also exhibited a nearly black specimen of *Venilia macularia*, L., the yellow markings being reduced to a few small dots.

Mr. Hamilton H. Druce exhibited a female specimen of *Hypochrysops scintillans*, lately received by him from Mioko, New Ireland. He said that only the male of this species had been as yet described.

Mr. F. Enock exhibited a nest of the British trap-door spider, *Atypus piceus*, recently found near Hastings by Mrs. Enock.

Mr. W. F. H. Blandford stated that he had recently obtained an additional species of *Scolyto-platypus* from Japan, which, though closely allied to the species he had formerly described, showed a very distinct modification of the male prosternum.

Mr. M. Jacoby exhibited and remarked on a specimen of *Leptispa pygmaea*, Baly, which was doing much injury to sugar cane in the Bombay Presidency of India. Mr. G. C. Champion stated that he had found an allied species on bamboo.

Dr. F. A. Dixey read a paper (which was illustrated by the oxy-hydrogen lantern) entitled, "On the Phylogeny of the *Pierinae* as illustrated by their wing markings and geographical distribution." A long discussion ensued, in which the President, Mr. Osbert Salvin, Mr. Jacoby, Colonel Swinhoe, Mr. Jenner Weir, Mr. Hampson, and Mr. Kenrick took part.

Dr. T. A. Chapman read a paper, entitled, "Some notes on those species of *Micro-Lepidoptera*, allied to *Micropteryx*, whose larvæ are external feeders, and chiefly on the early stages of *Eriocephala calthella*." Mr. Hampson and the President made some remarks on the subject of the paper.

Mr. Hamilton H. Druce read a paper, entitled, "Description of the female of *Hypochrysops scintillans*, Butl."

The Rev. Dr. Walker communicated a paper by Mr. R. H. F. Rippon, entitled, "Description of a variety of *Ornithoptera (Priamoptera) Urvilliana*."—H. Goss and W. W. FOWLER, *Hon. Secretaries*.

SUPPLEMENT TO ANNOTATED LIST OF BRITISH *TACHINIIDÆ*.

BY R. H. MEADE.

Since the completion* of my list or descriptive catalogue of the British *Tachinids*, a few new or undescribed species, and several others not recorded as British, have come under my notice; the capture of a good many so-called rare species in new localities has also been reported to me, and the further study of this difficult family has shown me the propriety of subdividing some of the genera.

The *Tachiniidæ* have lately received a good deal of attention from foreign Dipterists. I may especially mention Messrs. Brauer and von Bergenstamm in Vienna, Mr. Van der Wulp in Holland, and Mr. C. H. Tyler Townsend in America. The researches of both the latter authors have been principally confined to transatlantic species, but the two former have revised the whole family of *Tachiniidæ* with its allies;† their observations applying to both European and exotic species.

Messrs. Brauer and v. Bergenstamm have so revolutionized the whole nomenclature and arrangement of these parasitic flies, that it requires a good deal of study to become acquainted with the system they have adopted. They ignore almost all the previously established genera, and form a much larger number of small groups which are not connected in a chain or linear series, but are more or less independent of each other; their affinities extending in different directions, allying them by one point to one group, and by another to a different one. The arrangement puts me in mind of the fanciful quinary arrangement of insects made many years ago by the late Wm. Sharp McLeay in the "*Horæ Entomologicaæ*."

These authors not only introduce a great number of new generic names, but abandon many of those that have been long in use, thus causing great confusion. The plates accompanying the work, which refer chiefly to the structure of the heads (a great number of which are figured), are very good, and of great value; and the work itself is full of information, and worthy of careful study. A decidedly natural arrangement of these flies is not possible, for the different species are connected with each other by so many links, that it is almost useless to attempt to form a genus of more than a few species that shall not include one or more aberrant ones which connect it with some other; we must, therefore, be content to adopt a more or less artificial classification that will enable the student to identify species with tolerable facility.

* Ent. Mo. Mag., October, 1892. † *Muscaria Schizometopa*, 1889 to 1893.

I will take those genera seriatim to which I have any remarks to make, or fresh species to insert, following the order I adopted in my "Annotated List."

APHRIA, Dsv.

A. ANGUSTIFRONS, Mde.*

Male. Head: forehead slightly prominent, frontalia narrow, central stripe black and wider than the sides, which, like the face, are white with blue-black reflections; fronto-orbital bristles in a single row extending as far as the apex of the second joint of the antennæ; cheeks bare, and divided from the chin by a brown transverse groove; epistome prominent and testaceous; vibrissæ few in number, having one long bristle on each side; facialia with only a few short ciliæ at their lower part; antennæ grey, first joint very short, second about twice as long as broad, third about half as long again as the second, rather dilated and rounded at the end; arista with the second joint a little prolonged, and the third long, slender, a little pubescent, and dilated at the base; proboscis piceous, long, slender, horny, and narrow at the apex; palpi long, filiform, with the points a little dilated and furnished with several long hairs. Thorax black, covered with yellowish-grey pubescence, marked with four longitudinal, moderately wide, black stripes, interrupted at the suture, and having three post-sutural external dorso-central bristles. Scutellum grey. Calyptra large and white. Halteres yellow. Abdomen conico-cylindrical, with first segment narrow and black, second, third, and fourth cinereous, with an irregular interrupted black band on their hind margins; ventral surfaces of the second and third segments somewhat rufous and translucent; dorsum with both discal and marginal setæ. Wings slightly brown, costal spine long, fourth longitudinal vein bent in a curve, apical cross vein curved a little inwards, and ending a little before the apex of the wing, leaving the first posterior cell a little open; outer cross vein rather sinuous, third longitudinal vein with two or three setæ at the base. Legs black, tarsi long, with large pulvilli and long hairs at the end; hind tibiæ with a few long bristles of unequal lengths on their outer sides. Length, 8 mm.

A single specimen of this well marked *Tachinid* was found by the late Mr. Pascoe at Folkestone. This species is rather anomalous, and differs from *A. longirostris*, Mgn. (the only other recorded species), by having the frontalia narrowed in the male, and by the abdomen possessing discal setæ. Messrs. Brauer and v. Bergenstamm would place it in a new genus, which they have named *Rhinotachina*.

DEMOTICUS, Mcq.

I shall confine this genus to the typical species, viz., *D. plebejus*, and introduce a fresh genus, in which *T. frontata*, Bohem., must be placed, together with two other allied species.

BITHIA, Dsv.*

Demoticus, p. Schiner.

Myobia, p. Mgn. et Rnd.

Hystrichoneura, Brauer and Berg.

* Wiener Ent. Zeitung, xi, Jahrg. (Mars, 1892).

* "Histoire Nat. des Diptères des environs de Paris," t. 1, p. 770.

nearly to its apex ; costal spine large ; third longitudinal vein (only) armed with seven or eight setæ, which extend from its base two-thirds of the way to the little cross vein ; legs black. Length, about 6 mm.

I received the specimen which I have described some years ago from Herr Kowarz, labelled a doubtful species of *Demoticus*. I have not met with it in Britain, but have ventured to name and describe it as an interesting addition to the genus. The *Tachina soror* of Zetterstedt must also be included in the genus *Bithia*.

GONIA, Mgn.

In my notice of this genus I omitted to call attention to a valuable paper by Herr Kowarz* on the determination of the species. These are very difficult to discriminate, and it is not easy to find characters by which they may be distinguished from each other ; as Kowarz observes, the relative lengths of the joints of the arista, which have been used for this purpose by some authors are so variable that they cannot be depended upon, so he has selected the number of the spines upon the edges of the abdominal segments as diagnostic characters. He found that in one group of species the hind margin of the first ring has either four or six setæ, while in the other group there are only two.

In arranging the British species I was not able to avail myself of these characters, for at present no *Gonia* found in Britain will fall into the former of these Divisions.

I have differed somewhat from Herr Kowarz in the determination of species, for he considers the *G. trifaria*, Zeller, to be only a variety of *G. capitata*, De Geer, and also makes *G. lateralis*, Zeller, to be identical with *G. ornata*, Mgn. ; the long list of synonymms, which he gives under each of these species, will show what a difference of opinion there has been, and how difficult it is to decide.

G. DIVISA, Mgn.

In May, 1893, the Rev. E. N. Bloomfield sent me two specimens of this rare species, which were captured at Maidstone and Eastbourne.

GERMARIA, Dsv.

G. RUFICEPS, Fln.

In November, 1893, the Rev. E. N. Bloomfield also kindly sent me a specimen of this fly, which had been taken by Mr. Harwood in Essex (near Colchester).

THRYPTOCERA, Mcq.

T. LATIFRONS, Mgn.

Frontal space wide, occupying more than a third of the width of the head ; frontal stripe pale red, rather wider than the sides ; antennæ with the first and second joints rufous, and the third brown ; arista nearly straight, with the second joint about one-fourth of the length of the third ; palpi yellow. Thorax nigrescent, covered with cinereous pubescence, and marked by a pale central stripe and two lateral, subquadrate, rather indistinct spots of a reddish-brown colour. Abdomen short and conical, of a pale bluish-grey colour, covered with brown punctures and

* Wiener Ent. Zeitung, vii, Jahrg. (Jan., 1888).

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Notes on the earlier stages of the Nepticulæ, with a view to their better recognition (<i>continued</i>).— <i>John H. Wood, M.B.</i>	49
Micro-Lepidoptera from Norfolk and Scotland: including an addition to the British List.— <i>Rt. Hon. Lord Walsingham, M.A., F.R.S., &c.</i>	50
<i>Thermobia furnorum</i> , Rovelli, a heat-loving Thysanuran, in London Bakehouses.— <i>R. McLachlan, F.R.S.</i>	52
Wing Expansion in a Butterfly delayed by low temperature.— <i>T. A. Chapman, M.D., F.E.S.</i>	54
<i>Musca (Calliphora) vomitoria</i> in New Zealand.— <i>W. W. Smith</i>	54
What are the specific limits of <i>Aspidiotus destructor</i> , Sign. ?— <i>T. D. A. Cockerell, F.Z.S.</i>	57
Do male moths require more energy than females?— <i>H. Guard Knaggs, M.D., F.L.S.</i>	60
Grease in old specimens of Lepidoptera.— <i>Sydney Webb</i>	61
<i>Calocampa vetusta</i> in January.— <i>Rev. W. F. Johnson M.A., F.E.S.</i>	62
<i>Epunda lutulenta</i> , var. <i>sedi</i> , in Cumberland.— <i>F. H. Day</i>	62
<i>Agriotypus armatus</i> , Curtis, in Perthshire.— <i>Kenneth J. Morton, F.E.S.</i>	62
<i>Andrena cineraria</i> and <i>fulva</i> in the imago state in December.— <i>R. C. Bradley</i> ..	63
Rare Coleoptera in 1893.— <i>H. Donisthorpe, F.E.S.</i>	63
Coleoptera at Maidstone.— <i>W. H. Bennett</i>	63
Sub-aquatic Coleoptera in the Hastings District.— <i>Id.</i>	64
Species of the Dipterous genus <i>Diastata</i> new to Britain.— <i>A. Beaumont, F.E.S.</i>	64
<i>Lygus atomarius</i> , Mey., and other Hemiptera in Ireland.— <i>J. N. Halbert</i>	64
OBITUARY.—Major-General George Carden, F.E.S.— <i>H. Goss, F.L.S.</i>	65
George Jonathon Hearder, M.D.	65
SOCIETIES.—Birmingham Entomological Society	66
South London Entomological, &c., Society	66
Entomological Society of London	68
Supplement to Annotated List of British Tachiniidæ.— <i>R. H. Meade</i>	69

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spots, on which the hairs are seated, and having the hinder margins of the segments darker; it has both discal and marginal setæ. Wings with the base of the third longitudinal vein armed with setæ as far as the little cross vein. Legs setose, yellow, with the upper surfaces of the fore and hind femora grey.

A specimen of this unrecorded British species was captured at Felden by Mr. Piffard, and sent to me for inspection by the Rev. E. N. Bloomfield.

NEÆRA, Dsv. and Rnd.

Gen. ch.—Head: * eyes nude; fronto-orbital setæ double at the back in both sexes; antennæ with third joint between two and three times the length of the second, somewhat dilated and compressed in the middle, with the upper surface straight and apex pointed, and the under surface convex; arista with both first and second joints elongated, and with the third geniculated to the second; facialia ciliated about half way up; wings unarmed, with the exception of two or three setæ at base of the third longitudinal; fourth vein bent in a curve, outer cross vein placed rather nearer to the inner cross one than to the bend of the fourth; first posterior cell nearly or quite closed at the end; abdomen with both discal and marginal setæ.

N. ATRA, Dsv.†

Male, shining black and immaculate, except for a white spot on the shoulders, which, in a certain light, extends partly across the transverse thoracic suture; frontal space narrow, about one-fourth of the width of the head; antennæ black, arista with the third joint bent inwards and forwards in a considerable curve; palpi black; thorax with three external dorso-central bristles behind the suture; abdomen black and glabrous, with the spurs of two white spots on the sides of the second and third segments, they seem the vestiges of transverse bands; alulets white, halteres yellow; legs black, with few spines. Length, about 2 mm.

The only specimen I have seen of this rare little species was taken by Mr. Beaumont at Boxhill, Surrey, in July, 1893.

The fly described by R. Desvoidy was a female, in which he says that the abdomen was quite black.

(To be continued).

A NEW SPECIES OF *ALEURODES*.

BY J. W. DOUGLAS, F.E.S.

ALEURODES SPIRÆÆ.

Adult, ♂ ♀. Head very broad, black. Antennæ pale brown. Eyes large, black, entirely divided by a broad yellow fillet. Rostrum black. Thorax black, the hinder margin of the segments on the sternum pale yellow. Wings pure white: fore-wings just at the place where the median nervure is deflected is a large, transverse, fuscous-grey, widely furcate, spot, of which on the lower limb of the furcation, within the limits of the discoloration, the nervure is deep black; the other limb extends at a similar angle upwards, but has neither nervure nor black line. The lower wings are of exactly the same pattern. The femora are black, pale at the base; tibiæ pale, blackish at base and apex; tarsi with 1st joint yellow, 2nd

* See fig. 90, Brauer and Berg., l. c.

† "Diptères des environs de Paris," t. i, p. 671.

black. Abdomen pale yellow, extremity infuscated more or less; the base beneath with two black spots. Expanse of wings, 3 mm.

Larva, adult (fig. 1). Shining pale yellow, broad oval, the margin not attached

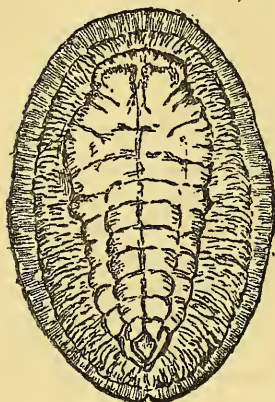


Fig. 1.



Fig. 2.

to the leaf of the food-plant, but distinctly separated, thus the usual waxen fimbriation is wanting; the marginal area rather wide, flat, delicately rayed transversely, the body of the insect adjoining is abruptly and greatly raised; the head very broad and prominent; the segmentation, especially of the abdomen, evident; the body is bordered next the marginal area by a wide zone of transverse, strong, slightly wavy, irregular striation: the profile (fig. 2) shows above the anal orifice a projecting conical

tubercle surmounted by a short hair; and on the top of the abdominal segments a row of six short, blunt tubercles, one on each segment. No hairs. Length, 1 mm.

At the beginning of November last Mr. C. W. Dale sent six of the adult insects recently taken from *Spiræa ulmaria* in Dorsetshire, and one larva found on the under-side of a leaf of the *Spiræa*, a plant not hitherto known to nourish any *Aleurodes*. The imago differs, *inter alia*, from all the species with a single spot on the wings, by having a very broad head, and a conspicuous black line on the nervure within the spot on the lower arm of the furcation on the wings; this is most observable on the under-side. The larva is unlike any of the species with one dark spot on each wing of the imago, described or figured by Signoret in his "Essai sur les Aleurodes;" it resembles *A. quercus* only in having no hairs, but differs essentially in being destitute of the shagreening so conspicuous in that species, which Signoret particularly notes under the term "*ponctué*;" and the pointed ano-dorsal tubercle is a peculiar and special character. The species appears to be undescribed, and to be very distinct.

Mr. Dale also sent six specimens of an *Aleurodes* brushed out of a low-growing elder bush (*Sambucus nigra*) in another locality (Brighton), and which are not to be distinguished from those from the *Spiræa*; I apprehend they were merely sheltering there.

I am indebted to Mr. Ernest F. Tugwell for the excellent and accurate drawings here re-produced.

OLEATE OF COPPER.

BY H. GUARD KNAGGS, M.D., F.L.S.

The error of considering the green cupric salt which forms on the pins of greasy *Lepidoptera* to be verdigris (acetate of copper) seems to be universal among entomologists.

The salt is not verdigris, but a combination of oleic, stearic and margoric acids with copper, which, for convenience sake, we may call the oleate of copper, seeing that the last two acids are in comparatively small quantity. If any one would like to prove it experimentally he has merely to scrape off some of the green salt and drop it into a *very* hot silver or iron spoon, when his nostrils will be assailed with a greasy vapour of an excessively offensive odour. The oleate of copper of the *Materia Medica*, which does not contain the margoric and stearic acids (these having been eliminated by freezing), will yield precisely the same result. But verdigris, if similarly treated, will emit not unpleasant fumes of vinegar, and the operator will probably exclaim "pickles."

Another experiment may be tried by dissolving verdigris in water, first cold then boiling, in a test tube, and adding a solution of carbonate of soda, when a dense precipitate of carbonate of copper will be thrown down. But if we apply this same treatment to the green salt, we shall fail to make the salt mix with, or even tinge, the water; the only result of furious boiling will be to melt the salt, cause it to float as an oil on the surface, and splutter up against, and adhere to, the sides of the tube above high water mark; and carbonate of soda will have no effect upon it whatever. Ordinary oleate of copper behaves in the same manner.

The formation of the green salt probably takes place as follows: the oleic acid is in feeble combination with glycerine, but this it forsakes for metal for which it has a greater affinity. The metal is first oxidized, either by the acid fluids of the insect, by the atmosphere, or by the oleic acid itself, the process being possibly aided by galvanic action set up by contact of acid matter with the copper and zinc of the alloy; and subsequently this salt is formed, the liberated glycerine keeping it company, although released from its chemical combination.

London: *February 2nd*, 1894.

A SECOND HUNDRED NEW BRITISH SPECIES OF DIPTERA.

BY G. H. VERRALL, F.E.S.

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| 1. <i>Cordyla semiflava</i> , Stæg. | 51. <i>Hilara canescens</i> , Ztt. |
| 2. <i>Dynatosoma nigricoxa</i> , Ztt. | 52. <i>Edalea Holmgreni</i> , Ztt. |
| 3. <i>Mycetophila vittipes</i> , Ztt. | 53. <i>Porphyrops penicillata</i> , Lw. |
| 4. <i>luctuosa</i> , Mg. | 54. <i>nasuta</i> , Fln. |
| 5. <i>obscura</i> , Dzied. | 55. <i>Lonchoptera fuscipennis</i> , Boh. |
| 6. <i>Rhymosia cristata</i> , Stæg. | 56. <i>Cephalops villosus</i> , v. Roser. |
| 7. <i>Brachycampta alternans</i> , Winn. | 57. <i>Pipunculus varipes</i> , Mg. |
| 8. <i>serena</i> , Winn. | 58. <i>Paragus lacerus</i> , Lw. |
| 9. <i>amæna</i> , Winn. | 59. <i>Chilosia plumulifera</i> , Lw. |
| 10. <i>hastata</i> , Winn. | 60. <i>Platychirus spathulatus</i> , Rnd. |
| 11. <i>griseicollis</i> , Stæg. | 61. <i>Syrphus arcticus</i> , Ztt. |
| 12. <i>Exechia tenuicornis</i> , v. d. Wulp. | 62. <i>Epicampocera ambulans</i> , Mg. |
| 13. <i>interrupta</i> , Ztt. | 63. <i>Myxexorista macrops</i> , B. & B. |
| 14. <i>spinigera</i> , Winn. | 64. <i>Hyetodesia quadrinotata</i> , Mg. |
| 15. <i>Anatella ciliata</i> , Winn. | 65. <i>boleticola</i> , Rnd. |
| 16. <i>Phronia basalis</i> , Winn. | 66. <i>Spilogaster protuberans</i> , Ztt. |
| 17. <i>cinerascens</i> , Winn. | 67. <i>Hydrotæa dentimana</i> , Mg. |
| 18. <i>forcipula</i> , Winn. | 68. <i>Hylemyia penicillaris</i> , Rnd. |
| 19. <i>crassipes</i> , Winn. | 69. <i>Lispe crassiuscula</i> , Lw. |
| 20. <i>Girschneri</i> , Dzied. | 70. <i>uliginosa</i> , Fln. |
| 21. <i>dubia</i> , Dzied. | 71. <i>pulchella</i> , Lw. |
| 22. <i>flavipes</i> , Winn. | 72. <i>gemina</i> , v. d. Wulp. |
| 23. <i>Platyura semirufa</i> , Mg. | 73. <i>Cordylura umbrosa</i> , Lw. |
| 24. <i>cineta</i> , Winn. | 74. <i>Clidogastra vittata</i> , Mg. |
| 25. <i>nana</i> , Meq. | 75. <i>punctipes</i> , Mg. |
| 26. <i>Macrocera crassicornis</i> , Winn. | 76. <i>tarsæa</i> , Fln. |
| 27. <i>Scatopse pulicaria</i> , Lw. | 77. <i>Stomphastica decora</i> , Lw. |
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| 32. <i>Tanypus lentiginosus</i> , Fries. | 82. <i>simplex</i> , Fln. |
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| 35. <i>griseipennis</i> , v. d. Wulp. | 85. <i>Calobata adusta</i> , Lw. |
| 36. <i>Ceratopogon candidatus</i> , Winn. | 86. <i>trivialis</i> , Lw. |
| 37. <i>unimaculatus</i> , Meq. | 87. <i>Aciura rotundiventris</i> , Fln. |
| 38. <i>rubiginosus</i> , Winn. | 88. <i>Spilographa abrotani</i> , Mg. |
| 39. <i>bicolor</i> , Mg. | 89. <i>Tephritis proboscidea</i> , Lw. |
| 40. <i>albipes</i> , Winn. | 90. <i>Sapromyza flaviventris</i> , Costa. |
| 41. <i>solstitialis</i> , Winn. | 91. <i>biumbrata</i> , Lw. |
| 42. <i>Goniomyia schistacea</i> , Schum. | 92. <i>Sepsis pilipes</i> , Lw. |
| 43. <i>Rhamphomyia flata</i> , Ztt. | 93. <i>Mycetaulus bipunctatus</i> , Fln. |
| 44. <i>costata</i> , Ztt. | 94. <i>Drosophila obscura</i> , Fln. |
| 45. <i>gibba</i> , Fln. | 95. <i>Anthracophaga frontosa</i> , Mg. |
| 46. <i>sciarina</i> , Fln. | 96. <i>Haplegis divergens</i> , Lw. |
| 47. <i>Empis prodromus</i> , Lw. | 97. <i>Chlorops puncticollis</i> , Ztt. |
| 48. <i>brevicornis</i> , Lw. | 98. <i>Cacoxenus indagator</i> , Lw. |
| 49. <i>Pachymyia palparis</i> , Egg. | 99. <i>Milichia ornata</i> , Ztt. |
| 50. <i>Hilara cornicula</i> , Lw. | 100. <i>Phyllomyza securicornis</i> , Fln. |

As *Diptera* are now often sent to me for determination which I have long well known to be British, but which are not recorded in my "List," I think I may as well clear off some about which there can be no reasonable doubt. Of course some may have been included in my "List" under names not yet recognised by me. I have purposely avoided describing any new species in this paper, as I think such species may be dealt with better in a different manner.

1. *Cordyla semiflava*, Stæg.: I am not yet at all satisfied with the species of the genus *Cordyla*, but I consider a specimen caught at Lodore on June 21st, 1889, and one at Dolgelley on June 13th, 1887, to be clearly this species. *C. flaviceps*, Stæg., may also be confirmed as a British species from Tuddenham on September 16th, 1891.

2. *Dynatosoma nigricoxa*, Ztt.: this well marked species occurred at Lodore on June 21st, 1889 (1 ♂, 1 ♀), and Mr. G. C. Bignell gave me a female caught at Cornwood on October 29th, 1890.

3. *Mycetophila vittipes*, Ztt.: out of the numerous species in this genus not yet recorded as British, I select three which seem to be beyond doubt. *M. vittipes* has occurred at Lodore on June 21st, 1889, Colwich on June 8th and 15th, 1889, and at Three Bridges, Sussex, on August 1st, 1889. *M. lineola*, Mg., may be confirmed as a somewhat common species, occurring from Lewes to Rydal.

4. *M. luctuosa*, Mg.: caught in my garden on January 29th, 1887 (1 ♀), and on September 18th, 1888 (1 ♂).

5. *M. obscura*, Dzied.: out of the numerous species so minutely and carefully worked out by Dziedzicki, I consider this one undoubtedly occurred at Tuddenham near here on September 16th, 1891.

6. *Rhymosia cristata*, Stæg.: this strongly marked species occurred at Inveran on July 14th and 15th, 1886. *Allodia ornaticollis*, Mg., and *A. crassicornis*, Stan., may be confirmed as common British species.

7. *Brachycampta alternans*, Winn.: when I published my "List" I knew the genus occurred in Britain, and consequently I included it with a doubtful species; the species (*B. bicolor*, Meq.) may now be confirmed as occurring in my garden, and also at Llangollen, and in addition to it about half a dozen more species occur in Britain. To distinguish these a most minute examination of the male appendages is necessary, but the distinctions are most pronounced and conclusive. *B. alternans* has occasionally occurred in my garden in June and November.

8. *B. serena*, Winn.: this species also has occurred in my garden, and in the other end of this parish of Exning, besides some doubtful female specimens from Three Bridges and Bettws-y-Coed. Although I cannot positively separate the females in this genus, I can form a somewhat strong opinion as to the species which they represent.

9. *B. amœna*, Winn.: apparently a common species in June and July, at any rate about the Lake District and North Wales, and also occurring at Lyndhurst.

10. *B. hastata*, Winn.: a very well marked species, of which two males were caught by me at Wyre Forest on September 4th, 1892.

11. *B. griseicollis*, Stæg.: another species apparently common from July to October in my garden, and at Dolgelley.

12. *Exechia tenuicornis*, v. d. Wulp: an undoubted male at Wyre Forest on September 4th, 1892, besides several females.

13. *E. interrupta*, Ztt.: this species occurs in my garden in September.

14. *E. spinigera*, Winn.: specimens of what I believe to be this species have been caught by me more than once in my garden, and also at Rydal on June 19th, 1889.

15. *Anatella ciliata*, Winn.: I think there can be no doubt but that I caught a male of this species at Dolgelley on July 26th, 1888.

16. *Phronia basalis*, Winn.: when I published my "List" I believed at least a dozen species of this genus occurred in Britain, but I could not identify them; of the two I accepted then I now know nothing more about *P. nitidiventris*, v. d. Wulp, while *P. austriaca*, Winn., although correctly identified by me, is only the female of *P. signata*, Winn., which has occurred abundantly at Inveran and Bettws-y-Coed. I believe I now possess at least eighteen species of the genus, and with considerable confidence I introduce seven as British, of which *P. basalis* is the first; this seems to me an unmistakable species, which I caught freely at Dolgelley in June and July, and also at Lyndhurst.

17. *P. cinerascens*, Winn.: abundant at Lodore on June 21st, 1889.

18. *P. forcipula*, Winn.: common from Plymouth to Inveran.

19. *P. crassipes*, Winn.: common at Colwich in June, 1889.

20. *P. Girschneri*, Dzied.: I cannot doubt but that I have caught this remarkable species in my garden on September 18th, 1888, and also at Dolgelley on July 25th, 1888.

21. *P. dubia*, Dzied. : at Colwich in June, 1889.
22. *P. flavipes*, Winn. : the Lake District and Bettws-y-Coed in June. The *Polylepta* sp. ? of my "List" is *P. splendida*, Winn., which has occurred at Lodore, Bettws-y-Coed and Wyre Forest.
23. *Platyura semirufa*, Mg. : Whitsand Bay, Plymouth, on September 3rd, 1888.
24. *P. cincta*, Winn. : Ormesby, June 27th, 1888, and also somewhere in Surrey on June 1st, 1892.
25. *P. nana*, Mcq. : in my garden in May and June, also at Lymington and Three Bridges in June. I have never yet obtained any species of *Platyura* in abundance.
26. *Macrocera crassicornis*, Winn. : a common species, allied to *M. fasciata*, occurring from Helston in Cornwall to Lodore.
27. *Scatopse pulicaria*, Lw. : I caught a pair at Colwich on June 15th, 1889, and found it abundant at Helston on May 5th, 1890.
28. *Simulium ornatum*, Mg. : the genus *Simulium* is in most urgent need of a Monograph, but a few species can be recognised if great care be exercised. I think *S. ornatum* is not uncommon from Sussex to Rannoch.
29. *S. latipes*, Mg. : this also seems to me a good species, imperfectly understood by Schiner, which I caught at Lagg in Arran on June 18th, 1882, and at Helston on May 11th, 1890.
30. *S. nanum*, Ztt. : Rannoch, Colwich and Tuddenham.
31. *Cricotopus pilitarsis*, Ztt. : in the *Chironomidæ* I possess a very large number of species which I cannot yet identify, but this species occurred in thousands at Slapton Lea early in September.
32. *Tanypus lentiginosus*, Fries : a handsome well marked species, not uncommon from Plymouth to Inveran.
33. *T. ornatus*, Mg. : a most exquisitely beautiful species, of which I caught one male at Colwich on June 6th, 1889.
34. *T. trifascipennis*, Ztt. : a handsome, conspicuous species, which has occurred abundantly at Dovedale, Wyre Forest, Colwich, Three Bridges, and Slapton Lea.
35. *T. griseipennis*, v. d. Wulp : a very common species at Slapton Lea and at Colwich.

(To be continued).

LITA INSTABILELLA, DGL., AND ITS NEAREST BRITISH ALLIES.

BY EUSTACE R. BANKES, M.A., F.E.S.

Our knowledge of the group of *Gelechiæ*, including *G. instabilella*, Dgl., and its allies, which belong to the well-accepted genus *Lita*, Tr., has long been in confusion, but much new information acquired by different workers has now become available, and, after careful study and comparison of types, the complicated synonymy may be cleared up. The process by which the following deductions have been arrived at, and the evidence on which they are founded, will be more easily followed if I commence this paper by giving some at least of the references under which the seven species here dealt with are alluded to. Unless otherwise stated, the facts recorded concern their known habits and distribution in the British Isles only.

1. LITA SALICORNIAE, Hering.

Lita salicorniae, Hrg., Stett. Ent. Zeit., L, pp. 302—5 (1889); Rehn., Ent. Mo. Mag., 2nd series, IV, pp. 243—8 (1893).

= *Gelechia instabilella*, Stn., I. B. Lep. Tin., p. 126 (*larva*) (1854); Ent. Mo. Mag., XIX, pp. 251—3 (*partim*) (1883); Shield, Prac. Hints, p. 149 (*partim*), p. 160 (*partim*) (1856).

= *Gelechia ocellatella*, Threlfall, Ent. Mo. Mag., XV, p. 89 (1878).

Larva—in and on leaves of *Aster tripolium*, V, VI, VII, VIII; *Spergularia media*, *Salicornia herbacea*, and *Suaeda maritima* (= *Chenopodium maritimum*), VII, VIII. The last two plants, being annuals, are not available as food for the early broods.

Pupæ—in cocoon of silk, mixed with mud, on surface of soil,* V—IX.

Imago—VI—IX. In Germany it has been taken from the middle of May onwards.

Broods—two or more, apparently in succession. Probably hibernates as imago, though evidence is wanting.†

Hab.: ENGLAND—Dorset, I. of Wight, Sussex, Kent, Essex, Durham, Lancashire; widely distributed and locally common on the sea-coast, and in salt-marshes. GERMANY—Erdeborn, near Eisleben, in Prussian Saxony, and Artern in Thuringia, where it occurs amongst, and has been bred from, *Salicornia herbacea* at inland salt-lakes.

* Herr W. Martini, finding that his larvæ in confinement spun up on the gauze over the jar, and not in the soil, was led to suppose that their natural habit is to spin up above the ground, but this is not the case in England, and he himself mentions it as "remarkable" that he only found two pupæ when searching among the food-plant in the open (S. E. Z., l. c.).

† Major Hering suggests (S. E. Z., l. c.) that it hibernates as "half-grown or full-grown larva," but this seems to me improbable as regards England, and unlikely anywhere. In Germany it has been found on *S. herbacea* only, but I scarcely see how it could hibernate "half-grown," on that plant which, being an annual, is not available as food in the spring. It would surprise me to find that any one of these *Litæ* hibernates as a "full-grown" larva.

2. LITA INSTABILELLA, Dgl.

Anacampsis instabilella, Dgl., Zool., IV, p. 1270, p. 1268, fig. 10 (1846).

= *Gelechia instabilella*, Dgl., Trans. Ent. Soc. Lond., V, p. 201 (*partim*) (1849); Stn., I. B. Lep. Tin., p. 126 (*partim*) (1854); Ent. Ann., 1855, p. 84; Man., II, p. 340 (*partim: nec larva*) (1859); Ent. Mo. Mag., XIX, pp. 251—3 (*partim*) (1883).

= *Lita instabilella*, Rehn., Ent. Mo. Mag., 2nd series, IV, pp. 242—8 (1893).

Larva—in leaves of *Atriplex portulacaoides*, III—IV (probably IX—IV); although full-fed by the middle or end of April (quite a month earlier than *suadella*, even when both occur on the same spot), the larva, after spinning up, lies for weeks unchanged in its cocoon!

Pupa—in cocoon of silk and mud on surface of soil, V—VI.

Imago—VI—VII.

Brood—one. Probably hibernates as young larva, since its food-plant is evergreen.

Hab.: ENGLAND—Dorset, Sussex, Essex, &c.; generally to be found where its food-plant grows freely.

3. LITA OCELLATELLA, Stn.*

Gelechia ocellatella, Stn., Ent. Ann., 1859, pp. 151—2; Man., II, p. 340 (1859); Barrett, Ent. Mo. Mag., XVI, pp. 261—2 (1880); Bankes, Ent. Mo. Mag., 2nd Series, II, pp. 48—9 (1891).

= *Gelechia instabilella*, Stn., Ent. Mo. Mag., XIX, pp. 252—3 (*partim*) (1883).

= *Lita ocellatella*, Rehn., Ent. Mo. Mag., 2nd Series, IV, pp. 242—7 (1893).

Larva—in shoots, leaves, and flowers of *Beta maritima*, IV—V (probably X—V), VI—VIII. (In Ent. Mo. Mag., XV, p. 89, Mr. Threlfall records *Aster tripolium* as a food-plant of "*ocellatella*;" but knowing *L. salicorniæ* to be the only British *Lita* on *A. tripolium*, I asked for a sight of the bred moths, and found them to be that species.)

Pupa—in slight cocoon of silk, often mixed with earth, on surface of soil, or among dead leaves, &c., V—VI, VII—IX.

Imago—VI—VII, VIII—IX.

Broods—two. Probably hibernates as young larva, since its food-plant is evergreen.

Hab.: ENGLAND—Cornwall, Dorset, Kent; widely distributed along the south coast, but Messrs. W. H. B. Fletcher and A. C. Vine have failed to find it in Sussex. WALES—Pembrokeshire. SCILLY ISLES. MADEIRA ISLES—Porto Sancto.

4. LITA SUÆDELLA, Richardson.

Lita suadella, Rehn., Ent. Mo. Mag., 2nd Series, IV, pp. 241—8 (1893).

= *Gelechia instabilella*, Stn., Ent. Mo. Mag., XIX, pp. 252—3 (*partim*) (1883).

* *Ocellatella*, Stn., n. syn., = *horticolella*, Rssl., Verz. Schm. Nassau, 240—1 (1866); Hein., Schm. Deutsch. Tin., 249 (1870); Stgr. and Wk., Cat. Lep. Eur., No. 1918 (1871). I received only last week from M. Ragonot two specimens of *Lita horticolella* from Wiesbaden, labelled "type Rössler," these are undoubtedly *ocellatella*, Stn., and agree with Rössler's description.—WLSM.

Larva—in shoots of *Suaeda fruticosa*, V—VI; once only (if a solitary larva may be excepted) on *S. maritima*, VIII e (*teste*, N. M. Rehn.). Mr. Richardson once found the larvæ rather plentiful on *S. maritima*, near Weymouth, on August 31st, perhaps half a mile or so from any *S. fruticosa*, but probably its natural food-plant had disappeared, or some stray specimens had been driven to adopt the new one. Mr. Richardson observes that *S. maritima*, being an annual, cannot be available for food in May, so that a July brood from it is impossible; on the other hand, I have no evidence of any other than a July brood from *S. fruticosa*.

Pupa—in thin, but exceptionally tough, cocoon of silk, often coated with mud, on surface of soil, V e—VII; once about IX or IX—IV (*teste* N. M. Rehn.).

Imago—VI e—VII; once about IX—X or IV (*teste* N. M. Rehn.).

Brood—one; see above remarks. The moths probably hibernate, or deposit their eggs, in the autumn, but evidence is wanting. The history of the June—July brood alone is well known. Mr. Richardson has recorded a single instance in which he met with larvæ on *S. maritima* in August, in Dorset, and found the bred moths dead and stiff in the following May.

Hab.: ENGLAND—Dorset, Essex, Norfolk, and Lancashire (*teste* J. B. Hodgkinson); only found, with the exception of the single instance mentioned above, in the actual spots where its natural and very local food-plant, *S. fruticosa*, grows freely.

5. LITA PLANTAGINELLA, Stn.

Gelechia plantaginella, Stn., Ent. Mo. Mag., XIX, p. 253 (1883).

= *Gelechia instabilella*, Dgl., Trans. Ent. Soc. Lond., V, p. 201 (*partim*) (1849); Stn., I. B. Lep. Tin., p. 126 (*partim*) (1854); Ent. Ann., 1856, p. 52; Man., II, p. 340 (*partim*) (1859); Ent. Mo. Mag., XIX, p. 252 (*partim*) (1883); Shield, Prac. Hints, p. 128, p. 149 (*partim*), p. 160 (*partim*) (1856); Threlfall, Ent. Mo. Mag., XV, p. 89 (1878).

= *Lita plantaginella*, Rehn., Ent. Mo. Mag., 2nd Series, IV, pp. 242—6 (1893).

Larva—in rootstocks of *Plantago coronopus*, *P. maritima* (*teste* R. Shield and J. H. Threlfall), and occasionally of *P. lanceolata* (*teste* N. M. Rehn.); apparently sometimes mining the leaves when very young. IV—V, VII—VIII.

Pupa—inside burrow in rootstock, V—VII, VIII.

Imago—VI—VII, VIII—IX.

Broods—two, regularly, according to Mr. Richardson's experience. Mr. W. H. B. Fletcher and myself have only, as yet, met with larvæ of the earlier one.

Hab.: GREAT BRITAIN; generally distributed all round the coast-lines, and in salt-marshes, and occurring as far north as the Shetland Isles. IRELAND—Dublin, Co. Derry.

In Ent. Ann., 1856, p. 52, Mr. Stainton states that Mr. Shield bred "*Gelechia instabilella*" from "larvæ found early in April, near Dublin, mining the leaves of *Plantago maritima*," and in Ent. Mo. Mag., XIX, p. 252, he refers this insect, which he there distinctly says Shield "bred from the leaves," to the species that he proceeds to describe as *plantaginella*. In his collection of coloured drawings is the one by Mr. Wing (alluded to in Ent. Mo. Mag., l. c.) of these Dublin larvæ; it is numbered $\frac{2}{35}$, and represents a plant of *P. maritima*, with two mined leaves,

each containing a larva, without detail and apparently young, with an enlarged figure of one, apparently well-grown, beneath.

Mr. C. G. Barrett, who knew the district well in 1860, doubts the occurrence of *P. maritima* in the actual spot indicated by Shield ("Prac. Hints," pp. 122—3, 128 [1856]) as the locality for "*G. instabilella*," and Hooker omits Ireland in mentioning its distribution in his "Student's Flora," 3rd edition, p. 289 (1884), but as I learn on good authority that it appears to be common and generally distributed in Ireland, both on rocky coasts and mountains, and it is a known food-plant of *plantaginella*, I cannot question the published identification.

It is contrary to modern experience, and seems incredible, that *plantaginella* should ever be "bred from the leaves," but, after weighing all the available evidence, I have no doubt whatever that Shield's *Lita* was really that species, although I have failed to trace any of his bred moths. For Shield states ("Prac. Hints," p. 149), almost certainly on his own authority, that the larva of "*G. instabilella*" "mines the leaves OR BORES INTO THE STEM" of *P. maritima*,* and the words in capitals, nowhere alluded to by Mr. Stainton, describe the characteristic habit of *plantaginella*; to this day no other British *Lita* is known to feed on any species of plantain; the locality described by Shield ("Prac. Hints," l. c.), would suit *plantaginella* well; the magnified figure of the larva agrees exactly with the larva of *plantaginella*; the description of the larva of "*instabilella*" in the "Manual" agrees in all points with the figure (from which it was, in fact, most probably taken), and Mr. Stainton tells us (Ent. Mo. Mag., XIX, p. 253) that the description in the "Manual" is really that of the larva of *plantaginella*.

Further evidence would be desirable as to whether the newly hatched larva actually mines the leaves as stated by Shield, but not noticed by any other observer, and on this point I can only add that I have occasionally observed empty mines, apparently Lepidopterous, in leaves of tenanted plants of *P. coronopus*, and if the egg is ever laid on the leaf this would account for Shield's statement, although not for Stainton's.

6. LITA ATRIPLICELLA, F. v. R.

Lita atriplicella, F. v. R., 223, pl. 78 (1839); Zell.; Dup. (?)†; Dgl.; Stn.; H.-S.; Frey; Hein.

Larva—in silken gallery among, and feeding on, young leaves, flowers, and seeds of various species of *Atriplex* and *Chenopodium*, as well as of *Suaeda maritima* and *Salicornia radicans*.

Pupa—in slight silken cocoon among dead leaves, in honey-combed flints, &c., VI—IX, X—V.

Imago—V—IX.

Broods—two or more, apparently a succession; hibernates as pupa.

Hab.: ENGLAND; widely and pretty generally distributed; apt to attach itself specially to only *one* of its food-plants in any given locality.

* Shield adds: "This larva also feeds on * * * *Chenopodium maritimum*," and says, on p. 160: "while among *Chenopodium maritimum* [and *Plantago maritima*] we may find * * * *Gelechia instabilella*." Both remarks are broadly general, the former of England, the latter of the British Isles, and are doubtless founded on the fact, recorded two years previously in the I. B. Lep. Tin., that Mr. Douglas had bred so-called "*instabilella*" from larvæ on *Chen. maritimum*. These larvæ were *L. salicornia*.

† The original drawing of *atriplicella*, Dp., Sppl., IV, LXXIII, 7, confirms this identification.—WLSM.

NOTE ON *THERMOBIA FURNORUM*, ROVELLI.

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

About two years ago Mr. W. Bateson, of St. John's College, brought me two specimens of a *Lepisma* from a bakehouse here, which I thought were different from *L. saccharina*, and which reminded me of Oudemans' figure of *Thermophila furnorum* which I had recently seen; the specimens, however, were not adult, and were in bad condition, so that I could only say that I thought it was a form that had not previously been recognised in England, and that I should like to see other examples. No more, however, have been forthcoming until three days ago, when a large number of specimens of various sizes were brought to me, having been caught in a bakehouse here. These specimens quite confirm Mr. McLachlan's opinion expressed in the last number of this Magazine, that we have in England this interesting *Thysanuran*, which must be called *Thermobia furnorum* at present. The mottling with coloured scales is very characteristic, but varies greatly, as the scales are shed with great facility, though, according to Oudemans, they are renewed at the next moult.

Mr. McLachlan's paper refers to all the sources of information as to the insect so far as I am aware, and Oudemans' paper is so very good, though brief, that casual observation does not allow me to add anything to it. There is, however, one point in the external anatomy of *Thermobia* and *Lepisma* of a very unusual nature, and which, so far as I know, has been alluded to only by Oudemans in *Bijd. tot de Dierkunde*, Af. 16, p. 157, and by him only in a few words. This is the peculiar folds or plates formed by the three sterna. In these *Thysanura* all the coxæ are large, and form a shield to the under-surface of the body, as they do in the common cockroach, but instead of being quite free as in the cockroaches, they are, in these *Thysanura*, controlled by a large flap of the sternum; this flap has only a small point of connection with the extremely delicate integument of the body; its outer surface is quite covered with scales, and its margins ciliated, so that it forms a beautiful object under the microscope. The only structures that I can recall at all similar to it in arrangement are the peculiar abdominal plates of *Haliplidæ*. It would, however, be possible to suggest an analogy with the patagia of *Lepidoptera*. In all these cases the structure consists of a flap with a comparatively small attachment to the body. I believe the use of these peculiar structures in all the three cases I have mentioned is unknown.

Cambridge: *March 8th*, 1894.

[I shall be glad of further information as to the distribution of *Thermobia furnorum* in this country or on the Continent.—R. MCLACHLAN].

THERMOBIA FURNORUM, ROVELLI, AND *LEPISMODES INQUILINA*,
NEWMAN.

BY ROBERT McLACHLAN, F.R.S., &c.

Mr. C. O. Waterhouse has just sent me the following note:—
“When I was at Hastings in 1877, packing Dr. Bowerbank’s collection of sponges, I came across a slip of paper, evidently in Newman’s handwriting, with a rough sketch; it is as follows:—‘In a bottle. *Lepismodes inquilinus*, four specimens, the *fringe* will at once distinguish it from *Lepisma saccharina*.’ This slip I pinned in the drawer of *Lepismæ* (in the Brit. Mus.). I did not get the bottle.” The *fringe* shown in the sketch (on the sides of the body) points to the suspected identity of Newman’s insect with that now under consideration. But even if the identity be proved, it is still a very open question as to whether Newman’s name can be adopted. It would, however, have a bearing on the time the species has existed here, and on the possible origin of the insect in view of the probability of Packard’s species being the same. And here I would call attention especially to *Lepisma parisiensis*, Nicolet, Ann. Soc. Ent. Fr., 1847 (*cf.* Lubbock, *Collembola* and *Thysanura*, p. 221), found in houses in Paris. The description, in some respects, points to identity with our insect.

Lewisham, London :
March 20th, 1894.

The Entomology of a London Bakehouse.—As it is not often we see a record of insect-collecting in bakehouses, perhaps a list of my captures in a place of this kind at Hoxton may not be uninteresting, and as beetles were the most numerous in species and individuals, I will begin with them.

Coleoptera.—*Sphodrus leucophthalmus*, one specimen running over the lid of the kneading trough. *Pristonychus terricola*, one amongst some old lumber. *Tenebrioides mauritanicus*, mostly obtained by breaking up the dry pieces of dough which had accumulated under the troughs, not very common. *Anobium paniceum*, amongst the flour and dust under the troughs and under the sacks of flour, only a few. *Blaps mucronata*, under the troughs and amongst the coals, not common. *Gnathocerus cornutus*, under the troughs, fairly common. *Palorus depressus* and *Hypophlæus bicolor*, under the ovens, amongst the cinders, flour and dust (the floor of the bakehouse was the ground, and as it dried about the oven’s mouth crevices were formed, most of the last named species being found in these crevices), not common. *Alphitobius diaperinus* and *A. piceus*, very common, under the troughs, under the fireplace, up over the ovens, and in the crevices of the walls; although so nearly related, they are very unfriendly, as they were seldom found together; *piceus* seems most partial to the heat. *Tenebrio obscurus* and *T. molitor*, under the troughs, not common. Though beetles were so plentiful, larvæ were scarce, and pupæ still scarcer; from the larvæ I took I bred a few *Tenebrio*.

Orthoptera.—The most noticeable insect here was *Periplaneta americana*; the smell of these insects was very strong from the top of the stairs leading to the bakery, and even in the shop; they appeared to take no alarm from footsteps, but as soon as the light was turned up (I always went at night) they could be seen and heard scampering away to their hiding places; after a while they recover their fright and venture out, and will soon be seen in great numbers crawling over the white-washed walls, the floor, under the ovens, over the troughs, and in fact everywhere, and in various stages of development—now and then a white individual was seen, having just moulted, and amongst the females some were carrying their egg cases. They being so very quick I could only get them by dashing them off the walls into a pail of hot water. Their relatives, *Acheta domestica*, were not very numerous; I captured them in the same way as the last named.

Lepidoptera were represented by *Ephestia Kühniella*, two specimens only. *Diptera* by *Musca domestica*, swarming even in winter. In *Aphaniptera*, *Pulex irritans* was much too common for the comfort of the bakers.

The *Thysanura* were represented by *Thermobia furnorum*, these swarmed around the oven's mouth where the bread was baking and under the ovens. As it is such a great lover of heat, the bakers call them "fire brats." Though flour seems to be their general food, they are notorious cannibals, for so soon as one of their number is killed, a great struggle ensues amongst them for which shall have the greatest share of the body. Perfect specimens are somewhat rare, and these are much diminished in setting as they are so fragile. It seems this has not been added to the British list with certainty before.

Although it is three years since I collected these insects, I have not been able to complete my list until now, owing to the difficulty of getting the *Thysanuran* named, and I am now indebted to the kindness of Mr. McLachlan for helping me out of my difficulty.—F. MILTON, 184, Stamford Hill, N.: March 15th, 1894.

"*Liste des Anthicidæ*," par M. Pic.—In the *Annales de la Société Entomologique de Belgique*, 1894, pp. 43—59, M. Pic gives a list of *Anthicidæ* described since the publication of the Munich Catalogue, that is to say, from the years 1870—1893 inclusive. In this list one of the very few recently proposed genera is omitted, viz., *Holcopyge*, Champ. [*Ent. Mo. Mag.* (2), i, p. 292 (1890)], with its two species, *H. pallidicornis*, Champ., from Colombia (*loc. cit.*, p. 292), and *H. meridionalis*, Champ., from Venezuela (*op. cit.*, p. 293). Moreover, M. Pic in the same paper (p. 59) describes *H. pallidicornis* under the name of *Tomoderus sydmænideus* (*sic*), he overlooking the sulcate pygidium; the insect, as he states, is very like *T. scydmanoides*, Reitt., from the Caucasus. *Anthicus salinus*, Crotch, is renamed *A. Crotchi*, and *A. scoticus*, Rye, is quoted as *A. scoticus*, Ray! The reference to *Notoxus dendroides*, Horn (*Trans. Am. Ent. Soc.*, xv, p. 47), is altogether a mistake, no such species having been described by Dr. Horn. The total number of additions is given as 414, this number including many species of Desbrochers and Marseul which are not mentioned in the Zoological Records, and others omitted from the Munich Catalogue, as those from Australia described by King. To this number, in addition to the two species of *Holcopyge* above mentioned, may be added *Anthicus Wollastoni*, F. Waterh., *Journ. Linn. Soc.*, Zool., xiv, p. 532 (1879), from St. Helena, the name *Wollastoni*, however, being long pre-occupied in the

same genus (King, 1869); and the following species of *Cotes*—*distincta*, *dorsata*, *optima*, *proxima*, *punctata*, and *rufa*, Broun [Man. New Zeal. Col., pp. 1165—1167 (1893)]. It is to be regretted that M. Pic, who has lately paid a good deal of attention to this interesting Family of *Coleoptera*, has considered it necessary to describe so many new species in obscure ephemeral unobtainable publications,* and that he has not been able to find better specific names than *sutura-depressa*, *fortiter-punctatus*, *pygidiolongus*, *scutelloniger*, &c. I would also here enter my protest against the wholesale naming of trivial varieties (upwards of twenty varietal names having been proposed by M. Pic in *Anthicus* alone), the study of these insects not being facilitated by a trinomial system of nomenclature. The list contains a large number of typographical errors, and references to all published figures are omitted. The number of species of *Anthicidæ* enumerated in the Munich Catalogue is 424, the additional 414 of M. Pic's list making a total of 838 species.—G. C. CHAMPION, Horsell, Woking: *March 6th*, 1894.

Aleurodes rubicola, Doug.—Yesterday I visited the restricted locality on Blackheath adjacent which is affected by these insects, and about the bases of the bare stems of the blackberry bushes saw a multitude of their larvæ (or now perhaps become pupæ) tightly adherent to the under-side of the fallen leaves. These had been hustled about during the winter, some turned upside down, some very wet, others very dry and broken, but the *Aleurodes* maintained their hold. Against the dark background of the leaves their pale yellow colour rendered them very conspicuous, yet they had no enemies, for neither birds, mice, parasites, nor other creatures had molested them. Nature had protected them, and unharmed they await the advent of June, then to expand their white, spotless, moth-like wings for the brief culminating stage of their existence.—J. W. DOUGLAS, 153, Lewisham Road, S.E.: *March 13th*, 1894.

Coccids associated with ants.—With reference to Mr. W. W. Smith's articles on this subject (Vol. iii, 2nd series, pp. 60, 307) it may be of interest to state that at the end of May last year I found *Pseudococcus aceris* among ants (*Lasius fuliginosus*). At that time I had collected on lime trees, eggs of the *Pseudococcus* which had been laid in waxen secretion (and afterwards became larvæ) and females nearly all infested with parasitic *Hymenoptera*. The greater, therefore, was my surprise when I afterwards found on detached pieces of bark in the ants' runs three large healthy ♀ of the above-mentioned species, well filled with eggs, but they had no waxen threads attached to them; they were surrounded and caressed by the ants. Had they been dragged in by the ants, or had they strayed into the runs and there met with friendly treatment? Yet it is certain that their residence there was not unfavourable to them, and that they had met with no small enemies.—KAREL SULC, Zoolog. Institut, Prague: *March 1st*, 1894.

Why are large Perlidæ resident in Scotch but not in Swiss lakes?—At p. 63 of the present volume Mr. K. J. Morton remarks that some of the larger *Perlidæ*, which in Switzerland live almost exclusively in running water, inhabit stony shores of lakes in Scotland. May not this be accounted for by a difference in the average *maximum* summer temperature of lake-shore waters in the two countries, in neigh-

* A large number of names quoted by M. Pic as published in 1892 are not to be found in the *Zoological Record* for that year!

bourhoods where *Perlida* are found? Assuming that the larger species require a certain large percentage of oxygen as a *minimum* within a given period for respiration, the Scottish shore waters in question must be cool enough to hold this in solution throughout the year. But along the margins of Swiss lakes the water in summer is apt to become decidedly warm, and consequently the percentage of oxygen which it contains is likely enough to be reduced below the *minimum* necessary for these insects. But where (as at Geneva, Lucerne, &c.) water issues from a lake with rapid flow, provided the reduction referred to be not excessive, species unable to live in the lake might find the same water habitable; because the swiftness of the current would subject the insects to what amounts to accelerated respiration. A larger reduction even, up to a certain limit, could be compensated for by a mechanical admixture of air with the water. Therefore, where large *Perlida* live in a lake, the thermometer would probably always indicate a relatively low temperature; and in hot countries the water of rivers may be found at too high a temperature for them to exist, even in a brawling shallow or a boisterous rapid.—A. E. EATON, Biskra, Algeria: *March 7th*, 1894.

Cloantha perspicillaris at Norwich.—Some time ago I received from Dr. E. W. Carlier, of Edinburgh University, a box of *Lepidoptera* for determination, part of them taken in Scotland, others at Dr. Carlier's home at Norwich. Among them I was much surprised to find a beautiful specimen of the excessively rare *Cloantha perspicillaris*, L. Upon communicating with Dr. Carlier, he replies that he caught it one night in the summer of 1892 sitting upon the ironwork of a gas lamp in the Unthanks Road, in the outskirts of Norwich. The moth had chosen a spot which is not usually very productive, having only fields and market gardens with low hedges near it, and no trees for some distance. This specimen would thus have occurred in the same season as that secured at Shorncliff by Lieut. Brown. Among the extremely few previous records is one at Yarmouth many years ago, taken, if I remember right, by Messrs. Paget.—CHAS. G. BARETT, Nunhead: *March*, 1894.

Plusia moneta at Tonbridge.—It may be worth recording that I captured a single specimen of this moth (rather worn) in our garden at the flowers of *Nicotiana affinis* on or about the 10th of July last. I had it unnamed in my collection till the other day, when I came across the moth figured in the "Entomologist" for 1890. To make quite sure I was not mistaken, I showed the moth to a son of Mr. Dallas Beeching, of Tunbridge Wells, who confirmed my opinion.—P. L. BABINGTON, Walmer House, Tonbridge: *February 28th*, 1894.

Early appearance of Pieris rapæ.—On March 9th a perfect specimen of this butterfly fluttered in at our kitchen window; it did not seem very strong on the wing, and had evidently just emerged. I at first thought it must have pupated just outside, and so been, to a certain extent, "forced" by the heat from within; but I could not find any trace of its chrysalis, and I do not see how the larva could have got there.—ID.: *March 11th*, 1894.

The supposed new British species of Diastata.—I see that in the last number (page 64) of this Magazine Mr. Beaumont has recorded three species of *Diastata*,

supposed to be new to Britain. I regret that I am unable to add them to my "List," as I suppose his *D. obscurella*, Fln., is the very common *Geomyza obscurella*, Fln., while *D. fumipennis*, Mg., and *D. basalis*, Mg., are meaningless terms, as nobody knows what is meant by those names. Mr. Beaumont has kindly given me six gummed specimens of *Diastata nigripennis*, Lw. (which may include Mr. Beaumont's *D. fumipennis*, Mg., and also *D. obscuripennis*, Mg., of my "List," if only those names could be certified), taken at Neach Hill in December, 1893, and also two specimens of *D. punctum*, Mg., taken at the same place and time.—G. H. VERRALL, Newmarket: *March*, 1894.

Societies.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY: *March 12th*, 1894.—Mr. S. J. CAPPER, F.L.S., F.E.S., President, in the Chair.

Mr. W. E. Sharp gave a brief description of the British species of the genus *Silpha*, particularly those of local occurrence, in the course of which he quoted an extract from the Transactions of the Société de Biologie of Paris, by Professor A. Giard, on *Silpha opaca*, an insect most destructive to the French beetroot crops. The notes were illustrated by specimens of the genus. Miss E. H. Lea exhibited varieties of *Cidaria psittacata* and *C. miata*. Mr. John Lea, large specimens of *Cidaria sagittata*. Mr. John Watson, *Meganostoma cæsonia*, *Catopsilia crocea*, *Colias Vautierii*, and *C. Fieldii*.—F. N. PIERCE, *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY *February 22nd*, 1894.—E. STEP, Esq., President, in the Chair.

Mr. South, for Mr. Rose of Barnsley, exhibited a long bred series of *Phigalia pedaria*, Fb., some being uniformly black without a trace of markings; for Mr. Fowler of Ringwood, a var. of *Euchelia jacobææ*, L., having the costal stripe carried round the hind margin to meet the spot; for Mr. Dennis of York, photographs of very long series of *Spilosoma lubricipeda*, Esp., ranging from very pale and almost spotless to very deep colouration, and a photograph of three other vars. from the Allis Collection, of York, of which two were undoubtedly of the *Zatima* form, although not extremes; for himself, a specimen of *Argynnis Aglaia*, L., from Hampshire, which was a modification of var. *Charlotta*, Sow., the silvery spots forming long streaks, and several vars. of *Argynnis Euphrosyne*, L. Mr. Frohawk, coloured drawings representing the complete life-history of both *Argynnis Aglaia*, L., and *A. Adippe*, L., with details, enlarged to show the remarkable larval structure. Mr. Warne, an asymmetrical specimen of *Abraxas grossulariata*, L. Mr. Moore, several cases of all Orders, containing specimens collected on a bicycle tour from Dieppe through Paris, Cote d'Or, and Jura to Geneva, and in Guienne, and contributed notes. Mr. Pearce, series of *Feniseca tarquinius*, Fab., spring and summer broods of *Lycæna pseudargiolus*, Bd., *L. comyntas*, Godt., and *Thecla Edwardsii*, Saund., from Pennsylvania, U. S. A. Mr. Auld, for Mr. Tugwell, to correct an error in the report of January 11th, series of the York city form of *Spilosoma lubricipeda*, Esp., for which he suggests the name var. *eboraci*, series of var. *Zatima*,

Cr., and series of the selected brood originating from Yorkshire, for which he suggests the name var. *fasciata*. A discussion ensued as to variation produced by artificial selection. Mr. Jenner Weir, a new Euploëine butterfly from North-Eastern Borneo, which he had described under the name of *Caduga Crowleyi*. Mr. Lewcock sent for exhibition a box of *Coleoptera* to illustrate a paper he communicated describing his observations during the various excursions of the Society. Mr. Mansbridge communicated a paper containing his observations in the United States, entitled, "Notes from the Indian Territory." Remarks were made on the increase of Melanism in insects, and a discussion ensued.

March 8th, 1894.—The President in the Chair.

Mr. R. Adkin exhibited a series of *Erebia Epiphron*, Knoch, var. *Cassiope*, Fb., from Inverness, which were said to be of the type form (*Epiphron*). He had, however, failed to detect the white pupil to the ocellated spots, which was the typical character. Mr. Weir said that the British form had no trace of the white pupil. Mr. Routledge, specimens of a brood of *Selenia bilunaria*, Esp., which had laid over the summer of 1892, emerging in April, 1893; also individuals bred from a pair of the latter, which had emerged at intervals from August, 1893, to February, 1894, and were all of the small form, although some had the pigment well developed; he also brought a series of *Aporophyla lutulenta*, Bork., captured in Cumberland, among which were both the var. *sedii*, Gn., and the var. *luneburgensis*, Frr. Mr. South, exceedingly large specimens of *Ocneria dispar*, L., one of which was bred about thirty years ago from a larva taken in the Fens. Mr. Frohawk, a third brood of *Pararge Megara*, L., ten males and ten females, bred by himself from ova deposited on August 2nd, 1893. Mr. Billups, three species of rare *Ichneumonidæ*, viz., *Microgaster russatus*, Hal., taken at High Beach in 1884; *Hyperacmus crassicornis*, Gr., of which only one recorded British specimen was known, taken at Oxshott in 1892; and *Euryproctus nemoralis*, Four., taken at the same place last July. Mr. Filer, a series of *Hybernia leucophearia*, Schiff., taken at Richmond and Epping, among which were some exceptionally melanic forms. Mr. W. A. Pearce, specimens of *Attacus Luna*, L., and *Citheronia regalis*, F., from Wilkinsburg, U. S. A. Mr. Jenner Weir, male and female *Heteronympha Merope*, Fab., and stated that the sexes were so totally unlike as to be deemed different species until quite recently; he also mentioned that the chrysalis was said to be contained in a frail network on the ground. Mr. Auld, on behalf of Dr. Knaggs, a working model of the Decoy and Net described in the *Entomologist*, 1893, and a considerable discussion ensued.

—HENRY J. TURNER, *Hon. Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON: February 28th, 1894.—Colonel CHARLES SWINHOE, M.A., F.L.S., Vice-President, in the Chair.

Professor August Forel, M.D., of the University of Zurich, was elected an Honorary Fellow of the Society, to fill the vacancy caused by the death of the late Professor H. A. Hagen, M.D. Mr. John Pratt, of The Cedars, New Barnet, and Mr. Michael Yeatman Woolf, of 1, Marlborough Terrace, St. John's Wood, N.W., were elected Fellows of the Society.

Mr. G. C. Champion called attention to a supposed new Longicorn beetle,

described and figured by Herr A. F. Nonfried, of Rakonitz, Bohemia, under the name of *Callipogon Friedländeri*, in the Berl. Ent. Zeitschr., 1892, p. 22. He said that the supposed characters of the insect were due to the fact that the head had been gummed on upside down! He also exhibited an extensive collection of *Coleoptera* and *Hemiptera-Heteroptera* made by himself in the Island of Corsica in June last.

The Rev. Theodore Wood exhibited a variety of *Saturnia carpini*, with semi-transparent wings, a large proportion of the scales being apparently absent, bred with several examples of the type-form at Baldock, Herts; also a pale variety of *Smerinthus populi*, which was said to have been bred, with several similar specimens, from larvæ marked with rows of red spots on both sides.

Mr. R. South exhibited a variety of *Argynnis Aglaia*, approaching the form known as var. *Charlotta*, and a variety of *Euchelia jacobæ*, in which the crimson costal streak was continued along the outer margin almost to the inner margin, taken by Mr. Fowler at Ringwood, Hants, in 1893; a variety of *Argynnis Euphrosyne*, taken by Mr. Mead in Epping Forest in 1893; and a series of black and other forms of *Phigalia pedaria*, bred during the present year from a black female captured last spring by Mr. Rose, of Barnsley.

Mr. H. Goss exhibited, for Mr. C. B. Taylor, of Jamaica, a beautifully coloured drawing of the larva of *Papilio Homerus*, Fab.

Mr. F. W. Frohawk exhibited drawings showing the complete life-history of *Argynnis Aglaia* and *A. Adippe*, every stage being figured; also enlarged drawings of the segments of the larvæ in their first and last stages, showing the remarkable difference in structure. Mr. Merrifield commented on the beauty of the drawings.

Mr. G. C. Champion read a paper, entitled, "On the *Tenebrionidæ* collected in Australia and Tasmania by Mr. J. J. Walker, R.N., during the voyage of H.M. Ship 'Penguin,' with descriptions of new genera and species;" and he exhibited the specimens comprised in the collection. Mr. J. J. Walker and Colonel Swinhoe made some remarks on the paper.

Mr. Champion also read a paper, entitled, "An Entomological Excursion to Corsica," in which he described an expedition to the mountains of that island in June, 1893, in company with Mr. R. S. Standen, Mr. A. H. Jones, Colonel Yerbury, R.A., Mr. Lemann, Mr. Raine, and others. Mr. Osbert Salvin, Colonel Yerbury, and Colonel Swinhoe took part in the discussion which ensued.

Mr. Edward Saunders communicated a paper, entitled, "A List of *Hemiptera-Heteroptera* collected by Mr. Champion in Corsica, with a description of one new species."

Mr. W. F. Kirby read a paper, entitled, "Notes on *Dorydium Westwoodi*, Buchanan White, with observations on the use of the name *Dorydium*."

Mr. Charles B. Taylor communicated a paper, entitled, "Description of the Larva and Pupa of *Papilio Homerus*, Fab."—H. GOSS, *Hon. Secretary*.

March 14th, 1894.—Colonel CHARLES SWINHOE, M.A., F.L.S., Vice-President, in the Chair.

Mr. William Bateson, M.A., Fellow of St. John's College, Cambridge; Mr. H. Caracciolo, of Port of Spain, Trinidad; Mr. G. C. Dudgeon, of 53, Montagu Square,

W.; and the Rev. Frank E. Lowe, M.A., of St. Stephen's Vicarage, Guernsey; were elected Fellows of the Society.

Dr. D. Sharp exhibited a collection of White Ants (*Termites*), formed by Mr. G. D. Haviland in Singapore, which comprised about ten or twelve species, of most of which the various forms were obtained. He said that Professor Grassi had recently made observations on the European species, and had brought to light some important particulars; and also that, in the discussion that had recently been carried on between Mr. Herbert Spencer and Professor Weismann, the former had stated, that in his opinion the different forms of social insects were produced by nutrition. Professor Grassi's observations showed this view to be correct, and the specimens now exhibited confirmed one of the most important points in his observations. Dr. Sharp also stated that Mr. Haviland found in one nest eleven neoteinic queens—that is to say, individuals having the appearance of the queen in some respects, while in others they are still immature; these neoteinic queens were accompanied by kings in a corresponding state.

Mr. Haviland gave an account of the structure of some of the nests, and of the cells of the females, and stated that two of the species of White Ants exhibited certainly grow fungus for their use, as described by Mr. Smeathman, many years ago, in the "Philosophical Transactions." Mr. H. Goss remarked that the fact that the different forms of social insects were produced by nutrition was known to Virgil, who referred to it, and to the subject of Parthenogenesis in Bees, in the "Georgics," Book iv. Mr. McLachlan, Colonel Swinhoe, Mr. Champion, Mr. Jenner Weir, and Dr. Sharp continued the discussion.

Mr. O. E. Janson exhibited specimens of *Dicranocephalus Adamsi*, Pascoe, from Sze-chuen, Western China, and *D. Dabryi*, Auz., recently received from the neighbourhood of Moupin, in the same district; he observed that, although the latter had been quoted by Lucas, Bates, and others, as a synonym of *Adamsi*, the two species were perfectly distinct.

Mr. C. O. Waterhouse exhibited, for Mr. E. A. Waterhouse, a specimen of *Colias Edusa* closely resembling *C. Erate*, a continental species, which was taken on Wimbledon Common; a varied series of *Chrysophanus Phlaas*, from Barnes Common; and a series of *Lycæna Arion*, from Cornwall.

The Rev. Canon Fowler read a paper, entitled, "Some new species of *Membracidae*."

Mr. F. Merrifield read a paper, entitled, "Temperature Experiments in 1893 on several species of *Vanessa* and other *Lepidoptera*." He said that the results tended to confirm Dr. Dixey's conclusions as to the origin of the wing-markings in the *Nymphalidae*, brought out many, presumably, ancestral features, and in some cases were very striking. There was much difference in sensitiveness between the seasonal broods of the same species, even in *V. c-album*, although both broods of that species passed the pupal state in the warmer part of the year.

Dr. F. A. Dixey read a paper, entitled, "On Mr. Merrifield's experiments in Temperature Variation, as bearing on theories of heredity," which was supplemental to the previous paper. Colonel Swinhoe, Mr. Hampson, Mr. Jenner Weir, Mr. Merrifield, and Dr. Dixey took part in the discussion which ensued.—H. Goss and W. W. FOWLER, *Hon. Secretaries*.

NOTES ON THE EARLIER STAGES OF THE *NEPTICULÆ*,
WITH A VIEW TO THEIR BETTER RECOGNITION AT THIS PERIOD
OF THEIR LIFE.

BY JOHN H. WOOD, M. B.

(Continued from page 50).

The *Nepticulæ* of the pear (*Pyrus communis*). When making some observations on food plants early in the course of these notes, I remarked that I had never met with *atricollis* on the pear. This no longer holds good. Twice in the past autumn I have come upon a small colony on the plant, numbering between them perhaps a score of individuals. The species is so well known that nothing further need have been said, were it not that there was a peculiarity about the mines that is not commonly seen when they occur on apple or hawthorn. Every one is aware that the mine in the *angulifasciella* group has quite a character of its own. Starting from some point in the body of the leaf, it presents three perfectly distinct portions; first, a bunch of convolutions; next, shooting out from this, a gallery, seldom of any length; and lastly, a blotch. Now, *atricollis* when living on apple or hawthorn by no means follows this plan, but mines much after the fashion of *regiella*, setting out with a long gallery round the margin of the leaf, from which, as from a base, the blotch springs. Each one, however, of the pear mines was true to type. Each one began in the body of the leaf, and each one presented the bunch of convolutions, the short gallery, and the blotch. This sent me once more to the apple and hawthorn bushes, and I learnt that at any rate in the latter of these plants the mine does occasionally conform to type, when the egg happens to be deposited well away from the edge. It is, then, the position of the egg that determines the character of the mine. When it is laid upon or near the edge the larva seems unable to resist the fascination of keeping there (a fascination that appears to possess every species that finds itself, whether by rule or accident, in that position), and so the bunch of convolutions gets unravelled and spread out along the margin. It had always struck me as strange, that in a group so strongly accentuated by the similarity of the mines, larvæ, and imagos, one of its members, whilst closely conforming in the last two points, should fail to do so in the first; now the anomaly is to a great extent explained.

I also find on the plant three gallery-miners, viz., *oxyacanthella*, *pyri*, and *minusculella*, but the last named in such scanty numbers that I have not yet succeeded in rearing it, and for the ability to determine

my mines I am indebted to the kindness of Mr. Bankes, who sent me some, from which the moths had been bred, for comparison. The first two make narrow galleries with the coil arrangement, the last a wide gallery with the frass collected into the middle ; all have bright green larvæ. *Oxyacanthella* and *minusculella* lay on the under-side, *pyri* on either upper- or under-side, but with a very decided preference for the former, and I am inclined to think that it is the fouling of the upper surface with honey-dew that generally drives it to the lower one. *Oxyacanthella* can be recognised by its long and bold mine, by the dark head of the larva with the cephalic ganglia just visible behind, and by the yellowish intestinal canal—the characters, in fact, that distinguished it in the hawthorn leaves. The mines of the other two are small and cramped, the larvæ have pale heads and no trace of the cephalic ganglia, a tinge of blue in their ground colour, and the hinder part of the intestinal canal in *pyri* red. Seldom can any hesitation be felt in distinguishing *oxyacanthella* from *pyri*, and still less from *minusculella*, but it is not always as easy to discriminate between *pyri* and *minusculella*. If the mines are typical, no difficulty arises. But occasionally the convolutions in *pyri*, which always show a tendency to keep close together, will so run into each other as almost to form a blotch, and at the same time the coiling of the frass gets rather slovenly ; on the other hand, when *minusculella* happens to be in an over-thick leaf, and in consequence contracts to some extent the width of its gallery, signs of imperfect coiling may show themselves, probably an ancestral habit, indicating that the insect has only recently parted company from the species that use narrow galleries and the coil arrangement. Under these circumstances each mine encroaches somewhat on the character of the other, and their distinction becomes not as clear as could be wished. It is, therefore, rather tantalizing that we should be in sight, though not quite in possession, of a very simple character that would solve the matter at once, I mean the position of the egg. For did *pyri* always lay on the upper-side of the leaf as *minusculella* does on the under-side, nothing more would be wanted, but since it does not do so, it is only in a limited number of cases, that is, where the egg is found above, that any conclusion from the position of this body can be safely drawn.

Minusculella and *pyri* are double brooded, feeding in July and again in September ; differing in this respect from *oxyacanthella*, which is single brooded. I have never seen the cocoon of *minusculella*. The cocoon of *pyri* is very like that of *oxyacanthella*, but smaller and darker, and is placed in similar situations.

The gallery-miners of the birch (*Betula alba* and *glutinosa*). Six species occur here, whilst I learn from Mr. Fletcher that a seventh is found in Sussex, having a mine hard, perhaps impossible, to be distinguished from that of *continuella*, and a cocoon and imago extremely like *floslactella*. My own six are *continuella*, *distinguenda*, *betulicola*, *luteella*, *lapponica*, and an unknown one, which I have only lately recognised as distinct by its mine and larva, but have not yet bred; I will call it for the present No. 1. They all lay on the under surface of the leaves, and have yellow larvæ, excepting No. 1, which has a greenish-white larva. As a first step towards differentiating them, they might be broken up into three pairs in accordance with the three types of frass arrangement; *lapponica* and No. 1 would be linked together with type 1, *betulicola* and *luteella* with type 2, and *distinguenda* and *continuella* with type 3. But it will be more convenient, perhaps, if they are rather grouped by their larvæ, a plan which also arranges them in pairs. Thus, the first pair (*lapponica* and No. 1) are characterized by mining with the back up, and showing distinctly the cephalic ganglia; the second pair (*betulicola* and *distinguenda*) by mining with the venter up, and showing the ventral cord; and the third pair (*continuella* and *luteella*) by mining with the back up, and showing neither cephalic ganglia nor ventral cord. Under either arrangement *lapponica* and No. 1 go together, so I will take them first.

Lapponica and No. 1. The mines of both are long galleries of moderate width, whose usual course is to follow a rib for some distance, and then to turn off at a tangent till another is reached, which in its turn is pursued; but whether the ribs are taken as a guide or not, the mine is never contorted, and this holds good even with their very commencement, which, beginning in a delicate and hairlike manner, stretches straight away at once from the site of the egg. So far, and in a general view, the mines are precisely alike, but in the two portions which answer to the first three skins of the larva, and which, from their apparent insignificance, are apt to be overlooked, most excellent and easily appreciable characters may be gathered. In the case of *lapponica* it has already been pointed out, that the frass completely fills these two portions of the mine, that it is coiled in the second of them, and that its colour in both is green, thereby offering a striking contrast to the third or main portion of the mine, in which the frass is black, and collected into a narrow central thread. On the other hand, the frass in No. 1 is black throughout, there is no coiling in the middle portion, and a free margin borders its track in all three portions, so that the character of the mine is uniform from beginning to end.

This alone would, in my opinion, be sufficient to warrant their distinctness, even if the larvæ did not also throw their weight into the scale. *Lapponica* is yellow, with the cephalic ganglia brown and distinct, yet at the same time less conspicuous than the head. No. 1 is greenish-white, with the head very pale brown, the cephalic ganglia dark and distinct, and markedly more conspicuous than the head. No trace of the ventral cord is discoverable so long as the larvæ are *in situ*, but it becomes visible in *lapponica* when removed from its mine, and may also perhaps in No. 1, but my notes are silent on the point. *Lapponica* is single brooded and feeds in June, though occasionally an odd mine or two may be picked up late in the autumn; No. 1 feeds a little later, in July, and has no second brood. The cocoon of *lapponica* is smooth, and varies from dark brown to almost black; it is difficult to find, as it is commonly placed under the soil. I have not yet seen the cocoon of No. 1.

Distinguenda and *betulicola*. The mines are small and narrow—especially in *distinguenda*—are generally much contorted, several being often crowded together in a leaf, and begin coarsely, very differently from the slender and delicate commencement adopted by the two preceding species. Here the resemblance between them ends. *Distinguenda* fills its gallery with brown frass very neatly coiled, and is always most constant and true to type. *Betulicola* deposits its black frass without any order, and is distinctly irregular in its practice; usually it does not much more than half fill its gallery, but not unfrequently it very nearly does so, the mine at the same time being narrower and shorter than common, and coming extremely near the mine of *luteella*. The irregularity, there can be little doubt, is dependent on the nature of the leaves, for it will be found that the latter are appreciably thinner, and their network of veinlets more open where the gallery is only half filled than where it is more completely so. Larva—in *distinguenda* the head is dark brown, a black square-shaped spot (skin mark) is present on the under-side of segment two, the ventral cord is black and very distinct, and the urinary tubes are also plainly visible. *Betulicola* differs in the ventral cord and spot on segment two being brown instead of black, and in wanting altogether the urinary tubes. Both are double brooded. *Betulicola* has a singular fancy for the little seedling plants, and may appear to be unaccountably scarce if the search is confined to the taller bushes, whilst all the time it is in abundance at the ground level. The cocoons are spun above ground, *distinguenda* being buff in colour, *betulicola* brown.

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Supplement to Annotated List of British Tachinidæ (<i>continued</i>).—R. H. Meade	73
A new species of Aleurodes.—J. W. Douglas, F.E.S.	73
Oleate of Copper —H. Guard Knaggs, M.D., F.L.S.	75
A second hundred new British species of Diptera.—G. H. Verrall, F.E.S.	76
Lita instabilella, Dgl., and its nearest British allies.—Eustace R. Bankes, M.A., F.E.S.	80
Note on Thermobia furnorum, Rovelli.—Dr. D. Sharp, M.A., F.R.S.	84
Thermobia furnorum, Rovelli, and Lepismodes inquilina, Newman.—R. McLachlan, F.R.S.	85
The Entomology of a London Bakehouse.—F. Milton	85
“Liste des Anthicides,” par M. Pic.—G. C. Champion, F.Z.S.	86
Aleurodes rubicola, Doug.—J. W. Douglas, F.E.S.	87
Coccids associated with Ants.—Karel Sulc	87
Why are large Perlidæ resident in Scotch but not in Swiss Lakes?—Rev. A. E. Eaton, M.A., F.E.S.	87
Cloantha perspicillaris at Norwich.—C. G. Barrett, F.E.S.	88
Plusia moneta at Tonbridge.—P. L. Babington	88
Early appearance of Pieris rapæ.— <i>Id.</i>	88
The supposed new British species of Diastata.—G. H. Verrall, F.E.S.	88
SOCIETIES.—Lancashire and Cheshire Entomological Society	89
South London Entomological, &c., Society	89
Entomological Society of London	90
Notes on the earlier stages of the Nepticulæ, with a view to their better recognition (<i>continued</i>).—John H. Wood, M.B.	93

We greatly regret to announce the death of Mr. J. JENNER WEIR, F.L.S., on Good Friday (March 23rd), aged 72. Owing to the Easter Holidays the information was received too late for mention in the present No.

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Continuella and *luteella*. There is just as little similarity in the mines of these two species as in those of the preceding pair, and had the grouping been based upon this ground instead of upon the larvæ, *continuella* must have gone with *distinguenda*, and *luteella* with *betulicola*. My remarks will, therefore, have to be directed to this cross resemblance. Like *distinguenda*, *continuella* is a very perfect example of the mine with a small transverse capacity and coiled frass, the want of capacity in the former depending on the extreme narrowness of the mine, and in the latter upon the very partial manner in which the parenchyma is removed. They can, however, be readily distinguished from one another. *Continuella* is a much larger mine, it is filled with greenish frass, and begins invariably from a brown bunch of convolutions of some size, placed in an angle of the midrib; whereas, the other starts from a point, without any series of twists and turns or sign of discolouration, and contains brown frass. To distinguish between the mines of *luteella* and *betulicola* is a much harder matter. The relative breadth of the frass-track (about half filling the mine in *betulicola*, and almost completely so in *luteella*) ought to serve to differentiate them nicely, but then, under certain conditions, each varies so in the direction of the other, that it would be rash sometimes to say to which of them a mine belonged. There are other small points of difference, but I need not particularize them, since they too are liable to variation, and it is not after all a very important matter to distinguish the empty mines so long as we can recognise the full ones. Besides varying in the direction of *betulicola*, *luteella* also occasionally mimics the mine of *distinguenda* by a rough attempt at coiling, but so clumsy is the counterfeit that it ought never to deceive the collector.

Utterly unlike in their mines, in their larvæ *continuella* and *luteella* are closely related. Both larvæ are yellow, with pale brown heads, and no trace of either cephalic ganglia or ventral cord. *Luteella* may be known out of the mine by the urinary tubes, but they are not dark enough to be seen when the creature is in the mine. *Continuella*, yellow though it be, looks *in situ* green, and a very decided green too, in consequence of the light reflected from the floor of its mine. Both species are double brooded. *Continuella* almost restricts itself to the downy variety of the birch, selecting the leaves at the ends of the uppermost shoots; and its cocoon varies from dark brown or blackish-brown to olive. The cocoon of *lutcellu* is white or pale buff.

Briefly summarized :—

No. 1.—Mine large and angular, frass a central thread throughout ; larva greenish-white, with pale head and dark cephalic ganglia.

Lapponica—Mine large and angular, frass a central thread in the last portion and coiled in the middle portion ; larva yellow, with blackish head and brown and inconspicuous ganglia.

Continuella—Mine large, greenish, and filled with coiled frass ; larva green in the mine but yellow out, with pale head and no other visible markings.

Distinguenda—Mine small, brown, and filled with coiled frass ; larva yellow, with black head, a chain of black linear marks down the middle, and a pair of black lines at the hinder end.

Betulicola—Mine small, usually about half filled with irregularly arranged frass ; larva yellow, with brown head and chain of inconspicuous brown linear marks, but no trace of any dark lines at the hinder end.

Luteella—Mine small, usually nearly filled with irregularly arranged frass ; larva yellow, with pale head and no other visible markings.

Thus, then, these six mines, all much alike in many ways, and all occurring in the same kind of plant, can be identified when full with the greatest readiness, and even in dealing with them when empty equal certainty can be felt as regards four out of the six. Whether Mr. Fletcher's Sussex species will throw in a note of discord as it half threatens to do, time alone will show, though I cannot but think that either mine or larva will offer some point or other by which we may learn to know it.

(To be continued).

ABUNDANCE OF *PYRAMEIS CARDUI*, L., IN THE ZIBAN, ALGERIA.

BY THE REV. A. E. EATON, M.A., F.E.S.

At the base of the Aures and south of the Hodna, in Eastern Algeria, the Ziban, with Biskra as their chief town, form the northern border of the Sahara. The country, hilly in parts and diversified with shallow irregular valleys, slopes gently towards the open desert, which viewed in clear weather from afar looks as blue and level as the sea ; dark patches, like low islets, in the broad expanse are oases with palms. The valleys referred to are most of them waterless, excepting perhaps for a day or two after heavy rain once or twice in a winter.

Just as March was ending, a spell of Mediterranean weather,

with rain and snow on the mountains northwards, was at Biskra succeeded by breezes and wind from the opposite quarters, with a rise of temperature. At the same time *P. cardui* (which hitherto had not been commoner during the winter than tortoise-shells in England are apt to be in early spring) increased rapidly in numbers daily, until the butterflies became as plentiful as Garden Whites in June over a cabbage plot, or Meadow Browns in a well-stocked hay field. A certain proportion of the increase in their population was undoubtedly due to some bred in the vicinage emerging from pupæ; because there were specimens to be seen, bright coloured and in prime condition amongst the faded and worn, and a cripple was noticed one day with wings not fully expanded. But the greater number must have wandered hither with the wind from southern districts, to loiter in the welcome shelter of hill sides and hollows. They soon made themselves quite at home.

It was natural to wonder what so many butterflies would find about Biskra to lay their eggs upon. The plants selected by them varied with the locality. Near the town, or (to be exact) near the railway and Fort St. Germain, mallows were in favour. Strips of *Malva parviflora*, L., on open ground, were thronged for several days with egg layers, until some leaves were studded with from three to six eggs apiece. A few plants of *M. sylvestris*, L., attracted less attention, but yet were not entirely passed over. But all this in large measure proved in the end to be "love's labour lost;" when the eggs were beginning to hatch out, the mallows were fed off by goats. Away from the oasis, on the stony hills and wastes, oviposition took place almost exclusively upon two species of inconspicuous plants, *Filago spathulata*, Presl, and *Plantago ovata*, Forskall. Each butterfly seemed to lay only upon one kind of these plants, not upon both indiscriminately; and so where *Plantago* predominated and was attracting the attention of most of the egg layers, a single butterfly might be observed searching out chance *Filago* plants, and laying only upon them. This was noticed in more than one place between Biskra and Hammam-es-Salahin, otherwise Fontaine Chaude. The only thistle met with in that neighbourhood, a miserable plant of *Carduus pycnocephalus*, L., was, however, found to have on it a single egg.

Within the last week *P. cardui* seems to have diminished in numbers (although still very common), perhaps through dispersion over the district, or perhaps through emigration.

CIONUS LONGICOLLIS, CH. BRISOUT: AN ADDITION TO THE
BRITISH LIST.

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

I am indebted to Mr. James Edwards for calling my attention to *Cionus thapsus* and its allies, as by so doing he has enabled me to add *C. longicollis*, Ch. Bris., to the British list. The insect is a close ally of *C. thapsus*, Fabr., but, as stated by its describer [Ch. Brisout, in Grenier's Cat. Col. de France, p. 114 (1863)], it is more elongate, the rostrum is thicker, the thorax is longer, with the sides less oblique, and the sutural spots on the elytra are larger. I may also add that *C. longicollis* is a larger and more robust insect than *C. thapsus*, with stouter legs and rostrum, the latter (as in *C. thapsus*) roughened and pubescent nearly to the apex in both sexes; this last-mentioned character separates *C. longicollis* from *C. hortulanus*, Fourcr., which has the distal half of the rostrum smooth and shining in the female. My specimens of *C. longicollis* were given me many years ago by Mr. H. Moncreaff, who found them at Portsdown Hill in 1871. This adds yet another species to the list of discoveries of that most successful entomologist. Mr. Moncreaff's specimens were, I believe, determined as *C. thapsus*, Fabr., by the late Mr. Crotch, or by Mr. Rye, and have since done duty for that species in my own and other collections. Brisout's examples of *C. longicollis* were obtained at Vernet, in the Pyrenees Orientales, upon *Verbascum*, and the species also occurs in the Alps. I have to thank M. Louis Bedel for identifying the Portsdown insect for me, and also for comparing it with Brisout's types. As M. Bedel remarks, *C. longicollis* has probably been confused with *C. thapsus*. The species is not mentioned in the "Faune des Coléoptères du Bassin de la Seine," nor in the Rev. Canon Fowler's British *Coleoptera*. Mr. Edwards informs me that he has taken both *C. thapsus* and *C. hortulanus* at Colesborne, Gloucestershire, the former upon *Verbascum nigrum* and *Scrophularia nodosa*, the latter upon *Scrophularia aquatica* and *S. nodosa*. These two species are, perhaps, about equally common as British, and I have taken specimens of both in various localities in the south. The only *Cionus* I met with at Vernet (the original locality of *C. longicollis*) in 1891 was *C. hortulanus*. Mr. Moncreaff in a letter just received states that his specimens were taken off a plant of *Verbascum thapsus* growing in an old roadway at Portsdown in 1871, and that he has not met with it since.

Horsell, Woking:
April 18th, 1894.

PATENT POSTAL BOX WITHOUT PACKING.

BY H. GUARD KNAGGS, M.D., F.L.S.

The chief object of the new postal box is to prevent vibration of the contents, but it also saves much time in packing. It is remarkably simple and inexpensive, and consists of a light box B, suspended "à la façon du cercueil de Mahomet," in a larger and stronger box A, by means of two elastic bands, one of which is shown, in the section, at C C. There are numerous variations on the method of suspension according to the articles to be conveyed, but the one here given is most suitable for the postage of entomological specimens.

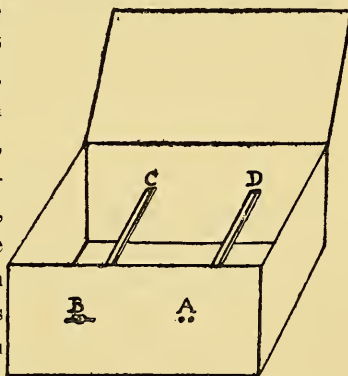
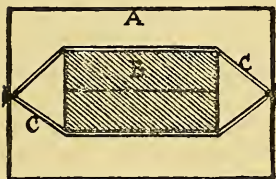
The mode of construction was as follows:—having procured a cigar box or any other of light but strong material (preferably metal), I made, with a bradawl, twin holes (as shown at A in the second figure) at A B C D (*i. e.*, front and back of box), and tied on with watercord (as shown at B) two elastic bands, B C and A D, of a substance that will lightly support the weight they have to carry, each half as long as the width of the box, but stretched to the full width in the tying process. N.B.—These knots could be tied on the inside between the bands if neatness be desired, and they should be touched with glue or varnish to prevent subsequent slipping. The distance between the bands should be at least two inches less than the length of the box to be suspended. The inner box should be as light as possible—a seidlitz powder box answers admirably. All that has now to be done is to slip the inner box between the bands, and—*voilà tout*.

Folkestone: April 7th, 1894.

BRITISH HEMIPTERA: ADDITIONS AND CORRECTIONS.

BY JAMES EDWARDS, F.E.S.

CORIXA SELECTA, Fieb.

= *Stali*, D. & S. (*nec* Fieb.).Amongst our species of *Corixa* which are characterized by the rastrate pronot-

tum, non-rastrate corium, and the basal joint of the hind tarsi not black at the apex, *hieroglyphica* is at once to be distinguished by the greater proportion of yellow in the colour of the pronotum, owing to the narrowness of the black transverse lines; and there remain to be dealt with those specimens in which the black lines on the pronotum are wider than the pale interstices; of these latter we have certainly two species. According to authentic specimens kindly lent to me by Mr. Douglas, these two species are the *lugubris* and *Stâli* of Douglas and Scott, and the essential differences between them are given in Brit. Hem., pp. 596, 597, but as these differences are not there emphasized, I have thought it worth while to set them out in greater detail below. Dr. Puton, who has examined Fieber's type of *lugubris*, says that the *Stâli* of Fieber is not separable from that author's *lugubris*, and Mr. Douglas has been good enough to lend me a male specimen, which is undoubtedly *C. lugubris*, but which Fieber himself labelled "*C. Stâli*, Fieb., in K. K. zool. bot. Verein." Under these circumstances, and the name *lugubris* being the older, that of *Stâli* falls; but as the *Stâli* of Douglas and Scott is clearly not conspecific with *lugubris*, Fieb., one has to determine what name it should bear. To this end I submitted male examples of both our species to Dr. Puton, who says that the *lugubris* of Douglas and Scott is the same as *lugubris*, Fieb., and that *Stâli*, D. & S., is the same as *selecta*, Fab. In the male of *selecta*, Fieb., there is a strong transverse keel on the forehead at about one-third of the height of the inner margin of the eye (when viewed from in front), bounded above by a rather deep impression; the entire frons below the keel is excavated, the excavation reaching from eye to eye. In the male of *lugubris*, Fieb., there is a feeble transverse keel on the frons on a level with the lower margin of the eyes (when viewed from in front), bounded above by a large shallow impression; the excavation on the frons is feeble. The best character for separating the females of these two species lies in the middle keel on the front of the pronotum, which in *selecta* is nearly half as long as the pronotum, and in *lugubris* is not more than one-fourth as long as the pronotum. *C. lugubris* and *C. selecta* occur together in coast marshes in Norfolk, and I have always regarded them as being just as characteristic of such localities as *Gyrinus elongatus* or *Salda pilosella*; but such is not the experience of others, as Douglas and Scott give "Cambridge Fens" as the locality for *lugubris*, and "brackish water in ditches at Gravesend" for *Stâli* (*selecta*), whilst Mr. Saunders says of *lugubris* (he did not know *selecta* at the date of his Hem. Het. Brit. Islands) "common and generally distributed, often in brackish water." Dr. Puton informs me that *C. selecta* has also been taken in Holland by M. Fokker.

THAMNOTETIX STRIATULELLUS, n. s.

Very similar to *T. striatulus*, Fall. (indeed, the markings of the upper-side agree with those of that species *ad punctum*), but apparently only half as large, with the elytra subequal in length to the abdomen. Its actual length is $2\frac{1}{2}$ — $2\frac{3}{4}$ mm., as against 4 mm. for *striatulus*. Appendages of the apex of the ædeagus (viewed from above, fig. 1) two, lateral, gradually narrowing to their pointed apex, connivent about their apical third, afterwards recurved. In *striatulus* (fig. 4) the appendages of the ædeagus (viewed from above) are four, of which the two outer are short and spiniform, and the two inner are long, strap-shaped, pointed, bisinuate, and crossing one another after the manner of the lines which form the figure 8.

On *Calluna*, Roudham Heath, Norfolk; Woking (*Saunders*); also in coll. Douglas.

This species occurs also in Finland, and is known to Dr. J. Sahlberg as a depauperate form of *striatulus*. I sent specimens to Dr. Puton, who did not know the species, but referred me to M. Lethierry, who named it *Athysanus russeolus*, Fall.; it is, however, perfectly distinct from that species, as represented by description and a specimen kindly given to me by Dr. Sahlberg, but it is, nevertheless, in all probability, the *A. russeolus* of our British List. The latter was introduced to our list by the late Mr. George Norman, and the late Mr. Scott, replying to my application for the loan of specimens, said that he knew nothing about the species, as the specimens had been returned by M. Lethierry to Mr. Norman direct. I have never seen a British example of the true *Athysanus russeolus*, Fall., but there seems to be no reason why it should not occur here, since we have such things as *Cicadula Dahlbomi*, &c. I place this insect next to *T. striatulus*, Fall., on account of its resemblance in markings to that species, but, owing to its short elytra, it has as much the facies of *Athysanus* as *A. melanopis*, Hardy.

LIMOTETTIX AURANTIPES, n. s.

♂. Differs from *L. quadrinotatus*, Fab., which it otherwise very closely resembles, in its rather larger size, the deep (gamboge) yellow colour of the upper-side, and its yellow-red legs, of which the front tibiæ want the black stripe on the outer side, which is the rule in *quadrinotatus*. Appendages of the apex of the ædeagus (viewed from above, fig. 3) three, the two lateral ones slightly incurved and about twice as long as the central one, of which the apical third is forked. In *quadrinotatus* (fig. 6) the appendages of the apex of the ædeagus (viewed from above) are three, of which the two lateral ones are twice as long as the single middle one, and strongly curved outwards.

From time to time for several years past Mr. E. A. Butler has taken near Wonersh, at Chobham, Gomshall, and Burnham Beeches, always in very boggy places, a *Limotettix* differing from *quadrinotatus* in the particulars given above. In the first instance I thought that it might be an unnamed variety of *L. nigricornis*, Sahl.; subsequently I put it, with doubt, as a variety of *quadrinotatus*, but having recently had the opportunity, through the kindness of Mr. Butler in furnishing specimens for dissection, to investigate the matter thoroughly, I am able to lay down its distinctive characters. I have not taken this insect myself, nor have I seen any specimens of it, except those taken by Mr. Butler in the localities before mentioned.

CICADULA LIVIDA, *n. s.*

= *cyana*, Edw. (*ante* vol. ii, 2nd Ser., p. 33, excl. syn.).

The following is a statement of the circumstances under which the above correction has become necessary. Mr. E. A. Butler wrote me some time since that he had found *Cicadula cyana*, and on examining some of his specimens it was at once apparent that his insect was not the same as mine. My insect is a true *Cicadula*, with the head wider than the pronotum, the sides of the latter exceedingly short, and the genital plates of the male attenuate and upturned at the apex, whilst it agrees in point of colour with the description of Boheman's *cyana*. Mr. Butler's insect, on the other hand, is as much a *Thamnotettix* as *T. splendidulus*, Fab., which it closely resembles in size and shape; its head is narrower than the pronotum, the sides of the latter are as long as the hind margin of the eye, the yellowish fuscous hyaline elytra have (in life) an evident blue bloom, which is retained to a certain extent after death, and the upper branch of the cubital vein runs into the upper fork of the lower branch near the middle of the elytron.

After reading Tollin's remarks (*Stett. Ent. Zeit.*, xii, p. 69) I have a strong impression, which I record for what it is worth, that *C. livida*, *mihi*, is the same as his *Iassus morio*.

THAMNOTETTIX CYANÆ, Boh.

(*vide supra*).

Several females were taken by Mr. E. A. Butler at Loughton and Fifield on *Potamogeton natans*. The determination of our insect as Boheman's species is confirmed by Dr. Puton, M. Lethierry, and Dr. J. Sahlberg, the latter kindly giving me an identical specimen taken in East Gothland by Haglund.

LIMOTETTIX 5-NOTATUS, Boh.

This species occurred to me very sparingly at Ranworth in September and October, 1890. It may be distinguished from *L. intermedius*, Boh., our only other species in which the sub-ocellar black spots on the crown are minute and punctiform, by the want of a black spot on the temples and (in most specimens of the male, at least) by having in the middle of the front margin of the crown a pair of very short, fine, geminate, longitudinal, black lines; the deep yellow colour of its upper-side and the two black spots on the forehead sufficiently distinguish it from *L. sulphurellus*. I managed to select a few specimens out of swarms of *L. 4-notatus*, from which it may be distinguished in the net by its larger size, different colour, and the want of the large black spots on the crown.

CICADULA DAHLBOMI, Zett.

In June, 1892, I discovered this fine and interesting species on an isolated patch of *Epilobium angustifolium* in Hilcot Wood near this place. Its food-plant is

common about here, but notwithstanding diligent search, I have hitherto failed to find the insect, except in one spot having an area of about five square yards, and unless it migrates to some of the numerous plants of the same species close by, it is doomed to speedy extinction there; for the *Pteris* has so rapidly crowded out the favoured patch of *Epilobium*, that if the process goes on at the same rate in the coming year as it has done in the past, the original food-plants will have entirely disappeared. In June, 1893, I found that the *Epilobium* plants frequented by *C. Dahlbomi* were, owing to the encroachment of the *Pteris*, reduced in quantity to less than one-half, and what remained were only about half as robust as in the previous year; but although I took considerable pains in the matter, I could not discover that the insect had spread to any of the numerous adjacent plants; the latter, however, were, so far as I could see, equally well suited for the support of the species. It is a comparatively large species, approaching *C. punctifrons* in point of size, and may readily be distinguished from its British congeners by the pale green elytra with stout black veins in the male, and the plain pale sea-green elytra in the female. Dr. Puton gives its range as Scandinavia and France.

DELTOCEPHALUS PALEACEUS, J. Sahl.

The insect which I identify with this species is most nearly allied to *D. Flori*, which it resembles in size and the milk-white veins of the elytra, but from which it may be distinguished by the reddish rust-yellow ground-colour of its upper-side, the almost entire absence of fuscous markings on the elytra (the most prominent fuscous markings on the elytra, except the dark hind margin to the apical areas, being a fuscous border to the hind margin of the third subapical area), and the shape of the hind margin of the last ventral segment in the female, which has the apical angles rounded off, and no small tooth between the sides of the projection and the sides of the segment as in *Flori*. The genital style of the male resembles that of *Flori*. I took a small series of this species at Brooke Wood, Norfolk, in August, 1888; it occurred sparingly in company with a profusion of *D. Flori*, and in the net its general rust-yellow colour contrasted strongly with the greyish-testaceous appearance of *Flori*. The late Mr. Scott put *D. paleaceus* as a synonym of *Falleni*, Fieb., and Dr. Puton in his Catalogue does the same; but if I am correct in referring the insect now under consideration to *paleaceus* (and it agrees well with Sahlberg's description), then *paleaceus* does not = *Falleni*. I am scarcely so well acquainted with the latter species as I could wish, but I have a male specimen the genital style of which agrees fairly well with Fieber's figure (Syn. Eur. Delt., pl. v), and which in point of facies agrees well with specimens named *Falleni* by Dr. J. Sahlberg for Mr. Douglas; and so far as one can judge from this material the most obvious point of distinction on the upper-side between *Falleni* and *distinguendus* lies in the more distinctly arcuate free sides of the crown in the former; this difference, however, is so small that it is difficult to appreciate, and a much more satisfactory distinction is found in the shape of the genital styles, since the simple clavate black style of *distinguendus* cannot well be confounded with the pale style of *Falleni*, with its crenulation on the outer side from the apex downward. Having regard to Fieber's figures of the male genitalia of *distinguendus*, I have no reason to doubt that my determination of that species is correct; and if this is so, then his figure of the

hind margin of the last ventral segment in the female of *distinguendus* is misleading, because that part in the female of my insect has two small triangular teeth about equidistant from the sides of the segment and from each other, and would, in fact, be well represented by Fieber's figure of that part in *Falleni* if the two teeth shown in the figure were a little closer to each other. In examining a number of specimens one, of course, meets with slight differences of degree in these parts, but it is to be observed that the hind margin of the last ventral segment which Fieber in his figure gives to *distinguendus* is of the same character as that of *Flori* and *picturatus*; that is to say, the central projection is the result of a notch near each side of the segment, and not as in *Falleni* (and *distinguendus* as I know it), caused by the production of the hind margin into small triangular teeth at two points. There is the more reason to suspect some mistake in this instance as Fieber's figures, as a rule, are very characteristic.

D. PANZERI, Flor.

This species, of which a few specimens have been taken by Mr. E. Saunders at Chobham, has considerable superficial resemblance to *D. pascuellus*; it belongs, however, to the same group as *pulicaris*, &c., in which the crown is rather convex than excavated, and it may further be distinguished from *pascuellus* by the costal vein not being conspicuously whitish; it is pale brownish-yellow above, and the veins of the elytra being almost imperceptibly margined with fuscous have the appearance of being unusually wide. The genitalia of both sexes, which I have examined, are well figured by Fieber (*l. c.*, pl. vi, fig. 39), and our insect agrees well with Flor's excellent description.



EXPLANATION OF FIGURES.

Fig. 1, apex of *ædeagus* of *Thamnottettix striatulellus* seen from above, 2, same from side; 3, same of *Limottettix aurantipes* from above; 4, same of *Thamnottettix striatulus* from above, 5, same from side; 6, same of *Limottettix quadrinotatus* from above.

Colesborne, Cheltenham :

March, 1894.

SUPPLEMENT TO ANNOTATED LIST OF BRITISH *TACHINIIDÆ*.

BY R. H. MEADE.

(Continued from p. 73).

MACQUARTIA, Dsv.

M. AFFINIS, Schr.

This species is closely allied to *M. tenebricosa*, from which it differs by having the outer cross vein of the wing placed nearly in the centre, between the little cross vein and the bend of the fourth longitudinal vein, instead of being much nearer to the latter than the former, as in *M. tenebricosa*; the apical cross vein is also straight instead of being curved, and the size is usually rather larger than in *M. tenebricosa*.

A specimen of this fly is in Mr. Dale's collection, bred from a beetle (*Chrysomela*).

NEMORÆA, Dsv.

N. GLABRATA, Mgn.

This has the palpi yellow; the antennæ grey; the face white; the frontalia narrow in the male, with the central stripe black and wider than the sides; the thorax is dark grey, with three rather indistinct black stripes; the scutellum is red; the abdomen is black and shining, with the sides tessellated with white, and marked by red patches, which are very small upon the sides of the 1st segment, but cover the whole width of the side of the segment in the second and sometimes in the third ring; the discs of the 2nd and 3rd segments are without any large setæ; and the bristles upon the edges are also small; the legs are black, and the wings clear with fuscous roots.

This species has been found by the Rev. E. N. Bloomfield near Hastings, and also by Mr. Harwood in Essex.

EXORISTA, Mgn.

E. LIBATRIX, Mgn.

Ochreous; forehead rather prominent; frontalia bright yellow; frontal stripe black and narrower than the sides; face white; fronto-orbital setæ extending as low as the base of the third antennal joint, which is five or six times as long as the second joint; arista with the second joint short, but distinct, and the third one thickened for about half its length; palpi yellow; facial setæ extending about half way up the face; vibrissæ very long; thorax covered with yellow pubescence, and marked with four stripes, the central pair being narrow, the outer ones broken and maculiform; post sutural outer dorso-central bristles four in number; scutellum and abdomen yellow-grey, the latter oval, with both discal and marginal setæ; ventral surface black, with the edges of the segments white; wings with the apical cross veins straight, and the outer ones sinuous; calyptra and halteres yellow; legs black.

This pretty little species has been taken near Hastings by Mr. Esam, and also at Colchester by Mr. Harwood; a specimen was kindly sent to me by the Rev. E. N. Bloomfield.

TACHINA, Mgn.

A number of incongruous species have been placed together in this genus, having the following characters in common, viz., eyes nude; antennæ with the second joint elongated, and at least half the length of the third; facialia bare, or only ciliated for some distance with fine hairs; the first posterior wing cell partly open at the end. The typical species always have the fourth longitudinal vein bent at a sharp angle, and furnished with a true or false cubital appendix; the eyes of the males much more approximated than those of the female; the fronto-orbital setæ in an elongated series; the facial ciliæ somewhat extended; and the middle abdominal segments without discal setæ. Many other species want these characters, and some closely resemble those in the genus *Masicera*, with the exception of having shorter antennæ. Under these circumstances I think it better to subdivide the genus or group into several sub-genera, retaining under the name of *Tachina* those possessing the typical features which I have mentioned.

Sub-gen. I.—TACHINA, Mgn.

Eutachina, Br. & v. Berg.

Sub-gen. ch.—Frontal space distinctly narrower in the male than female; facial angle slightly oblique; fronto-orbital bristles extending nearly half way down the face; facialia ciliated with fine hairs for about half way up; arista with both basal joints short; abdomen without discal setæ on the 2nd segment; wings with the fourth longitudinal vein bent at a sharp angle, and having a cubital appendix; apical cross vein terminating at some distance before the apex of the wing.

1.—T. LARVARUM, L.

2.—T. NOCTUARUM, Rnd.

3.—T. LATIFRONS, Rnd.

4.—T. ERUCARUM, Rnd.

Sub-gen. II.—CHÆTOTACHINA, Br. & v. Berg.

Sub-gen. ch.—The chief point of difference between this and *Tachina* is the presence of discal setæ upon the second abdominal segment; the facial angle is also more oblique; the facialia less ciliated, and the second joint of the arista a little prolonged.

1.—C. RUSTICA, Flh.

2.—C. NIGRICANS, Egger.

The latter species has not yet been recorded as British; it is thus characterized:—Forehead rather prominent; eyes widely separated in the female; frontal stripe black, and about equal in width to the sides of frontalia, which, like the face, are glistening white; fronto-orbital setæ extending about half way down the face, but not so far as in *C. rustica*; facial ciliæ only present on the lower third of the facialia; antennæ black, with the third joint about twice as long as the second in the female, but is said to be not much more than the same length in the male; arista with the third joint thickened for about two-thirds of its length; palpi piceous; thorax and scutellum grey, the former with four moderately wide black stripes, and three post sutural outer dorso-central bristles; abdomen oval, grey, marked with irregular, transverse, black bands and tessellations; legs black, with hind tibiæ irregularly armed with setæ on their outer sides; wings grey, with yellow roots, apical cross veins oblique, and somewhat curved; cubital appendix rather short.

I have only seen a single female of this species, which was captured at Eastbourne by Mr. W. Esam, and kindly sent to me by the Rev. E. N. Bloomfield.

Sub-gen. III.—APOROTACHINA, *sub-g. n.*

Sub-gen. ch.—Eyes widely separated in both sexes; fronto-orbital setæ only extending as low as the base of the third antennal joint; antennæ with the third joint usually twice the length of the second; facialia almost nude; abdomen with both discal and marginal setæ on the middle rings; wings without cubital appendix, and with the fourth longitudinal vein often bent at a blunt angle, or in a slight curve; apical cross vein mostly straight, and terminating rather nearer to the apex of the wing than in the species belonging to the two former sub-genera.

- 1.—A. ANGELICÆ, Mgn.
- 2.—A. BREVIPENNIS, „
- 3.—A. MOROSA, „
- 4.—A. AGILIS, „
- 5.—A. HORTENSIS, „

Sub-gen. IV.—PELATACHINA, *n. n.*

Hyria, Dsv.,* Br. et v. Brg., pre-occupied.

Sub-gen. ch.—Face oblique; epistome prominent; eyes much nearer together in the male than the female; antennæ short, the second joint a little elongated, and the third not more than one and a half times as long as the second; fronto-orbital setæ only extending as low as the base of the second antennal joint; facial setæ very few; abdomen narrow (in the male) and subcylindrical, having both discal

* Diptères des environs de Paris. T. i, p. 1100.

and marginal bristles ; wings with the fourth vein bent in a curve, and the apical cross vein terminating near the apex of the wing.

P. TIBIALIS, Fln.

This (the only known species belonging to this sub-genus) is very aberrant. Desvoidy, who formed the genus *Hyria* for its reception, placed it in his group of *Macquartidæ*, and it bears a good deal of resemblance in form and structure to some of the species of *Macquartia*, the size of the antennæ, and the position and form of the wing veins being very similar ; it differs, however, by having bare instead of hairy eyes, and a naked instead of a tomentose arista ; it varies also from most or all the species in that genus with the exception of *M. grisea* by the absence of dark, shining, metallic colours.

BRACHYCOMA, Dsv.

B. ERRATICA, Mgn.

Forehead prominent, frontal space moderately and nearly equally wide in both male and female, central stripe black, and somewhat wider than the sides, which, like the face, are white with dark reflections ; fronto-orbital setæ only extending as low as the base of the second antennal joint ; the facialia are almost bare, but the cheeks are ciliated with a row of very fine hairs placed near the edges of the facialia ; antennæ black, with the third joint rather more than twice the length of the second ; arista bare and short, thickened for nearly its whole length ; thorax grey, marked with four black stripes, having pale shoulders and sides, and three post-sutural outer dorso-central setæ ; abdomen conical, grey, marked with a central dorsal stripe and four large sub-triangular spots, one on each side of the second and third segments ; discal setæ absent on median rings ; calyptra large and white ; halteres yellow ; wings with the fourth longitudinal vein bent at a sharp angle, and furnished with a short spurious appendix ; apical cross vein curved inwards ; outer cross vein nearly straight, and placed almost in the centre between the inner cross vein and the angle of the fourth ; legs black ; fore tarsi of male with large claws and pulvilli and long hairs. The female is very similar to the male, but has a shorter and thicker abdomen. Length, about 6 mm.

Both sexes of this well marked species were bred by Mr. Watkins, of Painswick, Gloucestershire, from some Hymenopterous borings in an old cherry stump.

Meigen placed this anomalous species, together with *B. devia*, in the genus *Tachina*, in which he was followed by Schiner ; by the spotted abdomen and other characters, however, it more properly belongs to *Brachycoma*.

MILTOGRAMMA, Mgn.

M. CONICA, Fln.

This species has been found by Mr. Beaumont at Woking.

(To be continued.)

Note on Thermobia furnorum, Rov.—In the Ent. Mo. Mag. for this year, p. 53, Mr. McLachlan says that I have considered *Lepisma domestica*, Pack., and *Thermobia furnorum*, Rov., identical (Ent. Amer., vi, p. 233). But this is not the case, for I have expressly said (*loco citato*), that these insects are congeneric, but specifically distinct. As the name *Thermophila* is pre-occupied, I think Newman's generic name must be substituted for it, and I would now prefer to call the insect *Lepismodes furnorum*, Rov.—E. BERGROTH, Tammerfors, Finland: April, 1894.

[I acknowledge Dr. Bergroth's correction, with thanks. To me it appears highly probable that the insects are specifically identical. Whether the few words I quoted (*ante* p. 53) from Newman's note can in any way entitle the generic term *Lepismodes* to acceptance, seems to me highly doubtful. Newman, as editor of the "Zoologist," attached so little importance to it that he omitted it from the Index to the volume.—R. MCLACHLAN].

Xanthia ocellaris alive at Wimbledon.—On September 27th last, I took a sugar on Wimbledon Common a specimen of a *Xanthia* which was entirely new to me. As I was quite unable to identify it, I sent the insect to Mr. Barrett for his opinion, but as he was on the point of leaving home for some considerable time, the specimen remained with him until his return. He has now very kindly identified the insect as *Xanthia ocellaris*, Bork., but strangely, it appears not to be of the usual European form, but is the var. *lineago*, which Staudinger records only from the Altai Range. This being the case, it appears possible, as Mr. Barrett suggests, that the specimen may have been accidentally introduced by some means, *e. g.* from a garden, though the part of Wimbledon Common where I took the insect is a long way from any garden. It is a very fresh and perfect specimen, having apparently only just emerged.—E. H. TAYLOR, 52, Mimosa Street, Fulham: March, 1894.

The larva of Mamestra anceps.—At a Meeting of the City of London Entomological Society, held on February 2nd, 1894, it is reported, "Mr. Prout exhibited a specimen of *Mamestra anceps*, which he had bred in January from a larva found feeding on grass in the Isle of Wight." As this is only the *second* time the insect has been bred in this country, the following extracts from a letter I received from the late Mr. Buckler, dated October 7th, 1882, giving particulars of all that was known of the larva in this country up to that time will prove interesting; and, as doubtless his figures are still in existence, it would be very desirable that they should appear in the next or some following volume of his "Larvæ of British Lepidoptera."—J. GARDNER, Hartlepool: April 10th, 1894.

"Some years ago the Rev. H. Harpur Crewe's Parish Clerk picked up in a field a larva, which he took to him, and from it he bred *Mamestra anceps*. Subsequent finds of what looked like the same larva produced *Apamea basilinea*. But many years ago Mr. Robson sent me several larvæ which he said were *M. anceps*; he reared them from eggs on garden lettuce. They grew to be 1½ inches long, and were fed on the same food, but several died, one only going to earth in November, but no moth resulted. Therefore, without this proof of identity, I was not sure what species I had figured—for I think I took two figures—and certainly I have never

since seen a similar larva. There was, however, something that reminded one of *Hadena dentina*, and this, if I remember right, consisted of black dashes just along the upper edge of the paler, but obscure, subdorsal line, though in other respects it was different, in addition to its greater size. Probably the larva feeds on grasses."—W. BUCKLER: *October 7th*, 1882.

[Borkhausen's description (*sordida*) is as follows:—"Pale brown, with a faint dark dorsal line, and two similar lateral lines; on both sides of the dorsal line, on each segment, are four black points; below the lateral lines, on each segment, a backwardly-directed black streak. Head, thoracic plate and anal shield black-brown. Lives in March and April on grasses, concealed during the day time; pupates in the earth. Moth in July and August."—C. G. BARRETT].

Aporia cratægi introduced at Windsor.—Mr. Edmunds of Windsor writes to me on the 17th inst., "I have taken three more broods of larvæ of *A. cratægi*; this looks as if it had established itself here, or at any rate it is endeavouring to stay."—F. MERRIFIELD, 24, Vernon Terrace, Brighton: *April 19th*, 1894.

Accidental transposition of figures of two Graciliaria.—It may be useful to point out that on Plate xv of the Trans. Ent. Soc. Lond., N. S., i (1850—1, the figure standing in the seventh place and numbered "7" represents the fore-wing of *Gracilaria Kollariella*, while the following one, numbered "8," shows that of *G. ononidis*. This was not so intended by Mr. Stainton, for he heads the accompanying descriptions—"Sp. 22, *ononidis*, Zeller (Plate xv, fig. 7)" (p. 191), and "Sp. 24, *Kollariella* (F. v. R.), Zeller (Plate xv, fig. 8)" (p. 193). These references, which are therefore incorrect, according to the published Plate, were separately repeated by Mr. Stainton in I. B. Lep. Tin., p. 200 (*ononidis*), (1854), and Nat. Hist. Tin., viii, p. 136 (*Kollariella*), p. 182 (*ononidis*), (1864), although in Ent. Ann., 1862, p. 113, he had correctly referred figure 7 to *Kollariella*. Unfortunately both errors re-appear in Staudinger's Catalogue (1871).—EUSTACE R. BANKES, The Rectory, Corfe Castle: *February 24th*, 1894.

Coleophora potentillæ, Stn., under an alias.—This *Coleophora*, to which as "*potentillæ*, Boyd in lit.," Mr. G. Elisha had previously drawn attention in Ent. Mo. Mag., xxi, pp. 254—5, was first described by Mr. Stainton under that name in Ent. Mo. Mag., xxiv, p. 231. In *both* volumes it appears in the list of "Additions to the British Insect Fauna brought forward in this Volume," but in each case as "*Coleophora tormentillæ*, Boyd," which strange *alias* it also assumes in the "List of New Genera and Species, &c., described" in Vol. xxiv! In the other Indices it is correctly entered, in Vol. xxi as "*potentillæ*, Boyd in lit.," and in Vol. xxiv under its present name, "*potentillæ*, Stainton."—ID.: *March 2nd*, 1894.

Note on a Butalis hitherto undetermined.—Recently Mr. E. Meyrick very kindly lent me the single example of a *Butalis*, taken near Newbury, which is the subject of his note in Ent. Mo. Mag., xiv, p. 111, and is referred to in mine in Ent. Mo. Mag., N. S., iv, pp. 88—9, and, after a careful examination, I have no hesitation in

saying that it is certainly *grandipennis*, Haw., ♀, and must no longer pose as "A *Butalis* new to Britain." I have little doubt that Mr. Stainton was led to return it as perhaps *dissimilella*, H.-S., and Prof. Zeller (in whose native country *grandipennis* does not seem to occur) to suggest that it might be undescribed, by the presence of a longitudinal streak of white scales down the centre of the fore-wing: it is narrow at the base, but gradually widens out until towards the hind-margin, the white scales no longer form a streak, but are scattered over the disc. This form of *grandipennis* appears to be unknown to most Lepidopterists, but is well illustrated by some of the fifty females in my series, in a few of which the white streak is quite as prominent as in the moth under notice. The males occasionally, though very much less frequently, show indications of a similar streak, but I have never yet met with or seen any in which it is well pronounced. The Newbury specimen is rather small, though if as flatly set, it would be visibly larger than my smallest specimens, and is exactly the same colour as the somewhat faded individuals that I took about ten years ago; it was netted "on a heath," which is, in my experience, quite the most likely place for *grandipennis*, if either of its food-plants (*Ulex europæus* and *U. nanus*) occurs there. The published date of capture (Ent. Mo. Mag., *l. c.*) is "June 29th, 1875," but this should be "June 28th, 1874," as is rightly given on the MS. label on the pin. Mr. Meyrick, who was previously unacquainted with the white streaked form of the insect, has now no doubt that my determination is correct.—ID.: *March 5th*, 1894.

Tinea pallescentella in a wasp's nest.—In the Grosvenor Museum at Chester, among other cases illustrative of life histories, is one, set up by Mr. R. Newstead, Curator, which, along with a nest of *Vespa germanica*, found at Mold, North Wales, shows also the insects—Dipterous, Lepidopterous, and others—which were reared from the nest by Mr. Newstead, and were presumably parasitic in it.

Among these I was greatly interested to find several specimens of *Tinea pallescentella*, and to hear that at least a dozen had been reared from this nest, some of them showing the dark markings, others almost plain. It was not, however, clearly established that the *Tinea* is parasitic in the nest of the wasp, *in its natural state, out of doors*. This nest had been brought home in the autumn of 1890, and the moths were reared in February, 1891, so that great probability exists that eggs were laid in the nest, indoors, by a moth of the usual late autumn brood. With the *Tinea* was (of course) one *Endrosis fenestrella*.—CHAS. G. BARRETT, Nunhead: *March*, 1894.

Crambus ericellus in Cumberland.—When at Carlisle a few weeks ago, I was asked to examine a few unnamed moths by Mr. George Dawson of that town. Among them I was particularly interested to find several undoubted specimens of *Crambus ericellus* in excellent condition. Having no previous knowledge of the occurrence of this *Crambus* south of the border, I made particular enquiry, and found that the specimens had been taken by Mr. Dawson himself; and that he had found them always at a great elevation, upon two or three of the Cumberland mountains, but most commonly upon Great Gable, where he might have secured many specimens had he known what it was.

So far as I am aware, there is no previous record of this species in these islands south of Perthshire, and its discovery in Cumberland is, therefore, of exceptional interest.—ID.

Aberration of Deiopeia pulchella, L.—On October 19th last (1893), my cousin gave me a female of *Deiopeia pulchella*, which I confined in a box loosely lined with paper, with the lid slightly ajar, and which I fed on a mixture of honey, beer, and rum, the result being that I obtained fifty-two eggs, only one of which eventually reached the chrysalis state. The egg period lasted from October 20th, 1893, to October 22nd, 1893; the larval from October 22nd, 1893, to February 8th, 1894; the pupal from February 8th, 1894, to March 16th, 1894; on which last date the imago (a female) appeared, the following being a description:—

Expanse of wings, $1\frac{5}{8}$ inches. The fore-wings have only nine red spots, those near the base being absent, but the four black spots (at the base) are confluent, with merely a little white in the centre. There are only two red dots near the inner margin, which are normal, however. At the hind margin there are only two spots instead of four, those nearest the apex being absent. The remaining red dots are all smaller than in the type, but the black spots are more extended, and are generally united; moreover, the black dots near the cilia are all joined together.

On the hind-wings the black at the hind margin occupies exactly half the wing, and the two discoidal spots (one of which shows through from the under-side) unite, and are joined to the main body of the black. The two dots on the lobes of the thorax, also, are confluent. The abdomen is blackish, instead of white, and has a row of six black spots, darker towards the anal segment, which are not present in typical examples, by this possibly showing a sort of connecting link between *Emydia* and *Nemeophila*, or allied genera.

The larva was fed entirely on *Borago officinalis*, in a room facing south.—F. BROMILOW, Nice, France: *February 21st*, 1894.

The genus Pseudonosoderma, v. Heyd.—In the *Deutsche ent. Zeit.*, xxix, p. 305 (1885), a supposed new genus of *Tenebrionidæ* was described by von Heyden under the name of *Pseudonosoderma*, to include a single species, *P. amurense*, v. Heyd. (*op. cit.*, p. 306, t. 4, fig. 2), from the Amoor. He compares it with *Nosoderma*, of the group *Zopherides*, and states that it differs from that genus in having eleven distinct joints to the antennæ, that is to say, the antennæ (instead of having the tenth and eleventh joints connate, as in *Nosoderma*) are formed precisely as in *Phellopsis*, Lec. [*Class. Col. N. Am.*, 1st edit., p. 216 (1862)]. *P. suberea*, Lewis [*Entom.*, xx, p. 219 (1887)], from Japan and Siberia, is no doubt synonymous with *P. amurense*, v. Heyd. *Phellopsis* is one of many genera of the Heteromerous-series common to the Palæarctic and Nearctic regions, as *Boros*, *Pytho*, *Zilora*, *Stenotrachelus*, *Phryganophilus*, *Pyrochroa*, *Dendroides*, *Pedilus*, *Microtonus*, &c. It contains two North American species, *P. obcordata*, Kirby, and *P. porcata*, Lec. The recently described *Pseudonosoderma chinense*, Semen. [*Horæ Ent. Ross.*, xxvii, p. 499 (1893)], from Gan-su, China, is also a *Phellopsis*. By some mistake, the genus *Pseudonosoderma* is included in the *Byrrhidæ* in the *Zoological Record* for 1885.—G. C. CHAMPION, Horsell, Woking: *April 9th*, 1894.

Pentaria Oberthüri, Champ.—In the Bull. Soc. Ent. Fr., 1894, p. lxxvi, Dr. Chobaut gives a Table of the palæarctic species of *Pentaria*, but he omits all mention of *P. Oberthüri*, Champ. [Ent. Mo. Mag., xxviii, p. 109 (1892)], from the Pyrenees. This insect, however, proves to be synonymous with *P. Defarguesi*, Abeille de Perrin [Rev. d'Ent., iv, p. 161 (1885)], who, not recognising its obvious generic characters, wrongly placed the species in *Anaspis*. The palæarctic species of *Pentaria* (4) are as follows:—*badia*, Rosenh. (= *sericaria*, Muls.), and *Defarguesi*, Ab. (= *Oberthüri*, Champ.), from the south of Europe; *libanicus*, Mars., from Lebanon; and *Reitteri*, Chob. (*op. cit.*, p. lxxv), from the Araxes valley.—ID.

Aphodius consputus, Creutz.—I have in past years occasionally met with this rare *Aphodius*, but always as casual single specimens, on walls and in flood refuse. The dates of these captures, corroborated by that of the larger haul made by the Rev. T. Wood in East Kent (Ent. Mo. Mag., Ser. I, vol. xxiii, p. 261), have hitherto induced me to regard the beetle as especially a late autumn or early winter species; and this idea was confirmed by my finding a fine specimen crawling on a wall in New Brompton as late as December 23rd last. Until the early part of the present month (April) all my efforts to find the insect in its natural pabulum have been in vain, but within the last few days I have taken it rather freely in sheep-droppings on the pasture lands in the Isle of Sheppey, near Queenborough. Although not exactly plentiful, it was actually the commonest member of its genus on the two occasions on which I have been able to look for it; as it even outnumbered its usually abundant ally, *A. punctato-sulcatus*, from which species its smaller average size, darker and comparatively uniform colour, and the conspicuous yellow spot on either side of the clypeus, distinguish *A. consputus* at a glance. With it occurred *A. luridus*, *hæmorrhoidalis*, *pusillus*, and other ordinary species, but none of them in any great numbers. I shall be happy to give a type of *Aphodius consputus* to any Coleopterist wishing for it.—JAMES J. WALKER, 23, Ranelagh Road, Sheerness: April 11th, 1894.

Curious locality for Crioceris asparagi, Linn.—On cutting open a pierced bramble stem the other day in search of Hymenopterous larvæ, I was very much surprised to come upon a living example of the above; I do not know exactly where the bramble stem was found, but it was from this neighbourhood, and may have been near an asparagus bed, anyhow it is a curious position for the insect to occupy, and shows that it occasionally hibernates.—E. SAUNDERS, St. Ann's, Woking: April 14th, 1894.

Dytiscus dimidiatus at Askham Bog.—On Wednesday, March 28th, I visited Askham Bog. I found the Bog very full of water, which surprised me, as the winter and early spring have been so dry. It was in the state which I have always found most favourable to the capture of rare *Hydradephaga*. The morning was very misty, and the sun only broke out a little time before I began work. It was very noticeable how, as the warmth increased, the water-beetles got more and more on the move. I soon took about a dozen *Agabus uliginosus* and a score of *Hydroporus rufifrons*. I then visited a large pond where, twelve years ago, I took a female *dimidiatus*. I put the net down in a place where deep water can be reached from the bank, and at

once brought up a magnificent male *D. dimidiatus*; the next haul afforded a glorious spectacle to the Coleopterist, two males and one female, and soon after I took two more females. I thus secured three pairs in about fifteen minutes. I visited the Bog again two days after, but though I worked hard, I could not find another specimen. It was rather curious that *D. marginalis*, and that species only, occurred just in the spot where two days before I took only *D. dimidiatus*. I obtained several *Hydroporus oblongus*, *Scalesianus* and *decoratus* on this occasion, as well as many other good insects.—W. C. HEY, Westayton, York: April, 1894.

Extraordinary abundance of Echinomyia ursina.—On Saturday, March 24th, in company with a friend, I went to Wyre Forest, in the hopes of doing a little collecting, but we were not prepared for what occurred. In the afternoon a few specimens of this fine insect were taken. On Sunday, the 25th, however, they appeared in gradually increasing numbers until after mid-day, when four to six could be taken at one stroke of the net from off the willow blooms. We found it sunning itself in the road and on posts wherever we collected, and some friends working three miles the other side of the Forest said it was equally common there. It is difficult to account for this comparatively rare insect appearing in such profusion; but whatever larvæ it is parasitical upon must have had a bad time of it last year, judging from its numbers.—RALPH C. BRADLEY, Sutton Coldfield, Warwickshire: April 11th, 1894.

Obituary.

John Jenner Weir, F.L.S., &c., who came of a family of Scotch descent, was born at Lewes, Sussex, on August 9th, 1822, and died suddenly at Beckenham, Kent, on March 23rd, 1894. In 1831 his family removed to Camberwell, near London, and he was educated chiefly at Dr. Rogers' school in that suburb. In November, 1839, he entered the service of the Custom House, and by 1874 had attained the high position of Accountant and Controller General, which he held until his retirement in 1885. From his early days he was passionately devoted to Natural History, especially Entomology, and in 1845 was elected a Member of the Entomological Society of London, at the Meetings of which he was one of the most constant attendants for very nearly half a century, was often on its Council, Treasurer from 1876 to 1879 inclusive, and Vice-President in 1886. He joined the Linnean Society in 1865 and the Zoological in 1876, and had been on the Council of both. He was appointed on the Scientific Committee of the Royal Horticultural Society only a month or two before his death. In addition he was an original Member of the West Kent Natural History, &c., Society, and was several times President; was President of the South London Entomological, &c., Society for the year immediately preceding his death; and was for long on the Council of the Ray Society. His intimate knowledge of accounts caused him to be frequently appointed Auditor at all of these Societies.

His first published notes appeared in the "Zoologist" for 1845, and the last, being the description of a new species of Butterfly (the only species we think he ever described), was published posthumously in the "Entomologist" for last month. Weir was a man of vast general knowledge in all branches of Natural History, and

freely imparted his information to others, and it is to be regretted that he produced comparatively little original work; he had been heard to say that his time was too much occupied in testing the observations of others. In addition to notes in various serials, he published two papers on the edibility of certain caterpillars as correlated with their colours, &c., in the Trans. Ent. Soc. for 1869 and 1870, and, indeed, most of his observations lay in the direction of Philosophical Natural History, in connection with which he largely assisted Darwin (of whom he was an enthusiastic admirer), as acknowledged by him in his writings. It can truly be said of him that there was no branch of Natural History of which he had not some acquaintance, and of many it was intimate.

Early in his career he studied British *Micro-Lepidoptera*, and several of his discoveries therein were named after him. At times he seemed to practically abandon Entomology, and to take up enthusiastically some other cognate subject, such as Ornithology, Botany, &c. His latter years were principally devoted to Horticulture and the formation of an extensive general collection of Butterflies, more especially of those groups that afforded subjects for the study of mimicry and protective resemblances. In conjunction with his brother, Harrison Weir, the artist (who differed from him in all respects as much as two men possibly could, save in the love of Nature common to both), he frequently acted as judge at the Crystal Palace cat, dog, and bird shows.

In the foregoing notes we have endeavoured to bring prominently forward the many-sidedness of Weir's acquirements. In social circles he will be long missed by a large number of friends, and not the least for his conversational powers, which were exhibited in a strikingly emphatic manner; with Jenner Weir for a companion a railway journey was never tedious. He had travelled much on the Continent, and never failed to acquire stores of information thereby; his aptitude for exact observation was of the highest order.

Some years ago he was attacked by a form of heart disease of a terribly fatal character (*angina pectoris* was the cause of his extremely sudden death), but after the shock of the first knowledge of the nature of his malady he soon re-acquired his natural vivacity, and his friends noticed that latterly his innate vitality seemed more marked than ever. Those who knew him intimately realize the loss of a thorough naturalist, a genial companion, and a faithful friend. He leaves a widow, one son and two daughters; a second son died suddenly in Germany when completing his education.—R. McL.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *March 19th*, 1894.—Mr. R. C. BRADLEY in the Chair.

Mr. A. H. Martineau showed a few *Lepidoptera* received from Sierra Leone; he also showed a small collection of *Lepidoptera*, made by Mr. R. W. Chase in Lundy Island last year: it contained, amongst other things, *Satyrus Semele*, *Vanessa Atalanta*, *V. urticae*, *V. polychloros*, *Macroglossa stellatarum*, *Bombyx rubi*, *Zygana trifolii*, and *Z. filipendulae*. Mr. Bradley remarked that many of the specimens were distinctly under the average size of the species. Mr. Bradley and Mr. Colbran

J. Wainwright each showed boxes taken from their collections containing the *Tachinidæ*. Mr. P. W. Abbott showed single specimens of *Leucania obsoleta* and *Senta maritima* from near Ely.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY: *April 9th*, 1894, the last Meeting of the winter session.—Mr. S. J. CAPPER, F.L.S., F.E.S., President, in the Chair.

The following papers were read:—“*Lepidoptera* of Prescott,” by the Rev. R. Freeman; “A Note on Aculeate *Hymenoptera* and Diurnal *Lepidoptera* during March, 1894,” by Mr. Willoughby Gardner, F.R.G.S.; and “*Amnophila lutaria*,” by Mr. C. E. Stott. The papers were all illustrated by specimens. Reports of the additions to the lists of the Insect Fauna of Lancashire and Cheshire for the years 1891–2–3 were read, as follows:—*Coleoptera* and *Hemiptera-Heteroptera*, by Mr. W. E. Sharp; *Hymenoptera*, by Mr. Willoughby Gardner; and *Lepidoptera* by Messrs. Capper and Pierce. The lists showed that many important additions had been made to these lists, and that steady work was being done in the neglected Orders. Mr. Jones exhibited a number of *Tæniocampæ* taken at sallows from Llangollen. Mr. Crabtree, *Callimorpha Hera* and light varieties of *Zygæna filipendulæ*. Miss Tomlin, of Chester, a number of *Hymenoptera* from Madras. The Rev. R. Freeman, *Rhopalocera* from North-West India. Mr. Sharp, a collection of local *Hemiptera-Heteroptera*.—F. N. PIERCE, *Hon. Secretary*, 7, The Elms, Dingle, Liverpool.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *March 22nd*, 1894.—E. STEP, Esq., President, in the Chair.

The Rev. J. E. Tarbat, The Common, Weybridge, was elected a Member.

Mr. South exhibited a long bred series of *Tæniocampa gothica*, L., including many var. *gothicina*, which he had received from Mr. Rose, of Barnsley. The whole were large, and of a deep red shade; also buds of *Arundo phragmites*, L., from Hampshire, which were infested by a large Dipterous larva. Mr. Turner, a long series of *Hybernia leucophearia*, Schiff., taken this year, including a considerable number of melanic forms. Mr. Adkin, a series of the same species from the New Forest, the common form among them being the white banded one. Mr. Auld, a very large recently bred specimen of *Ocneria dispar*, L. Mr. Sauz , a locust (*Edipoda tartarica*) captured at Brixton among vegetables imported from Italy. Several members noted that *Tæniocampa munda*, Esp., *Asphatia flavicornis*, L., *Diurnea fagella*, Fb., and *Semioscopus avellanella*, Hb., were out.

April 12th, 1894.—The President in the Chair.

The President referred to the great loss the Society had sustained by the death of Mr. J. Jenner Weir, who had always taken such an active interest in its meetings, and a resolution was unanimously adopted that a letter of condolence and sympathy should be sent to Mrs. Weir. Mr. Carpenter exhibited long series of *Hybernia leucophearia*, Schiff., from Coombe Wood, West Wickham, and the New Forest, showing the typical forms in each place, also ova of *Trachea piniperda*, Panz. Mr. Adkin, for Mr. Billups, the following rare *Diptera*: *Meigenia majuscula*, from

Dulwich, new to Britain, *Sciomyza rufiventris*, from Ireland, *Degeeria pulchella*, bred from *Peronea maccaea* by Mr. Adkin, *Urellia elata*, from Lewisham, and an unknown species of the genus *Phorbia*; also galls of *Dryophanta divisa* and their maker, with *Synergus albipes*, one of its inquilines, and five parasites, viz., *Mesopobolus fasciventris*, *Syntomaspis caudatus*, *Upelmus urozonus*, *Decatoma biguttata*, and a *Chalcid*. Mr. Adkin, a drawer showing series of the genus *Noctua* from various localities, especially *N. glareosa*, Esp., and *N. augur*, Fb. Mr. Moore and Mr. Perks, wood which had been destroyed by *Coleoptera*. Mr. C. A. Briggs, a number of very striking varieties of *Abraxas grossulariata*, L., similar to those figured by Newman, and *The Young Naturalist*, Vol. I. Mr. Jager, a living *Biston hirtaria*, Clerck, stating that he had met with a considerable number of cripples, all malformed on the right side.—HENRY J. TURNER, *Hon. Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON: *March 28th*, 1894.—HENRY JOHN ELWES, Esq., F.L.S., President, in the Chair.

Mr. Percy H. Grimshaw, of 58, Comiston Road, Edinburgh, was elected a Fellow of the Society.

Mr. McLachlan announced the sudden death, on the 23rd inst., of Mr. J. Jenner Weir, who joined the Society in 1845, and had been one of its most regular attendants. He also commented on the scientific attainments of the deceased, and his social qualities. Mr. Goss and Mr. Merrifield also spoke of their long friendship with the deceased, and of the respect and esteem which they entertained for his varied knowledge and amiability of disposition.

Mr. W. Borrer, Jun., exhibited a wasp's nest which had been built in such a way as to conceal the entrance thereto and to protect the whole nest from observation. He believed the nest to be that of *Vespa vulgaris* (*cf.* Proc. Ent. Soc. London, 1892, pp. 20 and 21). Mr. McLachlan and Mr. Blandford made some remarks on the subject.

Mr. G. F. Hampson exhibited a specimen of *Gaudaritis flavata*, Moore, from the Khári Hills, and called attention to the existence in the males of this species, in the closely allied British species *Cidaria dotata*, Linn., and also in two Japanese species (*C. Agnes*, Butl., and an undescribed species), of an organ on the under-side of the fore-wing, which he suggested might be for stridulation; this organ consisting of a small scar of hyaline membrane situated just below the middle of vein 2, which is much curved: this scar is fringed with long hair, and has running down its middle a row of sharp spines situated on the aborted remains of vein 1, and which is curved up close to vein 2. Mr. Hampson said that in the Japanese species *C. Fixreni* of Brem., closely allied to *flavata*, the males have no trace of this organ; and he hoped that entomologists who have an opportunity of observing *dotata* in life would make some experiments on living specimens during the ensuing summer; probably confining males and females together would lead to some results. The President, Prof. E. B. Poulton, Lord Walsingham, and Mr. Hampson took part in the discussion which ensued.

The Rev. T. A. Marshall communicated a paper, entitled, "A Monograph of the British *Braconidæ*, Part V."

Mr. Louis Péringuey communicated a paper, entitled, "Descriptions of new *Cicindelidæ* from Mashunaland."

Prof. Poulton gave an account of his recent tour in the United States, and commented on the Entomological and other collections contained in the American museums. Lord Walsingham, Mr. Hampson, and the President also made some remarks on the subject.

April 11th, 1894.—The President in the Chair.

Mr. F. W. Jones, of 63, Carlton Hill, St. John's Wood, N.W., and Dr. William Steer Riding, B.A., M.D., of Buckerell, Honiton, Devon, were elected Fellows of the Society.

The Hon. Walter Rothschild exhibited male and female specimens of *Ornithoptera paradisea*, Stdgr., from Finisterre Mountains, New Guinea; *O. trojana*, Stdgr., from Palawan; *O. Andromache*, Stdgr., from Kina Balu, Borneo; *Ænetus mirabilis*, Rothsch., from Cedar Bay, Queensland; and a few other splendid species from the Upper Amazons. The President, Mr. J. J. Walker, Mr. Osbert Salvin, Lord Walsingham, Colonel Lang, Mr. Champion, and Mr. Hampson made remarks on the geographical distribution of some of the species and the elevation at which they were taken.

Mr. H. Goss exhibited, for Mr. G. A. J. Rothney, several specimens of a species of *Hemiptera* (*Serinetha augur*, Fab.), and a species of *Lepidoptera* (*Phauda flammanis*, Walk.), the latter of which closely resembled and mimicked the former. He said that Mr. Rothney had found both species abundantly on the roots and trunks of trees in Mysore, in November last, in company with ants (several species of *Camponotus* and *Cremastogaster*). The *Hemiptera* appeared to be distasteful to the ants, as they were never molested by them, and he thought that the species of *Lepidoptera* was undoubtedly protected from attack by its close imitation of the Hemipteron. Mr. Goss said he was indebted to Mr. C. J. Gahan for determining the species. A discussion followed on the mimicking species, in which the President, Mr. Waterhouse, Mr. J. J. Walker, Colonel Swinhoe, Mr. Hampson, and others took part.

Mr. J. W. Tutt exhibited (1) a typical specimen of *Lycana Corydon*, captured in July, 1893; (2) a hybrid male (*L. Corydon* and *L. Adonis*), taken *in copulâ* with a typical female *L. Adonis*, May 20th, 1893; (3) a typical male *L. Adonis*, May 20th, 1893; (4) a female *L. Adonis*, the pigment failing in one hind-wing; (5) a pale var. of *L. Corydon*, probably to be referred to var. *apennina* of Zeller, usually taken in Italian mountains, or var. *albicans*, H.-S., taken in Andalusia. Mr. Tutt remarked that the hybrid retains the external features of *Corydon*, but has taken on to a great extent the coloration of *L. Adonis*. It was captured *in copulâ* with a female *L. Adonis*, at a time when *L. Adonis* was very abundant, and some weeks before *L. Corydon* occurred (*vide* Ent. Record, iv, p. 230).

The question having been raised by the President as to the number of meetings of the Society which it was desirable to hold during the year, and the most convenient dates for such meetings, a long discussion on the subject ensued, in which Mr. Waterhouse, Mr. Salvin, the Hon. Walter Rothschild, the Rev. T. Wood, Mr. S. Stevens, the Rev. J. S. St. John, and others took part.—H. Goss, *Hon. Secretary*.

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Abundance of <i>Pyrameis cardui</i> , L., in the Ziban, Algeria.— <i>Rev. A. E. Eaton, M.A., F.E.S.</i>	98
<i>Cionus longicollis</i> , Ch. Brisout: an addition to the British List.— <i>G. C. Champion, F.Z.S.</i>	100
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British Hemiptera: additions and corrections.— <i>James Edwards, F.E.S.</i>	101
Supplement to Annotated List of British Tachiniidæ.— <i>R. H. Meade</i>	107
Note on <i>Thermobia furnorum</i> , Rov.— <i>E. Bergroth, M.D.</i>	111
<i>Xanthia ocellaris</i> alive at Wimbledon.— <i>E. H. Taylor</i>	111
The larva of <i>Mamestra anceps</i> .— <i>J. Gardner, F.E.S.</i>	111
<i>Aporia cratægi</i> introduced at Windsor.— <i>F. Merrifield, F.E.S.</i>	112
Accidental transposition of figures of two <i>Gracilariæ</i> .— <i>E. R. Bankes, M.A., F.E.S.</i>	112
<i>Coleophora potentillæ</i> , Stn., under an <i>alias</i> .— <i>Id.</i>	112
Note on a <i>Batalis</i> hitherto undetermined.— <i>Id.</i>	112
<i>Tinea pallescentella</i> in a wasp's nest.— <i>C. G. Barrett, F.E.S.</i>	113
<i>Crambus ericellus</i> in Cumberland.— <i>Id.</i>	113
Aberration of <i>Deiopeia pulchella</i> , L.— <i>Frank Bromilow, F.E.S.</i>	114
The genus <i>Pseudonosoderma</i> , v. Heyd.— <i>G. C. Champion, F.Z.S.</i>	114
<i>Pentaria Oberthüri</i> , Champ.— <i>Id.</i>	115
<i>Aphodius consputus</i> , Creutz.— <i>J. J. Walker, R.N., F.L.S.</i>	115
Curious locality for <i>Crioceris asparagi</i> , L.— <i>E. Saunders, F.L.S.</i>	115
<i>Dytiscus dimidiatus</i> at Askham Bog.— <i>Rev. W. C. Hey, M.A.</i>	115
Extraordinary abundance of <i>Echinomyia ursina</i> .— <i>R. C. Bradley</i>	116
OBITUARY.— <i>John Jenner Weir, F.L.S., &c.</i>	116
SOCIETIES.— <i>Birmingham Entomological Society</i>	117
<i>Lancashire and Cheshire Entomological Society</i>	118
<i>South London Entomological, &c., Society</i>	118
<i>Entomological Society of London</i>	119

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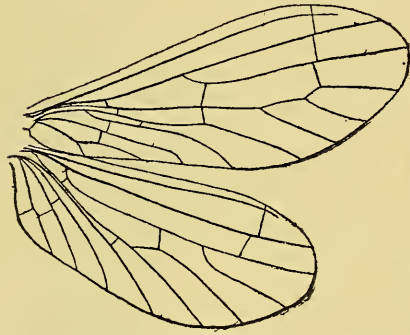
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IS *ALEUROPTERYX LUTEA*, LÖW, IDENTICAL WITH *CONIOPTERYX LUTEA*, WALLG.?

BY PROF. FR. KLAPÁLEK, F.E.S

The question whether the species described under the name *Aleuropteryx lutea*, Wallg., by Löw in his paper, "Beitrag zur Kenntniss der *Coniopterygiden*," is identical with the species whose name it bears, arose in my mind when I was arranging and naming my materials of Bohemian *Coniopterygidæ*, amongst which I have detected a few specimens collected in the year 1891 during my excursion in Sudets, and others from the neighbourhood of Prague, all agreeing in the neuration, and



distinguished by the twice furcated cubitus. Last year, when searching for more materials, I was delighted to find the same species very abundantly in a third locality in the neighbourhood of Prague. These specimens were likewise quite in accord with the above mentioned.

When examining my materials more closely I found that they agreed tolerably well with the description and figures given by Löw, but there were some little discrepancies. Then I applied to them the description given by Wallengren, with which they agreed very well. Comparing the descriptions given by Wallengren and Löw, I came to the conviction that the species described by Löw must be different from *Coniopteryx lutea*, Wallg.

For the sake of comparison I give here the description given by Löw (A) and the description of my examples agreeing with that given by Wallengren (B), pointing out the differences only.

A.

Antennæ 26—27-jointed in both sexes.
 Their second basal joint with a conical tooth beneath.
 The wings with a very slight brownish tinge and brown neuration.
 Sector radii in the anterior wings simple, arising almost from middle of the radius.

B.

Antennæ 23—25-jointed in both sexes.
 No tooth on the second basal joint of the antennæ.
 Wings with a slight brownish tinge, rather iridescent when deprived of the powder; neuration strong, distinct and brown.
 Sector radii simple, arising a little before the middle of the radius.

The transverse nervule in the area radialis not much further removed from the end of radius than the nervule in the area subcostalis.

The outer nervule in the area discoidalis is placed on the upper branch of the first cubital fork on the base of the second fork, or a little removed from it.

The nervule limiting outwardly the cellula postcubitalis intermedia lies a little behind the inner nervule in the area discoidalis (according to Löw's figure!).

The fork of the sector radii in posterior wings very short, a little shorter than its distance from the anastomosis of the transverse nervule in the area radialis (according to Löw's figure!).

The transverse nervules in the area subcostalis and radialis meet each other almost at the same point.

The outer nervule in the area discoidalis runs into the sector radii very little before the nervule in the area radialis, and with its other end into the upper branch of the second fork of the cubitus. All the four nervules in the outer series form therefore a line.

The nervule limiting outwardly the cellula posteubitalis intermedia forms almost a line with the inner nervule in the area discoidalis.

The fork of the sector radii in posterior wings long, more than two-thirds of the length of its stalk, so that the transverse nervule in the area radialis runs into the first third of its upper branch. The same nervule meets the radius very little before the nervule in the area subcostalis.

Though the differences seem slight, they are very constant and thorough. I supposed at first that Dr. Löw had known the types of Wallengren, and considered perhaps his own examples as a variety not deserving further mention; but Mr. Wallengren was kind enough to inform me that his types are in the Museum at Stockholm, and have not even been seen by himself for 20 years. As Dr. Löw does not mention he had before him materials of this Museum, I must infer he did not know the types, and was guided by the description only. I am now convinced of the distinctness of *Aleuropteryx (Coniopteryx) lutea*, Wallg., and the *Aleuropteryx* described by Löw, which may, in honour of its worthy discoverer, bear the name of *Löwii*. Our Bohemian specimens belong to the true *A. lutea*, Wallg. (the neuriation of which is represented in the figure here given), and were collected on *Abies picea*. The *Aleu. Löwii* lives on *Pinus mughus*, Scop.

Whether the specimens from Finland and Siberia belong to the true *Aleuropteryx lutea* or not remains to be decided.

Prague, Bohemia :

April 29th, 1894.

ON THE PROBABLE CASE OF *MOLANNODES ZELLERI*, McL., AND
SOME NOTES ON THE LARVA.

BY PROF. FR. KLAPÁLEK, F.E.S.

Three years ago I chanced to collect in a brook near Jablonné in East Bohemia some young larvæ and empty nymph cases, which,



though I have not been able to confirm this opinion by rearing, I hold as belonging to *Molannodes Zelleri*, McLach., which had been found rather abundantly in the same locality in the foregoing year. The reasons of my belief are based especially on the form of the case and larva. There is, except *Molanna angustata*, Curt., no other allied species as yet known from any part of this kingdom, and it is not very probable any will be found here. As I do not hope to be able soon to observe the whole metamorphosis, and as the case and larva themselves are interesting enough to deserve attention, I

will give here some preliminary notes on them. The cases show in every respect the greatest resemblance to those of *Molanna angustata*, Curt., which have been, from their singular form, several times described.* They are made of fine sand grains mingled with small plates of mica and minute particles of black bark, so that they are semipellucid and black spotted. The inner tube narrowed gradually behind and a little curved downward, has its sides and the upper part of the anterior margin dilated. But it is easily to be distinguished from the case of *M. angustata* by the side margins. These are, in the *Molanna* cases, broader and distinctly separated by a shallow groove from the tube proper. In *Molannodes*, on the contrary, the slightly arched upper-side of the case passes insensibly and directly into the side lobes. The transverse section of the case appears, therefore, triangular, rounded beneath, slightly arched above, and with sharp side angles. The posterior end of the case is narrowed as in *Molanna*, open above, and having an appearance as of a groove. The case is 14 mm. long and 4—5 mm. broad.

The larva is also very similar to a *Molanna* larva. Its posterior legs are proportionately somewhat longer, their tibiæ show likewise

* Dr H. Hagen : Ueber Phryganiden Gehäuse (Stett. Ent. Zeit., 1864, p. 223). K. J. Morton : Notes on the Metamorphoses of British *Leptoceridae* (Ent. Mo. Mag., Ser. 2, vol. i, p. 128). Klapálek : Die Metamorphose der *Trichopteren*, Sér. 2, p. 88.

the division into two parts, and the claws, which are in *Molanna* short and divided at their end into fine bristles, in *Molannodes* end in a fine long bristle, and bear numerous short hairs. The branchiæ of the young larvæ are in twos only (in *Molanna* in threes and fours). The 1st and 2nd tibiæ are prolonged on the inner edge into conical processes, each bearing on its tip a strong bristle. These processes are especially large on the middle tibiæ.

Also the habits of the larvæ are very similar to those of the above named genus. I have collected them in a clear brook, but only near its entrance into the river T. Orlice, in places where the bottom is covered with fine sand, and where the water runs rather quietly. The larva moves slowly by fits and starts on the bottom, and one must be very attentive in order to see and catch them. The case is a very interesting instance of protective form and colour.

The figures show a larva case and a transverse section of same, both $\times 6$.

Prague, Bohemia :
April 28th, 1894.

ANISOLABIS ANNULIPES, LUC., AT TAVISTOCK; AN EARWIG
UNRECORDED FOR BRITAIN.

BY HAROLD SWALE, M.B.

After reading the "Entomology of a London Bakehouse" in the April number of the Ent. Mo. Mag., I paid a visit to the oldest bakehouse here to try and get some specimens.

In *Coleoptera* I found only one example of *Tenebrio molitor*; but among the ashes under the furnace were great numbers of an earwig, different in appearance to any I had seen before. I took home several, and made out that it was a species of *Anisolabis*. Mr. Saunders, to whom a specimen was sent, refers the earwig to *Anisolabis annulipes*, Lucas. The bakers say they have always seen them there, so they must have arrived in the bakery many years ago.

It is easily distinguished by the 12th and 13th antennal joints being white, the rest brown, and by the dark ring round the femora of the otherwise testaceous legs.

Tavistock: May 15th, 1894.

[This species has been found in several Mediterranean localities, and commonly in the Island of Madeira. How it obtained a footing in an inland town in Devonshire we leave to the conjecture of local entomologists.—ED. SAUND.]

LITA INSTABILELLA, DGL., AND ITS NEAREST BRITISH ALLIES.

BY EUSTACE R. BANKES, M.A., F.E.S.

(Continued from page 83).

7. LITA OBSOLETELLA, F. v. R.

Lita obsoletella, F. v. R., 225, pl. 79 (1840); Dup.; Dgl.; Stn.; H.-S.; Frey; Hein.

Larva—inside stems of various species of *Atriplex* and *Chenopodium*, feeding on the pith, V—X.

Pupa—in slight white silk cocoon in burrow inside stem, or occasionally outside among dead leaves, &c., VI—IX, X—V.

Imago—V—IX.

Broods—two or more, apparently a succession; hibernates as pupa.

Hab.: ENGLAND—Dorset, I. of Wight, Sussex; more local than the preceding. I have no knowledge of its occurrence away from the coast in this country, though it occurs inland on the continent.

The usual habits of all the above species are liable to slight modifications, according to circumstances, and these may result in partial second broods, pupæ lying over, &c.

The first systematic attempt to clear up the existing confusion was made, some few years ago, by Mr. W. H. B. Fletcher, who, with great energy and perseverance, investigated the life-histories of all the *Litæ* here mentioned, with the exception of *suedella*. Mr. J. B. Hodgkinson tells me that he bred this species in July, about the year 1872, from larvæ found in May or June in shoots of *S. fruticoso*, near the mouth of the Wyre, in Lancashire;* it was taken by Mr. Atmore in Norfolk in 1881, bred by Mr. Harwood, in Essex, in 1882, and bred from Dorset larvæ by Mr. Richardson in 1885, and by myself in 1886. These discoveries were, in each case, made independently, and without previous knowledge of its existence. In no collection have I seen any but quite modern specimens.

In Zool., IV, p. 1270, p. 1268, fig. 10 (1846), are to be found the original description, by Mr. Douglas, and a figure of *Anacampsis instabilella*, but as these seemed insufficient to indicate the exact species before him, Mr. Douglas's cabinet series was, thanks to the kindness of the present owner, Mr. P. B. Mason, examined by both Mr. Fletcher and myself, independently. There was nothing to show which was the

* I must add that there were no *suedella* among the specimens kindly forwarded by Mr. Hodgkinson, as, perhaps, some of those that he bred, nor could any of the moths sent have resulted from larvæ with the habits of those then found by him, and the occurrence of the rare *S. fruticoso*, a perennial, in Lancashire is not recorded in Hooker's "Student's Flora," 3rd edition (1884), or thought at all probable by Mr. J. Britten, of the Botanical Department of the British Museum.

type specimen, Mr. Douglas having stated that the first place in the row was no guarantee, and the ten moths standing as "*instabilella*, Dgl.," represented *three* distinct species, for

- (a) Nos. 1, 5, 6 proved to be what is now recognised as *Lita instabilella*.
 (b) " 2, 7 " " *Lita plantaginella*.
 (c) " 3, 4, 8, 9, 10 proved to be *Lita salicorniæ*.

(a) Last spring, however, it occurred to me that the one and only insect to which the original description and figure could apply was a scarce form of *L. instabilella*, for no known form of any of its allies ever shows the combination of "a lighter transverse striga near the apex," and "a line (*i. e.*, a dark line, as shown in the woodcut) down the centre." Having no recollection of the actual specimens, I therefore asked Mr. Mason for the loan of Nos. 1, 5, and 6 in the Douglas series, and he obligingly sent me 1 and 5, but the third moth was *plantaginella*, and I afterwards found out that he had accidentally forwarded No. 7 instead of No. 6! No. 1 was, as expected, a splendid example of the scarce, dark-streaked form of *instabilella*, and there can be no doubt that, being the most strongly marked, it was taken as the type, and described and figured in the *Zoologist*, which justifies me in restricting the name to the species, of which this form is a known variety. No. 5 and No. 6 (which I subsequently examined) were ordinary streakless forms. To my great regret, Nos. 1, 5, and 7 were lost in the post on the return journey, so the type has disappeared.

(b) It is equally clear that when Mr. Douglas captured the original specimens of *instabilella*, near St. Osyth, Essex, in July, 1845, he also took at the same time examples of the then unrecognised *plantaginella*, and considered them to be forms of the same variable insect, for, apart from the fact that Nos. 2 and 7 in his series are that species, the Zeller collection contains a typical *plantaginella*, received from the late Mr. Stainton, whose own label it bears:—" *Instabilella*. Salt marshes, St. Osyth. One of Douglas' original specimens, captured 1845;" and in Professor Frey's collection there also stands a single typical *plantaginella*, labelled:—" *G. instabilella*, Dougl. *Petrophila*, ol. Frey. England (St. Osyth)."

(c) In the *I. B. Lep. Tin.*, p. 126 (1854), to his description of "*Gelechia instabilella*," Mr. Stainton adds: "Mr. Douglas bred this species last autumn from larvæ he found at Brighton, in August, feeding on *Salicornia herbacea* and *Chenopodium maritimum*." This is the first allusion to the species now recognised as *Lita salicorniæ*, Hering, which alone feeds on both these plants, and is found on them

in the larva state in August, by Mr. Fletcher, on the Brighton coastline. Bred examples lately received from Major E. Hering, of Stettin, to whom I am greatly indebted, are identical with Nos. 3, 4, 8, 9, and 10 in the Douglas series, and with those reared by Mr. Fletcher. The Zeller collection contains a few examples of this insect, labelled:— "*Salicornella*, Stg. Salzig See, lit., 11/61;" five being dated "29.5.59," and the rest, "14.5.62," and these, Major Hering tells me, are the very ones alluded to in his paper on "*Lita salicorniæ*, n. spec.," in Stett. Ent. Zeit., L, pp. 302—5 (1889), as having been taken at the Salt Lake, at Erdeborn, near Eisleben, and sent to Professor Zeller by the late brother of his friend, Herr G. Stange ("Stg.," = "Stange." E. Hering). Full particulars about this species will be given below.

(d) *Gelechia (Lita) ocellatella* was first described and named by Mr. Stainton in Ent. Ann., 1859, pp. 151—2, from specimens bred (Ent. Mo. Mag., XIX, p. 252) by Mr. Thomas Boyd from larvæ found feeding, in May, in flower-heads of *Beta maritima* at the Lizard, in Cornwall. And although Mr. Stainton in later years lost faith in his *ocellatella*, and finally sunk the name as a synonym of "*instabilella*" (Ent. Mo. Mag., l. c.), yet the characteristics given in the original description and diagnosis prove beyond a doubt that the *Lita* which he described as *ocellatella* was the pretty "ocellated" insect, "dusted with ochreous," of which the only known food-plant is *Beta maritima*. The name must, therefore, be retained for this species,* of which I have seen in Mr. Wollaston's collection one of the examples taken by him at Porto Santo (E. A., 1859, pp. 151—2). Through the kindness of Mr. W. C. Boyd, I have examined some fine specimens of "*ocellatella*" out of Mr. T. Boyd's collection; presumably they were either the very moths, or bred from the same batch of larvæ as those from which Mr. Stainton took his description, and all are true *ocellatella*. Mr. Douglas's series of "*ocellatella*" consists solely and entirely of this species.

In Mr. Stainton's cabinet, the series of "*instabilella*, Dougl." is composed in accordance with the views expressed in Ent. Mo. Mag., XIX, pp. 251—3, and, with its overflows into the spaces for *L. Strelitziella* and *R. leucatella*, includes:—

Two *L. ocellatella*, labelled, "e. l., Scilly, Jenkinson, 30.6.78." Four *L. ocellatella*, labelled, "e. l., 5—i, 7. Shoots and leaves, *Beta maritima*. C. G. Barrett.

* In the Stainton continental collection are seven examples of a *Lita*, standing as "*ocellatella*, Stt.," and labelled "Golf Juan. Constant. 8.82." and Lord Walsingham, in 1887, received specimens of the same from M. Constant, from Cannes, with the information that it had been identified by Mr. Stainton as "*ocellatella*." It is, however, very distinct from *ocellatella*, but is nearly allied to *instabilella*, from which it may be readily separated by its decidedly smaller size (5½"–6" as against 6½"–7"), by the much more ochreous colour of the fore-wings, and by the fascia, when present, being more indistinct.

25.10.79." Four *L. ocellatella*, labelled, "e. l., *Beta*. *Ocellatella*, Barrett. C. G. Barrett. 26.9.85." Eleven *L. instabilella*, labelled, "e l., *Atriplex portulacoides*. Shoreham, Sussex. W. H. B. Fletcher. 15.4.82." One *L. instabilella*, labelled, "e. l., 3.7.84. *Statice limonium*. Freshwater, I. W. W. H. B. Fletcher." As the larva of *instabilella* has never been found on *Statice limonium* by Mr. Fletcher (or by any one else!) a single pupa was doubtless in rubbish among the old *Statice* stems sent by him to Mr. Stainton in May, 1884 (Ent. Mo. Mag., XXI, p. 60). One *L. instabilella*, labelled, "e. l. 18.6.54. *Atriplex portulacoides*. Brighton. J. N. Winter." Four *L. suædella*, labelled, "e. l., *Suæda fruticosa*. Weymouth. N. M. Richardson. 20.8.85." Two *L. suædella*, labelled, "8.86. Hunstanton. C. G. Barrett. 13.9.86." Among these stand, side by side, two unmounted and un-labelled specimens, that on the right being *ocellatella* (a worn ♂), that on the left *salicorniæ*. There is also a moth mounted on pith, through which runs an extremely long continental pin, bearing a MS. label, "*ocellatella*," but no data, and a small ticket on which is printed "56." It was most probably one of a set intended to be sent to a continental correspondent, but that the moth in question is not one of the types of *ocellatella*, Stn., is proved by a comparison with the description, and it is certainly *instabilella*. Next above the series of "*instabilella*" is *obsoletella*, to the right of which is *G. aleella*; pinned sideways on the line between them are four un-mounted and un-labelled *instabilella*, the lowest being the scarce dark-streaked form, which was described as the type; and in the *aleella* space are eight un-mounted *atriplicella*, labelled, "e. l., *Atriplex* seeds. Bristol. Grigg, 23.8.80." The series of "*plantaginella*, Stn.," consists of six examples of that species, all labelled, "e. l., Roots of *Plantago maritima*. Fleetwood. Threlfall, 12.11.79."

The descriptions of the imago of "*instabilella*," in the I. B. Lep. Tin., and the "Manual," appear to me to have been drawn up mainly from *plantaginella*, but partly from *instabilella* also, because in both a pale angulated fascia is mentioned, which is wanting in *plantaginella*. In both works the locality, "St. Osyth," applies to both *instabilella* and *plantaginella*, while in the I. B. Lep. Tin., "Brighton," and the remarks about the larvæ and food-plants, refer to *salicorniæ* only. In the "Manual," the larva described under "*instabilella*" is that of *plantaginella*, while "Dublin," and not improbably "Sc." and "the Lizard" also, applies to that insect; "Brighton" refers certainly to *salicorniæ*, and, probably, to *instabilella* also, since Mr. Stainton had a specimen from there, bred in 1854. I cannot understand why the two food-plants of so-called "*instabilella*," given in the I. B. Lep. Tin., and the additional one in the Ent. Ann., 1865, p. 84, should have been omitted from the "Manual."

The notes on "*instabilella*" by Mr. Douglas, in Trans. Ent. Soc. Lond., V, p. 201 (1849) were doubtless made from both *instabilella* and *plantaginella*; of the localities, "Essex" certainly, and, perhaps, "mouth of the Thames," applies to both species, while "Ireland" most probably applies to *plantaginella* only, for *instabilella* is not known to occur in Ireland, where its food-plant is very rare.

CLUNIO MARINUS, HALIDAY: A MARINE CHIRONOMID.

BY GEORGE H. CARPENTER B.Sc.

It is now nearly forty years since Haliday* described the male of this small marine *Dipteron* from specimens taken on the coast of Kerry, and subsequently recorded the occurrence of stray individuals in Dublin Bay.† Since then, no observations of the species appear to have been made, as Mr. Theobald, in his recent work on British *Diptera*,‡ is only able to copy Haliday's description and figures. It is, therefore, with great satisfaction that I announce the re-discovery, on the Irish coast, of this interesting insect, especially as I have obtained the hitherto unknown female, eggs, and larva. Pending the detailed researches, which I hope to be able to make into the structure and life-history of the midge, the present short account of the chief points observed may be of interest.

On April 28th, when walking along the shore of Killiney Bay, Co. Dublin, with a party of the Dublin Naturalists' Field Club, Mr. W. F. de V. Kane called my attention to a number of small flies moving very quickly over the surface of the water in the rock-pools.

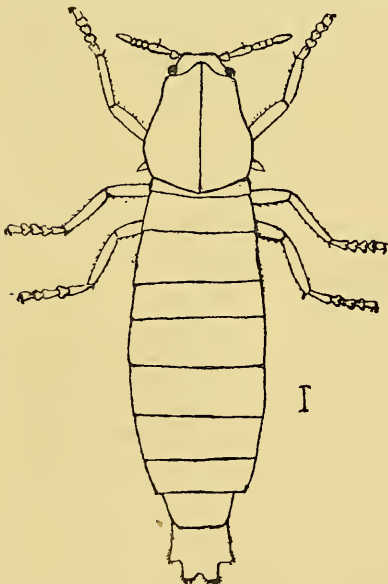


Fig. 1.

These proved to be males of *Clunio marinus*, and, as described by Haliday, they were skimming over the surface, with their wings in rapid vibration. A little further on, we discovered quite a colony of them on a mass of green sea-weed (*Cladophora*) covering a rock which had been left exposed by the tide. On some of the weed with the insects upon it being placed in a tube and examined, it became clear that we had now secured both sexes, for two of the males were carrying about with them (attached *in cop.*) wingless females (fig. 1). These, when captured,

had their abdomens distended with eggs, and appeared of a dull greenish-yellow colour. The female *Clunio* is much degraded. Not

* Nat. History Review, vol. ii, 1855, Proc., p. 52, pl. 2. † *Ib.*, vol. iii, 1856, Proc., p. 73.

‡ "An Account of British Flies," vol. i: E. Stock, London, 1892 (pp. 195-6).

only are the wings reduced to very small vestiges, but the legs are weaker, and the antennæ are shorter and of fewer joints (7) than are those of the male (whose antennæ are 11-jointed). The male, by means of his strong claspers (so marked a character of the species), was able to hold the body of his mate out in a straight line with his own, and thus carry her about; so that, when he walked on the glass of the tube, her legs could be seen kicking freely in the air.

During the next day, each of the females laid about seventy eggs, enclosed (like those of *Chironomus*) in a gelatinous tube. The egg is narrowly spindle-shaped, and measures .16 mm. in length. By the morning of the second day, egg-laying seemed to have finished, and the body of the mother became much shrivelled up. As, in both sexes, the mouth-organs are vestigial, it is probable that life in the imaginal state is short. I am not aware that any Chironomid has before been discovered with the wings aborted, as in the present insect.

Further examination of the *Cladophora* revealed a larva (fig. 2) of the Chironomid type, which there can be little doubt is that of *Clunio*. This larva (4 mm. in length) is, except the head, which is brown, of a green colour, closely agreeing with the sea-weed on which it lives and feeds. The head bears two deep black ocelli on each side (the posterior much larger than the anterior), and a pair of short two-jointed antennæ. The mandibles are powerful, armed with teeth, and articulated, so as to move in almost vertical planes, though somewhat inclined inwards. They act, in conjunction with the serrated labial plate, as scissor-like cutters. There are twelve body-segments, the first and last of which are each provided with a pair of sucker-feet, the anterior-pair armed with numerous spines, and the posterior with a few hooks. This larva has not the ribbon-like appendages and special breathing-processes found in that of *Chironomus*.

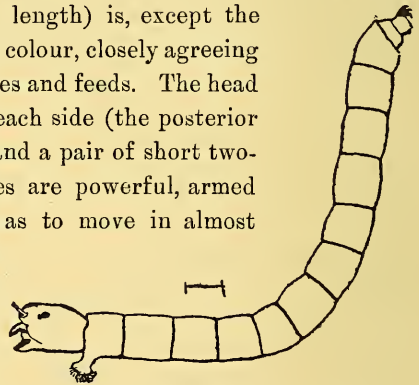


Fig. 2.

Science and Art Museum, Dublin :
May, 1894.

KYANIZING.

BY H. GUARD KNAGGS, M.D., F.L.S.

Collectors may come and collectors may go, but mites and mould go on for ever. Even with the experience of generations but little

progress seems to be made, since even in these "*fin de siècle*" days, opinions differ considerably as to the best means of circumventing those exasperating animal and vegetable parasites, though all agree to grumble about them, and to wonder what Nature could be about to invent such pests. It would be tedious to enumerate the various specifics which have been successively in fashion, from camphor to gasoline; suffice it that the best suggestion, to my fancy, was that of my good friend, the late Henry Doubleday, who advocated the use of a weak solution of corrosive sublimate (perchloride of mercury). His advice was that this liquid should be of the strength of six grains to the ounce of spirits of wine, and that it should be applied with a camel's hair brush to the under-sides of the abdomina.

With this many people were dissatisfied, they not unnaturally thought that there were other parts, besides those mentioned, which required protection, and so, acting on the dubious precept that "one cannot have too much of a good thing," they dipped their insects bodily into the fluid. But though they thereby secured immunity from their enemies, they not unfrequently detracted from the beauty of their treasures. Sometimes they acted on the aforesaid illogical principle in another direction, and increased the strength of their solution, and thereby apparently ruined the appearance of their specimens irretrievably, for they did not know at that time that an ether bath would soon rectify the error which they had committed. It is human nature: as soon as a good idea is started, certain people always think that they can "go one better;" I do it myself, that is why I am writing this paper.

Just about a quarter of a century ago, while on this subject, I wrote thus: "A good cabinet, quarantine, and kyanizing are the things," and that advice does not appear to require much alteration at the present day, though certain modifications, especially as to the process of kyanizing, present themselves to my mind. Ether, which, particularly in the form of spray, so far from causing injury, will actually give freshness to a shabby specimen, has occurred to me as an excellent vehicle in which to apply the perchloride. The strength of the ethereal solution should be five grains to the ounce—no more, but the difficulty is to keep it at that standard, on account of evaporation, and with this in view, my plan is as follows:—

Prepare a narrow strip of corked wood, about a quarter of an inch wide, and a foot or so long, with a cross handle at one end for the treble purpose of steadying it when placed on a table, of obviating the frequent handling of the specimens, and of holding it in the hand

in such a manner as to present the under-sides of the insects pinned upon it to the action of the spray. The next thing to do is to find a half ounce phial, which will fit the cork of the spray apparatus, and then fill it with ether, to which two and a half grains of perchloride have been added.

As soon as the agent is dissolved, the operation should at once be commenced, using the spray in such a way as to *slightly* damp each insect, and this should be continued till all the solution is used up, for which reason it is advisable to have a sufficient number of specimens pinned on the strips in readiness ; but we must always remember that as ether is very inflammable, naked lights must be kept out of the way, and also that it is not desirable to prolong this work beyond undue limits : the agent being a powerful alterative, and the solvent an anæsthetic.

Folkestone: *April*, 1894.

Spring Lepidoptera.—The first day moths came under my notice this season in any abundance was on February 10th, when *Phigalia pilosaria* and *Hybernia leuco-phæaria* were observed on the north and east sides of the fence that encloses Oatlands Park, near Weybridge ; the latter insect being in great profusion and very variable. This species I record first on February 4th, and *P. pilosaria* (a ♀) on January 11th. On February 10th a single *Anisopteryx æscularia* was also noticed, and on the 16th *Hybernia progemmaria* began to appear.

During the hot weather that prevailed at Easter, which I spent at Midhurst, Sussex, the hibernated *Vanessæ* were to be seen in abundance, including *V. polychloros*, which was common on March 25th between Midhurst and Haslemere. The blossoms of the willows were now teeming with moths, chiefly *Tæniocampæ*, the most noticeable being *T. miniosa*, of which a few were obtained. On the evening of April 1st I was much interested to observe that the blossoms of the blackthorn on Ashstead Common were visited in considerable numbers by *Noctuæ*, chiefly *T. cruda* and *T. gothica* and *Cerastis vaccinii*, which were in no ways disturbed by the rays of the lantern, but could be jerked down into the beating tray quite easily, where, however, they found the use of their wings more readily than do those that have been feeding on the willows. On the same evening *Xylocampa lithoriza* and *Eupithecia abbreviata* were met with. Since then, and during the entire month, nocturnal *Lepidoptera* have been most unaccountably scarce in this neighbourhood, although gas lamps and sugared trees have been frequently visited. The season is, however, as evinced by the early *Rhopalocera*, a decidedly forward one, although not, of course, comparable with 1893 in this respect. Yesterday (April 29th) I had the pleasure of meeting with 14 species of butterflies in the vicinity of Dorking, including *Pieris rapæ* and *P. napi*, *Euchloë cardamines*, *Argynnis Euphrosyne*, hibernated specimens of *Vanessa urticae* and *Gonepteryx rhamni*, *Cænonympha Pamphilus*, *Satyrus Egeria*, *Nemeobius Lucina*, *Thecla rubi*, *Polyommatus Phlæas*, *Lycæna Argiolus*, *Thanaos Tages*, and *Hesperia alveolus*. Of these, *A. Euphrosyne* and *L. Argiolus* were first seen on the 22nd. *Drepana unguicula* was also observed

yesterday, but the same evening, although a still and sultry one, no other moth was seen on the wing. A single specimen of *Hepialus lupulinus* turned up on the 22nd inst., and on the 28th I took *Arctia fuliginosa* near Reigate, flying in the sunshine.

The present season must be looked forward to with unusual interest by Entomologists, following, as it does, such a remarkable year as 1893.—R. M. PRIDEAUX, Ashted, Surrey: *April 30th*, 1894.

*Abundance of Pyrameis cardui, L., in the Ziban, Algeria (second note).—*Although the larvæ of this butterfly in this neighbourhood were thinned out a good deal last month, they are still common, and there are plenty of pupæ and imagos to be seen. In some parts the larvæ ran short of food, and it was pitiful to see them trying to relieve their hunger with a few mouthfuls of distasteful plants, such as *Peganum Harmala, L., Ferula vesceritensis, Coss. and Dr. MS., Thymelæa microphylla, Coss. and Dr. MS., and Euphorbia Guyoniana, Boissier and Reuter,* among others. A few, in one spot where mallows failed, migrated to *Diplotaxis pendula, D. C.,* and seemed to thrive. Then came some rough weather; strong winds swept numbers of larvæ along the ground in open places; a night or two's heavy rain destroyed the younger larvæ and weaklings, and in certain places one or two days of drifting sand appear to have killed pupæ exposed to its full influence. But now, in the early days of May, imagos have become very numerous once more, frequenting the blossoms of many kinds of plants in the desert, and crowding to the bushes of *Tamarix brachystylis, J. Gay MS.,* now in flower along the Oued Biskra above the barrage. I have not noticed any ovipositing of late. Perhaps they are awaiting a sirocco to waft them to the highlands of Constantine and Sétif, if not to Europe.—A. E. EATON, Biskra, Algeria: *May 4th*, 1894.

*Deilephila euphorbiæ, L., abundant near Biskra, Algeria.—*It may not be unusual, but there may be entomologists interested to know how plentiful just now are larvæ of this hawkmoth within a few miles of Biskra. They feed on a common desert plant, *Euphorbia Guyoniana, Boissier and Reuter,* which flourishes in sandy places, especially among the dunes to the west and south of the town. Since April 27th I must have seen between 1000 and 2000 larvæ of diverse ages—some in the blackish juvenile stage, and others over three inches in length. Standing still anywhere where the food-plant grows, one can generally see four or six larvæ without stirring a step; but in exceptionally favourable situations they are much more numerous. Within the space of a quarter of an acre I counted up to 250 of them, and after ceasing to count say quite 200 or 300 more. A few bushes, occupying each about a square yard of ground, had on them over 20 or 30 larvæ apiece. Adolescent larvæ did not present much variation in colour; some have the dorsal line red, others yellow. It is a real pleasure to stroll among them where nobody will molest them.—*Id.*

*Ceuthorrhynchus suturellus, Gyll., &c., at Snodland.—*More than twenty years ago, at the end of April, 1874, Mr. G. C. Champion and I took two examples of this rare and pretty little weevil by sweeping in a marshy place close to Snodland, Kent; our impression being at the time that it came off *Cardamine pratensis.* On the 5th of the present month I was again at Snodland, and diligently swept all the *Cardamine pratensis* I could find, with the result of *Ceuthorrhynchus cochleariæ* in plenty,

but no other species of the genus. A very small patch of the allied but very dissimilar looking plant, *Cardamine amara*, growing by the side of a drain in a swampy thicket, yielded, however, by persistent sweeping, eight or nine specimens of *C. suturellus*, and on the same plant I also found *Phyllotreta tetrastigma*. The Rev. W. Tylden, many years ago, took *C. suturellus* at Hythe, Kent, on *Cardamine pratensis* (Ent. Mo. Mag., ser. i, vol. vi, p. 33). *Mantura obtusata* occurred rather freely by sweeping, apparently coming off *Spiræa ulmaria*, and *Thyamis agilis* was again found, but very rarely, on *Scrophularia aquatica*.—JAMES J. WALKER, 23, Ranelagh Road, Sheerness: May 8th, 1894.

Pselaphus dresdensis, &c., at Armagh.—On Friday, January 12th, as it was a fine mild day, I took my water net and set off for Mullinure to stir up the water beetles. On arriving there I found, somewhat to my surprise, that there was a considerable flood in the meadows; there was not much refuse being cast up, but I got a small amount in my water net. On sorting this refuse I found, to my delight, three specimens of *Pselaphus dresdensis* therein. This was encouraging, so I took a bag the next day and made my way again to the flood, to see what more refuse I could get. There was little, and I could not fill my bag. Quality, however, fully atoned for lack of quantity. I took, by careful examination, three dozen *Pselaphus dresdensis* out of this one bag of rubbish; the curious thing was that other *Pselaphidæ* were scarcely represented. There were one or two *P. Heisei*, an odd *Tychus niger*, and a few *Bythinus puncticollis*. I seemed to have come on a regular "pocket" of *P. dresdensis*. Besides these I got but little, nor need I mention any, save *Myrmedonia collaris*, *Gymnusa brevicollis*, and *Lathrobium terminatum*. On that day month (February 13th) there was a tremendous flood in Mullinure, consequent on the very heavy rain of the preceding days. Again I sallied forth armed with my bags and net. This time there were lots of refuse, and I easily filled two large bags and started for home. Finding the bags rather heavy to carry in my hand, I slung them over my shoulder, with the result that before I reached home I was a kind of animated waterfall. However, the thought of *P. dresdensis* sustained me, and hastily doffing my wet garments I sat down to interview my insect friends. There were lots of beetles, but *P. dresdensis* was only represented by one solitary specimen. But this time the other *Pselaphidæ* were there in force; *Tychus niger* swarmed, *Bryaxis fossulata* and *B. juncorum* were numerous, as also was *Bythinus puncticollis*. Besides these I took a considerable number of *Myrmedonia collaris*, also *Bembidium doris*, *B. Clarki*, *B. Mannerheimi*, *Anchomenus gracilis*, *Pterostichus nigrita*, *Dromius linearis*, *D. melanocephalus*, *Cercyon quisquilius*, *Tachyporus brunneus*, *Mycetoporus splendens*, *Cryptobium glaberrimum*, *Lathrobium quadratum*, *Megarthus depressus*, a couple of *Meligethes*, an *Atomaria* which is like *berolinensis*, and a specimen of *Orthochaetes setiger*, together with hosts of commoner species.

I was very much struck by the absence of *P. dresdensis* in February, after its abundance in January. Both lots of refuse were got in the same place, so that alteration of locality could not be the cause; evidently in January I hit upon the period when they were abundant in the imago state. These imagines had apparently for the most part died off by February, and the other species of the Family had taken their place. This sort of fact helps to explain the apparent rarity of certain species. Their apparent scarceness arises from the fact that we are unacquainted with their

life-histories, and so do not know the time of year when they are most abundant, consequently we must frequently look for species when we have not the slightest chance of obtaining them in the imago. Hence it is, too, that steady all the year round work at one spot produces such good results. I have, as the readers of the Ent. Mo. Mag. are aware, worked Mullinure at all times of year for several years, and I think the result justifies my suggestion.—W. F. JOHNSON, Winder Terrace, Armagh : *May*, 1894.

Coleoptera near Cardiff.—*Mniophila muscorum* occurred in profusion at the end of March in moss in the Leckwith Woods, and with it a single specimen of *Orthochaetes setiger*. I took a solitary *Aphodius sticticus* on April 4th. The capture of *Hister stercorarius* near Llandaff last autumn may be worth recording.—B. TOMLIN, The Green, Llandaff : *April 5th*, 1894.

Homalota (Aleuonota) rufotestacea, &c., at *Guildford*.—On the 15th inst., between 2 and 4 p.m., I obtained twelve specimens of *Homalota rufotestacea*, by sweeping in shady grassy places on the chalk downs near Guildford. The insect was, I believe, hitherto unique as British, the original example having been captured by myself at Mickleham in April, 1868 (*cf.*, Ent. Mo. Mag., v, p. 218, and Trans. Ent. Soc., 1869, p. 163). The day was an exceptionally favourable one for collecting purposes—very close, still, and humid—and small *Staphylinidæ*, *Clavicornia*, &c., were exceedingly abundant. Amongst the *Staphylinidæ*, in addition to the *H. rufotestacea*, the following species occurred:—*Homalota depressa* (abundant), *H. hepatica*, *H. testaceipes*, *H. angustula*, *H. inquinula*, and *H. pagana*, and *Calodera umbrosa*, with many other common forms. As recently as January last, M. Fauvel sent me a continental example of his *H. aurantiaca* (= *rufotestacea*, Rye and Sharp, *nee* Kraatz and Rey) to compare with my specimen of *H. rufotestacea*, with which it perfectly agreed. According to M. Fauvel, the species of the *Aleuonota*-section of *Homalota* have been much confused by authors, and their synonymy he gives as follows:—

- | | |
|---|------------------------------|
| 1— <i>aurantiaca</i> , Fauv. | 4— <i>egregia</i> , Rye. |
| <i>rufotestacea</i> , Rye, Sharp. | <i>gracilentia</i> , Kr. |
| 2— <i>atricapilla</i> , Rey, Fairm., &c. | <i>hypogæa</i> , Fowl. |
| <i>rufotestacea</i> , Kr., Rey. | 5— <i>ocaloides</i> , Bris. |
| <i>elegantula</i> , Bris., Sharp, Rey. | ? <i>Kiesenwetteri</i> , Kr. |
| 3— <i>gracilentia</i> , Er., Fairm., Rey. | 6— <i>laviceps</i> , Bris. |
| <i>venustula</i> , Heer. | |
| <i>splendens</i> , Kr., Sharp. | |
| ? <i>hypogæa</i> , Rey. | |

The last two are not British. *H. aurantiaca* has been found in France (Autun, Dijon, Drôme, and Limoges), Germany (Hesse), &c. The *H. elegantula* of our lists differs from it in the much more coarsely punctured head, and, according to Fauvel, in having the seventh ventral segment sinuate-emarginate (instead of truncate) in the ♀. *H. egregia*, Rye, M. Fauvel informs me, has two tubercles upon the sixth abdominal segment in the ♂; the specimen described by Rye, in my possession, is a ♀.—G. C. CHAMPION, Horsell, Woking : *May 18th*, 1894.

Eumicrus rufus near Shirley.—I have much pleasure in recording the capture of *Eumicrus rufus* near Shirley. I took three specimens of this very rare beetle on April 15th in wood stack refuse, and I went down again to-day and succeeded in taking six more.—HORACE DONISTHORPE, 73, West Cromwell Road, South Kensington: April 19th, 1894.

Lecanium rubi, Schrank.—Since the rediscovery of this species in 1892 (cf. vol. iii, n. s., p. 105) the scales have not been noticed, but on April 24th I saw on a bramble shoot of last year's growth, unaccompanied by even a single ant, one, and only one, finely developed ♀, radiant in her nuptial adornment, which consisted of a series of transverse white lines, showing effectively on the dark dorsal surface of the scale. It was attached to the under-side of the shoot, the locality being about a mile from the original place of capture; thus the species is well distributed, and is, I apprehend, not so rare as might be indicated from the fewness of its captures recently, and that it was not seen at all anywhere for 90 years; but there are reasons for the apparent scarcity of this large and conspicuous *Coccid*. Firstly, the intensely spiny habitat is deterrent of investigation; 2ndly, the scale being attached to the under-side of a shoot is not visible from above; and 3rdly (in this country, as far as my experience goes), the species affects brambles that grow in hawthorn hedges, and as these are pruned and trimmed during the winter, the young shoots, to which the scales are attached, are either cut away entirely or are shortened, and so the scales are destroyed, the race being continued only from those casually left by the hedgers and ditchers.—J. W. DOUGLAS, 153, Lewisham Road, S.E.: May 1st, 1894.

The European bluebottle fly in New Zealand.—In the March No. of this Magazine Mr. W. W. Smith has recorded the presence of this fly in considerable numbers in New Zealand. There are two distinct but very similar looking species, belonging to the genus *Calliphora*, Dsv., respecting the names of which there has been some confusion. One, the *Musca vomitoria* of Linnæus, has the lower part of the face and chin of a bluish-black colour, bearded with yellow or reddish hairs. The other, the *C. erythrocephala* of Meigen, has the face and mentum fulvous or rufous, and the beard black. R. Desvoidy and Macquart named the latter *C. vomitoria*, calling the former *C. fulvibarbis*; Meigen's name, however, has the priority, and is now universally adopted. Mr. Smith forwarded some of the New Zealand specimens to Mr. McLachlan, who kindly sent them on to me, and I find that they all belong to the black bearded species (*C. erythrocephala*). These meat flies have lately swarmed in immense numbers in the Falkland Islands, and (some of them having been sent to me through Miss Ormerod) I found that they were all of the same species as those from New Zealand. Baron C. R. Osten-Sacken records both species as inhabitants of North America. In England I find that *C. erythrocephala* is by far the most common in and about houses and towns, while *C. vomitoria* usually occurs in fields and country places.—R. H. MEADE, Bradford: April, 1894.

Review.

ALTERNATING GENERATIONS: A BIOLOGICAL STUDY OF OAK-GALLS AND GALL-FLIES: by HERMANN ADLER, M.D. Translated and edited by CHARLES R. STRATON, F.R.C.S., F.E.S. 8vo, pp. xliii and 198, with three plates. Oxford: Clarendon Press; London: H. Frowde. 1894.

It is now over 13 years since Dr. Adler published his remarkable memoir, proving that many gall-flies which had previously been considered not only distinct species, but also distinct genera, are merely alternating generations of one and the same species. This has since been so abundantly proved by independent observers, that doubt, if there were any, has long been dispelled. A French translation by Lichtenstein appeared in 1881. Rather late in the day, but none the less welcome, we have now an English translation by Mr. Straton, with a copious editorial introduction, in which is embodied a lucid explanation of the theory of alternation of generations, with notes on the pathological questions involved in gall production, with a chapter on *Cynips Kollari*, a synoptical table of galls, &c. One of the three folded plates is anatomical; the others are coloured, and will enable the student to identify almost any British Oak Gall with certainty. The type, paper, &c., are perfect, and we have no doubt the book will be studied with interest and advantage by the now somewhat numerous students of British Galls and their producers, and that they will thank Mr. Straton for having placed so remarkable a memoir before them in English dress.

Obituary.

Lucien François Lethierry.—We regret to announce the death of this eminent French entomologist on April 4th, at Lille, aged 64. He had been a Member of the Entomological Society of France since 1857, and was well known as an authority on *Hemiptera*, more especially *Homoptera*. Latterly he had commenced, in conjunction with Mons. Severin, of Brussels, a general Catalogue of the *Hemiptera* of the world, of which the first part appeared in 1893.

Dr. Jacob Spångberg.—Equally we regret to announce the death of this well-known Swedish entomologist, who held a professorial appointment at Gefle. He took a warm interest in the foundation of the Swedish Entomological Society, and was principally an Hemipterist, but he published a Monograph of the Scandinavian *Psocidæ*, and other papers outside his speciality. We are without particulars; but he was a comparatively young man, and visited London when on a European tour not many years ago.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *April 16th, 1894.*—Mr. G. H. KENRICK, President, in the Chair.

Mrs. Petley, Pedmore Lodge, near Stourbridge; Mrs. P. W. Abbott; and Miss Titley, Four Oaks; were elected Members of the Society.

Mr. Colbran J. Wainwright showed a collection of *Diptera* made at Wyre Forest at Easter; amongst others there was a large series of an *Echinomyia*, perhaps *ursina*, which had been extremely abundant throughout the Forest, more particularly on the sallows; there were also short series of *Cheilisia grossa* and *flavicornis*, and larger ones of *Syrphus lasiophthalmus* and *Melanostoma quadrimaculata*, all taken on the willow bloom. He remarked on the bee-like appearance of the *Echinomyia*

and the two species of *Cheilosia*; the latter resembled *Andrena fulva* so closely that it was with difficulty he recognised them on the bloom. Mr. R. C. Bradley also showed a long series of the above *Echinomyia* taken at the same time and place; also two specimens of *Bombus Latreillellus* from Sutton. Mr. W. Harrison showed living larvæ of *Melitæa Artemis*, of which he had taken a considerable number on the devil's bit scabious at Arley. Mr. P. W. Abbott showed three specimens of *Stauropus fagi*, bred from larvæ obtained in Wyre Forest last year; also three specimens of *Neuria saponariæ* from Wicken Fen. Mr. G. H. Kenrick read some "Notes on the Migration of Insects," in which he called attention to such facts as were known about migration, and dealt with various possible explanations, suggesting that in some cases at least it might be possible that the migration was similar to that in birds; that with *Vanessa cardui* for example, which appears during the winter in the North of Africa, Egypt, &c., it was possible that it migrated northwards to moister climates for the summer broods returning south again for the winter broods; and he asked for information and evidence as to the actual hibernation of this and other migratory species in our country. A discussion ensued, in which Messrs. R. C. Bradley, G. T. Bethune-Baker, P. W. Abbott, W. Harrison, G. H. Kenrick, and C. J. Wainwright took part.—COLBRAN J. WAINWRIGHT, *Hon. Secretary*.

LEICESTER LITERARY & PHILOSOPHICAL SOCIETY—SECTION F (ENTOMOLOGY):
February 27th, 1894.—W. A. VICE, Esq., M.B., in the Chair.

Exhibits:—Mr. C. B. Headly, the larvæ of *Æstrus bovis*. Mr. F. Bouskell, life-histories, with ova, larvæ, pupæ, and imagines of *Papilio Machaon*, *Bombyx neustria*, *Orgyia antiqua*, *B. quercifolia*, *Biston hirtaria*, and he recommended the formation of Local and British Collections by the Section, showing full life-histories. An enquiry as to the best means of dealing with the onion grub, which is very prevalent in the district, was replied to, recommending the cultivation in trenches and covering up the bulbs, according to Miss Ormerod's plan.

April 2nd, 1894.—W. A. VICE, Esq., M.B., in the Chair.

The Hon. Sec. read the Report of the Easter Excursions to Charnwood Forest. The chief captures being *Lepidoptera*. *Brephos parthenias*, in good condition, out fourteen days earlier than last year; *Cymatophora flavicornis*, (1) at rest (1) on the wing in the bright sunshine; *Hybernia leucophearia*, *H. progemmaria*, *A. æscularia*, at sallow; *P. rubricosa* (11), *T. gothica*, *T. stabilis*, *T. pulverulenta*, *T. munda* (2), *T. instabilis*, very variable, *T. gracilis* (1), *Cerastis racciniæ* (8), exceedingly variable, *S. satellitia* (11), *X. ferruginea* (1). *Coleoptera*—*Rhagium inquisitor* (8) and a number of larvæ out of an old stump; *Ips 4-guttatus*, *I. 4-pustulatus*, *Rhizophagus dispar*, *R. bipustulatus*, *Rhinosomus planirostris*, *Ilybius ater*, *I. obscurus*, *Acilius sulcatus*.

Exhibits—Mr. Moss, *Sinodendron cylindricum*, which he found in numbers in an old ash stump; *Dorcus paralellopedus*, *Barynotus obscurus*, *B. Schönherri*, and *B. mærens*, all from near Loughborough; larvæ of *Acherontia Atropos*, *Smerinthus ocellatus*, *Sphinx elpenor*, *Cossus ligniperda*, *Bombyx quercus*, *Notocenta ziczac*, *N. dictæa*, from the same locality. Mr. Dixon, *Brephos Parthenias*, *Anphidasis prodromaria*, dark form. Mr. Scott, very variable series of female *Polyom-*

matus Alexis, also *Lepidoptera* from the south of France. Mr. Bouskell, series of *Nyssia hispidaria* from Buddon Wood, all taken on oak trunks within 12 inches from the ground, none being found higher up; also an exceedingly variable series of *Hybernia leucophearia*, with several melanic and light forms. Mr. Headly, larvæ of *Cymatophora ridens*, *Cucullia verbasci*, and imagines of *C. ridens*, *C. or*, *Brephos notha*, and *Monohammus sartor*, which was taken in Leicester on a willow.

The Hon. Sec. read "A Short Paper on the British *Micro-Lepidoptera*," by the Rev. C. T. Cruttwell, M.A. A long discussion ensued, in which the Chairman, Messrs. Moss, Scott, Dixon, Headly and Bouskell joined. Two Excursions were arranged, April 14th, Bardon Hill, and April 28th, Narborough Bogs. The next Meeting was fixed for April 30th.—FRANK BOUSKELL, *Hon. Secretary*, 11, Lansdowne Road, Stoneygate, Leicester.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY:
April 26th, 1894. —E. STEP, Esq., President, in the Chair.

The Rev. M. Corden Jones and Mr. Francis Fell were elected Members.

Mr. Dennis exhibited a bred variety of *Pararge Egeria*, L., having all the light markings much extended. Mr. Routledge, a series of *Miselia oxyacanthæ*, L., taken by Mr. Beaumont. Mr. Auld, a series of *Teniocampa munda*, Esp., with several examples of var. *immaculata*, Stgr., taken at West Wickham, also a series of *T. populeti*, Fb., taken at Westerham. Mr. Enock then gave his paper, entitled, "Notes on Common Insects," and illustrated it by about fifty slides shown with the oxy-hydrogen lantern. After a few remarks from the Chairman, Mr. Barrett proposed, and Mr. Auld seconded, a hearty vote of thanks to Mr. Enock, which was unanimously passed.

May 10th, 1894.—The President in the Chair.

Mr. H. B. Laurence, of Anerley, was elected a Member.

Mr. South exhibited a bred series of *Boarmia cinctaria*, Schiff., with the parent female, from Glengariff, Ireland; like the female, they were pale, but not so pale as those captured by Mr. Kane some time ago; also the new postal box, invented by Dr. Knaggs: a trial was made, insects were placed in it, and after rough usage it was opened, and they were quite intact, showing it to be a very successful device. Mr. Barrett, on behalf of Mr. Sydney Webb, the pick of his valuable and extraordinary varieties of the "tigers," viz., *Arctia villica*, L., varying from almost spotless to nearly black; *A. Caia*, L., spotless, brown marbled, pale blotched, pink shaded, black suffused, and half one colour, half another, &c.; *Nemeophila plantaginis*, L., red and pale; *Callimorpha dominula*, L., yellow, white spotted, pink and dusky; and contributed notes on the normal and abnormal variation shown by the exhibit. Mr. Frohawk, a specimen of *Vanessa urticae*, L., having the blue marginal spots exaggerated and extending into the black border about twice the usual distance. Mr. Adkin, a case containing series of most of the genus *Teniocampa*, showing extreme variation, all from the New Forest. Mr. Williams, a bred specimen of *Pieris napi*, L., in which only the hind-wings had developed. Mr. Turner, specimens of *Sirex gigas* from Box Hill and Chichester; several species of *Neuroptera*, and specimen of *Bombylius major*, from Box Hill.—HY. J. TURNER, *Hon. Sec.*

A SECOND HUNDRED NEW BRITISH SPECIES OF *DIPTERA*.

BY G. H. VERRALL, F.E.S.

(Concluded from page 79).

36. *Ceratopogon candidatus*, Winn. : I can say, in direct opposition to the general opinion, that there are very few large genera in which species can be so readily and confidently identified as in this genus. I could now confirm as British most of the species in my "List," but no harm can be done by my waiting until I have had still more examination, but in the mean time I may record *C. candidatus* as not uncommon in Wicken Fen on May 13th, 1892.

37. *C. unimaculatus*, Mcq. (= *C. variegatus*, Winn.) : a most remarkably distinct species, of which I caught one female at Ormesby on June 28th, 1888.

38. *C. rubiginosus*, Winn. : a female at Three Bridges on August 2nd, 1888.

39. *C. bicolor*, Mg. : not uncommon at Ormesby on June 25th, 1888.

40. *C. albipes*, Winn. : Lewes, June 7th, 1888 (1 ♂), and August 5th (1 ♀).

41. *C. solstitialis*, Winn. : from June to December at Slapton Lea, Three Bridges, Ormesby and Dolgelley.

42. *Goniomyia schistacea*, Schum. : sitting on large leaves near water in Millersdale, on June 18th, 1888, also at Ulleswater on June 26th, 1889.

43. *Rhamphomyia filata*, Ztt. : one male of this remarkable species at Keswick on June 20th, 1889.

44. *R. costata*, Ztt. : abundant at Bettws-y-Coed in the middle of June, 1887 ; also occurred at Colwich in June, 1889, Ivybridge in May, 1890, and at Three Bridges in June, 1892.

45. *R. gibba*, Fln. : a very distinct species, which has occurred near Three Bridges in August, 1889, at Woking on August 1st, 1875, and at Wyre Forest on September 4th, 1892.

46. *R. sciarina*, Fln. : one male at Coniston on July 19th, 1876.

47. *Empis prodromus*, Lw. : one male and three females at Brandon on July 9th, 1877.

48. *E. brevicornis*, Lw. : a male near Barton Mills on September 8th, 1879, and three females, which are probably the same species, taken since in the same neighbourhood.

49. *Pachymeria palparis*, Egg.: a male at Rannoch on June 25th, 1870, and a female at Braemar on July 25th, 1873.

50. *Hilara cornicula*, Lw.: a male at Three Bridges on June 10th, 1892.

51. *H. canescens*, Ztt.: abundant at Inverness on July 10th, 1886, also occurred at Braemar on July 22nd, 1873.

52. *Ædalea Holmgreni*, Ztt.: common at Ivybridge on June 13th, 1883, and has also occurred at Bettws-y-Coed, and in the Doone Valley near Lynton, and as long ago as May 12th, 1867, at Darenth.

53. *Porphyrops penicillata*, Lw.: Dr. P. B. Mason possesses a male bearing the date of May 16th, 1868; he also has a male of

54. *P. nasuta*, Fln.: both of which I fancy were caught in the neighbourhood of Deal.

55. *Lonchoptera fuscipennis*, Boh.: it is curious that among the hundreds of specimens of *Lonchoptera* which I have examined I can only clearly distinguish one species, and that is not in any British List. All the rest seem to me at present to be one very variable species, but *L. fuscipennis* has abundant structural distinctions; it is not uncommon in Wyre Forest, and has also occurred at Buttermere and Coniston.

56. *Cephalops villosus*, v. Roser: has occurred at Eridge, Lyndhurst, Doone Valley, and Bettws-y-Coed.

57. *Pipunculus varipes*, Mg.: this species, so well distinguished by its shining thorax, was given to me this year by Rev. E. N. Bloomfield with his label of Guestling, 1892, attached to it. I previously possessed a male from Lagg, in Arran, caught on June 19th, 1882, and a female from Tuddenham, near here, on September 16th, 1891.

58. *Paragus lacerus*, Lw.: Mr. J. H. A. Jenner caught a male of this at Seaford on June 15th, 1890.

59. *Chilosia plumulifera*, Lw.: somewhat common at Chippenham Fen in August, and has also occurred at Barton Mills, Three Bridges, Braemar, and Inveran.

60. *Platychirus spathulatus*, Rnd.: I am gradually coming to the conclusion that two males caught by Mr. Coryndon Matthews at Ivybridge in May, 1888, must be referred to this little known species. I have just (May 4th, 1894) seen a male, caught by Mr. C. J. Wainwright at Conway on June 22nd, 1893.

61. *Syrphus arcticus*, Ztt., and *S. barbifrons*, Fln.: one of these two must be considered new to Britain. In June, 1870, at Rannoch, I caught a lot of a *Syrphus*, which I considered *S. arcticus*, but which I was informed by Loew was only the well known *S. barbifrons*, Fln., and consequently only *S. barbifrons* occurs in our English lists; but in 1889, when revising my *Syrphidæ*, and comparing many of them with continental types, I came to the conclusion that our species was distinct from theirs. Since then, in April, 1892 and 1893, Mr. R. C. Bradley has taken true *S. barbifrons* in considerable numbers at Sutton Park, and I am consequently confirmed in my belief that the summer northern species is true *S. arcticus*, Ztt. Besides Rannoch, I have taken this northern species in June at Arran, Loch Maree, Lairg and Tongue, and in July at Inveran.

62. *Epicamnocera ambulans*, Mg.: Brauer and Bergenstamm have published three elaborate treatises on what they call the MUSCARIA SCHIZOMETOPA, in 1889, 1891 and 1893, which are intended to bring this difficult group into systematic order; up to the present however they have almost added to the previously formidable difficulties of determining the names of species, and consequently I am still very averse to introducing new British species in this group until I become absolutely sure about their nomenclature. For instance, *Ceromasia ambulans* of Rondani turns out to be a very distinct species from *Tachina ambulans*, Mg.; Brauer and Bergenstamm place Rondani's species in *Dexodes*, a sub-genus of *Ceromasia*, while they put Meigen's species in *Megalochæta*, a sub-genus of *Epicamnocera*. I do not think there can be any doubt but that I possess this latter species in two males from Darenth on April 2nd, 1869, one male from Abbots Wood on May 17th, 1873, and a female from there on June 28th, 1867.

63. *Myxexorista macrops*, B. and B.: this *Tachinid* I should a few years ago have introduced without hesitation as *Exorista libatrix*, Mg., but now Brauer and Bergenstamm's writings have made me alter my opinion. They have formed a genus *Myxexorista*, in which they have placed *E. libatrix*, which, however, they consider to be a jumble of three species. Certainly, I think my two specimens differ from my continental types named by Kowarz by the shallower cheeks, and consequently I accept the species *M. macrops*. One of my two males was caught at Darenth on May 12th, 1867, and the other at Abbots Wood on July 5th, 1868.

64. *Hyetodesia quadrinotata*, Mg.: two males at Barton Mills on August 14th, 1886.

65. *H. boleticola*, Rnd.: one male of this little known but perfectly distinct species in Arran on June 15th, 1882.

66. *Spilogaster protuberans*, Ztt.: for the last dozen years I have known a species which is very common in the summer wherever there are sandhills near the coast, and which I can only refer to this species. It was abundant at such widely distant localities as Barmouth, Yarmouth, and Aberdeen.

67. *Hydrotæa dentimana*, Mg.: a beautiful male in my garden on May 29th, 1886.

68. *Hylemyia penicillaris*, Rnd.: this may be readily distinguished from *H. criniventris*, Ztt. (= *tibiaria*, Rnd.), by its black legs, besides other important distinctions. I have a male caught at St. Bees on July 18th, 1876, and another caught at Barmouth on July 20th, 1888. A monograph of the European species of *Homalomyia* has been completed by Stein, and will appear very soon; several new species from Britain will be included in it.

69. *Lispe crassiuscula*, Lw.: one male at Sutton Wash on July 13th, 1881, and a female at Aberlady on June 23rd, 1884.

70. *L. uliginosa*, Fln.: I possess an old obviously "British pinned" male, and the species ought to occur with us.

71. *L. pulchella*, Lw.: a specimen given me for examination in September, 1889, by Mr. C. W. Dale as *L. riparia*, is, I believe, this species, and I also possess an old female from the late Wilson Saunders' British collection.

72. *L. gemina*, v. d. Wulp: I caught two males of this species at Worthing on June 20th, 1876. It is very distinct from *L. litorea*, Fln., with which Kowarz has somewhat carelessly united it. I caught two males and one female of *L. litorea* at Fawley on June 22nd, 1875.

73. *Cordylura umbrosa*, Lw.: this species, described by Loew in 1873 from Hungary (as certified by types from Kowarz), has been the commonest to me of the large *Cordyluræ* in Britain. I have taken it at Abbey Wood in August, 1869, and May, 1871, at Wicken Fen in July, 1875, and at Lewes in May, 1881. The scutellum bearing only two bristles distinguishes it from any species recorded as British up to the present time. It is probably the species which was labelled *C. pudica*, Mg, in most old English collections, but Meigen's species is very distinct, and is probably the same as Zetterstedt's *C. geniculata*, which has been taken recently by Mr. R. C. Bradley in Sutton Park,

near Birmingham. Mr. Bradley has also taken *C. ciliata*, Mg., there in July and August, 1891, while I have it from Warrengore, near Lewes, in July, 1870, and from Three Bridges, Sussex, in September, 1874.

74. *Clidogastra vittata*, Mg.: two females at Loch Maree on June 7th, 1884, and one at Tongue on June 18th, 1884. This species is very much like *Cordylura albipes*, but can be distinguished immediately by the short-plumed arista.

75. *C. punctipes*, Mg.: a pair at Inveran on July 17th, 1886, and a male at Martham on June 24th, 1881.

76. *C. tarsea*, Fln.: abundant at Aberdeen on June 3rd, 1884, I think in a wood on Scotsdon Moor; also at Tongue on June 18th, 1884; in Arran on June 14th, 1882; and in England, at Hickling, on June 20th, 1881. I may as well record here *C. apicalis*, Mg., as occurring at Abbey Wood on May 7th, 1871, and at South Walsham on July 14th, 1883; this species belongs to a distinct genus, separated by Rondani as *Cnemopogon*.

77. *Stomphastica decora*, Lw.: for about twenty years a single specimen of this beautiful species has been in my hands, without my being able to identify it, from Dr. A. Chapman, professing to come from Abergavenny. I now know its name without a doubt, and the gummed specimen shows that it is an English specimen, as no continental Dipterist in possession of his senses ever gummed a *Dipteron*.

78. *Blepharoptera ruficornis*, Mg.: a male of this most distinct species at Inveran on July 15th, 1886.

79. *Tephrochlamys flavipes*, Ztt.: two females on my study window here on October 17th and 20th, 1889.

80. *Dryomyza decrepita*, Ztt.: no matter what doubts may exist as to this species, there can be no doubt but that I caught a number of the form distinguished by Zetterstedt, at Rannoch in June, 1870, and at Loch Maree in June, 1884.

81. *Sciomyza pallida*, Fln.: a somewhat common species, of which I possess specimens from Lairg, June 21st, 1884; Lyndhurst, June 14th, 1885; Frant, June 16th, 1886; and Three Bridges, June 16th, 1892. I have also seen a specimen caught by Mr. R. C. Bradley, and quite correctly named by him, from Wyre Forest, on May 27th, 1890.

82. *S. simplex*, Fln.: a female at Barton Mills, near here, on August 17th, 1883.

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Page 114, line 27 from top, for "February," read "March."

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Is Aleuropteryx lutea, Löw, identical with Coniopteryx lutea, Wallg. ?— <i>Prof. Fr. Klapálek, F.E.S.</i>	121
On the probable case of Molannodes Zelleri, McL., and some notes on the larva.— <i>Id.</i>	123
Anisolabis annulipes, Luc., at Tavistock; an earwig unrecorded for Britain.— <i>Harold Swale, M.B.</i>	124
Lita instabilis, Dgl., and its nearest British allies (<i>continued</i>).— <i>Eustace R. Bankes, M.A., F.E.S.</i>	125
Clunio marinus, Haliday: a marine Chironomid.— <i>George H. Carpenter, B.Sc.</i> ..	129
Kyanizing.— <i>H. Guard Knaggs, M.D., F.L.S.</i>	130
Spring Lepidoptera.— <i>R. M. Prideaux</i>	132
Abundance of Pyrameis cardui, L., in the Ziban, Algeria (<i>second notice</i>).— <i>Rev A E. Eaton, M.A., F.E.S.</i>	133
Deilephila euphorbiæ, L., abundant near Biskra, Algeria.— <i>Id.</i>	133
Ceuthorrhynchus suturellus, Gyll., &c., at Snodland.— <i>James J. Walker, R.N., F.L.S.</i>	133
Pselaphus dresdensis, &c., at Armagh.— <i>Rev. W. F. Johnson, M.A., F.E.S.</i> .. .	134
Coleoptera near Cardiff.— <i>B. Tomlin</i>	135
Homalota (Aleonota) rufotestacea, &c., at Guildford.— <i>G. C. Champion, F.Z.S.</i> ..	135
Eumicrus rufus near Shirley.— <i>Horace Donisthorpe, F.E.S.</i>	136
Lecanium rubi, Schrank.— <i>J. W. Douglas, F.E.S.</i>	136
The European bluebottle fly in New Zealand.— <i>R. H. Meade</i>	136
REVIEW.—Alternating Generations: a Biological Study of Oak Galls and Gall Flies: by Hermann Adler, M.D. Translated and edited by C. R. Straton, F.R.C.S., F.E.S.	136
OBITUARY.—Lucien François Lethierry	137
Dr. Jacob Spångberg	137
SOCIETIES.—Birmingham Entomological Society	137
Leicester Literary and Philosophical Society (Entomology)	138
South London Entomological, &c., Society	139
A second hundred new British species of Diptera (<i>continued</i>).— <i>G. H. Verrall, F.E.S.</i>	140

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83. *Pelidnoptera nigripennis*, F.: the dark-winged *Sciomyzidæ* are now growing into shape, and I can record this species without doubt from a male at Dolgelley on June 13th, 1887, and a female from Muchalls, near Aberdeen, on June 4th, 1884.

84. *Loxocera fulviventris*, Mg.: Rev. E. N. Bloomfield has recently given me a female of this species, which he caught in 1892 at Guestling, near Hastings.

85. *Calobata adusta*, Lw.: I caught two males and two females of this little known species in Millersdale on June 18th, 1886.

86. *C. trivialis*, Lw.: probably a common species, which I have caught in June, July, and August from Devonshire to Dovedale.

87. *Aciura rotundiventris*, Fln.: caught by Rev. T. A. Marshall at Lidford Gorge, Cornwall, on July 6th, 1892.

88. *Spilographa abrotani*, Mg.: a male also caught by Rev. T. A. Marshall at Hatt, in Cornwall.

89. *Tephritis proboscidea*, Lw.: probably not uncommon on *Chrysanthemum leucanthemum*. I caught two males at Gatwick, in Surrey, on August 1st, 1891, and previously possessed it from the late J. C. Dale in 1870, labelled *T. parietina*.

90. *Sapromyza flaviventris*, Costa: I have caught specimens at St. Mary Cray on June 9th, 1869; Leigh, on June 18th, 1871; and Dyffryn on July 21st, 1888.

91. *S. biumbrata*, Lw.: three specimens from my garden, one on July 28th, 1883, and a pair on July 20th, 1890; also from Denmark Hill, London, on August 1st, 1867, and Penzance on July 8th, 1871.

92. *Sepsis pilipes*, Lw.: this little species was first described by Loew in 1873 from Hungary, although he had long known it. I have not noticed any other reference to it, but I caught two males at Abbey Wood, one on July 24th, 1870, and the other on July 17th, 1874.

93. *Mycetaulus bipunctatus*, Fln.: two fine specimens of this species have occurred at Tuddenham, near here, one on September 16th, 1891, and the other on September 19th, 1892.

94. *Drosophila obscura*, Fln.: abundant where sap was flowing on a tree trunk at Lingfield on July 30th, 1887. I may as well now confirm *Aulacigaster rufitarsis*, Mcq., as British, from a specimen caught here on May 12th, 1893; in my "List" it is placed among the *Agromyzidæ*, but I think it is more allied to the *Drosophilidæ* and *Ephydridæ*.

95. *Anthracophaga frontosa*, Mg.: four specimens from Abbey Wood on May 7th, 1871.

96. *Haplegis divergens*, Lw.: four specimens from Warrengore Wood, near Lewes, on July 16th, 1871.

97. *Chlorops puncticollis*, Ztt.: common at Aberlady on June 30th, 1870, and I have also taken it at Rannoch on June 18th, 1870, and at Redbridge, Hants, on June 18th, 1875.

98. *Cacozenus indagator*, Lw.: whether the *Milichidæ* are entitled to the rank of a separate family or not is still an unsettled question, but in Part iii of my "List" I included the family, with three reputed British species. I can now add this species, and partly confirm as British two of the previous ones. *C. indagator* appears to have a curious habit of occurring on windows, and I have caught three on my study window: one on May 29th, 1886; the second on May 24th, 1892; and the third on May 28th, 1892. I have also seen some old British specimens.

99. *Milichia ornata*, Ztt.: the various species of *Milichia* are at present very insufficiently differentiated, and, consequently, I can only say that a specimen caught by me at Ulleswater on June 26th, 1889, seems to be this species, even though the cross-veins on the wings are scarcely darkened at all. The species seem to vary in this respect, as well as in size, consequently Zetterstedt's *M. boletina* may be only a variety, and perhaps both only varieties of our reputed species, *M. maculata*, Mg.

100. *Phyllomyza securicornis*, Fln.: I caught a few specimens of this curious species at Braemar on July 25th, 1873, by sweeping about nests of the wood ant; my specimens have somewhat darker legs than continental types and descriptions, but I do not know enough of the group to consider them distinct.

Sussex Lodge, Newmarket:
March, 1894.

ABOUT SOME SAMOAN BUTTERFLIES.

BY JANE FRASER.

Within fourteen degrees of the equator, and under a cloudless sky, one naturally expects to see butterflies, birds and flowers of glowing colours, but the first thing that struck me on landing in Upolo was the almost universally quiet, even sombre tone of colour of the butterflies. Flowers there were in abundance of brilliant hue, scarlet *Hibiscus*, yellow *Alamanda*, weeds by the wayside like small scarlet

Gladioli, and trees with blossoms vivid as those of the flame tree of Ceylon. Kingfishers like living sapphires, and bright red and black honey eaters, flashed across one's path, but with few exceptions the butterflies showed less colour than some of our own *Vanessæ*.

Perhaps the most generally distributed species was *Hypolimnas Bolina*, var. *otaheitæ*, black with round white spots shot with blue; the female with spots of white or blue or more rarely yellow, the markings showing immense variety. In gardens and sunny open spots, where flowers were in profusion, this insect was sure to be found flying quickly from blossom to blossom, often three or four on one cluster with extended wings, basking in the sunshine, until perhaps disturbed by our cosmopolitan friend, *Danaïd Plexippus*, who seemed to take pleasure in chasing them off his own particular haunts. One of the first to appear in the morning, when the sun was well up, *H. Bolina* seemed to find the day all too short, and used to continue flying after the sun had set, and in the warm still evenings, as long as there was sufficient light to see, a few might be observed on the wing. Sometimes, when we were sitting indoors reading or writing by lamp-light, heavy rain clouds would drift up from the Pacific, and on those occasions it was no unusual thing for several of these butterflies to flit in by the open door, and, after circling round the room two or three times, finally settle on the rafters for the night. More than once, when out of doors late at night, and when there was neither wind nor rain to disturb them, I have caught it flying. It may be that the sound of footsteps scared it from its resting place, but I am almost inclined to believe that it has the habit of flying by night as well as by day.

In clearings in the lower lying Forest the pretty velvety-brown *Deragena Schmelzii*, with the curious scaleless stripe on its wing, flitted gently in the sunshine, disappearing, if hunted or alarmed, into the dense undergrowth of the Forest, where it might be found hanging with drooping wings from leaf or twig, looking very like a withered leaf itself. In the same open spaces of the lower forest a butterfly that looked like a miniature edition of the large Queensland species, *Tirumala hamata*, often alighted on the yellow flowers of a most abundant weed, the flower contrasting beautifully with the delicate pale blue and black of the insect's wings. The very remarkable pocket on the wing appears to be the source whence comes the evil odour which undoubtedly pervades this butterfly, and which lasts for quite a week after it is dead.

The most handsome and striking butterfly which appeared during

my stay in Upolo was *Papilio Godeffroyi*, which, though pretty widely distributed, was by no means plentiful. In the early forenoon they might be seen hovering round the scarlet *Hibiscus*, but more frequently they were attracted by the blossoms of the mammee apple, which were unfortunately too high to be easily reached by the net, and if one missed a first stroke, *P. Godeffroyi* rarely allowed a second chance, but would go sailing up to the topmost branch of some tall tree, where perhaps he would sit and fan his wings for a while, and then soar out of sight right over the tops of the palms. *When not hunted*, this butterfly had a curious habit of going in a straight line through the thickest bushes, which proved no obstacle, and it is probably owing to this habit that so few of them have the long tails of the hind-wings unbroken.

In a rather remote part of the Forest, about 800 feet above the sea, a very small clearing had been made by the fall of a huge tree, which had brought down some large branches of other trees, and had crushed down a lot of undergrowth, allowing the sun to blaze in on the spot for an hour or two at noontide. In this favoured retreat a bright fawn-coloured "skipper," whose identity I have yet failed to discover, used to disport himself, flying rapidly at about 20 or 30 feet from the ground, and occasionally alighting on the leaves of the wild banana, where they loved to bask in the intense heat, as did also a pair of very beautiful golden-green lizards with bright blue tails, who had their favourite leaf, on which one was pretty sure to find them sunning themselves at noon. Probably they helped to keep the little "skippers" scarce, for once when one of them incautiously lit near one of the lizards, it was caught and swallowed instantly.

On the shore a little above tide mark grew in dense masses a low plant with large shining leaves, and here the gem-like deep blue *Lycæna Woodfordi* darted hither and thither, certainly the most brilliantly coloured butterfly I saw in Samoa. A much commoner "blue" was *Lycæna communis*, which literally swarmed on sunny roadsides.

A leaf-like butterfly, probably a variety of *Melanitis Leda*, haunted certain shady places. It would dart across your path and glide back again, seeming to dive into a bush or in among the ferns or weeds at the roots of trees. Among the many species of leaf-like butterflies I have seen in Java, not one had the power of concealing itself so absolutely as this Samoan species. One day one of them flew into a small isolated bunch of ferns close to where I stood, and in a moment my large ring net was over the spot. I felt so confident that the

butterfly was under the net that I knelt on the grass for nearly an hour, holding the ring of the net tightly down the while, watching to see if it would re-appear, then one by one I pulled away the ferns and picked up every withered leaf, but never a glimpse of that leaf-butterfly did I get. A charming bright bit of colour in small openings of the Forest was *Atella Bodenia*, and there were a few localities, generally the beginning of a foot track on the edge of the Forest, where one was almost sure to find one or two of them. They were fond of the "fua fua" trees, and would sit sunning themselves on a bright green leaf just where a slender streak of sunshine could touch them, but they were wary and alert and off at the slightest alarm, circling round the tops of the trees, but generally returning to the same branch, often to the same leaf. The famous "Hampstead" butterfly, *Junonia vellida*,* was common in gardens, and in the garden of Mr. R. L. Stevenson, where *Xenias* of every shade and colour grew profusely, it was always to be found during the hottest hours of the day flying swiftly from flower to flower.

In the different Colonies of Australia, in the Friendly Islands, and in the Navigator Islands, one of the first butterflies to be noticed is *Danais Plexippus*, and in Upolo it was very much at home, but was decidedly more numerous at a few hundred feet above the sea.

There was a cleared space of a few acres about 700 feet above sea level, where a red-flowered cotton weed (*Asclepias*?) grew, and here *Danais Plexippus* might be found in all its stages. The greenish-yellow egg on the under-side of the leaf, the brightly banded black and yellow larva, the chrysalis (chartreuse-green with golden dots) hanging from leaf or twig, and the grand butterfly himself skimming with easy flight over the cotton weeds, sucking at the blossoms of orange or lemon trees, and often chasing butterflies of other species off his hunting grounds, for *Danais Plexippus* is, I fear, decidedly aggressive. In all stages of its existence the same unpleasant odour pervades it, probably one of the reasons why it is so abundant. When freshly emerged from the chrysalis, and with the sun shining directly down on it, a deep rich purple tint appears to be shot through the black markings, this disappears very soon, and he continues his unmolested career sometimes until his powerful wings are almost denuded of scales, which is not to be wondered at, when his unbutterfly-like disregard of weather is taken into consideration.

31, Bloomsbury Street, Bedford Square :
May, 1894.

* "Albin's Hampstead Eye" (*Cynthia hampstediensis*, Steph.).

NOTES ON THE EARLIER STAGES OF THE *NEPTICULÆ*,
WITH A VIEW TO THEIR BETTER RECOGNITION AT THIS PERIOD
OF THEIR LIFE.

BY JOHN H. WOOD, M.B.

(*Concluded from p. 98*).

I conclude with a subject intimately connected with the economy of these insects, though scarcely perhaps relevant to the actual purpose of the paper.

I allude to the singular power these insects possess of delaying the ripening and death of the part of the leaf they are occupying. Mentioning the subject some years ago to Mr. Stainton, he told me that it had first been noticed by Von Heyden, but I do not think it has received the attention it merits, and, at any rate, I have come across nothing bearing on it in our own publications. It is a most curious and striking phenomenon. The leaf shall have put on its red or yellow autumnal tint, it shall even have dropped from the tree, have died and turned brown, but the area in which the larva is feeding will remain alive and green, not merely for days but for weeks, provided it be not exposed to excessive dryness.

Now, it is well known that the fall of the leaf is associated with an acid condition of the sap, and the only explanation I have heard of the phenomenon we are considering is, that the mine, cutting like a trench across the leaf, stops the supply of this acid sap to the part beyond, and so preserves it from the change going on in the rest of the leaf. But I question whether there is not an erroneous notion here, for it is not the acidity of the sap that brings about the changes in the leaf, but the changes in the leaf that bring about the acidity of the sap. Those of us who do much rearing in air-tight vessels must have noticed, as the season drew to a close, that the leaves we placed in our bottles, though perfectly green at the time of picking, would not unfrequently, and in the course of a few days, dye the natural autumnal colour, and apparently more readily (it has seemed to me) than if they had remained on the plant and had continued to be fed by the sap. Here is proof, if proof be needed, that the sap can have little to do with the process, except in the way of retarding it, and that it is a property of the leaf tissue itself. This being so, how then does the larva manage to delay the process and keep that part of the leaf in which it is residing green and living?

In the nature of things, the presence of the larva among the living cells must act on them as a stimulant or irritant, the first effect

of which is to bring about an increased flow of sap to the part. That a free and over-abundant supply of sap is conducive to the longevity of leaves is shown by the length of time that the branches of recent pollards and still more the shoots thrown up from the stools of felled trees retain their greenness. Hence it might with good reason be argued that the afflux of sap brought about by the irritation of the larva is the sum and substance of the whole business. The explanation certainly is simple enough ; but simple explanations are not necessarily right, and in this case, when all attendant circumstances are considered, and especially the length of time that vitality is retained after the death of the leaf as a whole, I think it will be admitted that something more than mere mechanical irritation must be at work. Looking at one of these green patches, with its margins fading gradually into the surrounding brown area, it is almost impossible to escape the conviction that it is produced by some substance that we may call a poison, or better still, looking at its effects, a preservative, which, taken up by the sap, is carried to the cells, and being appropriated in its progress gets more diluted and attenuated the further it travels. What this substance may be, whether a secretion specially provided for the purpose and poured out from the mouth of the larva, or possibly some excretory substance present in the frass, I am quite unable to say. At any rate, the whole virtue of the operation seems to be exercised whilst the larva is still young, and once accomplished the life or death of the creature is of little or no consequence.

Exhibited by very many species, in none does it offer a better opportunity for study than in *subbimaculella*, one of the commonest and best distributed of our species. Passing under the oak trees any time in the autumn, from September to November, it will hardly be possible to overlook its little green patches in the brown leaves lying on the ground. Usually the patches are roughly triangular, and extend from an angle of the midrib for some little way into the corresponding interspace, whilst at or near the apex is the larval blotch. If we look closely, the empty egg-shell will be found on the upper surface of the midrib, or occasionally of a side rib, and proceeding from it a fine gallery that keeps accurately to the side of the rib, and catches and impregnates, we must suppose, the sap in its passage out of the vascular bundles. At any rate, it is whilst the larva is making this preliminary gallery that the whole of its singular influence over the leaf is exercised, for not unfrequently a patch is found as large and as green as usual, and yet nothing is to be seen but this preliminary gallery and the dead larva at the end of it. Even more striking as a

display are the leaves occupied by *apicella* and *intimella*, provided only the season is favourable to the production of rich autumnal colouring. To see, as I have more than once, an aspen tree with nearly every leaf of a pure yellow, save for a bold splash of vivid green striking across from stalk to margin, is an extraordinary sight, and one that can scarcely fail to arrest attention. Equally remarkable are the leaves of the Bedford willow (*Salix Russelliana*) when *intimella* is present, for one lateral half will be yellow or even brown, while the other half remains green. In both cases too the death of the larva whilst in the stalk in no way lessens the effect on the blade, and the simplest, indeed the only plausible, explanation I can see is, that some substance is produced, which being absorbed by the vascular bundles, among which the creature is burrowing, gets distributed to the parts of the leaf they supply, where it is taken up and appropriated by the cells.

But this curious power is not restricted to the *Nepticulæ*. It is equally noticeable in the *Lithocolletes*, yet with a distinct difference as regards one point. In the former the patch faded more or less insensibly into the surrounding area; in the latter it is sharply defined and coterminous with the limits of the mine, in fact, it is neither more nor less than the mine itself. The first thing the *Lithocolletis* larva does is to separate the cuticle of the leaf, until an area sufficient for its future needs is mapped out. It then spins strands of silk across this separated cuticle, and presently by the natural contraction of the silk the sides of the mine are drawn together, and at the same time, aiding the operation, the larva nibbles all round the edge of the mine, picking out the parenchyma but leaving the veinlets untouched. Afterwards it continues to feed upon the parenchyma from the commencement made at the edge, leaving the central parts to the last, and never at any time touching the network of veinlets. The virtue of the process lies, as it did in the *Nepticula*, in the first stage of the work, namely, the separation of the cuticle, for the larva, having effected this, may come to grief, and yet the patch it had so cunningly marked out for its future use will remain green and fresh as if nothing were amiss, whilst the rest of the leaf may long since have gone through the whole series of autumnal changes.

Striking as the contrast is between the restriction of the process within definite limits in the one case, and the absence of any such limitation in the other, it can scarcely point to any real difference in the principle itself, but rather suggests a want of agreement in some detail of procedure. Now, the *Nepticula* larva, though it may not eat down the veinlets to the same level as the parenchyma, does, never-

theless, undoubtedly nibble them, and we may, therefore, conclude that in this way it gains access to the vascular bundles and so to the general current of the circulation. On the other hand, the veinlets appear to be quite untouched by the *Lithocolletis* larva, and consequently the entrance of any animal product into the sap stream becomes difficult, if not impossible. In the one case, then, I imagine that the preservative is applied indirectly, through the current of the circulation, and in the other case, directly to the cells themselves, by which it is at once appropriated and prevented from spreading farther.

If this view be correct, if some product of the larva be the real efficient cause, and mechanical irritation but at best a subsidiary one, then it seems to me that this curious condition of the leaf has much in it that allies it with gall formation, especially as seen in the *Cynipidæ*, in which the poison is provided by the larva and not by the parent insect at the time of oviposition. I am aware that Mr. Cameron, when discussing the nature and origin of galls in his "Monograph of the British Phytophagous *Hymenoptera*," vol. iv, issued by the Ray Society, gives his decision against any special poison, and ascribes their formation to mere mechanical irritation. But it is hard to imagine that irritation by itself can give rise to such complicated forms, and of such endless variety, as are presented by galls. Granted, however, a poison, and then the formation of an organized body, a new birth as it were, from the union of the vegetable cell with the animal product, becomes to some extent understandable, with its independent life, carried on in some instances months after it has been shed by the parent plant, as is evidenced by its continued growth and development whilst lying free and exposed on the naked ground. Of course the action of the Lepidopterous larva on the leaf stops very short of this, yet the difference, I fancy, is rather one of degree than of kind. For, in the first place, there is the existence of a substance, the product of the larva. In the next place, this substance is of such a nature that it can be assimilated by the plant tissues. And lastly, although no new growth results from this union of the vegetable cell with the animal product, yet there follows from it a sort of independent life almost as pronounced as in the case of the gall. Let me give an instance of this that made a great impression on me at the time. On August 15th in the past year, at the very hottest period, be it noted, of the late extraordinary summer, I picked up on the side of a steep bank exposed to the full force of the sun, many brown oak leaves holding one or more of the little green patches of *subbimaculella*. The leaves were dead beyond all doubt, shrunken, and so dry as to crackle when bent,

nevertheless, the little patches of the *Nepticula* were not only green but juicy, and to all intents and purposes alive. Yet they must have been lying for days upon the short turf, resisting alike the great heat and the drought, and by the force of their vitality storing up from the dews at night moisture enough to meet the wastes of the day.

Here I will leave the question. Beyond noting some of the conditions under which it occurs, I feel I have done but little to elucidate it. It is a matter so intimately bound up with the physiology of plant life in health and disease; moreover, my opportunities of consulting recent authorities on these subjects are so scant, and any original investigations on my own part so out of the question, that it must remain for some one else to remove it from the domain of hypothesis to that of fact.

Tarrington, Ledbury.

ON TWO SPECIES OF *ALEURODES* FROM DORSET.

BY J. W. DOUGLAS, F.E.S.

Mr. C. W. Dale has sent specimens in the imago state of two species of *Aleurodes*, which he has quite recently taken at Glanvilles Wootton. One of them (three specimens) is certainly *A. spirææ*, Doug., but it comes from bramble, and from this it might be suspected that it is *A. rubi*, Sign. (Ess. sur les *Aleurodes*), but there are some material differences that militate against such an opinion. In the larva state *rubi* has (*sec. Signoret*) a series of long hairs on the dorsum (his pl. ix, fig. 4), but such are quite wanting in *spirææ*; and the remarkable dorsal tubercles of *spirææ* are not present in *rubi*. Of the imago of *rubi*, Signoret merely says that there is a single black spot in each wing, making no remark on any peculiarities of its form, such as exist in *spirææ* (*cf. p. 74, ante*), and which, if Signoret had seen in his species, he would surely have noticed. These considerations weighed with me when I described *A. spirææ*, and I still think go to show a distinction of species.

A. AVELLANÆ, Sign.

Signoret says: "This species is very near to *A. quercus*; like that it is transparent, only beginning to become rather opaque at the moment when it passes into the nymph-state. The perfect insect I have not been able to study well, having found only a mutilated individual, and still doubting if it be that of the nut-tree, as it may have proceeded from some of the numerous oaks around.

"But the larva is easy to distinguish, since it has, like that from the oak, some cavities in the form of excoriations on the median line of the abdomen; the sides, or expansion around the body, are much broader, more transparent, more folliculated, very wrinkled, and at the point of distinction of this expansion of the body properly so-called, there are also the same kind of excoriations on each segment, eight on each side, and some of them also near the cephalic portion. On each side of the median line, on the first and second abdominal segment, is a blackish spot; the extremity of the abdomen or anus elongate and brownish.

"This species, applied always to the under-side of the leaves, is as transparent as that of the oak and the bramble, and it is only by great attention that it can be discovered; on each side of the prothoracic region beneath is, in the form of a line, a pale secretion from the stigmata, giving to the species the appearance of a small *Lecanium*."

Mr. Dale sends six specimens, all exactly alike, which he found on nut-bushes (*Corylus avellana*), where, he says, it is very abundant. I conclude that it is the *A. avellanæ*, Sign., mainly on account of the habitat, but it is of so remarkable a character, and so distinct from all others, that it, at any rate, must be deemed to be special to the tree, and as no other *Aleurodes* lives thereon, I think there can be no doubt that it is correctly named, and I append a description:—

Imago, ♂ ♀. Body, antennæ, and legs entirely gamboge-yellow; eyes black, oval, not divided, in the least degree emarginate at the point where the antenna is inserted; wings somewhat narrow, white, transparent, the marginal nerve yellow, deeply so on the costa and apical curve, paler on the inner side; on the median nervure a small, undefined, yellow spot just where the nervure is deflected, but no dark spot.

Expanse of wings, 2 mm.

This is the smallest species I know, and is an addition to the British List.

153, Lewisham Road, S.E.:

May 12th, 1894.

NOTE ON *THERMOBIA DOMESTICA*, AND ITS OCCURRENCE IN THE UNITED STATES.

BY A. S. PACKARD, M.D., HON. F.E.S.

The recent articles on *Thermobia furnorum* (Rovelli) by Dr. Sharp and by Mr. McLachlan in the Entomologist's Monthly Magazine for March and April of the present year, lead me to affirm the identity of this insect with *Lepisma domestica*, described by myself in 1873. When I first saw Dr. Oudemans's figure of this *Thysanuran* I felt very sure it was the insect I had in former years so frequently observed.

I first noticed the insects living in abundance both in winter and in summer in the basement kitchen of my house at Salem, Mass.,

about the year 1869 or 1870. They would come out from behind the range, and were observed in dry warm closets, but were not commonly noticed in the upper cooler portions of the house, though at times appearing about fireplaces. I kept specimens in confinement for some time, offering them sugar (which, however, I am not sure they eat), hoping to get some eggs for purposes of embryological study.

I first called attention to it in an article in the American Naturalist, entitled, "Bristle-tails and Spring-tails" (v, p. 94, April, 1871). Referring to the four American species of *Lepisma*, I stated, "Besides the common *L. saccharina*?, there are three undescribed species, one the heat-loving form, perhaps an imported species, found in a kitchen in Salem, and apparently allied to *L. thermophila*, Lucas, of houses in Brest, France; and two allied forms, one from Key West, and another from Putvon, Nicaragua, collected by Mr. McNeil." These last three species are beautifully ornamented with finely spinulated hairs, arranged in tufts on the head; while the side of the body and edges of the basal joints of the legs are fringed with them. As *L. mucronata*, Pack., from Nicaragua, which closely resembles *Thermophila*, has 5-jointed maxillary palpi, it should be retained in *Lepisma*.

The Salem species was afterwards described from both living and alcoholic examples in the Fifth Annual Report of the Peabody Academy of Science at Salem, Mass., July, 1873, p. 48, under the name *Lepisma domestica*. I have not heard of its occurrence in any other locality in this country.

It seems to agree perfectly with Oudemans's figure and description in Tijdschrift voor Entomologie, 1889, p. 425, pl. 12, both in the shape and the proportions of the joints of the maxillary palpi, and in the colours and markings; the dark bands and spots being the same.

Providence, R. I., U. S. A.:

May 14th, 1894.

SUPPLEMENT TO ANNOTATED LIST OF BRITISH TACHINIDÆ.

BY R. H. MEADE.

(Concluded from page 110).

MYOBIA, Dsv. et Rnd.*

M. VETUSTA, Mgn.

Frontal stripe black, with forepart sometimes red; sides of frontalia and face white or luteous, with dark reflections; antennæ black, with second joint rufous at the apex, and about half the length of the third; arista long, slender, slightly pubescent, and a little thickened at the base; palpi piceous or black; thorax cine-

* The additional species which I now introduce belongs to Rondani's genus or sub-genus *Myobia*, all the other British species that I have seen are comprised in his sub-genus *Pyrosia*.

reous, with four longitudinal black stripes, the middle pair being very narrow; the post-sutural outer dorso-central bristles three in number; scutellum grey, with the apex sometimes testaceous; abdomen yellowish-grey, with brown reflections, the usual marginal bristles, and a few small discal setæ on the middle segments; calyptra and halteres luteous; wings brunescens, with the apical cross veins nearly straight, terminating near the apex of the wing, and curved at the base; outer cross veins slightly sinuous, and placed almost in the centre between the inner cross veins and the bend of the fourth; legs black.

Meigen and Schiner put this species in their genus *Tachina*, but Rondani has more properly placed it among the *Myobia*.

A female of this rare species was taken by Mr. Beaumont at Box Hill, Surrey.

MEIGENIA, Dsv.

M. MAJUSCULA, Rnd.

Eyes thinly clothed with fine white hairs; frontalia much narrower in the male than female, occupying about one-fifth of the width of the head in the former, and one-third in the latter; central stripe brown and rather wider than the sides, which are bluish-black; face white; antennæ grey, with the third joint from two to three times the length of the second; arista long, slender, and thickened for about one-fourth of its length; palpi piceous or black; thorax black or brown, with five stripes, which are indistinct in the female, and three post-sutural outer dorso-central bristles; abdomen grey with black reflections, a short dorsal stripe, and black margins to the hinder parts of the segments, dilated into two large semilunar spots on the second ring, which are more distinct in the male than female; wings brunescens, especially in the male; apical cross vein straight, outer one sinuous; legs black, hind tibiæ ciliated along their outer sides with a nearly even row of bristles.

This fine Tachinid was captured by Mr. Billups at Dulwich in June, 1893.

MASICERA, Mcq.

M. INTERRUPTA, Mcq.

Forehead prominent; frontal stripe piceous, and rather wider than the sides of the frontalia, which are grey with dark reflections; antennæ black, with the third joint three times the length of the second, which is a little elongated; arista thickened to the middle; palpi piceous or black; facial setæ few; thorax shining black with cinereous pubescence, and marked with four black stripes, the central pair narrow, and the lateral ones broad and irregular in shape; outer dorso-central post-sutural setæ four in number; abdomen shining black, with a narrow, even, interrupted white band on the front margins of the second, third and fourth segments; dorsal bristles both marginal and discal; wings with the apical cross veins nearly straight, and the outer ones slightly sinuous; legs black.

This fly was found at Wimbledon by Mr. Brunetti.

M. VIRILIS, Rnd.

Forehead and face rather prominent; frontalia occupying about one-fifth of the width of the head in the male, and one-third in the female; central stripe black, rather wider than the sides; face flavescens or white; fronto-orbital setæ extending

to about the root of the arista; facial setæ reaching about one-third of the way up; antennæ black with the third joint thick, and between two and three times the length of the second; arista long, thickened for about a third of its length; palpi black; epistome setose and slightly prominent; thorax black, covered with hoary pubescence, and marked with four black stripes of nearly equal width; outer dorso-central post-sutural bristles three in number; abdomen cylindrico-conical in the male, black, with wide, grey, transverse fasciæ and tessellations; discal and marginal setæ long and numerous; wings with the fourth longitudinal veins bent at an obtuse angle; apical cross veins straight; outer cross ones slightly sinuous, and fifth longitudinal one not quite reaching the margin of the wing; legs black and spinose; hind tibiæ armed with an irregular row of spines.

This species has been taken by Mr. Dale in Dorset, and by Mr. Piffard at Felden, Herts.

M. EGENS, Egg.

This rare species has been captured by Mr. Esau near Eastbourne.

HYPOSTENA, Mgn.

H. PROCERA, Mgn.

Mr. Billups sent me a specimen of this fly which he had captured, for identification in March, 1893.

BAUMHAUERIA, Mgn.

B. ALBOCINGULATA, Flin.

B. gracilis, Egg.

Forehead and face prominent and swollen; eyes widely separated in both sexes; frontal stripe wide, piceous or black, and bifid posteriorly, where it includes a grey ocellar triangle, the ocelli themselves being placed on a black spot; fronto-orbital setæ numerous, in an irregular double or triple row; antennæ black, with the second joint partly rufous, and five or six times shorter than the third; arista rather short and thickened nearly to the end; facialia ciliated along their lower halves; palpi piceous or rufous; thorax black, covered with cinereous pubescence, especially on the front and sides; there are four longitudinal black stripes, and three outer post-sutural dorso-central bristles; abdomen conical, black and shining, with a continuous rather narrow white band round the front margin of the second, third and fourth segments; dorsal setæ both marginal and discal; wings with the apical cross veins straight, joined to the end of the third longitudinal vein close to the costa, and some distance before the apex of the wing; outer cross vein oblique, rather sinuous, and placed nearly in the centre between the inner cross vein and the angle of the fourth; legs black.

The Rev. E. N. Bloomfield kindly sent me both sexes of this pretty species, which were captured at Felden, Herts.

DEGEERIA, Mgn.

D. PULCHELLA, Mgn.

Mr. Billups sent me a female of this species in December, 1893, bred from *Peronea maccana*.

D. DALII, *sp. n.**D. seria*, ?, Mgn.

Forehead rather prominent, eyes in the male rather widely separated, frontalia occupying about one-fourth of the head; frontal stripe black, and rather wider than the sides, which, like the face, are white with dark reflections; fronto-orbital bristles extending to a little below the base of the third antennal joint; facial setæ reaching up about two-thirds of the face; antennæ brown, with the third joint very thick and rounded, and five or six times as long as the second, which is short; arista with the second joint indistinct, and the third thickened for half its length; palpi black at the base and rufous at the apex; thorax shining black, with the front half covered (particularly upon the shoulders and sides) with hoary pubescence, and marked with four black stripes; outer post-sutural dorso-central bristles three in number; scutellum grey; calyptera dirty white; halteres yellow; abdomen conico-cylindrical, with both discal and marginal setæ, first segment nearly as long as the others, and black, second, third, and fourth cinereous, tessellated with black patches, and having a black dorsal line (most distinct on the second ring), as well as black hind margins; wings greyish, with the fourth vein bent at a slightly curved angle, and the apical and outer cross veins quite straight, the first posterior cell is nearly closed, and terminates a little before the apex of the wing; the outer cross vein is placed exactly in the centre between the inner cross vein and the angle of the fourth; legs black, hind tibiæ irregularly ciliated on their outer sides. Length, 8 mm.

This fly corresponds closely with Meigen's short description of *D. seria*, with the exception of the palpi being rufous at the end; he says nothing, however, about the large thick antennæ, which are such a prominent feature in the species, so I have described it as new. By the structure of the antennæ, it resembles the *D. grandicornis* of Zetterstedt, but it differs from that species by the second joint of the arista not being elongated, and by the abdomen being very differently marked.

A male of this well marked species was captured at Glanvilles Wootton, Dorset, by Mr. Dale, and sent to me for my inspection, in May, 1894. I have much pleasure in naming it after him.

PHOROCERA, Dsv.

P. PUMICATA, Mgn. et Rnd., *non* Mcq.

In the first part of my Annotated List I remarked that I had not seen this species, and doubted whether it was distinct from *P. cilipeda*, Rnd.; the Rev. E. N. Bloomfield, however, sent me two specimens last year, which had been captured by Mr. Piffard, at Felden, Herts, which I found to be characteristically different from *P. cilipeda*, Rnd., and may doubtless be considered as the *P. pumicata* of Meigen. In general form, colour, &c., they correspond closely with *P. cilipeda*, Rnd., but they differ by having only three outer dorso-central thoracic bristles behind the suture instead of four, and by the legs being quite black. This species seems to be rare.

PLESINA, Mgn.

P. NIGRISQUAMA, Zett., ♂.*P. flavicornis*, Zett., ♀.

This little species is black and shining. The antennæ are brown in the male,

and usually yellow in the female; the palpi are piceous; the calyptra have the upper scales nigrescent, and the under pale; the halteres are black; the wings have the front margins brown, and the fourth longitudinal vein bent in a curve.

This rare species was captured by Mr. Frisby, at Maidstone.

PHYTO, Dsv.

P. MELANOCEPHALA, Mgn.

Mr. Beaumont has captured this species at Bristol.

P. NIGRA, Dsv.

Mr. Brunetti sent me a specimen of this fly, taken at Gloucester.

ADDITION TO SUPPLEMENT.

NEMORÆA QUADRATICORNIS, *sp. n.*

Male: forehead prominent; eyes clothed with long white hairs, rather widely separated, the frontalia occupying about one-fifth of the head; frontal stripe black, rather wider than the sides, which, with the face, are glistening white; fronto-orbital bristles extending as low as base of second joint of antennæ; cheeks ciliated with a few fine black hairs below the termination of the fronto-orbital setæ; antennæ black, second joint marked with white on its upper surface, third joint fully twice as long as the second, widened and square-shaped at the extremity; arista short, with second joint indistinct, and gradually thickened nearly to the end; epistome white and prominent, facial setæ few and small; thorax cinereous, the front and sides being quite white; it is marked by four black, rather narrow, lines, and has three outer post-sutural dorso-central bristles; scutellum yellow and translucent, with the base grey; calyptra white; halteres yellow; abdomen ovoid, with a rufous patch upon the second segment, and the other rings tessellated with large brown and white patches; setæ rather small, there are none on the first segment, but two upon the disc, and two upon the margin of both the second and third ones; anal segment small; ventral surface marked with black and white reflections, and having narrow white margins to the segments; wings with roots yellowish; fourth longitudinal vein bent at a sharp angle, where it is furnished with a rather long cubital appendix; apical cross vein nearly straight, and terminating rather near to the apex of the wing; outer cross vein oblique and sinuous; legs black, hind tibiæ irregularly armed with setæ on their outer sides. Length, 10 mm.

This species bears close affinity with both the *N. truncata* and *N. breviseta* of Zetterstedt; it differs from the former by having the second joint of the arista short, instead of being elongated; by the abdomen being tessellated with black and white, instead of being fasciated with white, and by being of larger size. It differs from the latter (*breviseta*) by having a cubital appendix to the wings, by the square-shaped third joint of the antennæ, and also by its larger size.

This fine species was captured at Ipswich, and sent for my inspection in April, 1894, by the Rev. E. N. Bloomfield.

Bradford: *May*, 1894.

Xanthia ocellaris at Twickenham.—Among some moths taken at sugar last autumn in the garden of my friend, Mr. E. Boscher, of Belle Vue House, Twickenham, there were two specimens which I had mistaken at first for dark forms of *Euperia fulvago*. One of these had been taken a few nights previously, and was on Mr. Boscher's setting boards; the other was taken by me off the sugar the night I was there, and had remained in my collection as a doubtful *E. fulvago*, till an opportunity should occur of comparing it with this species, which I do not happen to possess. On looking over my collection this week, Mr. Barrett at once recognised the species as *X. ocellaris*, and thought the capture sufficiently interesting to be recorded. I believe this species used to be included among the "reputed British;" the only list in my possession in which I can find it is the Oxford and Cambridge Accentuated List. It would be interesting to know on what authority it was formerly regarded as British.—R. MELDOLA, 6, Brunswick Square, W.C. : June 16th, 1894.

Xanthia ocellaris, Bork., a British insect.—Early last winter a moth was sent to me for examination by Mr. E. H. Taylor, of Fulham, but as I was on the point of leaving home for some months it remained unnamed until the present spring. I then found that it was a specimen of *Xanthia ocellaris*, Bork., of the variety known as *lineago*, Gn., which is said to be found more especially in the Altai mountain district. On referring to Mr. Taylor for its history, he replied:—"I took it on September 27th, 1893, at sugar, on Wimbledon Common" (cf. *ante*, p. 111). Had the specimen been of the European type of *X. ocellaris*, it would have been at once announced, but, under existing circumstances, the only conclusion which seemed possible was that a larva or pupa had been accidentally introduced, with plants, from some part of Asia, and had come to maturity. The matter was, therefore, with Mr. Taylor's assent, dropped. Visiting Professor Meldola last week, I saw his specimen, and heard of its companion, and as these were captured at a place several miles distant from that of Mr. Taylor's specimen, and almost at the same time, there seems no reason why the species should not be duly recorded. It is a pretty insect, a good deal like *Xanthia gilvago*, but having the fore-wings somewhat differently shaped, the hind-margin of the fore-wings being faintly concave below the pointed apex, which thus becomes almost falcate; the nervures are pale, and it has a white dot below the reniform stigma. The variety *lineago*, to which both the specimens which I have seen belong, is of a dull brownish-buff or greyish-yellow, without the intermixture of clearer yellow or reddish found in typical specimens, and is, therefore, much more uniformly coloured.

As remarked by Professor Meldola above, this species has apparently already been included in the British fauna. This is correct only so far as the name is concerned. In 1857, the capture of a specimen was announced—with doubt—at Brighton, but although incredulity was expressed with regard to the capture, no doubt seems to have been felt as to the accuracy of the name. In the following year, 1858, the capture of several more specimens, also at Brighton, was put upon record; and it was not until a year later that they were discovered to be nothing more than light, brightly marked, *X. gilvago*. They were merely specimens of the paler variety of *X. gilvago*, which has a yellow ground with reddish mottling and spots, such as may be seen in any good variable series of the insect in this country. Such specimens are at times sent from abroad as types of *X. ocellaris* in error, but

the characters given sufficiently distinguish the latter. Should it prove to have effected a permanent settlement, we may surely hope that the variety will prove to be accompanied by the better known European typical form.—CHAS. G. BARRETT, 39, Linden Grove, Nunhead, S.E. : *June 17th*, 1894.

Food-plants of Papilio Machaon, L., in the Ziban, Algeria.—When spring is advanced, the swallow-tail butterfly is common locally among the low hills that fringe the plain in this part of the country. Larvæ were first noticed on the 17th of May, when almost every stage of growth was represented. Occasionally, on being approached, the youngest larvæ display uneasiness, and at once protrude the bifid tentacle. Older larvæ need persuasion with a twig or finger to provoke its extrusion ; if teased with a grass awn they are apt to drop down off their plant precipitately. Their principal food about Biskra is *Deverra scoparia*, Coss. and Dr. (I have not yet seen any on *D. chlorantha*, *id.*, although they may just as well feed on it also). This is an umbelliferous plant, allied to celery, that resembles at its best a tall clump of slender rushes : but camels and goats very often reduce it to a woe-begone stump. Its stem-leaves are nothing but rudimentary sheaths, and the others, short, with filiform segments, do not make any particular show. The larvæ eat the stems, and sometimes three or four can be found on one plant ; it is rather an exception for a plant to have none. *Fœniculum vulgare*, Gærtner, restricted seemingly to the Oued Biskra in this neighbourhood, and there local, yielded a solitary larva, after a long search. Another occasional food-plant of the species about here is *Haplophyllum tuberculatum*, Forsk., of the *Rutaceæ*, a plant that can be found, by one's nose, in dry water-channels here and there out on the wastes ; I have seen three larvæ on one small plant.—A. E. EATON, Biskra, Algeria : *June 6th*, 1894.

Abundance of Vanessa cardui and Plusia gamma.—I do not know whether your attention has been called from other quarters to the *sudden appearance* of *Vanessa cardui* and *Plusia gamma* in considerable numbers, but as I know you take a special interest in this matter, I will tell you what I saw this morning. I went out for a short walk along our sea-wall in the Isle of Sheppey in the forenoon, and noticed that every little clump of thistles in bloom had two or three *Vanessa cardui* feeding at the flowers ; and in the hay fields a little way inland, *Plusia gamma* was equally common, getting up out of the grass as one walked along the path. Both these insects were in the same condition, worn and faded, but not apparently torn or broken ; and I am inclined to believe that, as in 1879 (to which year the present one, up to this date, bears an unfortunate meteorological resemblance), there has been a considerable immigration of these species from abroad. Last summer *Vanessa cardui* was quite a rarity in Kent ; indeed, I did not see more than about four specimens altogether, and *Plusia gamma* was by no means as common as usual, so I do not think that the insects seen to-day have hibernated on the spot. I may add that I have seen neither species before this date, except one *V. cardui* at Chatham on the 14th.—J. J. WALKER, Sheerness : *June 17th*, 1894.

Rare Coleoptera in 1893.—*Megapenthes sanguinicollis*, at Bexley ; *Bruchus affinis*, Darenth Wood, May 14th ; *Phytœcia cylindrica*, Dorking, May 28th ; *Anthrribus albinus*, Oxted, June 4th ; *Telephorus translucidus*, Mickleham, June 8th ; *Oodes helopioides*, Wicken Fen, July 23rd ; *Dasytes niger*, Winchester, June 18th ;

Harpalus discoideus, Saltwood, Kent, August 24th; *Hippodamia tredecimpunctata*, Addington Park, Kent, September 3rd; *Molytes germanus*, Addington Park, Kent, September 10th.—HORACE DONISTHORPE, 73, West Cromwell Road, South Kensington: *February 4th*, 1894.

Pyrochroa pectinicornis in *Herefordshire*.—On the 1st June, Dr. Wood and myself made an exploration in the Herefordshire portion of the Black Mountains, where northern species occasionally reward our search. There was a cold wind, and no insects would move. Dr. Wood was, however, rewarded by finding mines of *Lithocolletis vacciniella*, and others that appear to be those of *Nepticula Weaveri*; if so, new to the district. In an old birch stump I found 2 ♂, 1 ♀ of *Pyrochroa pectinicornis*, and two larvæ thereof were also seen. According to Fowler's *Coleoptera*, this species has hitherto only been taken in Scotland.—T. A. CHAPMAN, Firbank, Hereford: *June*, 1894.

Odontæus mobilicornis at *Woking*.—When walking with Mr. and Mrs. Champion on the 13th May on the high road at Woking, I picked up a beetle, which proved to be a female of the above extremely rare insect. I believe the last specimen that occurred in this country was one which I have never recorded, though it presented itself to my collection in an even more simple manner, by alighting on the sheet of paper on which I was writing by lamplight at Shirley Warren, Southampton, 28th June, 1887. The extreme rarity of this species is probably due to subterranean habits. It appears to be even more scarce in Sweden than it is in Britain, if we may judge from the note of Herr Lampa in *Ent. Tidskr.*, xiv, p. 80, for in recording the occurrence of an individual near Malmö last summer, he speaks as if it had occurred only in three localities in that country.—D. SHARP, Cambridge: *June 4th*, 1894.

[Mr. Elton found it at Wellington College in 1890 and 1892; cf. *Ent. Mo. Mag.*, vol. ii, s. s., p. 109, and vol. iii, p. 288.—EDS.]

Osphya bipunctata, F., at *Chattenden, Kent*.—On the afternoon of May 24th, while I was beating hawthorn blossom in one of the "rides" at Chattenden Roughs, a small brown Telephorid-looking beetle tumbled into my net, and puzzled me not a little by its novel appearance. This proved to be a ♀ specimen of *Osphya bipunctata*, and is, I believe, the first example of this rare and local Heteromerous beetle recorded from Kent. I went to look for it again on the 28th, and in spite of very unfavourable conditions of weather, succeeded in obtaining another ♀, almost in the same spot as the first. The hawthorn blossom is nearly over now, but I hope that the much more conspicuous ♂ will be found at Chattenden next year.—JAMES J. WALKER, 23, Ranelagh Road, Sheerness: *May 30th*, 1894.

Throscus elateroides, Heer, at *Chatham*.—I captured a considerable number of *Throsci* by sweeping on the extension works at Chatham Dockyard, between 5 and 7 p.m. on May 16th. They have been examined by Mr. Champion, and about two-thirds of the number appear to be referable to *T. elateroides*, Heer, the remainder being *T. carinifrons*, Bonv. The locality where they were taken is part of the tract of meadow and salt-marsh on the right bank of the Medway below Chatham, formerly known as St. Mary's Island; but a large portion of its area has been covered with the mud and other refuse resulting from the excavation of the exten-

sive dockyard basins, and now supports a rank and varied growth of weeds and long grass, with brackish ponds here and there. The original locality where *T. elateroides* was taken by the late Mr. Brewer and other Coleopterists, is, I believe, some three miles lower down the river near Rainham; and a single unrecorded specimen has occurred to me by sweeping on the sea-wall at Sheerness, in June, 1874.—ID.

Is the Cockchafer (Melolontha vulgaris) decreasing in numbers in this country?—A recent visit to the New Forest for a few days, and the occurrence of *Melolontha vulgaris* there in small quantity, reminded me that thirty or forty years ago this insect used to be abundant, and that I had not seen it alive in this country for several years; no doubt partly because I have not latterly done much out-door collecting at the proper season. But there is an idea about that the insect is really less common than formerly. I shall be glad to have information bearing on this point, and more especially from those entomologists who can base their opinion on the experience of the last thirty years or more.—R. McLACHLAN, Lewisham, London: June 21st, 1894.

Clunio marinus, Halid.—The Rev. E. N. Bloomfield has kindly called my attention to the fact that this species was observed on the surface of rock-pools at Hastings, in April, 1872, by Mr. C. W. Dale, who recorded it in a note on “New and rare British Diptera,” in vol. xx of this Journal (p. 214). I wrote my account last month, under the impression that (excepting Prof. Westwood’s doubtful record for Plymouth, Walker’s Ins. Brit. Diptera, vol. iii) the midge had never been observed on the English coast. It would be interesting to ascertain its range around our shores. As the only other European species (*C. adriaticus*, Schin.) was obtained at Trieste, a southern and western distribution in Britain might be expected. Figures of the male are given in Walker’s work (vol. iii, pl. xxv, 5) apparently copied from Haliday.—GEO. H. CARPENTER, Science and Art Museum, Dublin: June, 1894.

Notes on Merodon equestris.—In January Mr. McLachlan kindly forwarded me a tin box containing a number of *Merodon equestris* grubs, found by a friend of his in a bed of seedling Bulbocodiums. The contents were placed in a small glass jar, about two inches in diameter, and occasionally moistened. The larvæ were very restless, doubtless owing to their being confined in such a small space, and tunnelled the earth in all directions. The first imago appeared April 13th, and they continued emerging to the end of the month. Twenty-six specimens were bred, four being cripples. They showed great variety in colouring, a few being entirely red, some inclined to yellowish-grey with the lower half of thorax and scutellum black, others entirely black with the exception of the last two segments, and several intermediate forms. The time taken in drying their wings surprised me, many after 24 hours emergence being limp and quite unable to fly; this was probably owing to absence of sun heat. They appeared about one month earlier than those I take in my garden, in fact, up to the present (June 16th) I have not met with it this season.—RALPH C. BRADLEY, Sutton Coldfield: June, 1894.

“Controlling the sexes.”—Now that July is upon us, and *Orgyia antiqua* will soon be abundant in most southern localities, it would seem a fitting opportunity for

testing the accuracy of the assertion that females can be converted into males, and *vice versa*, by the agency of food. I mention *Orgyia antiqua* partly because it is common, and does not take long to feed up, but chiefly because it appears to present the best chance of distinguishing the sexes in the larval state, particularly after the last moult, when it is popularly believed that under ordinary circumstances the larger larvæ will produce females, the smaller males.

In order to put to the proof the statement that semi-starvation will change females into males, I would suggest, as a first experiment, that a batch of say a hundred larvæ should be reared *ab ovo* on a plentiful nutritious diet in a spacious and well-ventilated cage, for the purpose of finding out the number of males which are usually produced by unstinted feeding; then another batch of a hundred should be treated on the short commons principle, with a view to showing *how many more than the average number of males* will result. Another way would be to feed up, with fresh and frequent supplies of food, say a couple of hundred larvæ *until the last moult*, and then to select a score of the very largest for the starving process, and a score of the very smallest for high living.

Perhaps the following extract from Mrs. Treat's paper (*Am. Nat.*, vii, 129) will give the cue to any one who may care to go into the question:—"Soon after the last moult, I took twenty larvæ [of *Papilio asterias*] and shut them away from food for twenty-four hours, at the end of that time I replaced ten on a good supply of food, watched them carefully, and kept them eating until they attained a large size; they became chrysalides within a few hours of each other, and emerged as butterflies eight days after; one of the chrysalides was accidentally crushed, the remaining nine were females; of the starved ones, eight males came out, the remaining two chrysalides died." Messrs. Geddes and Thompson (*Evolution of Sex*, p. 46) thus endorse Mrs. Treat's inferences:—"Still keeping to insects, we may note Mrs. Treat's interesting experiments, that if caterpillars were shut up and starved before entering the chrysalis state, the resultant butterflies were males; while others of the same brood, highly nourished, came out females."*

The effect of nutrition, or deficient nutrition, to shape the future sex of the hermaphrodite or sexless embryo one can comprehend; the rearing of males, and the failure to rear females, by semi-starvation, is by no means difficult to explain; but the assertion that female larvæ, especially at a stage when their ovaries are generally supposed to be furnished with eggs,† can be converted into males appears to me to require further confirmation.—H. GUARD KNAGGS, London, N.W.: June, 1894.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: WHITSUNTIDE EXCURSION, 1894.—A small party from this Society spent from May 12th to 15th in the neighbourhood of Selsley on the Cotswolds. In consequence of poor weather, the collections made were below expectations, and, consequently, there was some disappointment. The Lepidopterists took numbers of larvæ of *Callimorpha dominula*, *Nemeophila plantaginis*, *Nudaria mundana*, &c., and found *Nemeobius lucina* and other insects on

* Dr. Landois (*Zeit. für wissen. Z.*, B. 17, S. 375) was, I believe, the originator of this theory.

† Malpighi (*de Bombyce*, 29) discovered eggs in the silkworm larva, and Réaumur (*Mem.*, I, 359) discovered eggs in the larva of the gipsy-moth. These are old authorities, but I am not aware that their accuracy has been disputed.—H. G. K.

the wing, but nothing of importance. The Hymenopterists were well satisfied with their captures, and although the Dipterists, owing to want of sun, took comparatively little of interest, yet that little included two species of *Syrphus* new to the British list: Mr. R. C. Bradley taking one specimen of *triangulifer*, Zett., and Mr. C. J. Wainwright one specimen of *annulipes*, Zett. On the Monday, a drive to Cranham Woods was taken, in the company of two local entomologists, Messrs. Frank Stephens and R. W. Fitzgerald; and on the way back tea was taken at the house of Mr. C. J. Watkins, Painswick, and two profitable hours spent in the examination of his collection of *Diptera*, *Hymenoptera*, &c.

May 21st, 1894.—Mr. G. T. BETHUNE-BAKER, Vice-President, in the Chair.

Mr. W. Harrison showed living larvæ of *Callimorpha dominula*, taken at Selsley during the recent excursion of the Society to the Cotswolds. Mr. A. H. Martineau showed pupæ of *Crabro interruptus*, which he had dug from an old rotten stump at Middleton, where he had previously taken the perfect insect. Mr. P. W. Abbott read a paper upon the genus *Hadena*, in which he dealt with firstly, the position of the genus, which he considered should follow *Apamea*; secondly, the distribution of the genus in our own district; he only knew of the occurrence of eight species, although it was probable *suasa* and *trifolii* might be added; thirdly, variation, which he described at some length, generally concluding that the genus was not a variable one; and, fourthly, life-history, describing fully the life-history, &c., of *glauca*, which he knew well in Sutton Park. He showed the drawer from his cabinet which contained the genus, and other members also showed specimens.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY:
May 24th, 1894.—E. STEP, Esq., President, in the Chair.

It was announced that Mr. T. W. Hall, F.E.S., had been elected a Vice-President in place of Mr. J. Jenner Weir.

Mr. C. A. Briggs exhibited a var. of the under-side of *Lycæna Argiolus*, L., having several spots considerably lengthened into streaks, and some united; also a var. of *Vanessa Io*, L., with the eye only partially developed. Mr. Hall, a specimen of *Dicranura bicuspis*, Bork., with its cocoon, and remarked how closely the cocoon harmonized with the bark. Mr. Fremlin, a large number of bred vars. of *Vanessa urticae*, L., one series being of premature varieties; another showing variation in number and size of the characteristic spots in the centre of the fore-wing, and ranging from only one spot present to four blotches; and a third series showed more or less suffusion of the orange coloration; one specimen was almost black. Mr. Deunis, a number of similar vars. of the same species. Mr. Filer, a series of *Nyssia hispidaria*, Fb., taken in Epping Forest this year. Mr. R. Adkin, a long and variable series of *Boarmia cinctaria*, Schiff., bred from Co. Cork ova, one extreme var. having only a broad marginal dark band, a central light band, and a basal dark patch; also living larvæ of the same species. Mr. Henderson, a specimen of *Macroglossa bombylifformis*, Och., taken at Brockenhurst during Whitsun. Mr. Billups, the following new and rare *Diptera*: *Chortophila setaria*, Mg., from Dulwich; *Blepharoptera inscripta*, Mg., from Oxshott and Bromley; *Heteromyza atricornis*, Mg., from Oxshott; *Hypostena medorina*, Schnr., from Oxshott; *Sepsis punctum*, F., and *Callomyia amæna*, Mg., both from Bromley; also, on behalf of Mr. Manger, a small

collection of Australian *Coleoptera* and *Homoptera*. Mr. Hamm, a series of *Chrysophanus Phlaeas*, L., vars., one being an intermediate var., *Schmidtii*, Gerh.; a series of *Hybernia leucophaeria*, Schiff., showing extreme range of variation; a series of bred *Agrotis saucia*, Hb., all very light, and following the female form; a striking var. of *Apamea unanimitis*, Tr.; also a specimen of *Lithosia griseola*, Hb., of a brown instead of a leaden hue. Mr. Williams, a long bred series of *Pieris napi*, L., showing extreme variation, and read a short paper thereon. Mr. Sauz e, insects taken at Seal Chart, during the Society's Field Meeting, on May 19th. Mr. Turner, two specimens of the Homopteron, *Centrotus cornutus*, taken by Mr. Lewcock at the same place.—HY. J. TURNER, *Hon. Sec.*

ENTOMOLOGICAL SOCIETY OF LONDON: *May 2nd*, 1894.—HENRY JOHN ELWES, Esq., F.L.S., President, in the Chair.

Mr. S. Stevens exhibited a specimen of *Argynnis Aglaia*, var. *Charlotta*, taken by the late Rev. James Watson in the New Forest in 1870.

Mr. J. A. Clark exhibited a curious variety of *Chelonia Caja*, having an extraordinary wedge-shaped marking extending from the outer margin to the base of the left hind-wing, and also, on the same wing, a small spot. It was brown and white in colour, and had the appearance of having been taken from the fore-wing and inserted in the hind-wing. The specimen was said to have been taken at Abbots Wood in July, 1892.

Prof. E. B. Poulton exhibited living specimens of the larvæ of *Gastropacha quercifolia*, surrounded respectively during the early stages of growth by black twigs and lichen coloured twigs, the food being the same in both cases. All the larvæ were shown upon a white paper background, but examples of the surrounding twigs which produced the change of colour were shown beside each batch. Mr. Merrifield made some remarks on the subject.

Mr. E. Meyrick communicated a paper, entitled, "On *Pyralidina* from the Malay Archipelago."

Mr. C. J. Gahan read a paper, entitled, "A Supplemental List of the Longicorn *Coleoptera* obtained by Mr. J. J. Walker, R.N., during the voyage of H.M.S. 'Penguin.'"

June 6th, 1894.—The President in the Chair.

Dr. K. Jordan, of "The Museum," Tring, and the Honble. Nathaniel C. Rothschild, of Tring Park, Tring, were elected Fellows of the Society.

Mr. W. F. H. Blandford exhibited a series of eleven male specimens of *Rhina barbirostris*, from British Honduras, of which the largest and smallest examples measure respectively 60 and 17 mm. The difference in bulk, supposing the proportions to be identical, is as 43 to 1. He remarked that this variation of the size is especially common in the *Brenthidæ*, *Cossonidæ*, and other wood-boring *Coleoptera*. The President, Dr. Sharp, the Rev. Canon Fowler, Mr. Jacoby, the Honble. Walter Rothschild, Mr. Merrifield, and Mr. Champion took part in the discussion which ensued.

Mr. A. J. Chitty exhibited specimens of *Cardiophorus equiseti* taken near Braunton, on the north coast of Devon, in May, 1891. Mr. Champion and Mr. Blandford made some remarks on the species.

Mr. McLachlan exhibited for Mr. J. W. Douglas male specimens of a *Coccid* (*Lecanium prunastri*), bred from scales attached to shoots of blackthorn (*Prunus spinosa*) received from Herr Karel Sulc, of Prague. Mr. Douglas communicated notes on the subject, in which he stated that the species was common on blackthorn in France and Germany, and should be found in Britain.

Lord Walsingham exhibited a series of *Cacoecia Podana*, Scop., reared from larvæ feeding on *Lapageria* and palms in Messrs. Veitch's conservatories in King's Road, Chelsea, including some very dark (melanic) varieties. The Honble. Walter Rothschild stated that he had taken the species on lime. Mr. Hampson and Mr. Tutt also made some remarks on the habits of the species.

Mr. C. Fenn exhibited a long series of *Selenia lunaria*, bred from one batch of eggs, including both the spring and summer forms; and also two unforced specimens, which emerged in November. He remarked that the variation between the two emergencies, viz., spring and summer, is considerable, and also the range of variation *inter se*, especially in the spring form; but it is very remarkable that the summer form has one or two representatives among the specimens of the spring emergence. He said that the parent female was taken at Bexley in May, 1893.

Mr. F. Lovell Keays exhibited, on behalf of Mr. Arthur Lovell Keays, a variety of *L. Alexis* (female), having the marginal ocelli on the hind-wings entirely without the usual orange-coloured lunules. The specimen was captured at Caterham on May 22nd, 1894, and was the first example of the species observed by the captor this season. Mr. Barrett made some remarks on the specimen.

Mr. J. H. Durrant exhibited a series of *Steganoptycha pygmæana*, Hb., taken at Merton, Norfolk, between the 25th March and the middle of April last. Lord Walsingham made some remarks on the species.

Mr. H. Goss read an extract from a report from Mr. J. R. Preece, H.M. Consul at Ispahan, to the Foreign Office, on the subject of damage caused to the wheat crop in the district of Rafsinjan by an insect which was called "Sen" by the natives, and which he described as "like a flying bug, reddish-olive in colour, with heavy broad shoulders." Mr. Goss said he had been asked by Mr. W. H. Preece, C.B., to ascertain, if possible, the name of the species known to the natives as "Sen." Dr. Sharp said that in the absence of a specimen of the insect it was impossible to express an opinion as to the identity of the species.

The Rev. Canon Fowler exhibited for Miss Ormerod specimens of *Diloboderus abderus*, Sturm, *Eucranium arachnoides*, Brull., and *Megathopa violacea*, Blanch., which she had received from the La Plata district of the Argentine Territories, where they were said to be damaging the grass crops. He also read notes from Miss Ormerod on the subject.

Mr. Hampson raised an important point as to what was the legal "date of publication" of Part I of the Transactions of the Society, 1894. He pointed out that the question of the priority of the names of certain new species described therein would depend upon the date of publication. A long discussion then ensued, in which Dr. Sharp, the Honble. W. Rothschild, Mr. Goss, Mr. McLachlan, Lord Walsingham, Prof. Poulton, and Mr. Verrall took part.

Professor Franz Klapálek, of Prague, communicated a paper, entitled, "Descriptions of a new species of *Raphidia*, L., and of three new species of *Trichoptera* from the Balkan Peninsula, with critical remarks on *Panorpa gibberosa*, McLach."—H. Goss and W. W. FOWLER, *Hon. Secretaries.*

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Page 133, line 11 from bottom, for "say," read "saw."

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CONTENTS.

PAGE

A second hundred new British species of Diptera (<i>concluded</i>).— <i>G. H. Verrall, F.E.S.</i>	145
About some Samoan Butterflies.— <i>Mrs. Jane Fraser</i>	146
Notes on the earlier stages of the Nepticulæ, with a view to their better recognition (<i>concluded</i>).— <i>John H. Wood, M.B.</i>	150
On two species of Aleurodes from Dorset.— <i>J. W. Douglas, F.E.S.</i>	154
Note on <i>Thermobia domestica</i> , and its occurrence in the United States.— <i>A. S. Packard, M.D., Hon. F.E.S.</i>	155
Supplement to Annotated List of British Tachinidæ (<i>concluded</i>).— <i>R. H. Meade</i>	156
<i>Xanthia ocellaris</i> at Twickenham.— <i>Prof. R. Meldola, F.R.S., &c.</i>	161
<i>Xanthia ocellaris</i> , Bork., a British insect.— <i>C. G. Barrett, F.E.S.</i>	161
Food-plants of <i>Papilio Machaon</i> , L., in the Ziban, Algeria.— <i>Rev. A. E. Eaton, M.A., F.E.S.</i>	162
Abundance of <i>Vanessa cardui</i> and <i>Plusia gamma</i> .— <i>James J. Walker, R.N., F.L.S.</i>	162
Rare Coleoptera in 1893.— <i>Horace Donisthorpe, F.E.S.</i>	162
<i>Pyrochroa pectinicornis</i> in Herefordshire.— <i>T. A. Chapman, M.D., F.E.S.</i>	163
<i>Odontæus mobilicornis</i> at Woking.— <i>D. Sharp, M.B., F.R.S., &c.</i>	163
<i>Osphya bipunctata</i> , F., at Chattenden, Kent.— <i>James J. Walker, R.N., F.L.S.</i>	163
<i>Throsus elateroides</i> , Heer, at Chatham.— <i>Id.</i>	163
Is the Cockchafer (<i>Melolontha vulgaris</i>) decreasing in numbers in this country? — <i>R. McLachlan, F.R.S.</i>	164
<i>Clunio marinus</i> , Halid.— <i>Geo. H. Carpenter, B.Sc.</i>	164
Notes on <i>Merodon equestris</i> .— <i>R. C. Bradley</i>	164
Controlling the sexes.— <i>H. Guard Knaggs, M.D., F.L.S.</i>	164
SOCIETIES.—Birmingham Entomological Society	165
South London Entomological, &c., Society	166
Entomological Society of London	167

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ABUNDANCE OF CATERPILLARS OF THE ANTLER MOTH,
CHARÆAS GRAMINIS, LINN., IN THE SOUTH OF SCOTLAND.

BY ELEANOR A. ORMEROD, F.E.S., &c.

During the past few weeks considerable damage has been caused to grass at various localities in the south of Scotland by the ravages of the caterpillars of *Charæas graminis*, popularly known as the Antler Moth or Grass Moth.

On June 22nd specimens were sent me by a correspondent at Hawick as samples of caterpillars which were making considerable havoc to the grasses on the hill pastures in the western part of Roxburghshire, also the adjoining counties of Dumfries and Selkirk.

On July 2nd a few lines from Prof. R. Wallace (Professor of Agriculture in the University of Edinburgh) mentioned the caterpillars which were sent accompanying, as having "attacked in immense numbers the land in which the Voles did so much damage a few years ago;" also that "they are said to be worse than the Voles in some places."

At the same date, that is, on July 2nd, specimens of the larvæ were also sent me from Tanlawhile, Langholm (on the east of Dumfries-shire), as samples of grubs which were doing great damage to grass in those districts.

The caterpillars were in all cases very characteristic specimens of *Charæas graminis*. To general observation (like some nearly allied species) they were stout, cylindrical larvæ, about an inch to an inch and a quarter in length, with brown head, and of deep brown or bronzy colour, and excessively shining on the back and upper part of the sides. This deep bronze being divided longitudinally by three pale lines, and these dorsal and sub-dorsal stripes converging and meeting, or almost meeting, above the caudal extremity, and beneath each sub-dorsal stripe was another narrower pale stripe, more or less well defined. The characteristics (*vide* Brit. Butterflies and Moths, by the late W. Buckler, vol. iv, p. 69) which distinguish these larvæ from the caterpillars of *Heliophobus popularis* and *Luperina cespitis* were well marked. The segmental folds were "of a different tint to the back," * * "in fact catching the eye as narrow transverse bands;" the skin on the back (I did not chance to notice the condition of the lower surface) was certainly much wrinkled transversely; and also (though I did not find them constantly present) there were "transverse pale streaks in the space" * * "between the sub-dorsal and subspiracular stripes, though I could not say that these were always

sufficiently well defined to be "three above the pale lowest line, and two below it on each segment."

The caterpillars, when about half grown, of which I had a few specimens, were of a more olive tint, which is stated to be a distinction from those of *L. cespitis*, and the more general habit of not curling up on annoyance, but throwing the head and about a third of the body back towards the tail was very marked.

The "Antler," or Grass" moth, is to be found in many parts of England—as noted in Stainton's Manual, vol. i, p. 204—where about fourteen localities of observation, ranging from Brighton to the lake districts of Cumberland and Westmoreland are given, and also Edinburgh in N. B., but the remarkable point of its history is the vast numbers, the myriads, and absolutely devastating hordes, in which from time to time we are visited in upland or mountainous ground or pasturage, over an area of perhaps as much as ten miles, by an unforeseen invasion of these bronzy, pale-striped caterpillars. The first outbreak which I was personally acquainted with was that of June, 1884, when the caterpillars swarmed over an area of about ten miles diameter, running east and west, and not much less north and south, in Glamorganshire. The details of this I gave in my Annual Report for 1884, but it may be mentioned that the mountains of Ystrath-y-Fodwg (about ten miles north of Bridgend) were then infested by myriads of the caterpillars, devouring every green thing, leaving the mountains brown behind them, and others (and numerous neighbouring localities) specified were well-nigh overwhelmed.

In the following year (1885) the "Antler" moth caterpillars appeared in great numbers in Selkirkshire, destroying in their advance some of the hill pastures in Ettrick and Yarrow. In this case the extent of attacked country was shown by a line on a map enclosing an area of about seven miles by five miles, in the west of Selkirkshire, with Ettrick Water running down the middle.

In the present attack the area, judging by the reports received, is somewhat more extended, and there are one or two points about it which may prove of interest for investigation.

One of these is, the extent to which parasitism may be helping us against recurrence of the attack. It has been mentioned to me by one of my correspondents, writing from the area of infestation, that on cutting open the *C. graminis* caterpillars he found as many as "three or four hair worms within them, and in two cases maggots," and that out of a hundred grubs he had only got three chrysalids. This matter might be of considerable interest to follow up, and I am

hoping for further notes from the observer, and for specimens for investigation.

Another point which seems of interest is the observation of Prof. Wallace of the *Charæas* larvæ being found in immense numbers on the land on which the Voles did so much damage a few years ago.

The coincidences may very likely be of no scientific or practical interest beyond showing partiality of both the Vole and insect pests for the same kind of upland locality, and the same kind of vegetable food, so far as grass is concerned, but the occurrence may be just worth mention.

Agriculturally, these sweeping attacks of *Charæas graminis* are of a good deal of importance, as their ravages (bad enough in destroying the pasturage) may extend to such corn land as there may be in the mountainous or upland districts preferred by the infestation, but such measures of treatment as may lessen the evil, as well as descriptions of the imago, and details of the wide European distribution of the species have been given so fully by many entomological writers, that it is unnecessary to enter on them again here.

Torrington House, St. Albans :

July 10th, 1894.

ON A NEW SPECIES OF *PSYLLA*.

BY W. M. MASKELL.

Genus *Psylla*, Löw.—Head with arched ridges ; vertex with two posterior shallow perforations. Dorsulum well developed, about as broad in front as behind. Elytra more or less widely rounded, usually broadest near the middle ; the apex is between the subcostal and the cubital veins ; the stalk of the cubitus is shorter than the stalk of the subcosta. Frontal cones divided from the vertex.

PSYLLA ACACIÆ, *sp. n.*

♀. Length of adult female about $\frac{1}{8}$ inch. General colour of the thorax, dorsally, dark brown with very faint, small, narrow, yellowish stripes. Head buff, with brown stripes ; frontal cones black ; eyes yellowish ; anterior ocelli dark orange. Abdomen greenish, with bands of dark brown ; genitalia orange. Antennæ and feet light brown, darkening to the tips. Vertex rather flat, covered with a short light coloured pubescence. Eyes prominent, semiglobular. Dorsulum moderately elevated. Frontal cones rather short. Antennæ with the first two joints thick and short, the rest long and slender ; the whole antenna is nearly as long as the body. In the fore-wing the costa or marginal vein is stout, and runs all round the margin till it meets the clavus. The primary stalk is nearly one-fourth the length of the whole wing ; at its extremity the stalk of the cubitus is half as long as the stalk of

the sub-costa; the radius or main branch of the subcosta is very slightly convex, and reaches the margin above the apex; the secondary subcosta is also very slightly convex, and throws off a very short reflex branch to the margin soon after its furcation, thus forming a long, narrow and obscurely punctate pterostigma; the main cubitus is convex, reaching the margin as far below the apex as the radius does above it, and forks at half its length, throwing off a branch reaching the margin at a distance equal to that between the main branch and the radius; the secondary cubitus forks at half its length, but the upper branch is very convex, and therefore nearly twice as long as the lower; the clavus is very slightly concave. The veins just described form closed cells on the wing, in all of which, with the exception of the anterior basal cell, the stigma and the claval cell, there are a number of disconnected patches formed of minute punctuation and shading; four of these are Y-shaped, with stalks starting inwards from the margin, the rest are irregular; these patches cover rather more than the outer half of the wing. The genitalia consist of two conical valves or plates, broad at the base, with slightly convex sides and sharp points; between them the ovipositor slightly protrudes; these valves are very short, being scarcely longer than the penultimate abdominal segment. Both valves bear many short fine hairs.

♂. The adult male resembles the female in size and colour, and in the venation of the wings. The genitalia consist of the usual processes placed dorsally at the extremity of the abdomen. Viewed sideways the genital plate is anteriorly cylindrical, and very broadly rounded posteriorly; the forceps consists of two rather narrow, somewhat pyriform processes with the tips turned backwards; the penis is subcylindrical. Viewed from above the rounded posterior portion of the genital plate is seen to consist of two lateral lobes, and the two processes of the forceps curve inwards. The segment which bears these organs is about as long as, or a little longer than, the two penultimates together. All the processes bear some short spiny hairs.

Pupa naked, active; average length about $\frac{1}{25}$ inch. General colour buff, with dark brown patches on the thorax and transverse narrow brown stripes on the anterior abdominal region, the posterior region brown. Antennæ long, slender, brown, darkening to the tips. The posterior abdominal extremity is truncate and not produced, and bears a few longish hairs. The anal ring is elongated, and as if formed of two oblique, convex, conical divisions, with their bases conjoined and their divergent tips pointed; in consequence the posterior margin is straight, the anterior deeply concave.

Larva generally similar to the pupa, but smaller; the average length is about $\frac{1}{40}$ inch.

Habitat: in New Zealand, on *Acacia melanoxylon* at Wellington. A tree of this species in a garden is every summer covered with great numbers of the insects in all stages of growth. In winter an occasional stray adult may sometimes be found, but rarely. The tree, which is about 20 feet high, does not seem to have been as yet seriously damaged, though it is not as vigorous as it should be; it is, however, also attacked by *Aspidiotus camelliæ*, Boisduval, and the Coccid will probably be more injurious to it than the Psyllid.

The plant is Australian and Tasmanian ; doubtless, therefore, the insect may have also come from thence. I have not seen a specimen on any other tree in the same garden or elsewhere.

The venation of the wings and other characters fix this species in the genus *Psylla*. But after close study of all the species mentioned by Löw, Scott and Riley, and comparison with more than twenty species in my own collection, I cannot find any which exhibit the same markings in the cells of the fore-wing. *Psylla rhois*, Löw, *P. limbata*, Meyer-Dür, *Pachypsylla venusta*, Riley, come near it, but differ quite sufficiently in many particulars. Nor does it seem to be any of the species reported by Dobson (Proc. Roy. Soc. Tasmania, 1850).

Wellington, New Zealand.

PALPARES WALKERI, A REMARKABLE NEW SPECIES OF
MYRMELEONIDÆ FROM ADEN.

BY ROBERT McLACHLAN, F. R. S., &c.

On the voyage home from his late extended period of foreign service, Mr. J. J. Walker, R.N., F.L.S., had the opportunity of part of a day's (June 18th, 1893) collecting at Aden, and with his unvarying skill contrived to turn such an unpromising locality to good account. Amongst his captures were two males of a highly remarkable Ant-Lion, which I describe as under:—

PALPARES WALKERI, *n. sp.*

Head above yellowish-white, with indications of a dusky median spot posteriorly (but without distinct band) ; much swollen, and with a deep median longitudinal sulcus ; a narrow transverse black band (in which the antennæ are placed) connects the eyes ; face whitish-yellow, tips of mandibles dark piceous. Palpi dark piceous, the labial very long. Antennæ longer than the mesothorax, black, gradually clavate, the apex very acute. Thorax above whitish-yellow, with three black longitudinal bands, viz., one median, and one on either side (on the mesonotum these bands become confused and divided, and are still more vague on the metanotum) ; pronotum transverse, the fore and hind margins much raised, the former with a fringe of cinereous hairs directed forward, the latter with long erect blackish hairs and a fringe of cinereous directed backwards, between the raised fore and hind margins is a transverse elevated ridge : meso- and metanota clothed with cinereous hairs slightly mixed with blackish : sides of thorax, and beneath, blackish, with a short clothing of cinereous hairs. Legs black, and somewhat shining, with short cinereous and longer blackish hairs ; tibial spurs and tarsal claws dark reddish-piceous. Abdomen comparatively short, stout, piceous or flavescens above to end of 4th segment, then passing into blackish and blackish beneath (in one example, probably more mature, the abdomen is wholly black) ; there is a short, sparse, cinereous clothing, longer at the base : the posterior margin of the last dorsal segment

produced into an elevated triangle, which is open in front. In the male the appendages are about as long as the penultimate and ante-penultimate segments united, stout and broad, flattened laterally, attenuate at the base, and then dilated to the obtuse apex, slightly curved, dusky yellowish, but this colour is almost wholly concealed in a dense clothing of long black hairs.

Wings with a slight lacteous ground, on which are very distinct deep black markings, and (especially in the anterior) black irroration; both pairs nearly equal in form (the posterior slightly shorter), long and somewhat narrow, with straight costal margin (and narrow costal area), subacute apex, and gradually rounded inner margin, slightly sinuate below the apex. In the anterior wings the black markings are as follows:—small points at the junction of the costal nervules with the subcosta, larger ones at the commencement of the nervules arising from the radius, two or three still larger towards the base, and one at the commencement of the sector; the extreme base, post-costal region and the basal portion of the inner margin with rather dense irroration, and there is a submarginal series of small irroration extending from near the apex to beyond the middle of the inner margin: there are also two nearly opposite spots towards the base, one below the commencement of the sector, the other at the termination of the branch of the lower cubitus; an elongate isolated spot on the disc rather before the middle, another, irregular and subinterrupted, beyond the middle, and yet another, more or less interrupted, ante-apical; pterostigmatic region (in both pairs) slightly opaque, scarcely evident. Posterior wings almost without irroration, save a few on the inner margin, but there are four very distinct short, black, oblique fasciae, viz., (1) slightly beyond the commencement of the sector, commencing from the radius and extending about half across the wing, excised within, and continued by a small spot at the end of the branch of the lower cubitus; (2) about the middle, also commencing from the radius, extending more than half across, dilated at its lower end, continued by a small round spot, more towards the base, on the inner margin; (3) ante-pterostigmatic, commencing from the costal margin, extending more than half across, and with a spot, sometimes united to it, internal to its lower end; (4) ante-apical, enclosing an apical pale spot, or itself divided into two spots (none of the markings are quite symmetrical on the opposite wings of the same individual). Neuration close, whitish if seen against a dark ground (but appearing blackish if seen against a white ground), black where it traverses the black markings, and the radius is nearly wholly black in the posterior.

Length of body (*cum append.*), 48—50 mm. Expanse of wings, 110—117 mm.; greatest breadth of anterior wing, 16—17 mm.

This fine insect is peculiar for the manner in which the black markings of the wings stand out conspicuously from the lacteous ground, this latter being naturally coincident with the desert habitat. It is also remarkable for the broad flattened appendages of the ♂. As a near ally, the Indian *P. patiens*, Wlk., may be mentioned, with which it agrees entirely in form. Another undoubted near ally is the insect from Arabia Felix figured by Klug, *Symb. Phys.*, pl. xxxv, fig. 3, as a variety of the male of his *M. papilionoides*. Several entomologists,

including myself, have expressed doubts as to Klug's type-form, and his variety, belonging to the same species. The late Dr. Hagen (Canad. Entom., xix, p. 110) came to the conclusion that they do belong to one species, the correctness of which I still doubt. Klug's types are in the Berlin Museum.

Lewisham, London :

July 7th, 1894.

NOTES ON LEPIDOPTERA IN THE SOUTH OF FRANCE.

BY ALBERT H. JONES, F.E.S.

In the November number of this Magazine for 1890 I furnished an account of an Entomological Excursion to Digne, in the Basses Alpes, during the month of June. This Spring on my way to the south, I had the opportunity of spending a week there during the early days of May. On my arrival at Avignon on April 30th the mistral blew with considerable force, and on the following day increased almost to a hurricane, sweeping down the Rhone Valley and carrying with it leaves, boughs of trees, and dust in every direction. I was glad to leave for Digne, where I found a peaceful climate and perfect weather for collecting.

I noticed about 40 species of butterflies, a very fair average for so early in the year. *Pieris Daplidice* was certainly the commonest butterfly, flying by scores over the lucerne fields on the Barcelonette Road. *Colias Hyale* was also extremely plentiful, and *Colias Edusa* fairly common. *Leucophasia sinapis* was very scarce; *Leucophasia Duponcheli* was fairly common, and, like its congener, never resting. Hibernated specimens of *Gonopteryx rhamni* and *Oleopatra* were both rather common.

The dry hill side at the back of the cemetery is considered the great locality for *Thais Rumina*, var. *Medesicaste*, and here, in 1890, Mr. Nicholson and myself found the larvæ in considerable numbers on *Aristolochia pistolochia*. I naturally expected to meet with the butterfly, and possibly take the var. *Honoratii*, but the species was not to be seen. The *Aristolochia* seemed to have suffered much from last year's drought, and it is probable that the plants were dried up and the larvæ destroyed. Near the Baths, in another and more sheltered locality from the sun, I took a few of the butterfly.

Thccla rubi and *Polyommatus Phlæas* occurred occasionally. The commonest "Blue" was *Lycæna melanops*, which was locally abundant,

especially in the Bois du Rocher Coupé. Of *L. Cyllarus*, *Icarus*, *bel-largus* and *Corydon* I noticed a few, and one *L. Arion* in its usual haunt among broom. I paid one visit to the Dourbes, and although I was told by local collectors that *Euchloë Tagis*, var. *Bellezina*, was out, I failed to see it, and the only species I met with was *Nemeobius Lucina*. *Primula veris*, which grows in the meadows, is no doubt its food-plant. I met with occasional hibernated specimens of *Vanessa polychloros* and *Egea*, and of the latter species I found on *Parietaria officinalis* a full grown larva, which produced a butterfly on June 4th. *Melitæa Aurinia*, var. *provincialis*, and *Cinxia* were common along the roadsides. *M. Phæbe* and *Argynnis Euphrosyne* and *Lathonia* occurred at intervals.

Erebia Evias was just emerging, but *E. Epistygne*, of which I took three or four worn specimens, was practically over, having been out since March 20th. *Spilothyrus alceæ* and *lavateræ*, a few of each, complete nearly the list of butterflies.

Of moths I took a few, the best capture probably being *Cleophana antirrhini*.

I reached Hyères on May 6th, and was indeed sorry to find Mr. Frederic Raine, one of my companions in Corsica last year, too unwell to do any collecting.

The same afternoon Mr. Raine pointed out the locality for *Thais Polyxena*, var. *Cassandra*, of which I found a good number of full grown larvæ on the food-plant, *Aristolochia rotunda*, which grows on the hill sides. I had the pleasure of making the acquaintance of Professor Allen Harker, who had just returned from an Entomological trip to Corsica. In his company I had a very agreeable day's collecting at Carqueiranne. *Melanargia Syllius* was very abundant. *Euchloë euphenoides* females were not uncommon among its food-plant, *Biscutella didyma*. *Thais Rumina*, var. *Medesicaste*, *Limenitis Camilla*, *Melitæa Cinxia*, *Phæbe* and *didyma* occurred occasionally. *Epinephele Pasiphaë* was just commencing to emerge.

The Gapean Valley is also good collecting ground, and is the locality for the skipper, *Syrichtus sidæ*, of which I took a beautiful series. It is extremely local, being confined to a very limited area in which the wild thyme I noticed was abundant. A large form of *Acidalia ornata* occurred here, and at flowers of the periwinkle *Sesia fuciformis*. *Papilio Machaon* and *Podalirius* were both occasionally met with.

I left Hyères on May 12th.

ON MIMICRY IN *DIPTERA*.

BY COLBRAN J. WAINWRIGHT.

When collecting *Diptera* on the willows at Wyre Forest during the last Easter holidays, I came across some cases of mimicry which, together with some conclusions suggested by them, I think worthy of notice. I obtained several each of *Cheilosia grossa* and *flavicornis*, two very similar but distinct species belonging to the Family *Syrphidæ*, both of which seem remarkably partial to the willows, where alone we found them. I was particularly anxious to get these two species, but had a great deal of difficulty in distinguishing them from the bees of the genus *Andrena*, many of which were on the blossom; they particularly resembled *Andrena fulva*, and we netted far more of the bee than of the Dipteron, in our efforts to get the latter. The resemblance is very strong, colour, size and (to a considerable extent) shape being much the same; when at rest on a flower the Dipteron curls its body under a little, as the bee does, and folds its wings over its back in the same manner, in fact, these two species (*grossa* and *flavicornis*) are undoubtedly very good mimics of the bees.

In addition to the *Cheilosia*, we also took a large number of an *Echinomyia*, probably *ursina*, one of the *Tachinidæ*. This was very common throughout the Forest, but specially so upon the willows. It was easily distinguished when once its presence was known, although it had a distinctly bee-like appearance, unlike the other species of *Echinomyia* with which I am familiar. It, however, resembled no species in particular; it bore a general resemblance to *Bombus muscorum* in size, shape and colour, but it was not so hairy, and it did not fold its wings bee-fashion, but kept them fully extended in the well-known fashion of many of the *Muscidæ*, and so would fail to deceive the eyes of an entomologist.

There is very little doubt that in the spring, when insects are not very numerous, and when, therefore, we may reasonably infer that their enemies are unusually alert in discovering and capturing them, that it must be even more necessary than during the summer, for those insects which do appear, to be well protected in some way from their foes, and especially if they happen to be species which, through feeble reproductive powers or other similar causes, are limited in numbers to commence with. Now, the two *Cheilosia* are distinctly species which are limited in numbers, in fact, they are somewhat rare species, and may be described as occurring singly; they are not robust species, in fact, rather the reverse, and therefore, they are just such species one

would expect to find protected by mimetic resemblances. In every way they may be said to present all the requirements of an ordinary case of mimicry.

The *Echinomyia*, however, does not present so ordinary a case. It is a wonderfully strong and robust species, belonging to a group of parasitic species, all of which are strong and robust, and ordinarily neither need nor possess any such protection as a mimetic resemblance. It is well protected on the body by strong hairs, answering, to some extent, the purpose of spines, and is very strong on the wing; it is very large, too, many specimens being 8 or 9 lines long. It, however, occurs at this time (March) when other insects are scarce, and it must be conspicuous and so tempt its foes, and although common on this particular occasion at Wyre Forest, I do not think it is usually a common species, at least, I never saw it before; altogether, although it does not answer the usual requirements of a mimetic species, yet there are obviously good reasons why a resemblance to the strong and usually unmolested *Bombi* would be an advantage to it. We accordingly find that it does possess some such resemblance, though imperfect, and it is just this imperfection which is its most interesting feature, and is to some extent the reason for these notes.

Many or all of the opponents of the theory of mimicry urge very strongly the difficult question—how does the resemblance arise?, in early stages it can be of no use to its possessor. But here, I think, we have a case showing how mimicry may arise, and even the early stages be of use. The *Tachinidæ* do not, as a rule, resemble in the least degree any *Hymenoptera*, they are quite unlike bees. The *Echinomyiæ* are a genus of unusually large and well-developed *Tachinids*, some of which (*fera* and *ferox*, for example) are simply ordinary *Tachinids* in appearance, though unusually large, and quite unlike bees; they are summer species: *ursina*, however, a spring species, though closely allied to these others by a comparatively slight alteration in colour, a development rather than an alteration, and the increase of its hairs in number and size, at once and unexpectedly somewhat resembles *Bombus muscorum*, and almost certainly must derive some protection from even this superficial resemblance, at a time when food is being so eagerly sought by insect foes. It only needs a still further increase in hairiness, and to fold its wings over its body, and it would be an almost perfect mimic; and supposing its nearest allies to be lost, we should wonder how the early stages arose.

OBSERVATIONS ON *COCCIDÆ* (No. 8).

BY R. NEWSTEAD, F.E.S.,
CURATOR OF THE GROSVENOR MUSEUM, CHESTER.

ASPIDIOTUS ABIETIS.

Coccus abietis, Schk., Beitr. zur Naturg., 48, 5, tab. ii, fig. 16—20 (1776).

Coccus arborum, Schk. (*nec* Geoffr.), Enum. Ins. Aust., 295, 585 (1781).

Coccus pineti, Schk., Fauna Boica, ii, 146, 1269 (1801).

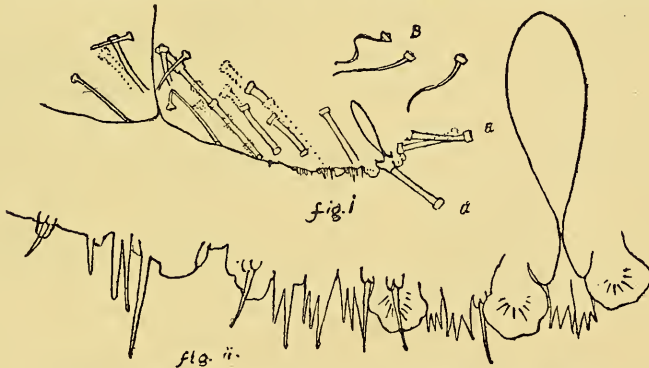
Aspidiotus flavus, ♂, Hartig, Jahresber., i, 642 (1837).

Aspidiotus pini, ♀, Hartig, Jahresber., i, 642 (1837).

? *Aspidiotus* ? *pini*, Comstock, Report, 1880, p. 306, pl. xv, fig. 2 ; pl. xvi, fig. 2 ; pl. xxi, fig. 7.

Aspidiotus abietis, F. Löw, Wiener ent. Zeit., i, 270 (1882).

Scale of the ♀ black, covered with a very thin grey film, most conspicuous near the centre and at the margins, giving the scale a greyish appearance under the



Long., elongate form, 1·50—1·75 mm. ; circular form, ·75 mm.

microscope; ovate, with the sides parallel, ends rounded; or often more or less circular, varying according to position on the fir leaf; exuviae bright yellow.

♀. Pygidium either with or without grouped spinnerets; when present, the anterior groups consist of from 3—7, the anterior laterals 8—12, the posterior laterals 6—8; arising from both dorsal and ventral surface at the margin are numerous (? 16) long tubular spinnerets, which are directed forwards, and lie closely appressed to the body (fig. 1); at *a a* three of these tubes are shown misplaced and directed backwards; all have a wide flange at the apex and base, but the latter not so strongly developed; in the centre of the tube at the apex is a very short (scarcely perceptible) cone-shaped organ, most easily seen in those tubes which have become shrivelled (fig. B). Dr. Löw (*l. c.*) describes these tubes as "bottle-necked rods," but does not say if they are free, or within the body of the insect. The shrivelled tubes shown at fig. 1 B I at first mistook for distorted hairs, for which they might well pass. Prof. Comstock (Rep., 1883, p. 52, pl. i, fig. 2) describes these forms as "wax ducts," but says nothing of their being shrivelled. Fig. ii is a drawing of the fringe, not hitherto figured.

It will be seen on comparing the above with the descriptions given by previous writers that there are some slight discrepancies as to the colour of the scale, and the presence or absence of grouped spinnerets. "Grey," "dark grey" (schwarzgrau), is given as the colour of the scale by Schrank and Löw respectively; but I attach very little importance to this, so slight a difference in colour stands for very little; but the presence or absence of grouped spinnerets is very important. So far as I can ascertain, it is the immature ♀ that is without the spinnerets, and that very probably these latter are not developed until the period of gestation, but I am not at all certain of this. It can only be proved by an examination of the living insects in their successive stages of development.

Löw (*l. c.*) found no grouped spinnerets, and says there are only two pairs of lobes. Quite half of my specimens are *without* grouped spinnerets, and the third lobe, which is very small, might easily have been overlooked. The rest of his description agrees so well that I have no doubt as to the identity of the species.

This species runs Prof. Comstock's *Aspidiotus? pini* (Rep., 1880, p. 306) very close. Externally there is no difference; and the marginal fringe of both is almost identical. It is only by the number and arrangement of the grouped spinnerets that they can be separated. Some forty specimens of *A. pini*, Comst., which I examined are also without grouped spinnerets, which is very singular. Nothing is said of this in Prof. Comstock's description. I imagine, therefore, the absence was overlooked by him.

We have all been attaching very great importance to the presence or absence of spinnerets in the separation of species, and, I think, rightly; but I am absolutely certain that in this species both forms occur in the same colony, on the same food-plant, and at the same time; and that there is no *external* character by which they can be separated.

Mr. Cockerell (Canad. Ent., 1894, p. 130) says that he has found the same variation in *Asp. destructor*, Sign., but I believe not in the same colony of insects, or under the other conditions stated above. In this case, therefore, the doubt still remains.

Hab.: near Prague, Bohemia, on *Pinus sylvestris*. Received from Herr Karel Sulc, May, 1894.

As to the synonymy of the species, I have had to fall back on Mr. J. W. Douglas for his valued help and translations, for which I am very greatly indebted to him.

LEUCASPIS PINI.

♂ *Aspidiotus pini*, Hartig, Jahresber., i, 642 (1837).

♀ *Aspidiotus flavus*, Hartig, *id.*

♀ *Aspidiotus pini*, Bouché, Stett. ent. Zeit., iii (1851).

♀ *Leucaspis pini*, Sign., Ess. Cochen., 146, 2, pl. 6, fig. 2 (1870); Witlaczil, Zeit., f. wiss. Zool., xliii, Taf., v, fig. 3—7 (1886).

♂ ♀ *id.*, F. Löw, Wiener ent. Zeit., i, 273 (1882); A. C. F. Morgan, Ent. Mo. Mag., xxv, 189, pl. iii, fig. 3 (1889); *id.*, iii, n. s., 13 (1892).

Scale of the ♀ white, more or less pyriform, according to position on the fir leaf; larval moult absent?; second moult yellow, or yellowish-brown, with the cephalic portion greenish, often covered with a thin white film; ventral scale thin, apparently complete. Long., 1—1½ mm.

♀, after treatment with potash, has the margins brown, with the centre paler; very elongate, ends narrowly rounded, sides nearly parallel, segments distinct; margins with an interrupted band of nearly circular spinnerets or pores, very distinct, and there are two short bands of the same arising near the vaginal opening, which gradually widen out as they extend across the abdominal segments. Antennæ a mere group of stiff spines with basal swellings. Grouped spinnerets wanting. Pygidium crenulated, with four pairs of small lobes, of which the 4th is very small, and widely separated from the rest. There are two serrated plates between the median and 1st and 2nd pairs of lobes; three between the 3rd and 4th, and beyond the 4th are five to six more, not shown in the figure; all are deeply serrated, varying in the number of serrations shown in the figure; arranged at the base of the plates are some twelve to thirteen crescent-shaped pores ("thickenings of the body wall," Comstock), very distinct. There are also four pairs of very broad plates, partly overlapping the four pairs of lobes and the 2nd and 4th plates. There is a spine over each lobe, and one in front of the 1st and 2nd pair. Long., .75—1.25 mm.



Scale of the ♂ dirty white, flat, elongated, sides parallel, end rather narrowly rounded; larval moult yellowish-brown, anterior portion greenish.

♂ dark brown soon after death,* piceous afterwards; antennæ of ten joints, each with a few hairs, which are longest on the terminal oncs. Haltere, with a

* The specimens which I succeeded in rearing died before they were discovered.

slender base, is much dilated for two-thirds of its length, and is surmounted with a single *straight* hair. Legs rather stout, with a few short scattered hairs; claws narrow and pointed; digitules to tarsi very small, and there is a strong spine at the apex of the tarsi. Genital armature straight. Long., .75—1 mm.

Hab.: Chuchle, near Prague, Central Bohemia; on *Pinus sylvestris*, generally between the leaves near the base, and often in company with *Aspidiotus abietis*, Sch. Collected by Herr Karel Sulc, May 6th, 1894.

As to the colour of the living ♂ Dr. Löw (*l. c.*) says: "blackish olive-brown, with rather lighter greyer abdomen, and pale, often rather reddish, antennæ and legs. In the middle of the mesonotum is a very glassy, equally broad, almost straight, convex, transverse band, which, on both sides, is truncate, and is only a little darker than the back." The rest of his description of the ♂ agrees with mine in every particular.

The presence of only one moult in the scale of the ♀ is curious and abnormal; nothing is said of this in the previous descriptions of the species. I have ventured to describe the only moult as the second, as it is much larger than the *larval* moult on the two ♂ scales in my possession. In the entire absence of the marginal fringe of blunt hairs, and grouped spinnerets, I am inclined to think my specimens are slightly immature; although from their large size they do not appear to be so. The crenulated fringe of the pygidium is like that of a *Parlatoria*, to which genus I at first thought the species belonged. Later, if the material can be obtained, it is intended to further investigate the matter, and if possible to clear up the discrepancies.

POLLINIA GRANDIS, *n. sp.*

♀. Adult viviparous; antennæ and legs absent; mentum uniaarticulate, apex widely rounded, filaments short and slender; anal tubercles very small, and without hairs; margin all round with a single row of double spinnerets (fig. 1). Very difficult to restore with potash, and for this reason I could find no trace of the anal ring, and the anal tubercles were only found in a single specimen. The form of the ♀ is also doubtful. The body shrivels at gestation, and is then yellowish-brown, and visible through the scale.

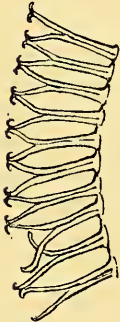


Fig. 2.



Fig. 1.

and entirely wanting in some specimens.

Scale of the ♀ semi-opaque, glassy-white, highly convex, slightly pyriform, widest behind; anal extremity with a very short tubular opening, which projects upwards; margin with a rather wide single cilia all round, and of the same colour and material as the scale, but is often broken away,

Long., 2—3 mm.

Scale of the ♂ with the fringe (fig. 2) and colour like that of the ♀; but is much smaller, elongate, sides parallel, ends widely rounded; dorsum slightly ridged. Long., 1 mm.

♂ unknown.

Larva yellowish-brown when dead, very elongate, sides nearly parallel, some slightly widest behind (♀?); margin, and two sub-dorsal lines, with curly white glassy filaments; mentum uniaarticulate, unexpanded filaments same length as mentum; anal tubercles very small, each with a single short hair; antennæ of 6 (♀) joints much swollen at the apex, and with a few long hairs; legs rather short, coxæ pointed on the outside, tarsi a little shorter than the tibiæ, claws and digitules of the tarsi exceedingly long and slender; the latter nearly as long as the tarsus and claw together, are attached to the tarsus *beneath*, and immediately behind them is a strong constriction running obliquely across the tarsus to the apex in front, forming a projecting spine-like point; margin all round with about 28 large double spinnerets, arranged wide apart.

Hab.: Baluchistan; on a very strong grass-like plant, leaves varying from three-quarters to half an inch wide, strongly ribbed, and very hard when dry. Collected by Lieut. R. Tomlin, and forwarded from Calcutta, January 24th, 1894.

Taking the characters altogether, the species is more conformable to the genus *Pollinia* than any other; but the uniaarticulate mentum, and the uncertainty about the anal ring in the ♀ make it somewhat doubtful. In some respects it approaches *Planchonina*, but in this genus there is a double row of marginal spinnerets and fringe, and the scale is not *glassy*.

The large size of the scale, and the curious fringe at once distinguish it from any other known species.

Described from many specimens.

Chester: *June 29th*, 1894.

BACTRA FURFURANA BRED, WITH A DESCRIPTION OF THE LARVA.

BY A. THURNALL.

After a search extending over several seasons, I at last succeeded in finding this exceedingly local species in the early part of last summer (1893), and having procured a series, I turned my attention to the possible food-plant of the larva; having made up my mind that it must be one of two plants growing on the spot, and not anywhere else in the immediate neighbourhood, I resolved to look it up early this spring. Accordingly, May 1st found me once more on the ground, and seeing some of the suspected food-plant just appearing, some roots were dug up, and the plants minutely examined upon my return home, but not a larva of any kind could be found! Another visit

paid on May 12th was more successful, for a very short search revealed a larva of a very *Bactra*-like appearance, snugly stowed away in a stem. About half a dozen roots were brought home, potted and covered with gauze-topped cylinders, and the larvæ, or rather the green frass, from them could be plainly seen at intervals on the stems of the food-plant (which it may be as well to state is *Scirpus lacustris*,* the common club-rush); they appear to move freely from stem to stem, hollowing each one out and stunting its growth, frequently causing the stems to turn brown, and gradually decay. Pupate in the stem in a light silken cocoon. The first imago, a ♂, appeared on June 23rd, the last, a ♀, July 2nd. Six specimens in all, two males and four females. I will now give a description of the larva:—

Length, about $5\frac{1}{2}$ lines, somewhat attenuated. Colour yellowish-green, and very shining and smooth. I could detect no hairs on the body; a few scattered hairs on the head, which is *black*, divided by a whitish line. Second segment *very* dark brown. The dorsal canal can be very plainly seen through the semi-transparent skin. Full-fed last half of May. Pupa greenish-yellow, wing cases darker.

Although the habits of this species, both in the larva and imago states, are very similar to its near ally, *lanceolana*, the appearance of the larvæ is very different. Perhaps it would be as well to give here a short description of the larva of this latter species by way of comparison:—

Larva of *Bactra lanceolana*:—Length, from $5\frac{1}{2}$ to 6 lines, when fully extended. Colour greenish. Head and second segment *both* black. Each segment after the second contains six plainly visible blackish spots. Two on either side of sub-dorsal, and one just above and slightly in advance of each spiracle. Full-fed first week in May. The above description was made on May 12th, when nearly all I found were in the *pupa* state; many of *furfurana*, on the contrary, were not more than half grown on the same date, and only *one* could be found full grown.

144, Chobham Road, Stratford New Town, E.:
July, 1894.

Carpocapsa nimbana.—I first met with this local and rare *Tortrix* towards the end of May, 1889. One fine ♀ emerged from a large pot containing beech nuts gathered the previous September. I did not meet with any more until this season, when another fine ♀ emerged from a pot containing a lot of dead, moss-covered beech bark brought last autumn from the same locality. A search on the beech trunks on the first opportunity (May 26th) enabled me to add three more to my collection, two ♂ and one ♀.—A. THURNALL, Stratford New Town: July, 1894.

Butalis chenopodiella.—I have taken five or six of this local insect at rest on fences in this neighbourhood during the past month (June).—ID.

* In addition to the *Scirpus*, Sorhagen gives *Juncus conglomeratus* also.—Ebs.

Notes on the larva of Ephestia elutella, Haw.—Having had an opportunity of seeing a great number of larvæ of this species doing considerable damage to biscuits, it may be of interest to give a description and an outline of its life-history. The larva tapers towards the head, colour brownish-white; head, plate on 2nd segment, and spots (or rather dots), brown; two dots on 2nd segment below the plate, four on the 3rd and 4th, six on 5th to 11th, three spots on 12th, and one on the 13th, the last four I designated as spots because they are three or four times larger than the others. The two dots on the 3rd and 11th segments below the subdorsal line are surrounded with a brown ring; all the dots bear a light coloured bristle, almost white, about 1 mm. in length; mouth black. The small round spiracles are brown, also the claspers. Below the spiracles a row of dots, having one and sometimes two bristles, and two smaller dots with bristles close to the ventral region. They left their food (biscuits) in the middle of October, and wandered about until they had secured a place to their liking, crevice or crack in the wall or in the folds of the biscuit bags, or any hiding place, when they spun themselves up a slight cocoon, therein they lay dormant until about April, when they changed to pupæ. The perfect insects came out the following month.—G. C. BIGNELL, Stonehouse, Plymouth: *July 1st, 1894.*

Aleochara maculata, Bris., at Guildford.—Amongst the *Staphylinidæ* captured by me at Guildford on May 15th (*cf. ante*, p. 135) were two specimens of an *Aleochara* which I set aside for further examination. These now prove to be *A. maculata*, Bris., an insect hitherto unique as British, the original specimen of which was obtained by the Rev. H. S. Gorham on the banks of the Lyn, in North Devon, and recorded by him many years ago in this Magazine (*cf. vol. v, p. 136*). I am indebted to M. Fauvel for comparing one of my examples with Brisout's types, which were from Vernet and Paris.—G. C. CHAMPION, Horsell, Woking: *July, 1894.*

Thermobia furnorum at Hastings.—A few days ago I received some miscellaneous insects, &c., from Hastings to determine; in the box were two specimens of this species, and on Wednesday last I saw about half a dozen alive and uninjured in a small shallow jam pot covered with glass, so that they could be examined at leisure. They came from the kitchen of the private house of a gentleman on the West Hill at Hastings. His theory as to their introduction is this:—He bought a sack of Hungarian flour, which was placed in the kitchen; before this they had not seen the "fire brats," now they must be fairly plentiful in that house. Of course, this is very likely to be a case of "Post hoc," not "Propter hoc." The Hungarian flour may have had nothing to do with the introduction of the *Thermobia*. I thought you would be sure to like to know of the occurrence.—E. N. BLOOMFIELD, Guestling Rectory, Hastings: *June 29th, 1894.*

Adicella filicornis, Pict., in the New Forest.—Amongst the contents of my collecting bottle during a few days' stay (June 16th—20th) at Brockenhurst, in company with Dr. Sharp and Mr. Champion, I found one female of this little longicorn Trichopteron, a species which, so far as I am aware, had hitherto only been known as British from specimens found in the Clyde Valley. I am unable to give the precise locality, but the only place visited at all likely to produce it was a portion of

the Lymington River, near Brockenhurst. Neither can I say with certainty that it was taken by myself, for my companions generously transferred to my bottle such *Neuroptera* as fell in their way. All I can do is to record the occurrence as a contribution to the distribution of the species in Britain.—R. MCLACHLAN, Lewisham, London: *June 30th, 1894.*

Rhaphidia notata, F., and *R. maculicollis*, Steph., common in the New Forest.—When I arrived at Brockenhurst, I found that Messrs. Sharp and Champion had been taking these two species commonly, in fact, in greater plenty than I had ever before seen any species of the genus in this country. By the time of my visit they were apparently becoming scarce. They were beaten from various kinds of trees, if old and lichen-covered so much the better; and they also occurred in the flowers of hawthorn and *Viburnum opulus*. The larvæ were to be found in dead wood, and under bark, and were not unfrequently disclosed by the beetle hunters, and they were sometimes dislodged by beating the jagged ends of broken branches on living trees. I have one larva, that I think belongs to *R. maculicollis*, in a glass tube with rotten wood; it is fed occasionally with a fly, and seems to thrive; I suspect it feeds at night, for I have never been able to detect it in the act.—ID.

Nothochrysa capitata and other *Neuroptera* in Surrey.—On June 22nd, while beating the fir trees at the Hut Pond, Wisley, Surrey, my brother and I disturbed and captured a specimen of *Nothochrysa capitata*. The *Hemerobiidæ* were out in numbers, the chief being *H. concinnus*, *H. inconspicuus*, *H. limbatus*, and *H. nitidulus*.

We also took one *Rhaphidia notata*. *Chrysopa aspersa* was plentiful, and *C. tenella* rare.

On the 30th, at Newark Abbey, Ripley, *Platycnemis pennipes* was common, and I took one fine blue variety of the ♂, resembling the figure in Charpentier's "Libellulinae Europææ," pl. 48. There seems to be a disparity of sex in this species, or else the ♂ has a more wandering habit than the ♀, as I took nineteen ♀ and only two ♂, while on an earlier occasion I took four ♀, and only one ♂.

Chrysopa phyllochroma occurred in the waste land around the Abbey. I took six, and, probably, lost as many more, as they were difficult to see and catch; when disturbed, they fluttered along the surface of the herbage for a few yards, and then dropped, and were difficult to move again. Although the field was to a great extent surrounded by luxuriant hedges with elm trees, and by the river, with clumps of alders, I failed to beat out a single specimen, all that I saw were walked up from among bugloss and thistles in the most open and hottest part of the field. I also took one *Hemerobius elegans*.—C. A. BRIGGS, 55, Lincoln's Inn Fields: *July, 1894.*

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *June 18th, 1894.*—MR. R. C. BRADLEY in the Chair.

Messrs. C. F. Haines, Stourbridge, and R. W. Fitzgerald, Uley, Dursley, Gloucestershire, were admitted Members of the Society.

The insects captured on the Cotswolds during the recent visit of the Society

were shown, as follows:—Mr. R. C. Bradley, *Lepidoptera* and *Diptera*, &c., the *Lepidoptera* included a specimen of *Thecla rubi*, with no trace of the white markings on the under-side; there were many *Diptera*, including *Syrphus triangulifer*, an addition to our list, *Cheilosia chrysocoma*, *Brachyopa bicolor*, and others not yet satisfactorily identified. Mr. C. J. Wainwright had *Diptera* only, these included *Syrphus annulipes*, Zett., new to our list; *Gymnochæta viridis* and other *Tachinidæ*, and one or two doubtful insects upon which he read a few notes. Mr. A. H. Martineau had *Hymenoptera*, including *Osmia xanthomelana*, *Andrena bucephala*, *Nomada ochrostoma*, a remarkably dark form of *Bombus muscorum*, &c. Other insects, *Lepidoptera*, &c., were shown by Mr. O. W. Walker and Mr. W. Bowater. Mr. E. C. Rossiter showed a few *Lepidoptera* recently taken at Wyre Forest, *Charocampa porcellus*, *Notodonta dictæa*, &c. Mr. C. J. Wainwright showed a small box containing a few rare *Diptera*, including the three closely allied species of *Syrphus*, *annulatus*, *vittiger*, and *lineola*, Zett.; the determination and separation of which had been confirmed by Mr. G. H. Verrall, the last species is a further addition to the British list of *Syrphi*, and was taken at Sherwood; the box also contained one specimen of *Platycheirus spathulatus*, Rond., from Conway, a species just added to our list by Mr. Verrall, on the strength of two specimens from Devonshire.—COLBEAN J. WAINWRIGHT, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY:
 June 14th, 1894. —E. STEP, Esq., President, in the Chair.

Mr. R. Adkin exhibited, on behalf of Mr. Tugwell, a series of vars. of *Spilosoma lubricipeda*, Esp., the product of a cross between var. *radiata*, and var. *fasciata*, and read notes; three specimens of hibernated *Vanessa Antiopa*, L., from Montreal, Canada, with pale margins; a series of *Asteroscopus nubeculosa*, Esp., bred from Rannoch ova, and some of which had been in pupæ three years; also bred specimens of *Aleucis pictaria*, Curt., from the New Forest. Mr. Frohawk, on behalf of Mr. Fremlin, a var. of *Apatura Iris*, L., from Berlin, intermediate between the type and var. *Iole*, Schiff.; on behalf of Mr. South, a dwarf captured specimen of *Euchlœe cardamines*, L., measuring only $1\frac{1}{4}$ in. in expanse, and another specimen with the apical patch of two shades of yellow; also an ovum, *in situ* on a nettle leaf, of *Vanessa c-album*, L., together with larvæ of the same species, showing all five stages of growth. Mr. Manger, a large collection of insects of all Orders captured on the S.S. Kara, by Captain T. Walker, during a voyage to N. York and Shanghai and back. It was interesting to note a specimen of *Acherontia Atropos*, L., from Shanghai; some species shown were new; a discussion ensued as to the distribution of species and the distances from land insects have been noticed. Mr. Edwards, specimens of *Papilio Priamus* and *P. Hewitsoni*. Mr. West (Greenwich), specimens of *Cryptocephalus nitidulus*, Gyll., and *C. coryli*, L., from Box Hill; also two very rosy males of *Smerinthus populi*, L., which had been assembled by a bred female. Mr. Filer, a long bred series of *Smerinthus populi*, L.; one male was of the female coloration; one specimen had emerged in August of last year, and had the discoidal spot on the primaries much smaller than the rest of the brood, which went their usual period. Mr. Turner, a series of *Cymatophora ridens*, Fb., from the New Forest, a larva of the same species, and a pupa of *Melitæa Aurinia*, Rott. The Report of the Field Meeting at Reigate was then read.

June 28th, 1894.—The President in the Chair.

Mr. G. A. Scorer was elected a Member.

Mr. C. Fenn exhibited a bred series of *Geometra papilionaria*, L., from the brood of which some larvæ were not yet fully fed; a specimen of *Heliothis peltigera*, Schiff., having the blotch in the dark border of hind-wing very large; a very long series of *Selenia lunaria*, Schiff., showing spring, summer, and intermediate forms from one batch of ova; and a *Mantis* from Australia. Mr. R. Adkin, specimens taken during the Society's Field Meeting at Reigate, including *Pachetra leucophæa*, View., and vars. of *Lycæna Icarus*, Rott., and *L. bellargus*, Rott. Mr. Dennis, ova and young larvæ of *Bombyx rubi*, L., from Reigate. Mr. Turner, a long series of *Lycæna bellargus*, Rott., from Box Hill, showing all the ordinary variations, some of the females having a considerable amount of the male coloration. A discussion took place as to the scarcity and lateness of insects this year, especially with regard to the Geometers.

July 12th, 1894.—The President in the Chair.

Mr. R. Adkin exhibited a bred series of *Dianthæcia nana*, Rott., from Unst, all very dark, and some unicolorous, and a yellow banded var. of *Sesia myopiformis*, Bork., from Mr. Wellman's collection. Mr. Oldham, series of *Rumia cratægata*, D. L., *Noctua triangulum*, Hufn., and *Dasychira pudibunda*, L., all bred this year, from Epping Forest; also insects taken at Wisley on July 7th. Mr. Dennis, varieties of *Epinephle Janira*, L., including a fine xanthic specimen. Mr. Auld, a long bred series of *Phorodesma smaragdaria*, Fb., from Essex, one specimen having only the discoidal spots present. Mr. C. A. Briggs, a specimen of the rare Lacewing Fly, *Nothochrysa capitata*, F., taken at Wisley. Mr. Edwards, two specimens of *Ornithoptera Cræsus*, from Batchian, *Papilio gyas*, from India, and *P. electra*. Mr. Perks, the egg of a *Coccinella* deposited on the point of a thorn. Mr. Turner, series of *Lycæna minima*, from Galway, showing gradual diminution of spots on the under-side, a brown-suffused var. of *L. Astrarche*, Bgstr., from Reigate, and an asymmetrical var. of *Smerinthus tiliæ*, L. Mr. Turner read the Report of the Field Meeting on July 7th at Wisley.—HY. J. TURNER, *Hon. Sec.*

LITA INSTABILELLA, DGL., AND ITS NEAREST BRITISH ALLIES.

BY EUSTACE R. BANKES, M.A., F.E.S.

(Concluded from page 128).

LITA SALICORNÆ, Hering.

With more than 300 examples before me, I should describe the insect as it most frequently appears in this country as follows:—

Exp. al., 6''—7½'', usually about 6½''. *Antennæ* fuscous, annulated with pale ashy-grey. *Palpi* pale grey or greyish-ochreous, middle joint marked externally with brownish-fuscous, terminal joint broadly ringed with fuscous near the base and tip. *Head* and *face* pale grey or greyish-ochreous. *Thorax* and *patagia* grey or greyish-ochreous, usually somewhat darker than the head.

Fore-wings moderately broad, costa fairly straight, apex rather blunt: ground-colour ranging from pale greyish-ochreous to greyish-fuscous, but commonly grey,

brown-grey, or ochreous-grey, much marbled with paler, and sometimes partially tinged with light rust-brown. From the costa, within the basal third, start two short, dark, oblique bars, often showing only as spots. On the fold are two large dark spots, apparently continuations of the interrupted costal bars, the second decidedly before the middle of the wing. On the disc are two large dark spots, the first just above the outer edge of the second spot on the fold, the second, crescent-shaped when complete, beyond the middle of the wing. The colour of the spots, and of the bars, ranges from bright rust-brown, through chocolate, to dark fuscous, and the spaces between them are frequently occupied by clusters of pale scales. Towards the hind-margin is a pale angulated fascia, generally more or less well-defined. At the apex there is usually a dark spot, on either side of which the margins are chequered light and dark. Cilia pale greyish-ochreous, sometimes more grey than ochreous, often with traces of transverse fuscous lines. *Hind-wings* but slightly emarginate below apex, semi-transparent, satiny leaden-grey, veins darker; cilia pale greyish-ochreous, sometimes more strongly grey.

Abdomen grey or greyish-fuscous above, greyish-ochreous beneath; anal tuft greyish-ochreous. *Legs*: anterior pair fuscous, narrowly paler beneath, with pale rings at all the joints; posterior pair pale ochreous, dusted externally with fuscous except at the joints, the tarsi alone showing dark bars internally between the joints.

From Major Hering's statement (S. E. Z., l. c.) that the ground-colour is "as a rule a bright roe-brown, rarely a mouse-grey," and from the four examples that he kindly sent me, I conclude that in Thuringia the insect is, on the whole, browner and brighter than in England, where the typical "bright roe-brown" form is not among those that occur most frequently.

This species, though extremely variable in both sexes, may generally be recognised by its delicately, though broadly, marbled appearance, due to the ground-colour being broken up by the pale fascia and the clusters of pale scales, and always by the large size and peculiar character of the spots, of which the most conspicuous are the second on the fold and the two on the disc. In its allies the typical spots are like spots or dots of black ink, in *salicorniæ* they resemble blots of some coloured ink. There is no dark longitudinal streak, nor any pale inner-marginal *vitta*. From *marmorella*, which it will follow in our lists, it is readily distinguished by its larger size, its less strongly-contrasted colours, and by the absence of any paler *vitta*.

Larva of LITA SALICORNIE, Hrg.

For the following description of the larva and its habits I am greatly indebted to Mr. W. H. B. Fletcher:—

"Length about 5 lines. *Head* varying from pale brown to nearly black: plate on second segment, and anal flap which is concolorous with the head, similarly variable in colour. *Legs* black. Ground-colour of *body* dull yellowish-green; dorsal line red; sub-dorsal region broadly red, with patches of the ground-colour round the usual tubercles; claspers same as ground-colour. The red markings vary greatly in intensity, often being nearly obsolete."

“When the herbage is strong, the larvæ spin together from two to six branches of *Salicornia herbacea* to form a sort of tent, and gnaw the inside of it; while, in the case of *Suæda maritima*, several leaves or shoots are joined, and the green part of the leaves is eaten from within, only whitened remains being left. Where the plants are dotted thinly over the more or less dry mud, and their branches are pro-cumbent, the larva spins a web of loose silk among the branches, much in the manner of a low-feeding *Phycis* or *Butalis*, and lives in a denser gallery of white silk on the surface of the ground, or often some little distance down a crack in it. Of the larvæ that live in this way the ground-colour of the body is, on the average, lighter than in those from which the description was taken. I have also found them on *Spergularia media*, feeding in this same manner, and on *Aster tripolium*, of which they mine and inhabit the leaves.”

Larvæ of the earlier broods have been found in leaves of *Aster tripolium* by Mr. G. Elisha, in Essex, on May 12th; and by Mr. J. H. Threlfall, in Lancashire, on June 5th; those of the later ones in this and other plants by Messrs. J. W. Douglas and W. H. B. Fletcher, in Sussex.

The imago does not seem to have been often noticed on the wing; Mr. Fletcher, who has taken it freely, finds blowing on the ground the most successful method of collecting.

GENERAL REMARKS.

In trying to distinguish these closely-allied *Litæ*, it should be borne in mind that in general they vary very greatly, and on parallel lines. The ground-colour is inconstant, while the markings are unstable in shape and colour, and are apt to be intensified, or to disappear almost entirely. But when long bred series of them are seen side by side, the special characteristics of each are very evident, and become impressed on the memory. The following is an attempt to tabulate them, so that, in their ordinary forms at least, they may be recognised:—

- | | |
|---|--------------------------|
| 1. Fore-wings moderately broad, apex rather blunt | 2 |
| Fore-wings decidedly narrow, apex acutely pointed | 5 |
| 2. Pale hind fascia generally present and well defined | 3 |
| Without pale hind fascia, (inner margin paler) | = <i>suædella</i> . |
| 3. With paler inner margin..... | = <i>ocellatella</i> . |
| Without paler inner margin | 4 |
| 4. With small spots..... | = <i>instabilella</i> . |
| With large spots | = <i>salicorniæ</i> . |
| 5. Inner margin paler, without pale hind fascia | = <i>plantaginella</i> . |
| Inner margin not paler, with or without pale hind fascia (generally
ill-defined, often obsolete) | 6 |
| 6. Ground-colour pale greyish-brown | = <i>atriplicella</i> . |
| Ground-colour pale greyish-stramineous | = <i>obsoletella</i> . |

1. *L. salicorniæ* may be known by its large coloured spots, and, in the commoner forms, by its prettily marbled fore-wings.

2. *L. instabilella* is distinguished by its more uniform appearance, seldom broken except by the pale fascia which itself is occasionally obsolete, and by its small black spots, which, however, are liable to disappear in part or in whole, and be replaced by rust-brown. In general, all the fringes, and the costal margin of the hind-wing towards the apex, are rather more ochreous, and less inclined towards grey, than in the preceding, and the pale ochreous tinge in the fore-wings is much more constant.

3. *L. ocellatella* is characterized by its bright ochreous fascia and inner margin, and its conspicuous ocellated black spots. On the whole it is also noticeably smaller, and less robust, than its nearest allies. The sexes differ considerably, the ♂s having darker, and much less ochreous, as well as apparently rather narrower and more pointed, fore-wings than the ♀s.

4. *L. suædella*, which is separated from all but *plantaginella* by the presence of an ochreous inner-marginal *vitta*, combined with the absence of any pale fascia, is more stoutly built and broader in the wing than that species, and has a brighter and more attractive facies. I always notice a most striking distinction between them, in all their ordinary forms, when the wings are closed; in *suædella*, the pale thorax lying between the darker patagia unites with the pale stripe presented by the two overlapping inner-marginal *vittæ* to form, together with the head, one conspicuous and sharply-defined central ochreous stripe down the moth; in *plantaginella* this is never seen, for although the thorax matches the inner margin in colour, the patagia are equally pale. Again, in *suædella* the contrast between the dark upper part of the wing and the pale inner-margin is, in general, much stronger than in *plantaginella*, in which the two parts, though often separated by a similar dark streak, approximate more nearly in colour.

5. *L. plantaginella*, although most variable, may be recognised by the peculiar *streaked* appearance of the pointed fore-wings, due to the presence of more or fewer lines of pale scales, especially pronounced towards the apex; it has a paler inner-margin as a rule, but has no pale fascia.

In his description of *plantaginella* (Ent. Mo. Mag., XIX, p. 253), Mr. Stainton says that it is "a larger and broader-winged insect than *instabilella*." In any case the comparison could not stand, because his "*instabilella*" (*l. c.*) is a mixture of the four preceding species; but, as to size, his remarks about the food-plant, and the *exp. al.* that he gives, to say nothing of his cabinet series, prove that he only knew the large salt-marsh form of *plantaginella*, and was unacquainted with the smaller dry-ground form; whilst, as regards breadth, the wings of *plantaginella* are visibly narrower in proportion to their length than in those four insects.

6. *L. atriplicella* is separated from the first four species by its slender build and shape of wing, and from all the foregoing by its more sombre, unmarked facies. It is however, particularly in its paler forms, continually mistaken for *obsoletella*, partly, no doubt, because in the "Manual," II, p. 340, it is emphasized as a characteristic of *obsoletella* that the "basal half of the abdomen" is "pale ochreous," and no mention is made of the fact that *atriplicella*, as a rule, has the basal half of the abdomen ochreous or pale ochreous; of both species individuals occur in which this part is not ochreous at all.

In the open country, *atriplicella* is commonly pale greyish-brown, more or

less thickly dusted with fuscous, but in the London and Thames-mouth districts it is very dark, owing to the presence of numerous blackish scales. It is, therefore, so much deeper in colour than *obsoletella*, which is usually pale greyish-stramineous, sparingly peppered with fuscous, that only in aberrant individuals do these species resemble one another. After examining large numbers of both, I think that, in separating them, more reliance should be placed on colour than on size or markings; they vary in size, and in both insects the black dot-like spots are similarly situated, and liable to be elongated into short streaks, while the pale hind fascia is often wanting.

7. *L. obsoletella*, which otherwise differs from the first five species in the same points as the preceding, is best distinguished from it by its much paler ground-colour. Fischer von Röslerstamm says that *obsoletella*, when in good condition, is "never so darkly coloured" as *atriplicella*, and that even worn specimens of the latter are "sufficiently distinguished" from the former by the presence of two blackish streaks on the under-side of the abdomen. But since he had only met with *atriplicella* in Vienna, and his type is the dark form, he probably did not know the paler forms, of which some examples show on the under-side of the abdomen no trace of any darker streaks, whereas, in *obsoletella*, on the other hand, the same part, as allowed by Fischer himself, "occasionally shows traces of two grey longitudinal lines."

The life-histories of both *atriplicella* and *obsoletella*, and the entirely different modes of life by which the larvæ betray their identity even when feeding on the same plant, as well as the larvæ, pupæ and imagines, have been fully described by Fischer, who also gives admirable figures (with magnified parts, &c.) of them in those stages [*atriplicella* (dark form), p. 223, pl. 78 (1839); *obsoletella*, p. 225, pl. 79 (1840)]. As no English descriptions of the larvæ or pupæ appear to have been published, the following translations by myself of those in Fischer's work may perhaps be useful:—

Larva and pupa of *LITA ATRIPLICELLA*, F. v. R.

Larva. "It has sixteen legs, it is greenish-yellow, sometimes even grass-green, with a dark—sometimes even only a light—rose-red suffusion on the back, and black shining warts, each of which emits a hair. The head is honey-yellow with four brown side spots (*i. e.*, two on each side—E. R. B.), the prothoracic plate green, with a few brown dots on the sides, and on the green anal extremity ten small black warts are visible. The legs are pale green, the points of the claws blackish-brown."

[In the first sentence there is, in the original, no "," after "grass-green," and no "—" between "light" and "rose-red," but to avoid ambiguity, I have ventured to insert them, because, from Fischer's language, apart from very strong corroborative evidence, I myself entertain no doubt as to his exact meaning.—E. R. B.].

"The pupa is brownish-yellow, it has paler wing-cases and, when the imago is well formed, dark red shining eyes; the anal extremity is armed with hooked bristles."

The larva, which "is very active and drops to the ground at a very slight touch" (F. v. R.), lives in a silken gallery among, and feeds on, the young leaves, flowers, or seeds of its food-plants, and I have little doubt that the eggs are laid in the shoots, flowers, or young seeds, according to the time of year. Mr. Fletcher found that larvæ from Southend, which produced the dark form of the moth, although very

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CONTENTS.

PAGE

Abundance of Caterpillars of the Antler Moth, <i>Charæas graminis</i> , Linn., in the South of Scotland.— <i>Miss E. A. Ormerod, F.E.S., &c.</i>	169
On a new species of <i>Psylla</i> .— <i>W. M. Maskell</i>	171
Palpares Walkeri, a remarkable new species of Myrmeleonidæ from Aden.— <i>R. McLachlan, F.R.S., &c.</i>	173
Notes on Lepidoptera in the South of France.— <i>Albert H. Jones, F.E.S.</i>	175
Mimicry in Diptera.— <i>Colbran J. Wainwright</i>	177
Observations on Coccidæ (No. 8).— <i>R. Newstead, F.E.S.</i>	179
<i>Bactra furfurana</i> bred, with a description of the larva.— <i>A. Thurnall</i>	183
<i>Carpocapsa nimbana</i> .— <i>Id.</i>	184
<i>Butalis chenopodiella</i> .— <i>Id.</i>	184
Notes on the larva of <i>Ephestia elutella</i> .— <i>G. C. Bignell, F.E.S.</i>	185
<i>Aleochara maculata</i> , Bris., at Guildford.— <i>G. C. Champion, F.Z.S.</i>	185
<i>Thermobia furnorum</i> at Hastings.— <i>Rev. E. N. Bloomfield, M.A., F.E.S.</i>	185
<i>Adicella filicornis</i> , Pict., in the New Forest.— <i>R. McLachlan, F.R.S.</i>	185
<i>Rhaphidia notata</i> , F., and <i>R. maculicollis</i> , Steph., common in the New Forest.— <i>Id.</i>	186
<i>Nothochrysa capitata</i> and other Neuroptera in Surrey.— <i>C. A. Briggs, F.E.S.</i> ...	186
SOCIETIES.—Birmingham Entomological Society	187
South London Entomological, &c., Society	187
<i>Lita instabilella</i> , Dgl., and its nearest British Allies (<i>continued</i>).— <i>E. R. Bankes, M.A., F.E.S.</i>	188

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variable in such details as colour of head and plate, were much greener than those from other localities, which yielded the ordinary paler form. In both forms of the larva he would describe the prothoracic plate as usually, though by no means invariably, concolorous with the head.

(For other details, see *Table of Species*).

Larva and pupa of *LITA OBSOLETELLA*, F. v. R.

"The larva has sixteen legs. When quite young it is pale green with a blackish-brown head and prothoracic plate; when full grown it has a pale rose-red dorsal stripe, and sometimes also shows that colour to a less degree on the sides. The warts are very small and blackish-grey, each emitting a whitish hair. The head is shining honey-yellow, the prothoracic plate blackish-brown, divided and edged with whitish, the shining anal flap without markings. The claws and ventral legs greenish-white."

Mr. Fletcher (MS.) describes the head as "pale brown," and mentions the fact, not actually stated by Fischer, that the body of the well-grown larva is pale yellowish-green.

"The pupa is brownish-yellow, it has (shortly before emergence takes place) shining dark red eyes, and bears on the anal extremity small hooks, spikelets, and bristles of various shapes."

Fischer came to the conclusion that the egg is introduced through the soft bark into the pith, and says that the young larva tunnels to a spot close above the axil of a branch, twig, or leaf-stalk, where it bores a hole outwards for the extrusion of the frass (which is always seen in the mouth of it or hanging therefrom), and for the ultimate escape of the moth. He observed that in spite of their protected position large numbers of larvæ were dragged out by small yellow ants, or stung by ichneumon flies; and mentions that the growth of the plant does not appear to be injured even when, as frequently happens, the stem, branches, and twigs are all tenanted (in one instance he counted 36 larvæ in one plant!), but Mr. Fletcher (MS.) says that their forward growth is checked and they become thickened. The larva, when extracted from its burrow, is very active.

(For other details, see *Table of Species*).

In Ent. Ann., 1859, p. 163, Mr. Stainton says, that larvæ found by Mr. Bond at the beginning of October mining the leaves and boring the stems of *Chenopodium maritimum* (= *Suaeda maritima*, Dum.), in the Isle of Wight, were probably those of *Gelechia obsoletella*. From the nature of the plant and the habits of *obsoletella* it seems clear that none of the larvæ then found were referable to this species, and I have little doubt that all were those of *atriplicella*, which, though not a true stem-borer, will at times gnaw into the soft upper parts of the stems.

While closely studying this group it has been my good fortune to be able to examine all the allied continental species in the Frey, Stainton, and Zeller collections, as well as those in Lord Walsingham's rich cabinet; these include almost all the described ones of which the names are known to me, and some that are still undescribed.

In conclusion, I wish to express my hearty thanks to Lord Walsingham for his kind assistance in many ways, and to my excellent

friends, the Rev. C. R. Digby for various translations from German works, and Mr. W. H. B. Fletcher for much valuable information, and also for the loan of his very long and beautiful sets of these insects; these, together with my own less lengthy series selected in most cases out of the larger numbers that I have bred, make up a total of some 1500 specimens, and illustrate well the known range of variation in each of the seven British species that belong to this more puzzling portion of the genus *Lita*.

The Rectory, Corfe Castle :
February 15th, 1894.

SUPPLEMENTARY NOTE (*cf. ante*, pp. 82-8).

I can now corroborate Shield's statement ("Prac. Hints," p. 149) that the larva of *L. plantaginella* (= "*G. instabilella*," *l. c.*) mines the leaves. Last month, Mr. W. H. B. Fletcher found on *P. coronopus*, in the I. of Wight, one young larva so engaged, and many empty mined leaves, whilst in Purbeck I secured two very young larvæ mining down leaves of this plant, and a few mines, two containing cast skins only, the rest empty. The three larvæ, the skins, and the mines, were referable to *plantaginella*. It seems clear that the egg is sometimes, perhaps always, laid on a leaf, that the larva mines down the leaf, and sometimes part of another leaf or two, and then, while still quite young, enters a rootstock. In nature it apparently never *feeds up* in or on the leaves, and I have failed to induce it to do so in confinement. The older leaves, when mined, die off and decay rapidly, thus escaping notice.—E. R. B. : May 18th, 1894.

DESCRIPTION OF A NEW SPECIES OF *PERICOMA* FROM DELAGOA BAY.

BY THE REV. A. E. EATON, M.A., F.E.S.

At page 23 of the present volume mention is made of an East African *Pericoma*, allied to *P. notabilis*, Etn. In some respects it approaches the *P. advena*, Etn., series of species, which with the former are included in the 3rd Section of this genus, tabulated in Ent. Mo. Mag. (2nd series), vol. iv, p. 127.

PERICOMA MERIDIONALIS, *sp. nov.*

♀. Disc of wing broadly ovate, pointed exactly at the end of the præbrachial nervure. Antennæ, allowing for difference of sex, as in *P. advena* (*cf.* Ent. Mo. Mag., 2nd ser., vol. iv, p. 127, step 8), reaching in ♀ to only a little beyond the base

of the wing. End of the subcosta not quite so far advanced as the end of the postical nervure. Radius forked distinctly beyond the pobrachial fork, but considerably before the end of the axillar nervure; its stem inserted in the anterior basal cell at a distance from the cell's end subequal to the cell's apical width. Stem of the pobrachial nervure short, equal to the difference in length of the two basal cells; its proportion to the stem of the radius not ascertainable with exactitude from wings *in situ*. Hair of the disc thin, dark greyish-brown, shifting with change of posture to a warmer subfuligineous brown; the margin bordered with a narrow brown line, interrupted at the endings of all the nervures, except the axillar and præbrachial, by small white hair-spots. In the region of bristling hair, when the wing is viewed edgewise away from the light, the hairs shift to whitish; and at the outer edge of this region an angulated series of small white hair-spots spreading outwards becomes apparent, pointing towards the apex of the wing, the spots placed singly on the radial branches and cubitus, and on the pobrachial branches, the postical and the axillar nervure, with the most salient angle at the cubitus; the spot on the posterior pobrachial, much smaller than the others, stands inwards a little out of rank. Within the same region, near the forks, are two small blackish hair-spots, one on the anterior radius nearly opposite the other on the posterior pobrachial nervure. Fringes concolorous with the hair of the disc, glossy, and from certain standpoints varied faintly with dull whitish in close proximity to some of the white marginal spots; costal fringe dense, varying in hue with change of posture, at the base of the wing, in correspondence with the bristling hair, the darker colour lingering at the roots of the fringe. Legs densely clad with fuligineous hair, especially the posterior pairs, and adorned with snow-white scales; the tibia and the first four joints in the tarsus dorsally strongly fringed, and the tarsal fringe densely loaded with black scales, glossed at their extreme tips with dull whitish; the snow-white markings are—some scales at the knee; some scattered scales interspersed among the hairs on the exposed side of the tibia, and a narrow edging of imbricate scales at the tip; a similar edging at the tip of the first tarsal joint; also, in the fore tarsus, some scales at the tips of the next three joints clear of the fringe; also, on the intermediate tarsus, a very small dorsal spot at the base of the first joint.

Frons and palpi clad in fuligineous. Scales on the two basal joints of the antennæ fuligineous; flagellum brownish, with light brownish-grey hair, shifting to whitish-grey. Pubescence of the vertex and notum dense, and up to the wings light brownish-grey, shifting to brownish-white; that between the wings, from certain standpoints, light fuligineous-brown, followed on the 1st abdominal segment with long erect hair matching in colour that of the wing-roots and alulæ. Dorsum of abdomen very densely pubescent with upstanding hair (shorter than that on the 1st segment), which remains light fuligineous-brown at the roots, but shifts with change of posture to light brownish-grey and whitish in its upper parts; last segment with whitish pubescence; sides and venter with fuligineous hair.

Length of wing, 3.5 mm.

Hab.: Delagoa Bay, two ♀ described (Brit. Mus.). A third specimen offered to the Museum in 1891, but there no longer, was labelled Kingarni River, German East Africa.

ADDITIONS AND CORRECTIONS TO THE LIST OF BRITISH
ACULEATE HYMENOPTERA.

BY EDWARD SAUNDERS, F.L.S.

(Concluded from page 86).

PROSOPIS MASONI, Saund. (DILATATA, Saund., nec Kirby, Smith).

In my Synopsis I described the wrong insect under *dilatata*, Kirb., and only discovered my mistake a few months ago when Mr. Billups lent me two males of this genus, both with white dilated antennary scapes, and told me that he felt sure they were distinct; one had the apices of the posterior tibiæ black, the other had the entire tibiæ yellow. I did not think much of the colour character, as the species I have always called *dilatata* (*Masoni*) has often a black spot on the inner side of the posterior tibiæ, which might increase to a band, but on closer examination I found a distinct difference in puncturation, and in the shape of the scape of the antennæ, and I at once recognised in the specimen with black apexed tibiæ the four-sided scape mentioned by several continental authors as characteristic of *dilatata*, Kirb. Professor Perez years ago questioned whether specimens of my so-called *dilatata* were Kirby's species, and referred them to *Rinki*, Gorski. I carefully examined them with Gorski's description and figure, and found they would not agree with these, and I assured Prof. Perez that they were the true *dilatata*, Kirb.; there is, however, no doubt that I was wrong. I have examined Kirby's and (through Dr. Mason's kindness) Smith's type specimens of *dilatata*, and they are both identical and distinct from what I have described in my Synopsis under that name, and I have, therefore, much pleasure in naming our second species, which appears distinct from any of those described by continental authors, *Masoni*, after Dr. Mason, whose kindness in lending me Smith's specimens of the rarer *Aculeata* has been extreme. In Smith's collection the two species were mixed, but although I have taken *Masoni* pretty plentifully in some localities, I have never met with *dilatata*. The two species may be thus compared:—

- | | | |
|--|---|----------------------------|
| ♂. Mandibles white, the scape of the antennæ nearly four-sided, its anterior and posterior sides subparallel, apical joint pale, abdomen more finely punctured, posterior tibiæ ringed with black at the apex. | } | <i>dilatata</i> ,
Kirb. |
| ♀. Basal segment of abdomen nearly impunctate, very finely punctured at the sides only, apical segments more clothed with brownish-white hairs. | | |
| ♂. Mandibles black, scape of antennæ subtriangular, apex of terminal joint black, abdomen more coarsely punctured, posterior tibiæ without black apical rings. | } | <i>Masoni</i> ,
Saund. |
| ♀. Basal segment distinctly but rather finely and remotely punctured on the disc, apical segments less clothed with brownish-white hairs. | | |

SPHECODES DIVISUS, v. Hagen ?.

I have placed the British exponents of this under *variegatus*, as the only character I can see to distinguish them lies in the extreme narrowness of the 2nd

submarginal cell; as this cell appears to vary in width, I do not think its form is sufficiently strong a character to consider specific.

ANDRENA ROSÆ, Panz., and *TRIMMERANA*, Kirb.

I have united these as races of one species under the name *rosæ*, as there can I think be little doubt that they are not specifically distinct; the fact that in the same localities where *Trimmerana* and its var. *spinigera* occur in the spring on sallows, *rosæ* occurs in the late summer on brambles, goes a long way to prove their identity. The entire apex of the 8th ventral valve of the ♂, and the impunctate 6th dorsal valve of the ♀, in *rosæ*, which in my Synopsis I gave as its specific characteristics, I find are liable to variation, as I have autumn *rosæ* (♂) with the 8th ventral valve emarginate, and ♀ with the 6th dorsal distinctly punctured.

ANDRENA APICATA, Smith (= *LAPPONICA*, Smith, Saund., &c., *nec Zett.*).

This change of name is necessary, as Zetterstedt's *lapponica* is a species allied to *helvola*, Linn., and is quite distinct from the *lapponica* of our lists.

ANDRENA HELVOLA, Linn., and *FUCATA*, Smith.

These two closely allied species, which I considered distinct in my Synopsis, but afterwards united as varieties of one, I am again going to separate. Mr. R. C. L. Perkins has always maintained their distinctness, but until I came carefully to examine a series of very fine examples of *fucata* (♂), sent to me by Mr. W. H. Tuck, of Bury St. Edmunds, I could detect no satisfactory structural characters between them. C. G. Thomson, in his *Hymenoptera Scandinaviæ*, gives four allied species, *varians*, *helvola*, *angulosa*, and *fucata*; these have always been a puzzle to me, but on reading his descriptions over again I find his *helvola* is without doubt our *præcox*, which leaves three species agreeing with our three, his *angulosa* being our *helvola*. The characters he gives to distinguish *angulosa* and *fucata* are most exact, and although somewhat "critical," are quite sufficient to distinguish the species apart. The chief of these lies in the form of the labrum. This in *helvola* is narrower and more pointed than in *fucata*, so that the apical emargination is smaller and less distinct in both sexes; in the ♂ the tooth at the base of the mandibles is rather less developed, and the abdomen is less polished and less finely punctured; in the ♀ the clypeus is less regularly and less closely punctured, the abdomen is less shining, more hairy, more rugulose and more punctured, and the hairs of the dorsal surface are largely intermixed with white.

MEGACHILE VERSICOLOR, Smith.

I am very glad to re-instate this species, as I was the means of excluding it from our list. Years ago I sent a *Megachile* to the late Mr. F. Smith to name, who returned it as *M. versicolor*, ♀. When I came to examine it I found it was only a variety of *M. Willughbiella*, and as years passed on and I found nothing which I could consider as distinct *versicolor*, and the ♂ was unknown, I presumed that F. Smith's species was only a var. of *Willughbiella*, ♀, and so I left it out. I had no reason to suspect otherwise till about three years ago, when the Rev. F. D. Morice, whilst staying with me at Woking, brought in a ♀ *Megachile* which for some time we could make nothing of, but at last it occurred to him that it might be Smith's *versicolor*, and so it clearly proved itself to be; in the same locality several females were found all alike in character, but still the ♂ was wanting. I was anxious not to re-introduce the species till it was discovered, but this has now turned up. I was

fortunate enough to meet with several in the spring of 1893 at the flowers of *Lotus corniculatus* with the ♀, and at this moment I have a series of males that have emerged, and females which are emerging, from some tubes formed of rose leaves, cut out of an old stem of a broom plant kindly sent to me last autumn by Mr. W. H. Tuck, of Bury St. Edmunds, who saw the ♀ making its nest there; about five males emerged from July 2nd to 5th, and to-day (the 7th) the females are coming out, four having already made their appearance. The stem was of nearly rotten wood, about three inches in diameter, and in it were five distinct tubes; whether these were all the work of one female I do not know, they vary much in length, two being three inches long at least, and the others from one and a half to two. The year before last Mr. Tuck also sent me a *Megachile*-bored broom stem, but somehow the insects died before emergence. This species does not always make its burrows in wood, as I have myself caught a ♀ at Woking emerging from a hole in a sandy bank.

The ♂ resembles that of *centuncularis*, Linn., very closely, but the fringes of white hairs on the ventral segments are much less dense, in fact, hardly noticeable, whereas in *centuncularis* they catch the eye at once, and the sagittæ of the armature are shorter and less produced at the apex; the ♀ has the abdomen blunt at the apex, as in *Willughbiella*, but with the pollen brush of the bright red colour of that of *centuncularis*, the apex of it, however, is black, the mandibles also are convex and shortly grooved, as in the *centuncularis* group.

BOMBUS.

In this genus the synonymy of our tawny species requires revision.

Smithianus, White, I retain, as although Schmiedeknecht considers it as a variety of *alpinus*, Linn., I think he must be wrong, as he says of the ♂ of that species that the posterior tibiæ and tarsi are "longe fulvo pilosæ," whereas in *Smithianus* the hairs are short and black. Our species really more closely resembles the continental *cognatus* (which is quite distinct from *cognatus*, Steph.), but the black haired under-side and the shorter lacinia of the ♂ armature (judging from the figures of ♂ *cognatus* in Schmiedeknecht's and Hoffer's works) seem to me to point to *Smithianus* being amply distinct.

venustus, Smith, = *variabilis*, Schmied., = *cognatus*, Saund., *nee* Steph.—There appears to be no doubt of this synonymy, and Smith's name being older than Schmiedeknecht's must stand. I have again carefully examined Stephens' type of *cognatus*, and although from its immaturity it is very difficult to speak for certain, still I am inclined to think from the uneven nature of its pubescence, that it is an immature *agrorum*, and that therefore the name should sink as a synonym of that species. F. Smith has placed it in the B. M. Collection under *agrorum*, so he evidently took the same view.

agrorum, Fab., = *muscorum*, Saund., &c.—I have followed the continental authors in the name of this species, as it is very doubtful which of the allied species Linnæus described, and tolerably clear what was meant by Fabricius, and therefore, although the Fabrician name is the younger of the two, I think it is perhaps wiser to adhere to it.

72, St. John's Park, Blackheath :

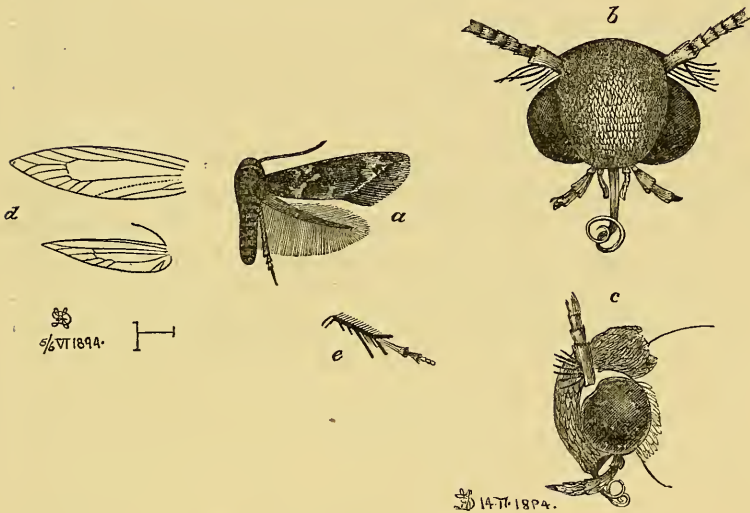
July 10th, 1894.

A NEW GENUS SEPARATED FROM *HEYDENIA*, HFM., WITH
DESCRIPTION OF A NEW ENGLISH SPECIES.

BY THE RIGHT HON. LORD WALSHINGHAM, M.A., LL.D., F.R.S., &c.

CATAPLECTICA, Wlsm., *gen. n.*

TYPE, *Cataplectica Farreni*, Wlsm.



a—imago ♂ enlarged.

b—head, front view.

d—neuration.

e—hind leg.

c—head, side view.

(*J. H. Durrant, delt.*)

Antennæ moderately stout, scarcely more than half the length of the fore-wings, coarsely scaled, not ciliate, basal joint with a strong pecten.

Labial Palpi short, slightly depressed, moderately clothed to apex, apical joint of about equal length with the second.

Maxillary Palpi distinct, short, dependent.

Haustellum well developed, naked.

Ocelli absent.

Head and *Thorax* smooth.

Fore-wings elongate, lanceolate, costal margin straight, dorsal margin slightly convex, with long cilia, at the anal angle nearly as long as the width of the wing.

Neuration, 12 veins; 2 and 4 parallel with and equidistant from 3, which arises at the lower angle of cell; 5 and 6 parallel; 7 and 8 from a common stem, enclosing the apex; vein 1 fureate at base.

Hind-wings narrower than the fore-wings, lanceolate, abdominal angle well developed, thence tapering to the apex, costal margin moderately straight, dorsal slightly rounded, cilia more than twice the width of the wing. *Neuration*,

8 veins; 2 and 4 equidistant from 3; 5 to upper half of cell and continued as an internal vein to the base; 6 and 7 from a short stalk; 8 free.

Abdomen somewhat stout.

Legs: hind tibiæ clothed with spine-like scales above, spurs moderate, the inner longer than the outer, the first and second tarsal joints are also spined.

This genus differs from *Heydenia*, Hfm., in the forking of the apical vein of the fore-wings, and in the simple antennæ; moreover, *Heydenia* has been hitherto described as having no maxillary palpi; these are present in *fulviguttella*, Z., and *auromaculata*, Fr., which also possess the basal pecten to the antennæ and agree in other generic characters with *Cataplectica*.

Heydenia was originally described by Hofmann, Stett. Ent. Zeit., XXIX, 292-3 (1868), as having in the fore-wings twelve separate veins, but he included *profugella* and *fulviguttella*, pointing out that their neuration differed from that of *devotella* (which he made the type of the genus) in the junction of veins 7 and 8 of the fore-wings, the chief point on which I now rely for the separation of this group of species under the name of *Cataplectica*.

The following is a list of the known European species:—

I.—*Veins 7 and 8 of fore-wings stalked.*

CATAPLECTICA, Wlsm.

1. CATAPLECTICA FARRENI, Wlsm., *sp. n.*

Antennæ dark leaden-grey above, paler beneath.

Palpi leaden-grey.

Head dark leaden-grey; face rather shining grey.

Thorax dark leaden-grey, slightly iridescent.

Fore-wings blackish, mottled with whitish-ochreous, forming three ill-defined blotch-like spots, followed by a subapical fascia; of the three spots the first is costal, the other two dorsal, the costal spot being at one-third from the base, diffused downwards nearly to the fold, the two dorsal spots lying, the first before the other beyond it; the first at about one-fourth from the base reaching upwards to the fold, the second before the commencement of the dorsal cilia reaching across the outer end of the fold; the fascia commencing at the beginning of the costal cilia is more or less interrupted by dark scales, tending slightly inwards, and somewhat attenuated towards the anal angle; a few ochreous scales are scattered towards the apex beyond it, and a few are also visible upon the dark ground-colour in other parts of the wing, rendering the markings ill-defined and variable; cilia greyish-fuscous, paler at their tips. Exp. al., 9—10 mm.

Hind-wings dark purplish-grey; cilia greyish-fuscous.

Abdomen greyish-fuscous, anal tuft slightly ochreous.

Legs fuscous, the spurs and tarsal joints inclining to pale ochreous.

TYPE—♂ ♀. Mus. Wlsm.

Hab.: Cambridge. VIe—VII_m.

Mr. William Farren met with this species at the end of June, 1893, and during the first two weeks of July in the present year, by sweeping herbage near Cambridge. Its superficial resemblance to some of the obscurely marked forms of *Elachista* may easily account for its having so long escaped the notice of collectors. I am indebted to Mr. Farren for kindly supplying me with specimens and permitting me to describe them.

The species hitherto placed in the genus *Heydenia* appear to be attached to various *Umbelliferae*, the larvæ feeding among the seeds of *Ægopodium*, *Pimpinella*, *Laserpitium*, *Angelica*, and *Heracleum*: search should be made for that of *Cataplectica Farreni* under similar conditions.

2. *profugella*, Stn.

5. *statarrella*, Hdn.

3. *auramaculata*, Frey.

6. *laserpitiella*, Pfaffz.

4. *fulviguttella*, Z.

7. *silerinella*, Z.

II.—Veins 7 and 8 of the fore-wings separate.

HEYDENIA, Hfm.

1. *devotella*, Hdn.

Merton Hall, Thetford:

July, 1894.

A COMPARISON OF MOTH-GREASE SOLVENTS.

BY H. GUARD KNAGGS, M.D., F.L.S.

Some time ago, whilst experimenting with moth-grease extracted by means of *pure ether*, I arrived at the following approximate results respecting the solving and evaporating properties of the under-mentioned fluids:—

At about 55° F., 2 grains of moth-grease were dissolved in 40 minims.		At about 60° F., 25 minims poured on to a plate evaporated.	
Methylated chloroform...s. g. 1.497	1 minute	Methylated ether	under 1 minute
Methylated ether	3 minutes	Pure ether	over 1 minute
Benzine-collas	4½ minutes	Petroleum ether.....	over 1 minute
Pure ether	6 minutes	Methylated chloroform...	7½ minutes
Petroleum ether.....	6½ minutes	Benzine-collas.....	35 minutes

Rectified turpentine, kerosine, bisulphide of carbon, &c., have not been included, for the reason that the two former are themselves

of an unctuous character, whilst the obnoxious fumes of the latter are highly objectionable. As for alcohol, it is simply perfectly useless for dissolving grease.

From the above table it will be seen that chloroform is by far the quickest solvent, and when to this it is added that it is non-inflammable, one would naturally imagine that the *ne plus ultra* of perfection had been reached; but as has been previously remarked (*ante* p. 6) rapidity of volatilization is a very important factor in restoring the specimen to its original freshness, and this quality ether undoubtedly possesses in the highest degree; so that we may thus sum up their relative merits—chloroform does its work more quickly, with less waste, than ether, and without the slightest danger of causing a conflagration; either of the ethers mentioned, on the other hand, turns out a better finish, besides being less powerfully anæsthetic than chloroform, while the price of the methylated preparation is comparatively insignificant. On the whole I still consider methylated ether to be the most serviceable for entomological purposes—especially at the price.

London: *June*, 1894.

OBSERVATIONS ON THE NEW ZEALAND GLOW-WORM,
BOLITOPHILA LUMINOSA.

BY A. NORRIS.

I have observed the larvæ in their natural haunts forming their webs, which consist of a kind of mucus, which is discharged from all parts of the body. If you take a larva from its web, and put it on the ground, it will stay there until it has discharged enough of this mucus from which to slide out. Wherever it goes it leaves a mark in the same way as the snail. When the larva is making a fresh web it raises its head and the first four or five segments in the air, and reaches round about until it strikes something. It then draws its head back a little way, thus making a very fine thread of mucus. It then passes it to the thick mucus on the first segment, then slides out a little way and makes another thread on the other side in the same way, fastening each to the thick mucus on the body. When it has made a sufficient number of these braces, it begins to make the strings of beads which hang downwards from these braces by gliding out on the braces, and lowering its head and about half the body. It then works its head and body up and down as if to vomit. You can see the mucus gathering on the body. Then it draws its head right back into the first two segments, as if it were turning inside out. It then catches hold of the mucus on the edge of the segment and forces it forward.

Now the head is out straight, with a large drop of mucus all round it, like a drop of water. Then it draws its head gently out of the mucus, thus making a short fine thread from it. It then makes another drop, and another short thread; then a drop, and so on, until it has made several of these pendants of beads, which vary in length. I have seen them from one inch to four or five inches. I believe in caves where there is no wind they reach the length of two feet. At night when the larva is shining, you can see the reflection of the light for a considerable distance along the main thread or *tube*. When it is in a small cave, the light also reflects on the pendants of beads, thus lighting up the whole of the cave. I call it the main *tube*, because the larva does not rest on the thread, but glides through it, which can easily be seen when the larva is in the centre of the thread, or tube, and tries to get out through the side. You can see it pushing, and moving its head about as if to break the side of the tube before it gets out.

It is my belief that the web is formed to entangle insects, which are attracted by the light.

The following are my reasons. I have frequently found small *Diptera*, *Coleoptera*, *Lepidoptera*, and a great many of the *Crustacea* entangled in the sticky web of the larva (which is very strong). I have also noticed that several of the *Coleoptera*, when taken out of the webs, were hollow, showing that the interior had been extracted in some way. When the insects are alive the larva may be seen smothering them with mucus. On the 17th February, 1894, I saw that one of the larvæ had a Crustacean in the web. The larva's head was thrust inside the shell of the Crustacean. I at once used the lens, and could plainly see the mandibles working, and that the larva was eating the animal. I blew the web gently, when the larva at once stopped eating, but proceeded again. Again I blew, but harder, when it at once retreated, taking the animal part of the way with it. There are frequently fragments of insects to be seen stuck on the rocks at the sides of the webs, as if, when a larva had finished with an insect, he turned it out of the web and was ready for more.

The ♂ and ♀ can easily be distinguished in the pupa. In the first place the ♂ is much smaller, and not so stout, as the ♀, and the end of the ♂ abdomen is very abrupt. On the other hand the ♀ is much stouter, and the end of the abdomen comes to a point, and has two small fans.

Both larvæ and pupæ are luminous, the ♀ being so in all three stages. The ♂ is luminous in the pupa until the last two or three days before it hatches. I have three males and none of them was luminous in the imago.

OBSERVATIONS ON *COCCIDÆ* (No. 9).

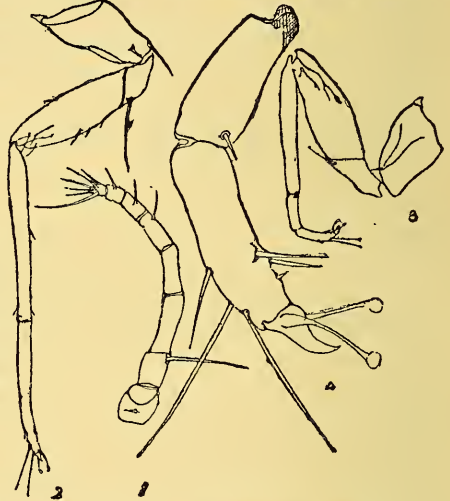
BY R. NEWSTEAD, F.E.S.,
 CURATOR OF THE GROSVENOR MUSEUM, CHESTER.

EXÆRETOPUS, *n. g.*

♀ adult covered at gestation with a felted sac. *Anterior tarsi dimerous*. Mentum monomerous. Anal cleft and lobes as in the *Lecaniidæ*.

EXÆRETOPUS FORMICETICOLA, *n. sp.*

♀ adult oviparous, subterranean, more or less reddish-brown, margins pale, "with two purple lines on the dorsum" (Luff, *in lit.*)*; rather widely ovate, narrow in front. Mentum short, widely rounded; unexpanded filaments shorter than the mentum. Anal cleft deep. Anal dorsal lobes triangular when flattened, inner side slightly longest. Anal ring with eight short hairs. Antennæ (fig. 1) of eight joints, of which the 2nd, 3rd, 4th, 5th are longest; 3rd longest of all, 8th smallest; there is a short spine on the 1st, a very long hair on the 2nd, one on each of the 5th, 6th, and 7th, and six or seven on the last. Legs very long: intermediate and posterior pairs much the longest (fig. 2, posterior leg), normal; tibiæ not quite as long as the tarsi, indented near the centre on the upper-side, but no trace of articulation:



anterior legs (fig. 3) with the tarsi dimerous (fig. 4), the articulation nearly in the centre; widely and deeply divided above, for about one-third of its length; on each side the chitine is stronger and darker; the rest of the articulation quite evident, but rather faint. In nearly every case the 2nd joint is curved inwardly (figs. 3, 4); in one instance the two joints are placed almost in the same plane, and the deep division in front quite closed, rendering the articulation quite straight, with a very short constriction on either side of it in front. In this instance had the joint been a false one, there must have been an extreme fracture beneath; nothing of the kind, however, has taken place, and the joint appears of equal strength throughout; there is a small hair near the apex of the 1st joint, and four or five near the apex of the 2nd; digitules to tarsi long, slender, scarcely dilated at extremity, those of the claw much dilated at both extremities; claw rather long. The articulations of all the joints are very clear, especially the tibio-tarsal joints. The tarsi of the front legs are attached on the under-side by two dark chitinous projections or flaps. Dermis with numerous short spiny hairs, numerous at the margins, and on abdominal segments.

Long., 2·50—3·50 mm.; wide, 1·50—1 mm.

* Seen only in a single specimen.

Sac of the ♀ very elongate, attenuated and often curved in front, composed of a rather close white felting, looser in front, where it is sometimes tricarinate; open at the cephalic extremity, where the body of the ♀ closes it, but after gestation the insect often drops out. Long., 3—6·75 mm.; wide, 1·50—3·25 mm.

Larva reddish-yellow, with numerous long waxy filaments on the dorsum, eyes black (after death). Antennæ of six joints, of which the 3rd is the longest, 2nd shortest; there are six or seven long hairs on the 6th, and one or two on the 4th and 5th. Mentum very short, uniarticulate; unexpanded filaments about three times the length of those of the adult ♀. Legs ordinary; coxa and trochanter each with a slender hair near the apex; tibia and tarsus in length nearly equal, each with a very long hair near the apex; claw slender; digitules to claw and tarsus slender. Anal lobes dorsal, apex within margin, each with a very long hair, and two or three shorter ones. Anal ring with six rather short hairs. Cleft deep. Margin all round with strong spiny hairs, arranged close together in front, but wider at margins and behind.

Hab.: Guernsey, in ants' nests (species not determined).

"Under stones, and also on roots of *Nardus stricta* and *Dactylis glomerata*, on the low north coast of the island. The stones were just on the edge of a beach, part of which has been rolled up beyond the action of the tide. Under the same stones were larvæ of *Platynopsis luteo-rubra*, which I at first took for *Coccids*, as they were covered thickly with white fluff. They seem to be very local, * * only occurring in a spot about fifty yards long. I searched the coast for a long distance on either side without finding any more. I noticed that the ants did not trouble about or carry any of them off, as in the case of *Ripersia Tomlinii*, Newst."—*June*, 1893.

For the foregoing information, as also for a liberal supply of specimens, I am indebted to the discoverer, Mr. W. A. Luff.

So far this is the only Coccid described as having a two-jointed tarsus (and this only on the anterior legs); and it is for this reason alone that I establish a new genus for it; otherwise I should have placed it in *Lichtensia*, with which genus, although it is not strictly conformable in its normal characters, it agrees more nearly than any other. Mr. Maskell says "it requires, in my opinion, some very important feature to make a *generic* character when only one species is known" (*in lit.*). Surely nothing could be more important than the anomalous character of the fore-legs. The rest of the characters of the ♀, and all those of the larva, are strictly Lecanid. On comparing the larva with that of *Lecanium tiliæ*, Lin., for instance, the only appreciable difference will be found in the arrangement of the hairs on the anal ring, a character that would hardly separate them generically.

The indentation on the intermediate and posterior tarsi of the ♀ suggests articulation, and yet I fail to find the slightest trace of such.

In my hurried examination of the species last year the dimerous tarsi were overlooked, and the species was provisionally recorded as *Spermococcus fallax*, Giard (Ent. Mo. Mag., 1893, p. 207); subsequently I thought it might be a more advanced stage of *Lecanopsis formicarum*, Newst. That it is neither of these species I am now quite certain, for Mr. C. W. Dale has quite settled the matter as to the latter, and Giard's description does not agree in any of the salient characters.

Described from twelve mounted ♀, many larvæ, and sacs of the ♀.

LECANOPSIS FORMICARUM, Newstead.

Ent. Mo. Mag., 2nd Ser., vol. iv, p. 205 (1893).

Adult ♀ at gestation envelopes herself in a white cottony material, which is so loose that it can scarcely be called a sac. Long., about 5 mm.

Larva elongate; antennæ of six short wide joints, of which the 3rd is longest, basal joint very wide. Legs with a few hairs, rather short and stout, tarsi shorter than the tibiæ; digitules to claw and tarsi ordinary. Anal lobes and slit as in the *Lecaniidæ*. Anal setæ long. Anal ring of (?) six hairs. Rostrum very large and wide; mentum uniaarticulate, wider than long, anterior angles narrowly rounded; unexpanded filaments very long, reaching to the base of the 4th abdominal segment. Arising from the centre of the mentum are three rather long, straight, wide filaments. Abdominal segments each with a conspicuous hemispherical disc, having a very slender short hair in the centre; these are not continued at the sides of the thorax, but there are about six of them on the margin in front between the antennæ; margin opposite the three pairs of legs with several large circular spinnerets, arranged in groups of four or five.

Described from two sacs of the ♀ and many larvæ. Received from Mr. C. W. Dale, who sent the following interesting communication:—

"The history of *L. formicarum*, as far as I can make out, is that she spins and envelopes herself in cotton (after the manner of a moth larva), after forsaking the ants.

"Then the first meal of the young ones consists of the body of their mother. Your premise about the ♀ secreting a pad of cotton beneath her is not correct, and she is viviparous, like some of the *Aphides*. I have never found any *ovisacs* in company with ants, and I fancy that in previous years I have been rather too early for them. I have never seen *L. formicarum* except on the Chesil Beach.

"*Beckia albinos* and *Platyarthrus Hoffmannseggii* also occur in company with the ants, *Formica nigra* and *flava*, and it is a strange thing that very few *Coleoptera* occur in their nests. *L. formicarum* feeds on the roots of a short stiff grass which grows on sand hills."—May 26th, 1894.

It will be seen that in many of its structural characters the larva differs very considerably from that of the preceding species (*Exæretopus formiceticola*). The rostrum is exceptionally large, and the

three long filaments arising from the mentum are curious; they are very probably connected with the ordinary filaments, but I cannot trace their connection, nor have I seen a similar character in other larvæ. That the larvæ should eat the body of their mother is most extraordinary; yet I found no trace of her amongst the larvæ in the cottony material sent to me. I could not be quite certain of the number of hairs on the anal ring, but there do not appear to be eight.

Mr. Dale also sent me two more ♀ which agree in every way with my description (*l. c.*).

Chester: July, 1894.

COLEOPTERA IN HAMPSHIRE, KENT AND ESSEX.

BY JAMES J. WALKER, R.N., F.L.S.

My recent appointment to H.M.S. "Northampton," commissioned in June as a training ship for home service, has induced me to place on record the more important species of *Coleoptera* which I have met with up to the present time; commencing with the new year, when the chances of Her Majesty's Service located me at Portsmouth until March 17th.

During this period very few opportunities of collecting fell to my share, owing to unfavourable weather and other circumstances; but I was able to visit some of the few remaining good localities in the vicinity of Portsmouth, to which I was first introduced by my friend, Mr. H. Moncreaff, many years ago. On the very last day of my stay I was able to ascertain that *Drypta dentata* was still to be found in its old haunt near Gosport by capturing some half dozen specimens at the roots of grass, in company with the var. *chrysocephala* of *Lebia chlorocephala*. In the same place occurred *Badister sodalis*, *Acupalpus flavicollis*, *Anchomenus gracilis* and *oblongus* (abundant), *Demetrias unipunctatus*, *Aleochara brevipennis*, and other marsh frequenting species. *Sunius filiformis* occurred in a tuft of grass at Stokes Bay, but only singly; and on Southsea Beach *Mecinus circulatus*, hibernating at the roots of bent-grass in company with numerous *Dermestes undulatus*, was the only decent insect I could find in this once productive locality. An afternoon's work at Titchfield, near Farcham, produced several *Mycetophagus piceus* under bark of a decayed oak, *Anchomenus puellus*, *Hygronoma dimidiata*, *Pæderus riparius* in large numbers, *Psammæchus bipunctatus* plentiful, &c., &c.

On my return to Chatham I visited Chattenden Roughs for the first time on March 24th, and had the satisfaction of once more taking *Euryporus picipes* in its old locality in moss, accompanied by *Alexia pilifera* (common), *Corticaria cylindrica*, *Liosomus ovatulus* var. *collaris*, *Cassida vibex*, and others. *Myrmedonia limbata* was unusually common in the same spot, and a very large light brown variety of *Silpha atrata* (quite mature) occurred in tufts of grass along with *Pterostichus inæqualis*, *Achenium depressum*, &c., &c. Within the next few days the following species of *Carabidæ* began to appear on the chalky slopes of Darland Hill, and were to be met with throughout April. *Harpalus punctatulus* (one only), *azureus* (very common, the pitchy-black var. *similis*, Dej., occurring in the proportion of one to

about a dozen of the blue type-form), *parallelus* (1), *rubripes*, and *caspicus* (in great numbers); *Licinus depressus* rare (also at Cobham Park, but I did not see a single specimen of the commoner *L. silphoides*, usually to be taken freely enough on the Chatham chalk-hills); *Stomis puniceatus* in plenty; *Amara apricaria*, *consularis*, *patricia* (rare), *ovata*, *similata* (the commonest of its genus), *acuminata*, *lunicollis*, etc.; and *Brachinus crepitans*, much more rarely than was the case some twenty years ago (this insect being also much scarcer than formerly in the Isle of Sheppey). The same locality produced *Opilo mollis*, beaten out of dead clematis, *Telephorus fuscus*, *Amalus scortillum*, and *Ceuthorrhynchus alliarie*, by sweeping in May, and *Chrysomela marginalis* (*distinguenda*) and *göttingensis*, walking on the paths, the latter as early as March 26th. *Plagiogonus arenarius* was found in great profusion under half dung on a road.

Several brief visits to Snodland, between April 28th and May 19th, produced in addition to species already recorded from this locality, *Anchomenus livens*, *micans*, and *puellus*, *Badister sodalis*, *Clivina collaris*; *Cercus bipustulatus*, *Aphthona lutescens* and *nonstriata* (*cærulea*), all three in great numbers; *Psylliodes dulcamaræ* and *picina*, *Ceuthorrhynchus urticæ*, rarely on *Stachys palustris* (not on nettle), and *alliarie*, *Ceuthorrhynchidius quercicola*, *Rhinoncus subfasciatus*, and *Limnobaris T-album*, not rare.

At Chattenden Roughs, at the end of May and in June, the following species were taken* :—*Staphylinus latebricola*, one specimen by sweeping in a "ride;" *Trachys minuta*, on sallows, sparingly; *Agrilus laticornis*, *Pachyta collaris*; *Tetrops præusta*, in the utmost profusion, along with *Magdalinus atramentarius* and *cerasi* in equal numbers, on the sunny side of a hedge on May 24th, where one or two females of *M. barbicornis* were also taken; *Lema puncticollis*; *Mordellistena abdominalis*, several of both sexes on umbels (which also produced the scarce and pretty bug, *Eysarcoris æneus*); *Byctiscus betuleti*, *Rhynchites uncinatus* and *ophthalmicus*; *Apion pomonæ*, *vicinæ*, *punctigerum* and *ebeninum*, all common; *Tanymercus palliatus*, *Hypera suspiciosa* and *murina*; *Gymnetron labile*, frequent; *Ceuthorrhynchus campestris*, plentifully on ox-eye daisy; *Orobites cyaneus*, &c., &c. On July 7th, my last visit to Chattenden, *Oxystoma* (*Apion*) *fuscirostre*, usually by no means a common insect here, turned up in profusion by sweeping *Genista tinctoria* in flower, and *Mordella fasciata* was just beginning to put in an appearance.

The best things taken in three or four afternoons at Cobham Park were *Abræus granulum*, very sparingly in the ash tree in which it occurred in 1889, and accompanied by *Mycetophagus quadriguttatus* (last year the *Abræus* could not be found at all, though closely sought for at every visit); *Philonthus decorus*, *Megacronus cingulatus*, *Euplectes nanus*, *Cerylon fagi*, *Nitidula rufipes*, in dead hooded crow, *Dasytes oculatus*, &c.

By sweeping the rank herbage on the Extension works at Chatham Dockyard I obtained *Hallomenus humeralis* (one on June 14th), *Olibrus oblongus*, *Apion Hookeri*, *Phytobius canaliculatus*, &c., &c. *Bembidium minimum* and *riparium*, and *Bledius spectabilis*, occurred commonly in damp saline places in the same locality.

At the end of March and in April *Adelosia picimana* was very common under clods and stones in the Isle of Sheppey, and *Pterostichus inæqualis* was equally plentiful in grass tufts, with *Achenium humile*, by no means rare. *Silusa rubiginosa*

* In addition to *Osphya* already recorded, cf. ante p. 163.

turned up in a *Cossus*-eaten ash at Elmley, along with dead specimens of *Hylesinus crenatus*, and *Nitidula rufipes* was taken rather freely in dry carcasses of birds. The usual species of *Dichirotrichus*, *Dyschirius*, *Bledius*, *Heterocerus*, &c., occurred abundantly on the saltings, but *Agriotes sordidus* was only to be found there very rarely. At the chemical works at Queenborough, *Gnathoncus nannetensis* was taken in company with large numbers of *Carcinops 14-striata*, and *Limnobaris T-album*, although very local, was obtained freely from old straw bottle envelopes laid down as traps in a damp place. In May *Donacia typhæ* and *lemnæ* occurred in profusion on *Sparganium ramosum* in one ditch, and at the end of the month *Telephorus fuscus* made its appearance in considerable numbers on the cliffs and elsewhere. *Saprinus virescens* on a wall in the town itself, *Limnichus pygmæus*, a few in a damp sandy spot on the cliffs, and *Bagôus subcarinatus*, again not rarely by cliff sweeping and in company with *Acupalpus consputus*, *Salpingus æratus*, &c., were among my captures in June near Sheerness.

Zabrus gibbus, which had apparently been scarce for some years past, reappeared at the end of June in its old locality near Sheerness, coming up the grass stems in numbers at dusk in a restricted and very public spot, where not a single specimen could be found before sunset. On one hot sunny forenoon early in July, *Bagôus argillaceus (inceratus)*, which I had scarcely seen since 1874, and had almost given up for lost as a Sheppey insect when its original locality was destroyed some years ago, occurred in profusion, running actively over the mud in the bed of a nearly dried-up ditch near Queenborough. So accurately was the colour of the beetle adapted to its surroundings, that it could only be detected when in motion, becoming to all intents and purposes invisible as soon as it stopped. On the same day I picked up the first *Polystichus vittatus* I have seen alive since 1875 within a hundred yards of my own door, and on my last day at home (July 13th) I found a specimen of the curious little Longicorn, *Leptidia brevipennis*, Muls., running on a window in my house.

On two occasions I visited Deal, on April 24th and May 29th, and each time I found the special *Carabidæ*, &c., of that famous locality in more than the usual plenty, *Harpalus servus*, in particular, being quite common, and *Psammodius sulcicollis* occurring pretty freely under small stones on my second visit, when, thanks to a hint from my friend, Mr. A. J. Chitty, I succeeded in taking two specimens of the rare *Dyschirius extensus* in rejectamenta on the banks of brackish pools. It is here probably associated with *Bledius tricornis*, which abounded in that particular spot, though a long search in the burrows of that Staphylinid failed to find the *Dyschirius* "at home." *D. impunctipennis*, usually somewhat rare at Deal, occurred in profusion in April in a damp hollow in the sand hills, accompanied by *Bledius arenarius*.

In an afternoon's collecting at Southend, Essex, on June 28th, I found *Ceuthorrhynchus triangulum (vicinus)* and *C. Chevrolati* locally not rare on *Achillea millefolium*, and unaccompanied by any others of the genus; also *Salpingus æratus* and *Bledius atricapillus* on the low cliff towards Shoebury, *Donacia thalassina* commonly on *Sparganium* in the ditches, and *Hypera fasciculata* under *Erodium cicutarium* on the beach.

H.M.S. "Northampton," at the Nore :

July 16th, 1894.

Smicronyx cæcus, Boh., at Portland.—On July 25th, and again on the 27th, I took, on the Chesil Bank at Portland, a considerable number of specimens of a *Smicronyx*, which has been identified by Mr. Champion as *S. cæcus*, Boh. (*cuscutæ*, Bris.), a species hitherto apparently very rare in Britain. The beetle was found on the Lesser Dodder (*Cuscuta epithimum*), growing parasitically on *Lotus corniculatus*, *Medicago maculata*, and *Ononis arvensis*; and was most conveniently obtained by shaking the dodder-infested plants over paper. In this way one little patch of dodder growing on *Medicago*, not more than six feet square, produced some forty specimens of the little weevil. It is probable that some of the specimens of *Smicronyx* mentioned in Canon Fowler's "Coleoptera of the British Islands," vol. v, p. 283, as *S. Reichei* and *S. jungermanniæ*, and as having been taken on the Chesil Bank by the Rev. H. S. Gorham and others, are to be referred to *S. cæcus*.—JAMES J. WALKER, H.M.S. "Northampton," Plymouth Sound: August 2nd, 1894.

Microrrhagus pygmaeus in the Plymouth district.—In company with Mr. J. J. Walker, R.N., I had the pleasure of taking the first specimen of the above-named rare beetle in the Plymouth district on August 10th last. Mr. Walker quickly followed with another example, and we were fortunate enough to secure half a dozen between us before leaving the wood. We caught them by sweeping bracken beneath oak trees. The locality is known as Cann Wood, and is about four miles from Plymouth.—JAMES H. KEYS, 7, Whimble Street, Plymouth: Aug. 12th, 1894.

Abundance of Vanessa cardui.—I am very glad to see that my friend, Mr. J. J. Walker, has called attention (*ante*, p. 162) to the "sudden appearance" in this country of large numbers of *Vanessa cardui* and *Plusia gamma* in June last. I first noticed *V. cardui* on June 4th, and for some time after that date it was to be seen plentifully in this district wherever one went, but, as was the case with those observed by Mr. Walker, all the specimens were much worn and faded. There can be no doubt that, as suggested by Mr. Walker, large flights have come over to this country from the continent, for during the whole of last year I only saw one *V. cardui*, which occurred near Dorchester on September 13th, and it appeared to be entirely absent from this neighbourhood! As regards *P. gamma*, I am inclined to think that no large flights from elsewhere have visited the Isle of Purbeck this summer; at any rate, I have seen but few specimens, and there was nothing in their appearance to suggest the idea that they were immigrants.—EUSTACE R. BANKES, The Rectory, Corfe Castle, Dorset: July 19th, 1894.

Abundance of Plutella cruciferarum.—*Plutella cruciferarum* is exceptionally common round here this season, and is an intolerable nuisance to the collector. I wonder whether the same is the case in other districts?—ID.

Lophopteryx carmelita in the New Forest.—As I am not aware of any record of the occurrence of *Lophopteryx carmelita* in the New Forest, and as the Rev. Bernard Smith, writing in 1888, says of it (*Entom.*, xxii, p. 102), "Yet I have heard of no captures of late years except in Sussex," it may be of interest to chronicle the fact that a very fine freshly emerged ♀ was taken at rest on a birch trunk near

Brockenhurst (Hants) by Mr. C. Gulliver in April, 1891. Happening to be at his house a few days later, I bespoke the insect (which was then on the setting-board) for my cabinet, where it is now in safe keeping. As all the other specimens in my series, selected out of a large number, have been bred in confinement, and are the progeny of a "tame" stock, it is hardly surprising to find that the alar. exp. of this captured ♀ is noticeably greater than that of any individual of either sex therein.—LD.

The typical Erebia Epiphron in Scotland.—Having had occasion recently to point out that the typical *E. Epiphron*—that is to say, the form of *E. Cassiope*, F., having white centres to the black spots of the fore-wings—had not come under my notice from any part of England or Scotland, it was with great pleasure that I saw a specimen, recently obtained by Mr. Salvage in Sutherlandshire, in the possession of Mr. C. S. Gregson at Liverpool, which fully exhibits the desiderated character. In two of the black spots of each fore-wing it shows, distinctly, a circular white centre. Otherwise the specimen is of a much paler brown than is usual in fine specimens, and I still doubt whether the occurrence of the white-centred spots is at all frequent.—CHAS. G. BARRETT, Nunhead : *August*, 1894.

Plusia moneta in Norfolk.—I am pleased to record a capture of very great interest and rarity. The insect, which is a perfect specimen, is, on the authority of Mr. C. G. Barrett, undoubtedly *Plusia moneta*. It was taken by my younger brother at Sprowston, near Norwich, on June 26th, whilst hovering over the flowers of a large rose bush about 9.30 p.m. Staudinger gives for it—Germany (exc. S.W.), Switzerland, France (S. and E.), Hungary, Poland, Russia (S. and E.), and Siberia (E.).—B. C. TILLET, Sprowston Lodge, Norwich : *July 25th*, 1894.

[The extension of the range of this beautiful species to Norwich is of the greatest interest.—C. G. B.]

Plusia moneta at Eastbourne.—One of the scholars at Eastbourne College (Mr. Saunders) captured a fine specimen of this species flying at the privet blossom in College Road on the evening of the 13th instant, and brought it to me for identification.—WILLIAM WATKINS, Villa Sphinx, Eastbourne : *July 28th*, 1894.

The food-plant of Bactra furfurana: a correction.—At p. 184 *ante*, the food-plant of *B. furfurana* was stated to be *Scirpus lacustris* instead of *Eleocharis palustris*, which latter was intended.—EDS.

Lithosia complana in the North of Ireland.—I send a specimen of *Lithosia complana* (as I believe) which I reared from a caterpillar found on the coast at Whitehead, Co. Antrim. It was feeding on *Anthyllis vulneraria* in the beginning of June.—W. HOWARD CAMPBELL, Ballynagard House, Londonderry : *Aug. 9th*, 1894.

[*L. complana* without doubt.—EDS.]

Notes on Lepidoptera from Devon.—*Arctia villica*, L.: both larva and imago very abundant at Scaton, Devon. *Nemeophila plantaginis*, L.: I have found and

bred this insect from larvæ picked up on the open moor (Dartmoor). *Phragmatobia fuliginosa*, L. : numerous at Seaton, and common in the Wallecombe Woods, near Grensfan, Horrabridge. I have taken a dozen ♂ in a few minutes on one spot, evidently after a ♀. *Eriogaster lanestris*, L. : the larvæ numerous in the thorn hedges round Seaton, but I do not think it is taken west of Exeter. I was once informed by Mr. Bignell that if larvæ were brought west of Exeter they would not turn to pupæ. In 1890, when at Seaton, I had 70 or 80 larvæ. As long as they were at Seaton they grew and thrived exceedingly; when they were almost full-fed I took them to a house on Dartmoor, 800 feet above sea level; the larvæ fed and fed but none attempted to pupate, and eventually died one by one, the last dying on November 8th. Whether this was owing to bringing them west of Exeter or from sea level to a higher altitude I cannot say. *Pæcilocampa populi*, L. : some years abundant at Seaton. *Boarmia repandata*, var. *conversaria*, L. : more abundant than usual this year. *Botys asinialis*, Hüb. : I found this not uncommonly in June, 1894; *B. lancealis*, W. V. : fairly numerous in all the woods round there. *Melanippe galiata*, W. V. : abundant this year. *Acidalia imitaria*, Hüb. : much more common this season than I have ever seen them. I took *Deilephila livornica*, Esp., on June 7th at rhododendrons at Horrabridge.—JOHN N. STILL, Seaton : August, 1894.

Occurrence of the yellow male of Hepialus humuli, L., in Lanarkshire.—On the evening of July 18th my nephew and I were collecting along the grassy borders of a small patch of unreclaimed bog land in South Lanarkshire, lying at an elevation of between 700 and 800 feet. A little after 9 o'clock *Hepialus humuli* began to fly, and I had just been commenting on the large size and beauty of the white males, when my attention was arrested by a hovering yellow *Hepialus* about the size of an ordinary ♂ *H. humuli*. No time was given me to come to any conclusions regarding it, for the sudden appearance on the scene of an undoubted ♀ of *H. humuli* put an end to conjecture, and the two insects were soon united and settled on a grass stem. I have not before me any of the aberrations of *H. humuli* which have hitherto been considered peculiar to the Shetland Isles, but the insect now under consideration agrees entirely with the ♂ figured by Mr. Barrett in his "*Lepidoptera of the British Isles*," pl. 63, fig. 1c. The ground colour of the fore-wings is nearly identical with that of the fore-wings of the ♀ along with which it was caught, but the markings on these wings are fainter and greyer in the ♂ than in the ♀. The hind-wings are decidedly blackish. *H. humuli* is just one of those common insects which no one thinks of going out specially to collect and observe. In no other way can I account for the fact that the yellow ♂ does not appear to have been noticed hitherto on the mainland of Scotland, for of course it is now quite incredible that it should not occur occasionally over the greater part of that country.—KENNETH J. MORTON, Carlisle, N.B. : July, 1894.

Vespa austriaca, Panz.—During the closing weeks of June and early days of July I was fortunate in securing five ♀ of the above species in a garden at Llangollen, North Wales; this locality is in same county as Colwyn Bay, where Mr. R. Newstead took his specimens two or three years ago. I saw several others, which I missed boxing, owing to a desire to trace them "home," if possible. I soon learned to distinguish them on the wing by their listless flight, like that of a "cuckoo bee,"

and their large size and pale colour. Their mode of flight, so different from the usual ♀ wasp busy catering for a large family, certainly seems to confirm Mr. Saunders' recent suggestion of "inquiline" habits like *Psithyrus*. I may mention also in this connection that I followed one, late in the evening, to a heap of manure and rubbish in the corner of the garden, where it proceeded to "go to roost," as if it had no nest of its own. The species is easily distinguishable from the other British *Vespidæ* by the combination in itself of the following characters,* viz. :—short face (as in the ground wasps), with yellow scape to antennæ (as in tree wasps); also three dots on clypeus (as in some *V. germanica*), coupled with black hairs on tibiæ (as in *V. sylvestris* and *V. norvegica*).—WILLOUGHBY GARDNER, Hoylake, Cheshire: August, 1894.

Solenopsis fugax, Latr., &c., near Weymouth.—In June last I found at Portland about a dozen workers of *Solenopsis fugax*, Latr., on the under-side of a stone. These I sent to my friend, Rev. F. D. Morice, of Rugby, who kindly named them for me, informing me that it is one of our rarest ants. It appears to be quite new to Dorset. I have since searched for it, but with very limited success. The stone under which I found them was placed between a nest of *Formica nigra* on the one hand and *F. flava* on the other, about eight inches apart, but ants of several species are very abundant in the locality, and have nests under most stones. I have also found several specimens of *Myrmecina Latreillei* in my garden here, in half eaten strawberries, and been much interested in observing the manner in which they immediately curl up and sham death when looked at, a habit I have not noticed in other ants. I have not as yet found the nest. Some common ants appear to have been most abundant this year, and the mowers complained greatly of the size and number of the ant-hills (chiefly *F. flava*) through which they had to mow, which, before the grass was cut, were built far up the stalks, these being used as a foundation to which to attach the earth walls. Is it that in a wet spring like the last the earth (Oxford clay) gets rather sodden, and the ants like to raise their dwellings as high as possible so that they may be drier? Possibly one of your correspondents can inform us of a good and inexpensive way of getting rid of these ant-hills in the fields.—NELSON M. RICHARDSON, Monte Video, Chickerell, near Weymouth: July 22nd, 1894.

Styloped ♀ of *Andrena Gwynana*, race *bicolor*, captured in cop.—The change produced by the presence of *Stylops* in a female bee is so conspicuous, that one might doubt whether the bee would retain any attraction for the male. That she does so I recently had proof, by capturing a male and female of *Andrena bicolor* copulated, and finding that the female was styloped, having three of the parasites protruding from beneath the apices of the dorsal segments. Since styloped bees are not abundant, and the intercourse of male and female not very frequently to be observed, it is possible that a similar concurrence may not hitherto have been noticed, and that the record of it be of interest to those who have investigated the history of *Stylops*. I may add that I endeavoured to keep the female alive by feeding, but that it died after four or five days.—A. PIFFARD, Felden, Boxmoor, Herts: August 6th, 1894.

* Appertaining separately to our other wasps.

Obituary.

William Machin.—One of our most experienced and reliable veteran entomologists has passed away. Thirty-eight years ago, the writer, then a very young man, found the keenest possible pleasure in studying his (even then) rich and valuable collection of *Lepidoptera*, and in learning from him something of the habits of their various larvæ, which he was always skilful in rearing. His circumstances—he was a compositor in a printing office—never allowed him to travel long distances in search of local species; but of the *Lepidoptera* of the environs of London and the home counties few had a more intimate personal knowledge. It was his inevitable misfortune to see locality after locality for interesting species destroyed by the steady extension of this great metropolis, or by the reckless mischief of its inhabitants. On the other hand, it was at times his good fortune to secure and even rescue from oblivion rarities (such, for instance, as *Butalis chenopodiella*) which found a temporary home and suitable conditions in waste places induced by the extension of buildings, otherwise so destructive.

His interest centred itself in the insects of the British Isles; these he could rear and study in life. Foreign insects had little charm for him. He was absolutely reliable, quiet and modest in demeanour, every word of information furnished by him could be depended upon, and such information was freely and willingly furnished. The writer feels his loss deeply—and the feeling is shared by all who knew him.

He was born at Bristol. Early in life he came to London, and was for probably fifty years employed by the same firm. Troubles, however, hung about him from time to time. His own health was never very robust. His first wife died young, leaving a little girl, his only child, who survives him. His second wife, after many years of ill health, died last spring; before that time his own health had seriously broken down, and the loss of his employment doubtless hastened the end. He died of apoplexy early on the morning of August 13th, aged 72.—C. G. B.

Reviews.

THE BUTTERFLIES OF NORTH AMERICA: by W. H. EDWARDS. Third Series, Part XV. Boston and New York: Houghton, Mifflin and Co. London: Trübner and Co. 4to. 1894.

This Part is devoted to two species of *Argynnis* and three of *Chionobas*, which from their nature do not make the plates so attractive as those in some previous Parts, but their interest, as detailed in the text, is of the highest order. Both species of *Argynnis* belong to the Western Provinces of the Dominion of Canada. The first, *Astarte*, Dbdy. & Hew., is practically a re-discovery; the other, *Alberta*, Edw., is a new discovery. In connection with this latter an interesting observation is made by Mr. Bean to the effect that its occurrence seems to be biennial. A similar statement has been made concerning at least one Swiss Butterfly; there would be nothing extraordinary in the assertion that certain Alpine or Arctic Butterflies habitually

require two years to complete their transformations, but we must be pardoned for being a little sceptical as to rigid biennial regularity. The three species of *Chionobas* are (1) *subhyalina*, Curtis, Edw. (= *Beanii*, Elwes), the remarks on which are mainly controversial as regards Mr. Elwes' application of Curtis' specific name; (2) *Norna*, Thunbg., a European species which has occurred in Alaska; and (3) *semidea*, Say, the details of which occupy a plate with about 30 figures, and the text 10 pages, full of most valuable information on metamorphoses, habits, and local variations, mainly from Mr. Scudder's observations.

ABSTRACT OF PROCEEDINGS OF THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY for 1892 and 1893. 8vo, pp. 160. Published by the Society. London (Hibernia Chambers), 1894.

We congratulate the Society on the appearance of the present biennial Report, and on the attainment of its majority in 1893. The present volume contains two Presidential Addresses, by Mr. Barrett and the late Mr. Jenner Weir respectively, extended reports of the proceedings at the meetings, and abstracts of special papers read thereat, and last, but not least, a capital Index. A vast amount of information is scattered throughout its pages, and it may, we think, become a question with the executive of the Society whether the Index might not be made yet more complete in future by becoming more analytical, though a very laudable attempt has already been made in this direction. The number of members is not quite so large as it was a few years ago, but the List is a strong one, and includes many names well known outside "South London." The financial position is very strong, those who have ruled this department having evidently had an eye to the future. The Society is also to be felicitated on the absence of personalities in its published Reports: possibly the quotation on our own cover has not been lost sight of.

COLEOTTERI ITALIANI: del DOTTER ACHILLE GRIFFINI. 12mo, pp. 332, with 215 illustrations. Milano: Ulrico Hoepli. 1894.

This is the first of a series of popular manuals on Entomology, proposed to be issued by the well-known scientific publisher, U. Hoepli. It is based on the common custom of taking the best known and most conspicuous genera and species in each Family and briefly describing them and their habits; the illustrations are mostly up to the average of such works. This should prove useful to English tourist entomologists who can read Italian. Paper and type are good, and it is strongly bound, an item too often neglected in continental works.

Society.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: July 26th, 1894. —E. STEP, Esq., President, in the Chair.

Mr. Frohawk exhibited a bred series of *Melitæa Cinxia*, L., set to show the variation on the under-side. Mr. Hall, a very variable series of *Melanippe hastata*,

L., from Sheffield, Scotland and the Hebrides ; some specimens showing the median white band almost obliterated. Mr. Carpenter, a bleached var. of *Epinephele Janira*, L., from the New Forest, being the only insect captured worth recording during a fortnight's hard work ; he stated that sugar was an absolute failure. Mr. Robson, a series of *Macroglossa bombyliformis*, Ochs., taken on May 15th in the New Forest ; a discussion ensued as to the presence of scales on the wings at emergence. Mr. R. Adkin, a series of *Coccyx strobilella*, L., together with the spruce cones from which they had been reared, and read notes on the economy of the species ; a discussion ensued. Mr. Auld, a bred series of *Calymnia affinis*, L., from Chattenden, and also a series of *Ephippiphora fænella*, L., bred from mugwort roots, which were shown with pupa cases *in situ*. Mr. Harrison, photographic views of Boldermere, taken during the Society's Field Meeting at Wisley, and which he presented to the Society. Mr. Adkin read a communication from Mr. South, stating that the Dipterous larvæ exhibited some months ago in the stems of *Arundo phragmites* had been found to be those of *Lipara lucens*. Several members remarked upon the abundance of *Acidalia virgularia*, Hb. (*incanaria*, Hb.), and the scarcity of *Spilosoma menthastri*, Esp., *S. lubricipeda*, Esp., and *Euplexia lucipara*, L., while last year just the reverse occurred.

August 9th, 1894.—The President in the Chair.

Mr. A. W. Peach, of Chiswick, was elected a Member.

Mr. Hall exhibited bred series of *Xanthia fulvago*, L. (*cerago*, Fb.), from Derby and Croydon, stating that it was usual to obtain more in proportion of var. *flavescens*, Esp., from the north than from the south ; also bred series of *X. citrigo*, L. Mr. West, of Streatham, exhibited two males and two females of *Lasiocampa quercifolia*, L., bred from larvæ obtained in the Fen District. Mr. Adkin, on behalf of Mr. South, bred series of *Hypsipetes sordidata*, Fb. (*elutata*, Hb.), from Northwood, having very dark ground-colour ; bred series of *Cleoceris viminalis*, Fb., from Blatchworth, some being melanic, while others were very pale ; a few *Tortrix xylosteanæ*, L., of which one had jet-black markings instead of the rich reddish-brown ; a long series of *Scoparia murana*, Curt., from Macclesfield ; a series of *Prays Curtisellus*, Don., comprising the normal and the uniformly fuscous form, collected round Macclesfield ; and an exceptionally strongly marked female of *Hepialus humuli*, L., taken at Elstree. Mr. Croker, a long and fine series of *Leptogramma hastiana*, L., bred from St. Anne's-on-Sea, and two exceptionally distinct specimens of *L. literana*, L., from the New Forest. Mr. Adkin, a few specimens of *Spilosoma mendica*, Clerck, bred from Hartlepool, and three specimens of *Hylophila bicolorana*, Fues. (*quercana*, Schiff.), bred from New Forest larvæ, with the cocoons, upon the mechanical structure of which he made remarks. Mr. Williams, a curiously scorched specimen of *Urapteryx sambucata*, Dup., from Highgate. Mr. Turner, a dark specimen of *Melanippe fluctuata*, L., referable to var. *neapolisata*, Mill., taken at Brockley. Several Members made remarks upon the season, and gave their collecting experiences.—HENRY J. TURNER, *Hon. Secretary*.

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Lita instabilella, Dgl., and its nearest British allies (<i>concluded</i>).— <i>E. R. Banks, M.A., F.E.S.</i>	193
Description of a new species of <i>Pericoma</i> from Delagoa Bay.— <i>Rev. A. E. Eaton, M.A., F.E.S.</i>	194
Additions and Corrections to the List of British Aculeate Hymenoptera (<i>concluded</i>).— <i>E. Saunders, F.L.S.</i>	196
A new genus separated from <i>Heydenia</i> , Hfm., with description of a new British species.— <i>Rt. Hon. Lord Walsingham, M.A., F.R.S., &c.</i>	199
A comparison of moth-grease solvents.— <i>H. Guard Knaggs, M.D., F.L.S.</i>	201
Observations on the New Zealand Glow-worm, <i>Bolitophila luminosa</i> .— <i>A. Norris</i>	202
Observations on Coccidæ (No. 9).— <i>R. Newstead, F.E.S.</i>	204
Coleoptera in Hampshire, Essex and Kent.— <i>James J. Walker, R.N., F.L.S.</i> ..	207
<i>Smicronyx cæcus</i> , Boh., at Portland — <i>Id.</i>	210
<i>Microrrhagus pygmæus</i> in the Plymouth district.— <i>James H. Keys</i>	210
Abundance of <i>Vanessa cardui</i> .— <i>E. R. Banks, M.A., F.E.S.</i>	210
Abundance of <i>Plutella cruciferarum</i> .— <i>Id.</i>	210
<i>Lophopteryx carmelita</i> in the New Forest.— <i>Id.</i>	210
The typical <i>Erebia Epiphron</i> in Scotland.— <i>C. G. Barrett, F.E.S.</i>	211
<i>Plusia moneta</i> in Norfolk.— <i>B. C. Tillet</i>	211
<i>Plusia moneta</i> at Eastbourne.— <i>W. Watkins</i>	211
The food-plant of <i>Bactra furfurana</i> ; a correction.— <i>Eds.</i>	211
<i>Lithosia complana</i> in the North of Ireland.— <i>W. Howard Campbell</i>	211
Notes on Lepidoptera from Devon.— <i>Major J. N. Still, F.E.S.</i>	211
Occurrence of the yellow male of <i>Hepialus humuli</i> in Lanarkshire.— <i>Kenneth J. Morton, F.E.S.</i>	212
<i>Vespa anstriaca</i> , Panz.— <i>Willoughby Gardner</i>	212
<i>Solenopsis fugax</i> , Latr., &c., near Weymouth.— <i>Nelson M. Richardson, B.A., F.E.S.</i>	213
Stylopidized ♀ of <i>Andrena Gwynana</i> , race bicolor, captured in cop.— <i>A. Piffard</i>	213
OBITUARY.— <i>William Machiu</i>	214
REVIEWS.—The Butterflies of North America: by <i>W. H. Edwards</i>	214
Abstract of Proceedings of the South London Entomological, &c.,	
Society for 1892 and 1893.....	215
Coleotteri Italiani: del Dott. <i>A. Griffini</i>	215
SOCIETY.—South London Entomological, &c., Society.....	215

ENTOMOLOGICAL SOCIETY OF LONDON.—Meetings for the Session 1894–5:—

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THE BRITISH SPECIES OF THE GENUS *PSYCHE*, AND ITS ALLIES.

BY C. G. BARRETT, F.E.S.

It has become necessary to arrive at some more definite knowledge of the British species of this group of Bombyces than that hitherto obtained, and also to know a little more of their preparatory stages. To this end, part or the whole series of these species in several of our best collections have been placed in my hands. Dr. Mason has sent up the whole of his extensive series; Mr. Sydney Webb, his own, and also a large portion of those from the late Mr. Bond's cabinet; Mr. Nelson Richardson and Mr. E. R. Bankes, their Dorset specimens; Mr. Charles A. Briggs (I fear at great inconvenience to himself), his interesting collection of the smaller species; Mr. S. Stevens, some particularly useful forms; and Mr. W. H. B. Fletcher those from Sussex and from the South of Ireland; while Mr. McRae, of Bournemouth, Mr. W. C. Boyd, and Mr. W. Holland, have exerted themselves greatly to afford information in respect of the living insects. Some of the results will, I think, be of interest.

PSYCHE VILLOSELLA, Ochs., *nigricans*, Curt.—I think that this species is generally known. The male is about the size of that of *Clisiocampa neustria*, with an equally robust thorax, very hairy; antennæ pectinated, wings smoky-blackish, but soon fading to dark smoky-brown, thinly covered with hairy scales and not completely opaque. The female is less known, appearing in collections as a dried up, wrinkled, brown maggot, of no particular shape. But a living specimen is different, and I gladly embrace the opportunity of noting down a description from a specimen furnished this summer by Mr. W. C. Boyd. Its whole appearance is that of a large fat maggot, without a trace of wings or legs or of scales. The head is horny, like that of a larva, but shaped in a most singular manner, so as to form the oddest possible resemblance to that of a walrus, having a smooth, rounded, protruding forehead, beneath this two hollows like eye-sockets, between which is a prominent, smooth, rounded resemblance to a swollen nose. On each side of this the antennæ-cases are soldered down, and have their tips continued straight down into two sharp points, just like the tusks of a walrus. There is no indication of the usual compound eyes, nor of palpi, tongue, or any effective organs in the solid brown mask which forms the face. On each side, on the antenna-case, is a black spot. Upper portion of each of the three following segments covered with a thin, shining brown, horny plate like the dorsal plate of a larva; lower portion creamy-white; on the under-side of these three segments are minute papillæ indicating the places of the non-existing legs; whole remainder of the body creamy-white.

There appears to be an idea that the females of this genus never leave the case in which they have passed the larva and pupa states. This is certainly an error. In some instances they do not; but very frequently, in this species, the female forces herself quite out of the case and falls, a helpless mass, upon the ground, and in Mr.

McRae's opinion, it is only in these circumstances that impregnation takes place. In some instances the female forces herself about halfway out, and even works backward and forward, but after three or four days comes quite out. This seems very strange, the creature being so helpless when out of the case that it can barely roll over, and its only motion is a sort of pulsating constriction of the segments; but there is no doubt about it, specimens in my own possession have, this summer, behaved exactly as described.

The larva is better known, and has been well figured and described. Its head and anterior segments have rather the appearance of porcelain, from the colour and texture of the horny plates with which they are covered; these are creamy-white with black markings. The legs are very strong, rather long, and with conspicuous joints; prolegs very small and inconspicuous, except the anal pair, which are large and rather extended outwards, and are used for holding fast to the silken lining of the case, to which they cling with great force. The larva is never known voluntarily to leave its case. The latter is composed of silk, but totally covered with short pieces of twig, usually of heather, all pointing obliquely back, the only opening being at the anterior end, whence the head and next three segments are protruded for feeding or moving. When full fed this end is spun tightly down to some firm object, and the larva then turns round inside the case, opens the other end, and spins an extension of the silken case through which the male pupa or the female moth can wriggle its way.

The pupa of the male is structurally like those of other winged moths, but that of the female is like a large brown Dipterous pupa, having no trace of the wing cases, and in this respect differing from the pupa of ♀ *Orgyia*, in which the wing covers are well marked. In both sexes the change to the pupa state takes place in the larva case, but in the male the pupa works its way fully one half out before emergence. The creature is curiously docile as regards the material of which the larva case is formed, any dry bits of vegetable stick seem to be welcome, and in confinement bits of paper are substituted without much objection. The late Mr. J. Jenner Weir induced his larvæ to build cases almost entirely of bits of paper of various colours, producing results both ornamental and remarkable. On the other hand, the larva is most obstinate as regards food when in confinement, existing sometimes for months without any; or else, after spinning its case tightly down as though for pupation, releasing it and feeding on for months, so as to pass over till another year. The only reasonably successful method of securing specimens of the adult of either sex (to call the females "perfect insects" would be an absurdity) is to secure the cases as soon as possible after they have been fixed down by the larvæ for pupation.

PSYCHE OPACELLA, H.-S.—This species is far more widely distributed than the last, being found in several parts of the South of England and in the Highlands of Scotland, yet decidedly less common. The male is about one half the size of that of *P. villosella*, the thorax rather stout and densely covered with long soft hairs, the wings very slightly clothed with smoky-black hair-scales, and more than semi-transparent. It flies in the sunshine, and Mr. W. Holland, who took a specimen near Reading, describes its appearance as unexpectedly pale when on the wing, and also says that, when captured, the motion of the wings was continued with such

swiftness as to render them invisible until it was stupefied. For opportunities of examining the living female I am indebted to Mr. W. H. B. Fletcher and Mr. W. C. Boyd. Like that of the last species it is in appearance a mere maggot, with a fat pinkish-white or brownish-pink body, devoid of scales, wings, legs and antennæ. The head is a mere mask of horny, brown, shining substance, like that usual in larvæ, rounded in front, but without regular eye lobes or mouth organs, but having faint indications of rudimentary antennæ in the form of short glassy points. The 2nd and 3rd segments are protected by, in each case, a large, thin, dark brown, horny plate, which covers the back and extends down the sides; the 4th segment has a smaller paler plate. Across the lower side of these three segments are slight ridges. The anal segment has a short, bluntly projecting, ovipositor sheath, and beneath it two rounded papillæ. At the sides of the 7th to the 9th segments are small tufts of erect, soft, white hairs. The dried and preserved female is a mere wrinkled shapeless mass. The female in some instances leaves the case on emergence from the pupa, but this is not always the rule. In the *Zoologist* for 1857 is a curious and interesting account, by Mr. Richard Weaver, of its habits, and of those of the pupa of both sexes, also of the extremely lively manner in which (as he states) they travel up and down the tubular part of the case to see (?) whether the climate outside is suitable for emergence.

The larva is pale grey, whitish beneath, with black head, and the three following segments having each a rather narrow, dark grey, horny plate, which almost embraces the segment; each has a blackish dividing line down the middle of the back and whitish spots on the sides; the legs are large and well developed, with black claws. The case is about an inch in length, composed internally of soft, tough silk, and covered with small pieces of dried grass, pointing backward, morsels of bark, seed capsules, and other dried vegetable substances. Food probably grasses, but this is not clearly ascertained. The pupæ are as in the previous species, but of course smaller.

P. MUSCELLA, Hüb., is a species somewhat similar to *P. opacella*, of nearly the same size, and even more hairy, but its fore-wings are differently shaped, being narrow for some distance from the base, then broad and rounded, so as to bear a faint resemblance to a battledore. The female and case appear to be unknown.

It appears possible that this species may be found to occur in mountain districts in this country. There is a specimen in the British series of *P. opacella* in Dr. Mason's collection, but unfortunately its locality is not known.

P. GRAMINELLA, S. V., *unicolor*, Staudinger's Catalog.—This also is a species which should occur here, since it is one of the commonest and most widely distributed of the whole group on the Continent. It is larger and blacker than *P. villosella*, and has a similar female. Its case is also larger, but sufficiently like that of the latter to be confounded with it. I have a male specimen which was sent me many years ago as a British *opacella*, I think from the New Forest, but unfortunately the record cannot be found. I therefore merely indicate this as a species to be looked for.

(To be continued).

A HOLIDAY IN THE PYRENEES.

BY W. E. NICHOLSON, F.E.S., AND F. C. LEMANN, F.E.S.

Desirous of visiting a new field, and encouraged by the interesting account of his experiences in the Pyrenees given by Mr. Elwes in the Transactions of the Entomological Society of London for the year 1887, we left England on the morning of Friday, July 6th, and travelling straight through arrived at 10.30 p.m. the next day at Vernet-les-bains, in the Pyrénées Orientales, which corresponds to the old province of Roussillon. In selecting Vernet we had followed in Mr. Elwes' footsteps, a course we had no cause to regret. The day after our arrival we made the acquaintance of Herr Seebold, a German entomologist from Bilbao, and through his kindness we obtained an introduction to M. René Oberthür, of Rennes, who was staying at Vernet, and who showed us great hospitality throughout our visit. The eastern Pyrenees, although not so familiar as the central and western to the English tourist, have many advantages over the latter from a collector's point of view. The weather is far more settled, being more of a Mediterranean character, and is much freer from storm and fog than the more western part of the range, where wet and foggy weather of the Atlantic type, with which we are unhappily so familiar at home, often prevails. Vernet, from its climate, the aridity of the lower hills flanking the valley between it and Prades, and the intermixture of alpine and southern species, reminded us somewhat of Digne, of which various accounts have appeared in this Magazine, but although very good, it is scarcely so rich in species as the latter.

The principal difficulty in the way of collecting at Vernet, a difficulty which applies also to the whole range of the Pyrenees, is the absence of any accommodation in the higher mountains, so that a long ascent is necessary before arriving at the localities for the alpine species. We joined M. Oberthür on one occasion in an expedition to such a locality, known as the Pla Guilhem, between 4000 and 5000 feet above Vernet, for which we started at 4.30 a.m., not returning until 6.30 p.m., which will serve to show that the alpine species are not to be taken in a mere morning's stroll from the hotel, as can be done in many parts of Switzerland.

We left Vernet on July 17th, having spent ten days there, and as we noticed nearly all the butterflies mentioned by Mr. Elwes from his observations, supplemented by those of De Graslin and Struve, we could scarcely have visited the place at a more favourable time.

Among the localities in the neighbourhood of Vernet that we

visited were the wood on the left hand side of the torrent, which runs through Vernet, about ten minutes' walk above the hotel, where *Thecla roboris* occurred in some numbers with *Euchloë euphenoides* and *Melanargia Lachesis*; the valley of St. Vincent, where many species occur on an ancient glacial moraine of large extent; and the slopes between the Col du Cheval mort, and the Pla Guilhem for the alpine species.

On leaving Vernet, we stayed for two days at Bagnères de Luchon, whence we made the excursion to the Lac d'Oô. The weather, however, was unsatisfactory, and although we found many interesting plants, including the beautiful *Ramondia pyrenaica*, which is peculiar to the central and western Pyrenees, we saw very few butterflies of interest.

From Luchon, after visiting Lourdes, which has been so much before the public, we went on to Cauterets, for which you leave the railway at Pierrefitte, and drive through one of the beautiful wooded valleys with a rushing torrent below, so characteristic of the central Pyrenees. Here we again rejoined Herr Seebold, who had just arrived from Vernet. As he was well acquainted with the localities in the neighbourhood, his assistance was of great value to us in our short visit. The best localities we visited were a steep bank on the left hand side of the valley between Cauterets and La Raillère, the neighbourhood of the Lac de Gaube, and the slopes of the Cabaliros to the north-west of the village.

We concluded our expedition with a few days at Biarritz, where, on July 25th and 27th, we took several interesting species in some marshy ground near the Lac de la Négresse, on the left hand side of the Railway to Bayonne. This marsh was interesting from a botanical point of view, as *Erica ciliaris*, *Lobelia urens*, and *Spiranthes æstivalis*, all grew freely there. Here we took the curious *Cyclopides Morpheus*, *Cænonympha Œdipus*, *Satyrus Dryas*, *S. Arethusa*, and *S. statilinus*. Their capture, however, was not effected without some difficulty, as owing to the wet weather which had preceded our visit, the marsh was unusually treacherous, and our first efforts after *C. Morpheus* were frequently rewarded by a partial immersion.

Mr. Elwes remarks that it is strange that such an extensive and isolated range as the Pyrenees should have developed so few distinct forms. However, the present form of the alpine fauna of Europe is probably at least as old as the last Glacial Epoch, when these species could have inhabited the plains between the Alps and the Pyrenees, and on the amelioration of climate, they may have retreated into the

mountains on either side of these plains without undergoing much modification. In speaking of the flora, M. Eugène Trutat, in a recent work on the Pyrenees, states that, "we may learn from palæontology that the species have varied but slightly since the Glacial Epoch, though their distribution has been profoundly modified;" and where we find very distinct species, what he calls, "espèces de premier ordre," in the Alps and Pyrenees, they have probably not arisen since this period, but the conditions have been favourable to their survival in the one locality and not in the other. The interesting Pyrenean varieties of well known alpine species belong to quite a different category, and are only such as might be expected to arise in regions at present so isolated, and offering somewhat different conditions of climate. It has been stated that there is a far larger proportion of peculiar species among the plants, but the flora should be compared with the fauna as a whole, and not with a single zoological group, as the *Lepidoptera*. Besides which species are occasionally founded by botanists on distinctions that would hardly hold good with *Lepidoptera*. For example, M. Trutat gives a double list of what he calls corresponding plants in the Alps and Pyrenees, some of which might be considered as varieties of each other.

Altogether during our trip we noticed 106 species of *Rhopalocera*, and we have added a few notes on the most interesting.

Papilio Podalirius, var. *Feisthamelii*.—The specimens of this variety in the middle of July at Vernet were rather worn, but they probably belonged to a second brood, as the first brood is said to be typical, while our specimens were very black and white. We found young larvæ on some stunted blackthorns on the dry hill slopes below Vernet.

Thais rumina, var. *Medesicaste*.—A single specimen in fine condition was captured by Herr Seebold during our visit. The larvæ were to be found nearly full-fed at the same time on *Aristolochia pistolochia*, on the dry slopes below Vernet, and among the rocks in the wood close to the hotel.

Parnassius Apollo.—Not uncommon near Vernet, especially near St. Martin. The specimens, though larger than the usual Swiss form, are not so fine as those we took at Digne. *P. Mnemosyne*.—Taken on the Col du Cheval mort at Vernet, and again near the Lac de Gaube; we did not, however, notice it in any abundance.

Pieris Callidice.—Not uncommon in the higher regions; on the Pla Guilhem and also on the Cabaliros above Canterets. In the latter place it was abundant, but in poor condition, on July 21st. *P. Daplidice* occurred, but not very commonly, at Vernet.

Euchloë euphenoides.—This beautiful little species was not uncommon at Vernet, in stony places where its food-plant, *Biscutella lavigata*, occurred. It must be on the wing for a very long time, as we found a few nearly full-fed larvæ. The

larvæ are said to be cannibals, but those which were kept showed no desire to eat one another. They had, however, all been stung by ichneumons, which may have accounted for their gentler behaviour. As pointed out to us by M. Oberthür, the under-side of this species mimicks the inflorescence of the *Biscutella*, on which it rests, and not an umbellate inflorescence, as is the case with our *E. cardamines*.

Colias Edusa and *C. Hyale*.—Both these species were noticed, though not in any numbers, and, contrary to what occurs in Switzerland, *C. Edusa* was the commoner of the two. Indeed, we only noticed *C. Hyale* on two occasions, once at Vernet, and again at Biarritz. *C. Phicomone* occurred on the Pla Guilhem, and near the Lac de Gaube; the specimens, though possibly a little darker, do not differ materially from the Swiss form.

Rhodocera rhanni.—We noticed a good many specimens of this species on the Cabaliros, at an elevation of over 7000 feet. *R. Cleopatra*.—Noticed at Vernet, and also seen in some abundance on some dry banks near the frontier town of Hendaye, in the Basses Pyrénées.

(To be continued).

CALLIMORPHA HERA AT HOME IN SOUTH DEVON.

BY G. T. PORRITT, F.L.S.

Mr. J. Jäger, of Notting Hill, having written to me from South Devon, that he was again taking *Callimorpha Hera*, and wishing me to join him, Monday morning, August 20th, saw me on my way to do so. The sight of a grand series on his setting boards the same evening made me impatient for next morning. Fortunately this proved fine, and under Mr. Jäger's guidance, I soon experienced for the first time the pleasure of taking and seeing on the wing this grand moth, my total for the morning's work being four specimens, whilst my friend also took several. The weather for the remainder of the week proved most disastrous—almost incessant heavy rain and several thunderstorms—so that scarcely anything could be done. The week following opened magnificently fine, and continued so until my leaving on Thursday, the 30th, by which time my "take" of *C. Hera* numbered exactly twenty specimens, the proportion of the various forms being as follows:—twelve red, four orange, and four yellow- (the var. *lutescens*) underwinged. Mr. Jäger's proportion of the orange form was not so large as mine, but he said this variety had been more plentiful than he had ever before seen it in any of the years he has collected the species. He had a greater proportion of the var. *lutescens*, which this year seemed to be almost as common as the red type. The species occurs over a wide district, as we took them ourselves three to four miles apart, and on all the intervening ground. It is certainly not at all rare, and has, I should say, been well established there for many more years than is generally supposed.

The locality evidently suits it exactly, and from its habits there is little fear of its extermination through collecting. What a succession of severe winters (if such were possible in South Devon) would do is another matter. The species had been out for some time before my arrival, consequently most of my specimens were more or less damaged; the ♀s of these were kept alive for eggs, and I obtained some from each of the three forms, from which I hope to breed a nice series next year. Our specimens were chiefly taken by beating the hedges in the lanes, when the moths flew out on the least disturbance, but the natural flight is just at dusk, when it is on the wing for apparently a very short time; in this way several were netted one fine evening in a few minutes, within a radius of only a few yards. That it also comes to light, probably late, was also evident, by several specimens being given to us by the cottagers, and which had flown into the cottages. The eggs are deposited in batches in a similar manner to those of the *Arctias*, but are rather small for the size of the moth, and, as pointed out to us by Mr. G. C. Bignell, the shell is so very thin that the development of the young larva can, with a lens, be very distinctly seen through it; they hatch in about a fortnight, or a little over, and I have fed the larvæ on knotgrass, dandelion, and lettuce.

Other species noticed during the expedition included *Colias Edusa*, several; *Vanessa cardui*, plentiful, also *V. Io* and *V. Atalanta*; *Lycæna Argiolus*, occasionally about the hollies and ivy; *Gnophos obscurata*, common, the dark form only; *Ephyra porata*, *Acidalia promutata*, *A. imitaria* and *A. emarginata*, a few of each; *Larentia olivata*, abundant, but getting very worn; *Melanippe rivata*, very fine, the specimens much larger than those of *M. subtristata*, which also occurred; *M. galiata*, common; *Anticlea rubidata*, several; *Coremia unidentaria* and *C. ferrugata*; *Cidara picata*, several, but very worn; *Anaitis plagiata*, not uncommon, &c. Sugar was tried, but, as everywhere else where I have tested it this season, was a complete failure, not a moth visiting it; there seemed, indeed, to be scarcely any *Noctuæ* about: an occasional *Tryphæna janthina* and *T. orbona*, with a few *Bryophila perla*, *Luperina testacea*, and *Phlogophora meticulosa* being all those observed. *Botys asinalis*, very worn, was the only decent *Pyræle*; and *Crambus geniculellus* and *Melia sociella* the best of the *Crambites*. In an ordinarily good season the district could not fail to be productive of many good species, and the marvel is it has not been more worked. I cannot too highly thank Mr. Jäger for his kindness and courtesy in showing me all the localities, and giving me every possible help in the district.

COLEOPTERA IN THE NEW FOREST.

BY G. C. CHAMPION, F.Z.S., AND D. SHARP, F.R.S.

It is evident from our experience that for some reason or other *Coleoptera* in the New Forest are becoming rarer than they used to be. Each of us has visited the Forest more than once in former years, and as we have recently passed a month there (June 7th to July 7th) we think it may be of some interest to give a list of the more important *Coleoptera* we met with, although we found little or nothing new to the locality, or indeed that we had not, one or other of us, met with there before.

The New Forest has long been known as the only, or as the best, locality for some of our more interesting British beetles, and every Naturalist will agree that it is a matter for regret that these should be disappearing from among us. Some of Charles Turner's captures, *Endophlæus spinulosus*, for example, have not been found again, though, judging from our experience with this species on the Continent, there should be no great difficulty in securing it, if it still exist here. It appears probable, too, that *Eucnemis capucina*, though only discovered in Britain a few years ago, has, like *Endophlæus*, nearly or quite disappeared; possibly, however, it may still be represented by a few individuals, the last of their race, in the Forest, this insect being more difficult to find than *Endophlæus*. "Red Elaters" are, it is generally agreed by collectors, becoming much rarer than formerly; only four specimens, representing two species, were obtained in our month's work. We were, however, probably not there at the best time for these insects, which are perhaps more readily met with in the late autumn, or in the spring; indeed, we found *Elateridæ* larvæ to be much more common than perfect insects of the same species.

We were fortunate in tracing to their haunts two of Turner's specially interesting prizes, very few specimens of which have been met with in this country during the 20 or 25 years that have elapsed since his decease. These were *Velleius dilatatus* and *Anthaxia nitidula*; to meet with the latter is a treat even to those who are acquainted with it as a fairly common insect on the Continent, for in its brilliant colour and mode of living in and flitting about the flowers, it is really a "thing of beauty." That it will be "a joy for ever" in the New Forest is to be doubted; we found it very local and apparently quite restricted to the neighbourhood where we had heard it used to be found by Turner. We were also fortunate in meeting with *Agrius viridis*, which was discovered in the Forest two or three seasons ago,

we believe, by Mr. Gorham or Mr. Chitty; the former gentleman, like ourselves, found the burrows of the insect under the bark; we were not, however, able to find the larva, and all our efforts to procure the allied species (*A. sinuatus*) were fruitless. The *Longicornia*, of which twenty-one species were observed, were more abundant than usual, the guelder-rose being particularly attractive to these beetles. Not an *Anthrribid* of any kind could we find, and *Scolytidæ* were extremely scarce. During our stay we had the pleasure of being occasionally accompanied by various friends—Messrs. McLachlan and Bateson, Colonel Yerbury (whose Coleopterous finds helped to increase our “bottle”), and the Rev. H. S. Gorham.

The following list includes the more important species we met with:—*Cychrus rostratus*, *Calosoma inquisitor*, and *Pterostichus oblongopunctatus*, a few specimens under chips of wood. *Carabus arvensis*, on the heaths. *Hydrovatus clypealis*, one specimen, in a pond near Lyndhurst; previously taken by Sharp at the same locality, but not recorded. *Hydroporus discretus*, rarely, in a small muddy pool. *Deronectes latus*, sparingly, in running water. *Hydræna angustata* and *H. nigrita*, by swilling the banks of running streams, not uncommon; the first mentioned has not, we believe, been previously recorded from the south, though we have taken it here on previous occasions. *Ocyusa incrassata*, several examples, under sappy bark of beech; this widely distributed insect seemed to be equally at home here, as it is in moss on the Scotch hills. *Homalota hepatica*, one specimen, by sweeping. *Oligota apicata*, in rotten wood. *Megacronus cingulatus* and *M. inclinans*, rarely, in rotten wood, &c. *Velleius dilatatus*, occasional, at sugar; both sexes obtained. *Quedius truncicola*, a few specimens in a hollow tree, in very wet rotten wood. *Q. xanthopus*, one specimen, in rotten wood; not hitherto met with in the south by either of us. *Staphylinus latebricola*, *S. erythropterus*, and *S. cæsareus*, occasionally, in the roads, &c. *Medon obsoletus*, two specimens, in very rotten wood. *Stenus lustrator*, two examples, running on old cord wood. *Omalium iopterum*, under bark. *Hapalaræa pygmæa*, by sweeping. *Euplectus punctatus*, *E. piceus*, and *E. Karsteni*, *Bibloporus bicolor*, *Scydmanus exilis*, and *Neuraphes Sparshalli*, under bark or in wet rotten wood. *Anisotoma nigrita*, evening sweeping, under pines. *Silpha quadripunctata*, on oaks and also on the wing, frequent, during the early part of June. *Hister meridarius*, one specimen, in a hollow tree, in company with *Quedius truncicola*. *Gnathoncus nannetensis*, in a dead hedgehog. *Plegaderus dissectus*, in some numbers, in decaying beech. *Ptenidium Gressneri*, not uncommon in a hollow tree, in com-

pany with *Quedius truncicola*; *P. turgidum*, in decaying beech. *Hyperaspis reppensis*, one specimen, crawling on a log. *Triplax russica*, in abundance, in fungoid growth on beech. *Omosita depressa*, one specimen, in a dead hedgehog; not previously seen alive in the south by us. *Cryptarcha strigata* and *C. imperialis*, and *Ips 4-guttata*, at sap. *Thymalus limbatus*, freely, under loose bark. *Synchita juglandis*, *Cicones variegatus*, and *Ditoma crenata*, sparingly, in beech; of the first-mentioned a few specimens were found under bark. *Pediacus dermestoides*, rarely, in freshly split oak and beech. *Enicmus testaceus*, rarely, under bark; *E. minutus*, a few specimens of a black variety (?) in fungoid growth on beech, in company with abundance of *Coninomus nodifer*. *Cartodere elongata*, sparingly, in rotten wood. *Cryptophagus pubescens*, on flowers of honeysuckle. *Mycetophagus piceus*, in fungoid growth on oak, and *M. atomarius*, in beech. *Tiresias serra*, one specimen, on a beech log. *Trox sabulosus*, in a dead bird. *Hoplia philanthus*, on sallows. *Gnorimus nobilis*, one specimen, on a rose. *Anthaxia nitidula*, on various flowers, sparingly and extremely local. *Agrilus viridis*, a good many specimens on old sallows, in which it breeds; the sexes were found *in copulá*, the females constantly differing from the males in having the thorax and under-surface brassy or coppery [the females thus fitting Kiesenwetter's description of his var. *b* (Naturg. Ins. Deutschl., iv, p. 151)]; all the males obtained were green above and beneath; this (like *A. sinuatus*) is a destructive insect on the Continent, and it also attacks the oak and the poplar; the larva has been described by Aubé and Perris. *Melasis buprestoides*, not rarely, on a hot sunny day, when the insect was found sitting outside its burrows in a decaying beech. *Microrrhagus pygmaeus*, rarely, by sweeping the bracken beneath old beeches, also in the enclosures under oaks. *Elater pomonæ* and *E. lythropterus*, very rarely, on stumps or under bark. *Athous rhombeus*, a fair series, including both sexes, by splitting up beech logs; some of the specimens were dug out of very hard apparently quite sound wood; the larva (which has been described by Dufour) is black, and coarsely punctured above. *Sericosomus brunneus*, sparingly, by sweeping. *Corymbites holosericeus*, *C. metallicus*, *C. bipustulatus*, and *C. tessellatus*, on sallows, &c. *Lampyrus noctiluca*, males frequently attracted to light. *Podabrus alpinus*, very abundant, on flowers, &c. *Malthodes dispar*, by sweeping. *Dasytes niger*, in *Hieracium* and other flowers. *Tillus elongatus*, a few specimens of the typical and one of the black form, about the burrows of *Ptilinus pectinicornis*. *Lyctus canaliculatus*, *Dorcatoma flavicornis*, and *Anitys rubens*, in decaying oak; as usual, dead specimens only of

the latter obtained. *Callidium violaceum*, on palings, Brockenhurst. *Clytus mysticus*, *Anoplodera sexguttata*, *Strangalia nigra*, and all four species of *Grammoptera*, freely on flowers, especially of *Viburnum lantana*. *Strangalia quadrifasciata*, dug out of beech. *Leptura scutellata*, many specimens, but nearly all females, crawling on old beech logs, and also (in all its stages) dug out of decaying standing or fallen beeches. *Mycetochares bipustulata* (both sexes), *Orchesia undulata*, and *Phlæotrya rufipes*, about fungoid growth on beech, the first mentioned in some numbers. *Conopalpus testaceus*, in plenty, in all its stages, in a fallen oak bough; one or two specimens also obtained by beating. *Ischnomera sanguinicollis*, one specimen, and *I. cærulea*, not rarely, on hawthorn blossom. *Pyrochroa coccinea*, one specimen, on a beech stump; the larva was common under bark, some of them being quite small and others full grown. *Tomoxia biguttata*, a few specimens on beech logs and stumps, flying in the hot sun, and also dug out of stumps; apparently a rare insect now in the Forest. *Mordella fasciata*, dug out of rotten beech; the larva also obtained. *Mordellistena humeralis* and *Anaspis Garneysi*, on flowers. *Xylophilus oculatus*, in a rotten oak, females predominating, with *Dorcatoma flavicornis*. *Rhynchites æneovirens*, on hawthorn blossom. *Cænopsis fissirostris*, one specimen, crawling in the road. *Polydrusus flavipes*, not rarely, on oaks. *Tychius quinquepunctatus*, on a small vetch. *Magdalis barbicornis*, both sexes, by beating old crab trees.

August 15th, 1894.

THE CHIGOE IN ASIA.

BY W. F. H. BLANDFORD, M.A., F.Z.S.

The sand-flea, chigoe or nigua (*Sarcopsylla penetrans*, L.), is one of the most troublesome pests in Tropical America and the West Indies to man and various domestic and wild animals, and, as such, has been the subject of numerous papers and monographs, chief among which are those of Karsten, Guyon and Bonnet. The female flea burrows into the skin, usually of the feet, but also of any other accessible region. After she has effected an entrance, her abdomen swells into a spherical mass which, unlike the abdomen of a queen Termite, shows no trace of the component segments, except at the extremity, and of which the tracheæ suffer remarkable changes and lose their characteristic spiral threads. In this situation she ejects her eggs after they have reached maturity; the larvæ, according to Guyon, are free-living and not parasitic on the host of their mother, on whose remains they are said by Bonnet to feed in part.

The chigoe is the only known flea which becomes enclosed in the integuments of its host; another species (*S. gallinacea*, Westw.), and those of the allied genera *Rhynchopsylla*, Hall., and *Vermipsylla*, Schimk., are ecto-parasites, and hang like ticks on the skin of birds or of cattle (*Vermipsylla*).

The recorded distribution of the chigoe extends over Tropical America and the Antilles, from 30° N. to 30° S., and in late years it has been exported in ballast to Africa, and has established itself in Angola, Loango and the Congo.

No Asiatic locality has been recorded for it, but it, or a closely-allied species, inhabits China.

I have recently examined specimens of the ears of sewer-rats, forwarded from Ning-po by Mr. Szigetváry, of H.I.M. Maritime Customs, to the Secretary of the Entomological Society of London. These ears exhibit one or more large oval cysts on the margins of the pinna, near its root, which communicate with the exterior by a small circular hole, usually on the border of the pinna, and blocked by the hinder end of the parasite.

The latter are ovoid in form, tough-skinned, and contracted posteriorly into a short, tail-like process which exhibits chitinized structures at the tip. The largest specimen (preserved in alcohol) measures 8.5 mm. in its long axis, and about 6 mm. in breadth. The anterior extremity is produced into four rounded lobes, which almost conceal the minute head, thorax and limbs of the insect, which, owing to their small size, remained undetected for some time. Till they were discovered, the identity of the parasite, which is even less like a normal insect than is a queen Termite, remained unsuspected.

It is a true chigoe, but not certainly identical with the American species. The shape of the dilated abdomen differs from that shown in published drawings of *S. penetrans*, and the disparity in size between it and the remainder of the body appears to be somewhat greater. No important differences can be made out between the præ-abdominal region, when mounted in balsam, and the same region in *S. penetrans*, and the size of the appendages, measured under the microscope, though smaller, does not vary from the size of the same structures shown in Karsten's drawings more than may be expected between individuals. The common flea is well known to be very variable in size.

It is to be hoped that Mr. Szigetváry will obtain more material, so that the species can be accurately determined, and its identity established.

Ning-po is within the 30th parallel, near the port of Shang-hai, and as Mr. Szigetváry says that no one in China appears to be familiar with the animal, there is grave reason to suppose that it may have been imported to, and may spread in Asia as it has in Africa, and prove as troublesome a scourge among a people ignorant of its habits, and unused to and unable to deal with its attacks.

An interesting point is the situation of the present examples in the tough skin of the pinna, which must have dilated with remarkable quickness to accommodate the rapidly growing parasite.

48, Wimpole Street, London, W. :

August, 1894.

PRE-OCCUPIED GENERIC NAMES IN *LEPIDOPTERA*.

BY E. MEYRICK, B.A., F.Z.S.

It appears from Lord Walsingham's paper on species previously referred to *Heydenia* (*ante*, p. 199), that he has overlooked the fact that the name *Heydenia* is pre-occupied in the *Hymenoptera*, and, therefore, not applicable. Hence it is possible that *devotella*, Heyd., may require a new generic name; but as I have never examined it, I abstain from suggesting one.

I have, however, noted several other generic names in use for good genera of *Lepidoptera*, but pre-occupied in other groups. I propose accordingly, for *Microdonta*, Dup. (pre-occupied in *Coleoptera*), to substitute HIEROPHANTA (type *bicoloria*, Schiff.); for *Cleodora*, Curt. (pre-occupied in *Mollusca*), to substitute PALTODORA (type *cytisella*, Curt.); for *Pæcilia*, Hein. (pre-occupied in *Pisces*), to substitute STENOLECHIA (type *nivea*, Hw.). I may also call attention to the fact that *Chauliodus*, Tr., is thrice pre-occupied in *Pisces*, *Neuroptera*,* and *Aves*, but in this instance the name *Epermenia*, Hb., already exists, and should be applied.

Returning to Lord Walsingham's paper above-mentioned, I observe that in his genus *Cataplectica* veins 6 and 7 of the hind-wings are described and figured as stalked; in my specimens of *profugella*, *auromaculata*, and *fulviguttella*, they are clearly separate. The point may, however, here well be variable, as in the closely allied *Epermenia*.

Ramsbury, Hungerford :

September 1st, 1894.

* This name was used by Billberg in his "Enumeratio," in 1820, and is a corrected form of the equivalent *Chauliodes*, Latreille, 1798.—R. McLACHLAN.

DISCOVERY OF *TRIOZA CENTRANTHI*, VALL., IN ENGLAND.

BY PHILIP B. MASON, F.L.S.

About the middle of August, 1894, Mr. T. Gibbs brought to me a plant of *Valerianella dentata*, Poll., which he had gathered in a corn field near Bretby, Derbyshire. It was curiously deformed, and on looking at it closely the deformity was found to be due to the crowding together of the flowers and the great broadening of the bracts; the upper portions of the bracts were reflexed, and each bract was found to shelter a Psyllid larva. From these larvæ, in about ten days, were hatched specimens of *Trioza Neilreichi*, Frfld. (1864). They are very prettily marked with two bright silvery lines on the dorsal surface of the abdomen.

Kaltenbach refers to a *Psylla fedicæ*, Först., as feeding on *Valerianella olitoria*. Puton, in his Catalogue (1876), refers to neither of these names, so that I cannot say whether the species infesting these two nearly allied plants be the same or not. At all events it is, I believe, a species of this interesting Family hitherto unrecorded for this country.

Burton-on-Trent :

September 5th, 1894.

[This is a very interesting notice of the first capture of this Psyllid in England, but the appearance of the species in Britain has long been expected. The late F. Löw had a comprehensive article on its natural history and bibliography in the "Verhandlungen der k. k. zool.-botan. Gesellschaft in Wien," 1886, from which the following synonymy is extracted :—

Psylla centranthi, Vallot (1829) ; *Trioza acutipennis*, Frst. (1848), nec Zett., nec Flor : *Trioza Neilreichi*, Frauent. (1864) : *Psylla fedicæ* (Frst.), Kaltenbach (1874) : *Trioza angulipennis*, Puton (1875) : *Trioza centranthi*, André (1878) : *id.*, F. Löw (1886).

The species lives within deformations the larva makes of the leaves and flowers of *Centranthus ruber*, *C. angustifolius*, *Valerianella carinata*, *V. dentata*, *V. olitoria*, and *Fedia cornucopiæ*, in France, Italy, Germany, Austria, and Hungary. It appears as imago from June to autumn, and hibernates.—J. W. D.]

Nothochrysa capitata, F., at York.—I obtained a dead specimen of *N. capitata* from a spider's web at Sandburn, York, on August 6th.—G. T. PORRITT, Huddersfield : August 31st, 1894.

OBSERVATIONS ON *COCCIDÆ* (No. 10).

BY R. NEWSTEAD, F.E.S.,

CURATOR OF THE GROSVENOR MUSEUM, CHESTER.

FIORINIA SULCII, *n. sp.*

Leucaspis pini, A. C. F. Morgan, Ent. Mo. Mag., xxv, p. 189, pl. iii, fig. 3 (1889); *id.*, iii, n. s., p. 13 (1892). Newstead, Ent. Mo. Mag., v, n. s., p. 181, fig. (1894).

♀ adult lying within the second moult; the latter, however, is completely hidden beneath the scale, which is entirely secreted at the 2nd stage. ♀. Pygidium (figs.



1, 2, 3) generally with two pairs of very short, rounded lobes; sometimes there are a third or even a fourth pair, but these are inconstant and asymmetrical; on either side beyond the median lobes are five or six (generally five) rather long spiny hairs, and between them two very short ones; within the margin are two irregular rows of pores or spinnerets; grouped spinnerets arranged in the form of an arch, but generally well separated: the anterior group consists of from five to ten, the anterior laterals from ten to

twelve, and the posterior laterals from nine to twelve.

Scale of the ♀. In my description (*l. c.*) for "second moult yellow, &c.," read "larval moult yellow, &c.;" there is only the larval moult visible at the cephalic extremity. Larva rather short-ovate. Eyes black. Antennæ of five joints; 1st, 2nd, 3rd and 4th shortest, and in length nearly equal; 5th about as long as the rest together, is strongly ringed, and has three very long hairs. Legs with coxa and femur broad; tibiæ and tarsi much thinner, the latter very short, only about the same length as the claw; digitules to claw and tarsi simple. Mentum uniaarticulate; unexpanded filaments reaching nearly to end of body. Pygidium with two large median, almost rectangular lobes; immediately within these are the two long anal setæ, and two very short ones; the latter arising from a central raised prominence. On either side of the lobes are a varied number of broad, and very finely serrated plates, and several small spines. The median lobes are very distinct, and their bases run almost through the pygidium. Segments each with two elongated pores, one ventral and one dorsal.

It is entirely through the persistent investigation of the species by Herr Karel Šulc, and his discovery of both the adult ♀ of this species and *Leucaspis pini*, Hartig, that I have been able to clear up the identity of the two species. It is unfortunate, however, that I did not in the first instance describe the species as a new one; but like Mr. Morgan (*l. c.*) I was in doubt all along as to whether the peculiar fringe of blunt spines on the pygidium of ♀ *Leucaspis pini*, as described by Signoret and Löw, were really chitinous or only waxy secretions. Now the doubt no longer exists since Herr Šulc has discovered the

adult ♀ of *Leucaspis pini*, Hartig, which, after treatment with potash, still retains the marginal fringe of blunt spines, which is so characteristic of the genus.

Mr. Morgan, in his description (*l. c.*), says, "the posterior margin of the female adult, unlike most species of *Diaspina*, is entire, possessing neither plates nor lobes." In this my new species does not agree, all have the very small plates, but they vary exceedingly in number, scarcely two being alike. It is, therefore, quite possible that some have none at all. The rest of his description agrees so well, that I feel almost certain of the identity, and Herr Sulo is of the same opinion.

EXPLANATION OF THE FIGURES.

1 and 2 after Sulo, types coll. Newstead.

3 ,, type coll. Sulo; this is a very curious form, having three *odd* lobes grouped together on one side.

LECANIUM PERFORATUM, *n. sp.*

♀ adult (fig. 1, as seen with transmitted light), viviparous; dark piceous, margins paler; extremely flat, short-ovate, generally much widened posteriorly; on either side of dorsum are well defined, radiating, transverse carinæ; the spaces between finely rugose. Dermis tessellated with irregular rows of tessera; four on either side of dorsum; margins of each tessera with very minute pores, which, under a low power, look very like perforations (fig. 2); posterior half of submarginal row with large, clear, jagged spaces (fig. 2); about five on either side of dorsum; marginal row finely granulated outwardly. Antennæ (fig. 3) of eight joints; 2nd, 3rd, 4th and 8th longest, 1st, 5th, 6th and 7th shortest, and in length nearly equal; 8th generally the longest. Legs rather short; intermediate and posterior pair wide apart; tarsi much shorter than the tibiae; trochanter with a rather short hair; digitules to tarsi ordinary, those of the claw much dilated at the extremity; claw short. Rostral filaments unexpanded, about the same length as the legs. Anal cleft very deep; lobes very small.

Long, 3.50—4 mm.; wide, 2.50—3 mm.

♀, prior to gestation, dull reddish-brown; younger forms much lighter. Larva dull reddish; antennæ of six joints, of which the 3rd and 6th are longest; 3rd longest, 4th and 5th equal, about same length as 1st and 2nd. Rostral filaments unexpanded, extending beyond tibiae of posterior legs. Legs rather short; digitules to tarsi and claws ordinary. Anal setæ rather shorter than is usual in the genus. Margins with a few stout hairs; and there are four very stout *blunt* spines, one over each of the tracheæ.

Hab.: Palm House, Kew; very numerous on the under-side of the leaves of *Caryota Cumingii*, a tropical palm. August, 1894.

This very interesting and clearly distinct species was kindly forwarded to me by Mr. J. W. Douglas, to whom the specimens were sent by Mr. D. Morris, Assistant Director of the Royal Gardens. It is very closely allied to *L. tessellatum*, Sign. (Essai, p. 231, pl. xii, fig. 4); but the eight-jointed antennæ, the central division and arrangement of the pores in the tesseræ, readily distinguish it from this or any other known species. The larvæ occurred both beneath and in the bodies of the adults, which is conclusive proof that the ♀ is viviparous. This, together with the other characters set forth, place the species in Signoret's 1st Series.

Chester: September 5th, 1894.

Coleoptera at Weymouth and Portland.—I spent the latter part of March last at Weymouth, and in consequence of the beautiful spring weather was able to do a good deal of collecting work. The hedges and trees were only showing very faint signs of the coming foliage, I therefore devoted most of my time to the coast and immediately adjoining land. Attention was mainly given to the *Adephaga*, and during ten days I was able to obtain about one-sixth of the total species found in Great Britain; of course a large proportion of these were very common, but a few were new to me, and are good species.

One day was spent at Poole: there I obtained *Cicindela sylvatica*, but though I kept a sharp look out for *C. maritima* all the time, I failed to obtain a specimen; perhaps it was too early, though *campestris* was in the utmost profusion all along the coast line, occurring on the clay cliffs as well as on the sandy portions of the coast.

On the Isle of Portland I obtained a few good insects (I was not lucky enough to come across *Seybalicus oblongiusculus*), the best were *Licinus silphoides* and *Cyrtinus axillaris*, both new to me.

On the Chesil Beach I obtained one specimen of *Mesoreus Wetterhali* and *Cyllenus lateralis* in great abundance, as also *Harpalus neglectus* and many common things.

At Weymouth itself my best captures were *Acupalpus consputus* (1), *Trechus lapidosus* (3), and *Harpalus rotundicollis*. *Harpalus* and *Calathus* were distinctly the commonest genera. *Bembidium varium* was in great abundance in the salt marshes near the town, along with *Pogonus chalceus*, and *littoralis* (sparsely).

In the other divisions perhaps the best take was a specimen of *Cardiophorus asellus* on Chesil Beach, where I found two last year about the same time.

Amongst those taken were *Aphodius luridus* (under a stone with *Agriotes lineatus* and *sputator*), *Prasocuris junci* (the only Phytophagous beetle met with), *Anthicus humilis* and *antherinus*, *Meloe proscarabeus*, *Apion hæmatodes*, *miniatum* and *radiolus*, *Oliorhynchus tenebricosus*, *Philopodon geminatus*, *Barynotus obscurus*, *Hypera variabilis*, *Silpha lævigata*, *rugosa* and *atrata*, *Bryaxis Waterhousei* and *Hefferi*, *Micraspis sedecimpunctata*, *Nitidula bipustulata* and *rufipes*, *Dermestes murinus*, *Aleochara lata*, *Quedius tristis*, *Cafius xantholoma*, *Xantholinus tricolor*, *Bledius spectabilis*, and many other common *Staphylinidæ*, &c.—T. HUDSON BEARE, Park House, Richmond: August, 1894.

Large number of Metæcus paradoxus in one wasp's nest.—I have just received from Mr. W. H. Tuck, of Tostock, near Bury St. Edmunds, a consignment of 24 specimens of *Metæcus paradoxus* (10 ♂ and 14 ♀), which were all taken from one wasp's nest. Mr. Tuck writes concerning them as follows:—"On Saturday, the 18th, I saw a wasp beetle (*M. paradoxus*) at the entrance of a nest belonging to *Vespa vulgaris*. That evening I destroyed the nest by turpentine; it was in an old tree stump about two feet deep. On digging it out yesterday I found everything dead, and, to my surprise, 23 more of the beetles, either in the cells or in the *débris* of the nest, which I had to bring away bit by bit. I consider this a most unusual event; first, to find a beetle outside, and again to find such a number, my previous experience being about three or four only in a nest." No doubt Coleopterists generally will be of the same opinion. The specimen met with outside was a fine male. One of the males from within the nest had lost the head and prothorax; according to Mr. Tuck the wasps had eaten them off.—E. A. BUTLER, 39, Ashley Road, Crouch Hill, N.: August 23rd, 1894.

Catocala fraxini, L., at Norwich.—I was fortunate enough to catch a male specimen of *Catocala fraxini* this morning. It was at rest on the stump of a small alder tree on the banks of the back waters of the river Wensum, some two miles above the city of Norwich; unfortunately, owing to my being in a boat at the time, it suffered considerably in the catching, but when first seen was in a magnificent condition, and apparently not long emerged from the pupa. Though I hunted about for some time, I failed to see another specimen.—E. W. CARLIER, Unthinks Road, Norwich: September 18th, 1894.

Note on Eriogaster lanestris in Devon.—In Major Still's note on Devon *Lepidoptera* (p. 212 *ante*) I see he doubts (on the authority of Mr. Bignell) whether *Eriogaster lanestris* is found west of Exeter, and he attributes his lack of success in rearing the larvæ of this insect possibly to this cause. I do not think this species is a rare moth on Dartmoor. In 1887 I was staying at Chagford, about the middle of the Moor, in June and July, and I then found the nests of these larvæ fairly common, and brought many caterpillars home, which pupated, and the perfect insects emerged in due time. I may mention that several remained three years in the pupa, and one or two four years, which is not unusual.—G. T. BETHUNE-BAKER, 19, Clarendon Road, Edgbaston: September 14th, 1894.

Great abundance of the larvæ of Heliophobus popularis in the North of France.—Recent Bulletins of the Société Entomologique de France contain several communications on this subject, especially concerning the Départements du Nord et de l'Aisne. The insect is ordinarily so rare in the district that it does not figure in more than one local list of *Lepidoptera*. This year the larvæ appeared in enormous numbers, marching in columns, and doing great damage; trenches were dug in the line of march, into which they fell, and great quantities were destroyed by means of quicklime, &c. The local entomological knowledge, or want of it, there, appears to be much on a par with what exists in some agricultural districts here. The officials of a certain local Agricultural Society, and the departmental Professor of Agriculture arrived on the scene, and it was decided that the larva could be no other than that of *Bombyx processionea* (!), and most extraordinary measures were decreed for its destruction.

As bearing on the subject of recent ravages of *Charæa graminis* in this country, it may be well to mention that there is a very elaborate article on its ravages in Sweden, by Sven Lampa, in the Entomologisk Tidsskrift for 1893, pp. 1—24, with an excellent plate. Herr Lampa, is a most painstaking student of Economic Entomology, and the pages of the Tidsskrift have latterly been considerably devoted to his observations on destructive insects of all Orders, which should not be lost sight of by our own workers in the same field.—EDS.

Tinodes unicolor, Pict., in Ireland.—When collecting last July for the Fauna and Flora Committee of the Royal Irish Academy, I obtained two specimens of this Trichopteron at Coolmore, in Co. Donegal; I took them on the banks of a little stream among *Iris*, *Epilobium*, &c., in company with *Agapetus fuscipes*. *T. unicolor* seems not to have been recorded from Ireland before. At Armagh, with commoner things, I took *Micromus variegatus*, *M. paganus*, *Hemerobius orotypus*, *H. subnebulosus*, and *H. micans*. All occurred in Mullinure, where I captured a very dark variety of *Holocentropus picicornis*. At Loughgilly I captured during an afternoon that I spent there last month *Limnophilus auricula*, *L. sparsus* (a pale variety), and *Hemerobius micans*.—W. F. JOHNSON, Armagh: September 18th, 1894.

A black variety of *Andrena rosæ*, var. *Trimmerana*.—Among some Aculeate Hymenoptera which I sent to Mr. E. Saunders for determination was the above curious variety. I took it along with several of the ordinary form of *A. rosæ* in Mullinure in April last. The fulvous pubescence of the thorax is entirely black, giving it a very distinct appearance. Other captures of Aculeata here were *Halictus albipes*, *Andrena Clarkella*, *A. albicans*, and *A. cineraria*. The first bee on the wing in the spring was *Bombus lucorum*, which I observed on March 16th, *Vespa vulgaris* making its appearance on the 23rd of the same month.—*Id.*

Decticus albifrons, F., at Ramsgate.—Mr. O. Janson has kindly given me from his father's collection a specimen of this South European Orthopteron, which was taken at Ramsgate by the late Mr. Dossitor in or about 1850, and given by him to Mr. E. W. Janson, in whose collection it had remained ever since. The species has not, so far as I can ascertain, been previously recorded from Great Britain, but is of course only a chance visitor, having no doubt come ashore from a vessel passing or unloading at Ramsgate. It is a large and handsome species, measuring about 4½ inches across the elytra, the markings on which greatly resemble those on *Schistocerca peregrina*.—C. A. BRIGGS, 55, Lincoln's Inn Fields: September 19th, 1894.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: August 20th, 1894.—Mr. G. T. BETHUNE-BAKER, Vice-President, in the Chair.

Mr. R. G. B. Chase, Southville, Priory Road, Edgbaston, was elected a Member.

Mr. C. J. Wainwright showed *Stratiomys potamida* taken this year in Sutton Park, and which was he believed the first authentic capture of a *Stratiomys* near Birmingham of which he knew. Mr. R. C. Bradley read some notes upon *Merodon equatris*. He had recently been breeding a number from some larvæ sent to him by Mr. McLachlan, and these he showed, and described their manner of emergence, &c.

He said that they took a very long time to dry their wings, twenty-four hours after emergence some of them were still quite limp; this he attributed to want of sun. He said the species was becoming not at all uncommon round Birmingham, and he had taken many at Sutton, although a few years ago it probably did not occur here. Mr. A. H. Martineau described some experiments he had been making upon different killing substances, in order to ascertain their effect upon the colours of insects. Amongst other things, he had tried the fumes of sulphur, which certainly seemed to preserve the reds and yellows of *Diptera* and *Hymenoptera* better than ammonia or cyanide of potassium; if anything, the effect being that the colours were heightened, not turned to black. On the whole he recommended at least a trial of sulphur.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY:
August 23rd, 1894.—E. STEP, Esq., President, in the Chair.

Mr. Hall exhibited two cabinet drawers of *Diurni*, captured in Switzerland during a fortnight in July, comprising about 100 species, among which were noticed specimens of *Hesperia lineola*, O. Mr. Filer showed a very dark *Stauropus fagi*, L., from Ashdown Forest. Rev. J. E. Tarbat, a remarkable aberration of *Vanessa cardui*, L., from N. Wales. Mr. Mera, *Agrotis tritici*, L., and *A. aquilina*, Hb., stating that it was considered by some persons that these were forms of one species. A discussion ensued, Messrs. Barrett, Fenn, and others taking part. Mr. Frohawk, pupæ of *Vanessa urticae*, L., showing beautiful variation in colour, induced by artificial surroundings. Mr. Sauzé, various forms of *Formica nigra*, and contributed notes thereon.

September 13th, 1894, the President in the Chair.

Mr. R. Adkin exhibited, on behalf of Mr. South, all the named forms except var. *albana* of *Peronea variegana*, Schiff.; on behalf of Mr. Murray, of Carnforth, a beautifully bleached var. of *Erebia athiops*, Esp., from his neighbourhood; on behalf of Mr. W. F. de V. Kane, a pale grey var. of *Agrotis segetum*, from N. Ireland; and a short series of *Arctia Caja*, L., bred this year, with notes on the variation shown by them. Mr. C. G. Barrett, the specimen of *Plusia moneta*, Fb., taken at Norwich by Mr. Tillet, and a beautiful red var. of *Oncocera ahenella*, Zine., taken at Folkestone by Mr. Purdey. Mr. Filer, series of *Epinephele hyperanthes*, L., from Brockenhurst and Halstead, showing local variation. Mr. H. Moore, male and female living specimens of the Orthopteron, *Ephippigera vitium*, from Poitiers, and read notes as to their habits; he also contributed his observations upon *Lepidoptera* in France during August. Mr. A. Hall, a splendid var. of *Pyrameis myrina*, from Bogota, S. America, with the type form for comparison. Mr. Dennis, a specimen of the "Silver Fish," *Lepisma saccharina*. Mr. Manger, a specimen of the rare stalk-eyed Crustacean, *Gonoplex angulata*, which had been dredged off Weymouth. Mr. C. G. Barrett, photographs of the Entomologists who recently met at Mr. Capper's house in Liverpool. Mr. Tutt gave a lengthy and interesting account of what Dr. Chapman and himself had observed during a tour through France, Switzerland, and N. Italy, especially referring to those species of *Rhopalocera* which occur in Great Britain. A discussion ensued; and Mr. Mansbridge gave a few remarks upon *Lepidoptera* in the Indian Territory, U. S. A. Mr. West, of Greenwich, a specimen of the rare Coleopteron, *Lebia cyanocephala*, L., from Bookham, with specimens of the two races of *L. chlorocephala*, Hoff., for comparison.—HENRY J. TURNER, *Hon. Secretary.*

SOME ADDITIONS TO THE NEUROPTEROUS FAUNA OF NEW ZEALAND, WITH NOTES ON CERTAIN DESCRIBED SPECIES.

BY ROBERT McLACHLAN, F.R.S., &c.

More than 20 years ago I published (Annals and Mag. Nat. Hist., July, 1873) a Catalogue of the Neuropterous Insects of New Zealand. Since then a few additional species have been described, and sundry alterations in nomenclature, &c., have been found necessary. It is not my intention in the present paper to revise that Catalogue; I propose simply to give descriptions of a few hitherto unnamed species, and to intercalate therewith a few supplementary notes. The additions to my collection of these insects from the Colony during the period above mentioned have not been great; for several of them I am indebted to Mr. G. V. Hudson, of Wellington, an industrious entomologist and keen observer, who has done good work in *Neuroptera* (as in other Orders) by describing and figuring the metamorphoses of several species in his Manual of New Zealand Entomology (1892). From him, and from others, I still have a few species, chiefly *Trichoptera*, that await examination.

TRICHOPTERA.

Fam. *SERICOSTOMATIDÆ*.

CECONESUS, McLach.

This genus (σ) was established so long back as 1862 (Trans. Ent. Soc. Lond., 3rd ser., vol. i, p. 303, with further notes in Journ. Linn. Soc. Zool., x, p. 211, pl. ii, fig. 1, 1868, and, ϕ , in Annals and Mag. N. H., July, 1873, p. 39). It becomes necessary to supplement the published descriptions, more especially as there co-exists in New Zealand another genus the aspect of which is very similar.

σ . In the anterior wings there is a deep fold or groove commencing at the arculus on the inner margin, where it is very broad, extending to the thyridium, and thence continued obliquely: the neuration seems to defy comparison with a regular condition; the *sector radii* would seem to arise from the upper cubitus, which, in its turn, arises from the radius near its base (a condition that merits still further examination and confirmation!), and the apical neuration is equally extraordinary (*cf. fig., loc. cit. supra*), especially the position of the 3rd apical cellule (which bears the "point" near its base common to that cellule). In the posterior wings there are indications, on the costal portion, of the fold on the anterior; the neuration is more regular, and the apical forks 1, 2 and 3 are present.

ϕ . Neuration regular; in the anterior the upper edge of discoidal cell is straight; apical forks 1, 2, 3 and 5 present: in the posterior apical forks 1, 2, 3 and 5 present (*cf. Annals and Mag. Nat. Hist., l. c. supra*).

ÆCONESUS MAORI, McLach.—♂. There is a small triangular acute tooth on the ante-penultimate ventral segment. Last dorsal segment narrow; from its upper edge arise the superior appendages in the form of two narrow transverse lobes, contiguous in the middle of the margin, their outer edge furnished with long and strong pale hairs; intermediate appendages (upper penis cover?) long and flattened, united for more than half their length, and then forming two branches, each oblique at its apex, leaving a deep triangular excision between them. Inferior appendages two-branched, the upper branch long, cylindrical and obtuse, bearing long pale hairs, lower branch attenuate at the apex, which is curved downward.

♀. Larger (expanse, 30 mm., as against 26 mm.). In the anterior wings the pale irrorations are smaller and more evenly distributed. A sharp triangular brown-tipped tooth on the ante-penultimate ventral segment. Last dorsal segment in the form of a triangular plate; below it is a tubular piece, truncate at its apex, whence (viewed laterally) a narrow rounded valve proceeds on either side, projecting slightly beyond the tube.

I have males from Wellington (*Hudson*, "Nos. 1 and 11"); the only ♀ bears no special indication of locality.

PSEUDÆCONESUS, n. g.

The species of this genus resemble *Æconesus* in a very remarkable manner, but the neuration of the ♂ is quite different. The characters here given are mainly comparative.

♂. Characters of antennæ, palpi, legs, &c., practically the same. In the anterior wings there is no costal fold and no defined groove (present in *Æconesus*); the radius is confluent with the first apical sector (in both sexes and in both pairs, as in *Æconesus*); upper edge of discoidal cell excised (straight in *Æconesus*); apical forks Nos. 1, 2 and 3 present (irregular afterwards), the 6th apical cellule very much dilated at its base in a nearly circular manner. In the posterior wings apical forks Nos. 1, 2, 3 and 5 are present, and the neuration is apparently regular (but abnormally irregular on one side in the only male before me).

♀. The joints of the labial palpi shorter and broader, the terminal joint almost spoon-shaped. In the anterior and posterior wings apical forks Nos. 1, 2, 3 and 5 are present, and the neuration appears to be normal and regular.

It appears to me probable that *Æconesus* and *Pseudæconesus* may have affinity with the group of genera represented by *Goëra*, *Silo*, &c.

PSEUDÆCONESUS MIMUS, n. sp.

♀. Almost precisely similar to the same sex in *Æ. maori*, but slightly smaller. In the anterior wings the excised upper edge of the discoidal cell (mentioned in the generic characters) is a good structural definition; the pale irrorations are larger and less regular (more as in the ♂ of *Æ. maori*); near the base of the 3rd apical cellule is a rather large rounded pale spot, on each side of which is a somewhat conspicuous brown spot (wanting in *Æ. maori*).

On the ante-penultimate ventral segment is a very strong triangular tooth. End of abdomen very similar (in dried examples) to that of *Æ. maori*.

I have two examples before me from Wellington (*Hudson*, "Nos. 1b and 11"), and in referring them to *Pseudæconesus* (in the absence of the ♂) have been principally guided by the form of the discoidal cell.

PSEUDECONESUS STRAMINEUS, *n. sp.*

♂. Much paler than *Ps. mimus*, stramineous or pale testaceous. Anterior wings pale greyish-stramineous, closely irrorated with small whitish spots, the pubescence greyish and stramineous intermixed (no dark spots in the 3rd apical cellule), apical margin narrowly fuscous, slightly interrupted with the ground colour, and on the inner margin are four or five long fuscous lines alternating with long pale spaces. Posterior wings whitish-silky-stramineous, the apical portion more yellowish, fringes concolorous. On the ante-penultimate ventral segment is a long and strong narrow, testaceous, acute tooth, and another similar, but rather shorter, on the penultimate. Last dorsal segment concealed (in the example before me); superior appendages lateral, quadrate, furnished with long pale hairs. Intermediate appendages (or upper penis cover?), viewed from above, consolidated into a broad elongate plate, canaliculate above, deeply notched at the apex, forming two obtuse apical points furnished with very long pale hairs. Inferior appendages 2-branched, the branches distant, both apparently stout and cylindrical, curved in such a manner as to leave a semicircular space between them.

Length of body, 7 mm. Expanse of wings, 28 mm.

One ♂ from Wellington (*Hudson*, "No. 12b"), which I consider the type of *Pseudæconesus*.

♀. As in the ♂, but the body darker, and the anterior wings with a more decided yellowish tint; the pale and dark spaces on the inner margin less distinct.

A sharp, broad, triangular tooth on the ante-penultimate ventral segment. Margin of last dorsal segment nearly straight, and slightly excised in its middle. Tubular piece forming two small, broad, triangular obtuse lobes, if viewed laterally, but open above and beneath.

Length of body, 10 mm. Expanse of wings, 33 mm.

One example from Mount Arthur, 2800 feet, January 19th (*Meyrick*); a second much smaller example from the same locality but at 4500 ft. elevation, expands to only 20 mm., it agrees with the larger in all essential points, and the dwarfing is probably due to altitude.

Although the sexes above described are not from the same locality, I have coupled them on account of colour-likeness, it seeming to me very improbable that the ♂ described as *stramineus* can be of the same species as the ♀ described as *mimus*. Feeling that there is yet a good deal to clear up in these allied forms, and that it could only be satisfactorily done by local observers, I have quoted the numbers on the specimens forwarded to me by Mr. Hudson.

OLINGA, *new name.*

= *Olinx*, McLach., Journ. Linn. Soc. Zool., x, p. 196 (1868).

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- (1) Catalogue of the Pterophoridae, Tortricidae, and Tineidae of the Madeira Islands, with Notes and Descriptions of New Species :— by the Right Hon. Lord Walsingham, LL.D., F.R.S.
- (2) "Palæarctic Nemouræ :—" by Kenneth J. Morton, F.E.S.

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The British species of the genus <i>Psyche</i> and its allies.— <i>C. G. Barrett, F.E.S.</i> ..	217
A Holiday in the Pyrenees.— <i>W. E. Nicholson, F.E.S., & F. C. Lemann, F.E.S.</i> ..	220
Callimorpha Hera at home in South Devon.— <i>G. T. Porritt, F.L.S.</i> ..	223
Coleoptera in the New Forest.— <i>G. C. Champion, F.Z.S., and D. Sharp, F.R.S.</i> ..	225
The Chigoe in Asia.— <i>W. F. H. Blandford, M.A., F.Z.S.</i> ..	228
Pre-occupied generic names in Lepidoptera.— <i>E. Meyrick, B.A., F.Z.S.</i> ..	230
Discovery of <i>Trioxa contranthi</i> , Vall., in England.— <i>Philip B. Mason, F.L.S.</i> ..	231
<i>Nothochrysa capitata</i> in Yorkshire.— <i>G. T. Porritt, F.L.S.</i> ..	231
Observations on Coccidæ (No. 10).— <i>R. Newstead, F.E.S.</i> ..	232
Coleoptera at Weymouth and Portland.— <i>T. Hudson Beave</i> ..	234
Large number of <i>Metœcus paradoxus</i> in one Wasp's Nest.— <i>E. A. Butler, B.A., F.E.S.</i> ..	235
<i>Catocala fraxini</i> , L., at Norwich.— <i>E. W. Carlier, M.D.</i> ..	235
Note on <i>Eriogaster lanestris</i> in Devon.— <i>G. T. Bethune-Baker, F.L.S.</i> ..	235
Great abundance of the larvæ of <i>Heliophobus popularis</i> in the North of France.— <i>Eds.</i> ..	235
<i>Tinodes unicolor</i> , Pict., in Ireland.— <i>Rev. W. F. Johnson, M.A., F.E.S.</i> ..	236
A black variety of <i>Andrena rosæ</i> , var. <i>Trimmerana</i> .— <i>Id.</i> ..	236
<i>Decticus albifrons</i> , F., at Ramsgate.— <i>C. A. Briggs, F.E.S.</i> ..	236
SOCIETIES.—Birmingham Entomological Society ..	236
South London Entomological, &c., Society ..	237
Some additions to the Neuropterous Fauna of New Zealand, with notes on certain described species.— <i>R. McLachlan, F.R.S.</i> ..	238

ENTOMOLOGICAL SOCIETY OF LONDON.—Meetings for the Session 1894–5:—

Wednesday, October 3rd & 17th, November 7th, December 5th, 1894, and (Annual), January 16th, 1895

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LORD WALSHINGHAM, M.A., LL.D., F.R.S., &c.

SECOND SERIES—VOL. V.

[VOL. XXX.]

“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*.

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This change in nomenclature is necessary, and under rather peculiar circumstances. In 1856 Förster (Hym. Stnd.) used *Olynx* as a generic term. According to his derivation (which was the same as mine) it should have been *Olinx*. Possibly I might have been excused from altering my term had not Taschenberg (Hym. Deutschl.), in 1866, given Förster's name its correct rendering (*Olinx*), in which he has been followed by others. The term I now propose changes the original as little as possible, and has practically the same meaning.

The ♀ of *O. Feredayi*, McLach., remains unknown to me.

NEUROPTERA—PLANIPENNIA.

Fam. OSMYLIDÆ.

STENOSMYLUS, McLach.

I instituted this genus in 1867 for the reception of *Osmylus tenuis*, Walker, and other Australian species. It was chiefly characterized by the narrow wings, and (especially) by the bifid or deeply excised tarsal plantulæ. Subsequently, two New Zealand species (*incisus*, McLach., and *citrinus*, McLach.), with the apical margin of the wings strongly excised, were included, and I see no reason for altering their position; moreover, the Australian *Osmylus pallidus*, McLach., should be placed in *Stenosmylus*, and it has excised wings. I have since received another species from New Zealand (described below), in which the apical margin is scarcely excised, and the wings broader than in the Australian species, thus approaching some forms of *Osmylus*, therefore, species with both forms of wings are represented both in New Zealand and Australia. The latter genus has increased vastly of late in the number of known species, and there is much diversity in the form of the wings and in minute details of neural structure. The condition of the plantulæ remains the principal distinguishing character of *Stenosmylus*, for in *Osmylus* they are truncate, or at the most only very slightly excised. I have an undescribed *Stenosmylus* with excised wings from Chili.

STENOSMYLUS LATIUSCULUS, n. sp.

Head above and pronotum dull yellowish. On the head the hinder part of the vertex (behind the ocelli) is separated from the fore part by a transverse slightly raised line, from which two slightly divergent longitudinal impressed lines descend to the hinder margin; ocelli large, but not prominent, approximate, their sockets narrowly blackish; eyes blackish; antennæ pale brown, the two basal joints and the base of the 3rd joint yellow; front fuscous; palpi yellow. Pronotum narrowly black on its side margins, longer than broad, with a transverse sulcus on its posterior third, the disc with small black tubercles whence black hairs arise, and there are black

hairs on the lateral margin. Meso- and meta-nota yellowish, clouded with fuscous. Anterior legs pale yellow, with fine, short, dark hairs, the tips of the tibiae and of the tarsal joints brownish, plantula brownish (intermediate legs wanting); posterior legs mostly fuscous, but the base of the femora and tibiae is somewhat yellowish. Abdomen (♀) fuscous above, dull yellowish beneath, sparingly clothed with pale pubescence: apex obtuse, provided beneath with an ovipositor (?) which appears to consist of two closely applied two-jointed pieces, the second joint directed backward upon the first; the posterior margin of the 7th ventral segment produced in its middle into a quadrate valve, from within which a cylindrical process (broad at its base) is directed between the basal joints of the above described apparatus.

Wings long-oval, subacute at the apex, with a very slight subapical excision. The ground-colour is very pale grey, somewhat shining: in the anterior wings the venation is blackish and whitish alternately, but in an irregular manner, closely set with minute black tubercles, whence arise black hairs; some of the black transverse nervules are faintly clouded, giving a faint irregular tessellated appearance; the margins all round are alternately whitish and dark in an irregular manner; there are faint dark spots on the transverse nervules between the radius and sector at their commencement, also along the lower cubitus, and the external series of gradate nervules form a somewhat curved dark line; pterostigmatic region (in both pairs) long but ill-defined, whitish-testaceous; costal nervules irregular, some simple, some with a small fork at the costal end, or forked and each branch again forked: posterior wings almost without markings, save slight nebulosity occasioned by the grouping of the black nervules, which are less numerous than in the anterior, and the black tubercles are fewer in number and scarcely evident.

Length of body, 13 mm. Expanse of wings, 54 mm.; length of anterior wing, 26 mm., greatest breadth, 9 mm.

I have one ♀ labelled "Otira Gorge, on window at light."

Var. Smaller (expanse, 45 mm.). The head above and pronotum more dusky, and the black margins of the latter rather broader. Posterior legs wholly yellowish. The anterior wings rather more strongly marked, the spots under the radius and along the lower cubitus rather more distinct.

One ♀ without special indication of locality, but which may possibly have come from Greymouth. The difference from the type is very slight, and any importance attached to the slight discrepancies mentioned would probably disappear with more materials.

STENOSMYLUS INCISUS, McLach. — I possess this species from Otago (*Oxley*), Waitara, and Wellington (*Hudson*). According to Mr. Hudson it is rare in the neighbourhood of Wellington.

STENOSMYLUS CITRINUS, McLach. — This insect is apparently liable to variation, and perhaps from local causes, so far as I can judge from the three specimens in my collection. The precise locality of the type specimen is uncertain. A second, from Wellington (*Hudson*) has the anterior wings more strongly marked and the ground somewhat

greyer; on the posterior wings there is a distinct discal point (as in the anterior), and the apical portion is distinctly clouded. Finally a third, from Waitara, differs still more widely; the posterior femora are darker: the wings have scarcely a trace of the yellow colour so striking in the type, but could be more correctly described as pale grey; the dark points in the anterior are much more numerous, and are spread over nearly the whole wing, but the whitish spot at the end of the upper cubitus is scarcely indicated, and is not margined with black; in the posterior the neuration is blackish in certain places, causing a nebulous appearance. All three examples agree in size and form, and at present it seems prudent to consider that from Waitara as only a strongly marked variety, having in view the paucity of material.

(To be concluded in our next).

TWO SPECIES OF *PSOCIDÆ* NEW TO BRITAIN.

BY ROBERT McLACHLAN, F.R.S., &c.

Herr H. Tetens, of Berlin, one of the most recent writers on European *Psocidæ*, lately visited London, and through him I am able to confirm the following species, of which I give brief descriptions, as new to our List.

PSOCUS MAJOR (Kolbe), Loens.

Ps. sexpunctatus, L., var. *major*, Kolbe, Jahrb. d. Westf. Provinz. Ver., 1879–80, p. 109. *Ps. major*, Loens, Stett. Zeit., li, p. 7 (1890); Tetens, Ent. Nachr., xvii, p. 375 (1891); Reuter, Act. Fenn., ix, No. 4, p. 25 (1893).

Closely allied to *Ps. 6-punctatus*. Differs in the apex of the anterior wings being less rounded; the pterostigma less dilated at the apex, and its basal portion more or less opaque-whitish or yellowish; the six subapical spots the same, but the other markings of the wings are less evenly distributed, and in part congested into an oblique fascia from the base of the pterostigma to the inner margin (somewhat as in *Ps. fasciatus*), where it is widest, and the colour of the markings appears to me to be brown rather than grey (minute differences in the neuration are also indicated, and the colour of the body is said to differ in fresh individuals).

I have one example in my British collection taken at Forest Hill, near London, on September 30th, 1861. Mr. J. J. King does not possess it amongst his extensive series of *sexpunctatus* from varied British localities, and Herr Tetens (*l. c.*, p. 376) was mistaken (of which he is now convinced) in attributing (from description) *Ps. subfasciatus*, Steph., to this species. It is very possible I had more British examples in view when writing my Monogr. of Brit. *Psocidæ* (Ent. Mo. Mag.

iii, 1867), for, in describing the markings of *Ps. sexpunctatus*, I said "some of them often uniting and forming an oblique fascia before the middle, broader on the inner margin."

I am now quite convinced of the specific distinctness of *Ps. major*. It is widely spread on the Continent. I have taken it at Paris, in the Schwarzwald, and in Belgium (Dinant), and possess it also from Berlin (*Tetens*), Finland (*Reuter*), and Switzerland (Bergün, *Zeller*, Burgdorf, *Meyer-Dür*).

The specific term "*major*" is unlucky, for the species is amongst the smallest of the genus (as restricted); all Kolbe intended was to indicate a form of *sexpunctatus* slightly larger than usual, and even this is scarcely apparent.

CÆCILIUS KOLBEI, Tetens.

C. Kolbei, Tetens, Ent. Nachr., xvii, p. 382 (1891).

A small species about the size and form of *C. obsoletus*. Head shining dingy yellowish; nasus shining fuscous. Antennæ shorter than the wings, blackish, the two basal joints yellowish. Thorax blackish. Legs yellowish. Abdomen yellow, black at the apex. Anterior wings greyish, with strong blackish neuration, which is margined with brownish, scarcely visibly so in the ♂, but strongly so in the ♀ (in which sex the wings are slightly shorter), where it forms a clouding under the pterostigma, and the apical margin is occasionally broadly brownish, but the amount of marking is very variable.

The ♂ might sometimes be mistaken for very small *C. flavidus* from casual observation. Mr. J. J. King took about twenty examples on August 16th, 1892, just within the entrance to Tuddenham Fen (Suffolk) from the village of that name, by sweeping dead and dry stems of ragwort in the vicinity of Scotch Fir. Herr Tetens indicates it from Fir in sandy places near Berlin, and he told me that he only found it on the lower branches near the ground. I had practically identified the species from his informal description.

There can be no doubt that both the above-mentioned species are widely distributed with us, and that several others remain to be detected.

Lewisham, London:
October 6th, 1894.

A NEW SPECIES OF *CORÆBUS* (*BUPRESTIDÆ*) FROM JAPAN.

BY G. LEWIS, F.L.S.

CORÆBUS NIPONICUS, sp. n.

Cyaneus, robustus, nitidus; *elytris albo-fasciatis, apicibus conspicue 4-spinosis*; *antennis pedibusque concoloribus.* Long., 10 mm.

Deep rich blue, with part of the thorax, base and sides of the elytra, purple in

certain lights, robust, shining; the head somewhat sparsely punctate, frontal channel angulate posteriorly; the thorax evenly arched from the anterior angle to the base, distinctly marginate at the sides, with the edges very evenly and finely crenulate, surface sculpture not very close, disc convex; the scutellum uneven, transverse in front, somewhat sharply acuminate behind; the elytra wholly sculptured above, deeply and widely impressed in the middle close to the base, before the apex is a white pubescent fascia with the posterior edge almost straight, and a second undulating band well behind the middle, apices strongly 4-spinose; the legs and antennæ cyaneous.

This species is the fourth in the genus recorded from the Japanese Archipelago, it is similar to *C. 4-undulatus*, Motsch., in its elytral spines, but the large size, colour, and shape of the thorax and scutellum are very different.

Hab.: Japan (*Fenton*). Also an example in the British Museum from the Riuikiu Islands, probably Oshima.

NOTE.—*Coræbus 4-undulatus*, Motsch., is brassy or brassy-green in colour, or very rarely purple-black, and it usually measures 7–8 mm. The thorax also is rather widened out behind, and the scutellum, although bulging out somewhat before the base, is more triangular, and in fresh specimens there are four patches of pubescence, which represent a median fascia.

84, Sandgate Road, Folkestone:
October 5th, 1894.

EXOCHLÆNUS, SHIPP, A NEW GENUS OF LEUCOSPIDÆ.

BY J. W. SHIPP.

EXOCHLÆNUS.

Closely allied to *Leucospis*, but the abdomen is short, stouter, and with the first or basal segment nearly as wide as thorax. Face rather more elongate from the lower margins of the eyes. Head narrower laterally. Antennæ 11-jointed, scape as long as the three following joints; 2nd joint short, not so thick at base as at apex; 3rd joint as long again as 2nd, narrow, wider at apex; the rest gradually thickening to the apex, and of equal length. Apex of anterior tibiæ armed with a curved spine. Anterior coxæ very elongate and almost as long as femora, the tibia not so long as the femur. Metathorax short, stout, and as wide as pronotum, with the posterior angles slightly rounded. Abdomen as long as thorax, with the posterior segments very much compressed. Apex of ovipositor flattened laterally at extremity. Intermediate tibiæ with a small tooth at apex. Posterior coxæ much dilated on the upper margin, with the apical angle rounded. Hind femora with one large tooth near the base, followed by seven smaller points; hind tibiæ curved, produced to a tooth and armed with a small spine at apex; tarsi furnished with a number of spines at margins.

Type: *Leucospis anthidioides*, Westw., *Thes. Ent.*, p. 135, pl. xxv, fig. 7, 1874; in Mus. Oxon., from Brazil.

Oxford University Museum:
October, 1894.

A HOLIDAY IN THE PYRENEES.

BY W. E. NICHOLSON, F.E.S., AND F. C. LEMANN, F.E.S.

(Concluded from page 223).

Thecla ilicis.—Not uncommon at Vernet; the specimens we captured are referable to the var. *æsculi*, which is a very dull looking insect compared with the brilliant var. *cerri*, which represents the insect at Digne. *T. roboris*.—This interesting species was fairly common at Vernet in bushy places, especially in the wood above the hotel, where it delighted to sun itself on the leaves of ash, alder, and other trees. Unfortunately, nearly all the specimens we took were more or less worn. We were fortunate enough to find upwards of 50 ova on stunted ash trees. The egg is of a brownish-red colour, and in shape like a cone flattened at the top. It is laid on the knotted branches of very stunted ash trees, frequently on the scar left by a leaf of the preceding year. *T. quercús*.—We took one specimen of this species at Vernet, which I have noted, as Mr. Elwes could not confirm Struve's observation as to its occurrence.

Polyommatus virgaureæ.—A brilliant form of this species occurred on the flowers of a species of *Senecio*, near St. Martin; the marginal row of black spots on the upper-surface of the hind-wings is well defined in our specimens, but we did not see any which could be referred to the var. *Meigii*, which is said to occur in the Pyrenees, and in which black spots occur on the upper-surface of the fore-wings near the apical angle. *P. Alciphron*, var. *Gordius*, *P. Dorilis*, and *P. Phlæas* also occurred at Vernet, and two handsome varieties of the latter were taken by M. Oberthür.

Lycæna batia.—A few specimens were noticed at Vernet, and we found it fairly common at Biarritz on some heathy ground to the south of the town, and in the marsh near the station. *L. argiades*.—A few were noticed at Vernet, on the road to Castells, near the monastery of St. Martin; it was common at Biarritz in company with *L. batia*, but usually worn. *L. orbitulus*, var. *pyrenaica*.—We captured five specimens of the Pyrenean form of this insect on some marshy ground near the Lac de Gaube; it differs from the Swiss form in being larger, and having the spots on the under-side whiter. The form occurring in the eastern Pyrenees is claimed by M. Oberthür as a distinct species. Unfortunately, we were too early for it on the Pla Guilhem, when we visited it on July 9th, as the season was backward. The variation of this insect appears to be analogous to that of our *Artaxerxes*, with its intermediate form, *Salmacis*. *L. amanda*.—We were too late for the first brood of this species at Vernet, but we subsequently took a few rather worn specimens between Caunterets and La Raillère. *L. Arion*.—A dark form of this species, somewhat like the var. *obscura* of Switzerland, but rather larger, occurred near the Lac d'Oô.

Nemeobius Lucina.—Worn specimens were noticed on July 9th at a considerable elevation on the Pla Guilhem route.

All the British species of *Vanessa* occurred at Vernet, and *V. cardui* was present in the greatest profusion, probably the result of a large immigration from Spain. M. Oberthür took a very curious bleached variety of this species.

Melitæa Aurinia, var. *Merope*.—A fairly good series was taken on the Pla Guilhem; the specimens are slightly more fulvous than the form occurring in the Upper Engadine. *M. Deione*.—This species was over at Vernet at the time of our visit, but larvæ were taken by M. Chrétien, while staying at Vernet, in the St. Vincent valley. *M. Parthenie*.—Taken on the Cabaliros near Caunterets; the spots of the under-side are scarcely so white as in the Swiss form, *varia*.

Argynnis Pales.—Not uncommon on the Cabaliros and other elevated places. A specimen was taken with the whitish blotches occasionally noticed on *Arg. Paphia* in this country. *A. Daphne*.—A single specimen was taken by a M. Viard, who was staying at the hotel at Vernet, in the valley of St. Vincent. *A. Pandora*.—Several specimens of this handsome species were seen at Vernet, and we secured a fine female on a thistle head on the road to St. Martin.

Melanargia Lachesis.—Abundant at Vernet, where it entirely replaces *M. Galathea*. Some of the specimens from Vernet are of a distinctly yellowish colour. *M. Galathea*.—Common near Caunterets; the specimens were hardly so dark as the usual Swiss form.

We took altogether ten species of *Erebia*, nearly all of which differ more or less from the Swiss forms of the same species.

Erebia Epiphron, var. *pyrenaica*.—This variety, which differs from the type in the greater extent of the fulvous bands, which have larger black spots, was not uncommon on the Pla Guilhem at Vernet, and near the Lao de Gaube at Caunterets. One specimen with very large black spots was taken at St. Martin, near Vernet, at an elevation of less than 3000 feet. *E. Manto*, var. *Cæcilia*.—The first specimen which we captured of this species was mistaken for a form of *glacialis*. It is almost uniformly black on both surfaces of the wings, though some specimens retain faint indications of fulvous markings near the apical angle of the fore-wings, especially on the under-side. One female was taken which is quite fulvous on all the wings on the under-side, while another is perfectly black; in both cases they are destitute of markings. As far as our observations went, it entirely replaces the type in the Pyrenees. One specimen was taken on the shores of the Lac d'Oô, and we found it in considerable abundance (thanks to Herr Seebold's directions) between Caunterets and La Raillère, where we captured thirty males and three females in about an hour. *E. Ceme*.—Almost over at the time of our visit. We took, however, a few scattered specimens near Vernet and at Lac de Gaube. They appear to approach the var. *spodia* of the Austrian Alps. *E. Stygne*.—Common at Vernet and in the Hautes Pyrénées at the lower elevations. A specimen from the Lac d'Oô appears to be a male with the markings characteristic of the female. *E. Evias*.—Common at Vernet and Caunterets. It occurs at various elevations, those from the higher places being rather the smaller. *E. melas*, var. *Lefebrei*.—We took two males and one female of this species on a mountain slope covered with loose boulders on the Pla Guilhem, at about 8000 feet; it is difficult to capture from the character of the ground it frequents. The form which occurs in the Eastern Pyrenees differs from that found more to the west. Unfortunately we failed to meet with it near Luchon or Caunterets, as the weather was generally unfavourable for exploring the higher mountains. *E. lappona*.—Rather common on the Pla Guilhem, and abundant on the Cabaliros. The forms from the two localities differ considerably; those from

the Pla Guilhem being smaller and more fulvous than those from Caunterets. Specimens from the latter locality have the fulvous band on the fore-wings almost entirely absent. *E. Tyndarus*, var. *Dromus*.—This pretty variety occurred on the Pla Guilhem and in great numbers near the Lac de Gaube. The Vernet specimens are more fulvous, and have larger ocelli than those we took near Caunterets. Both forms are, however, readily separable from that occurring in Switzerland. *E. Pronoë*, var. *pyrenaica*.—A single specimen of this variety was taken at Caunterets on July 23rd; it is usually abundant there in August. *E. Euryale*.—Rather common on the route to the Lac d'Oô; it also occurred about Caunterets. We did not take a long series, and the individual specimens vary too much to enable one to point to any constant peculiarity separating them from the Swiss form.

Satyrus Alcyone.—Fairly common at Vernet in dry stony places, and noticed also at Caunterets. It appears to entirely replace *S. Hermione* in the Pyrenees. *S. Circe*.—Taken at Vernet, but not in any numbers. *S. Briseis*.—Taken on the dry hill sides below Vernet, where several other species of *Satyrus* occurred. *S. Arethusa*.—Two specimens were taken in company with one *S. statilinus* on the fringe of the marshy ground at Biarritz on July 27th; both species are probably abundant there in August.

Epinephele Janira.—A very bleached variety was taken at Vernet. The females of this species are not so handsome in the Pyrenees as in other parts of the South of Europe.

Cænomypha Œdipus.—This very local species was abundant in the marshy ground at Biarritz, where we captured upwards of sixty specimens one morning. They vary considerably in the number and size of the ocelli on the under-side.

Spilothyrus altheæ.—Occurred at Vernet and Caunterets, but not abundantly.

Syrichthus alveus.—Very abundant near the Hôtellerie du Pont d'Espagne on the route to the Lac de Gaube, where they congregate in great numbers on mules' dung.

Cyclopides Morpheus.—We were pleased to find this strange species in the marshy ground near Biarritz, where it flies over the reeds with a curious jerky flight. It was not uncommon, and would not be difficult to catch on dry land, but in the marsh its pursuit had frequently to be abandoned.

We did no real work among the *Heterocera*, but a few interesting species came incidentally under our notice. Among these were *Zygæna anthyllidis* and *Psyche Leschenaultii*, both of which are confined to the Pyrenees. We found them not uncommonly on the Cabaliros, where Herr Seebold directed our attention to them. The *Psyche* occurred on the lower slopes, while the *Zygæna* frequented the summit of the mountain between 7000 and 8000 feet. Among other species of interest that we noted were:—*Zyg. Sarpedon*, the larvæ of which were found in abundance by M. Chrétien near Vernet on *Eryngium campestre*, *Z. scabiosæ*, Caunterets, *Trochilium apiforme*, Vernet, *Arctia purpurea*, not uncommon at Vernet, and *Abraxas pantaria*, abundant in the wood near the Hotel at Vernet.

In reference to the *Heterocera*, it struck us at the time that it is a pity there is so little communication between English and Continental collectors. This want is seriously felt by the Continental collectors themselves, who, as Herr Seebold informed us, often find it very difficult to obtain in exchange types of peculiar British forms, especially among the *Micro-Lepidoptera*.

W. E. N., Lewes : *September 7th*, 1894.

F. C. L., Plymouth : *September 8th*, 1894.

THE BRITISH SPECIES OF THE GENUS *PSYCHE*, AND ITS ALLIES.

BY C. G. BARRETT, F.E.S.

(Continued from page 219).

EPICHOPTERYX CALVELLA, Ochs., *fusca*, Haw., *hirsutella*, St. Cat.—If this is truly *hirsutella*, Hüb., the name must have been given it on a well known principle ! It is one of the *least* hairy of the group. This species, which was found twenty years ago and upwards, in the larva state, almost plentifully in the woods north of London, seems to have become very scarce, or to have been so completely overlooked more recently, that the announcement of its being observed in the neighbourhood of Reigate at an Excursion of the South London Society comes quite as a relief. The male is well known in collections, having a very thin body, but large fore-wings, expanding sometimes one inch, of a pale brown colour, and thinly clothed with very minute hair-scales. The female a mere maggot without any wings or legs, and in the dried condition shrivelled and shapeless. The case rather broad in the middle, narrowing rapidly at both ends, and covered with dried morsels of leaf, capsules of sallow or plantain, morsels of dried stalks, or any other vegetable material ; which is placed crosswise or any way rather than lengthwise. This case the female is reported never to quit. The larva is after the fashion of those already described, living in the case, protruding a light brown head with some white lines upon it, and the three following segments, which are covered down to the legs with thin, grey, horny plates, and living on sallow, buckthorn, oak, bramble, hazel, hawthorn, and hornbeam. So far as I can ascertain, the male flies most freely towards evening, but for the reasons just given recent information is not forthcoming.

E. PULLA, Esper, *radiella*, Curtis.—There seems to be no doubt of the identity of the forms sometimes known under these two names. The smaller, and far more plentiful, found in meadows and on hill sides, usually in chalky districts ; and the rather larger and blacker (sometimes noticeably larger), found rather rarely in marshy places, and especially at the edges of salt marshes ; appear to present no reliable distinguishing characters. This is a well known species, easily recognised by its blackness, and by the fact that the wings are covered thinly with minute hairs rather than scales, the cilia being especially hairy. Occasionally specimens which have become worn are also, probably from the effect of strong sunshine, faded to a

browner colour, and where these have been more worn in the middle of the wings than at the margins, they appear to have been, at times, mistaken for *E. marginenigrella*, Braund. The opportunity of examining a living female occurred rather unexpectedly. Mr. F. G. Whittle while searching, on my behalf, at Southend, met with three of the curious cases of this species, from one of which, most fortunately, a female emerged, excluding herself at once from the case. She was about half an inch long, stout, and very like a maggot, reddish-yellow, redder on the back, especially at the segmental divisions; head very small and tucked down, a mere brownish mask, browner where the mouth should be; no mouth organs, antennæ, wings nor scales; legs just indicated by minute jointed yellow glassy points, without claws—mere papillæ, apparently without motion or functions; seemingly without dorsal shields; pretty even in thickness to about the 11th segment, which, with the following, tapers off rapidly, the 13th being small, bluntly terminated, except a small point or ovipositor case projecting from its centre. This portion of the body has a vermicular motion, otherwise the creature seems quite inert. Preserved specimens which have laid their eggs shrink very short and small, and become curious little squared objects, ribbed closely at the insertions of the segments. Braund describes the larva as dirty white, inclining to purplish, with two clearly indicated black-brown stripes on each side, a very small spot of the same colour between the two upper ones, and a rather irregular line above the stigmata; head and legs shining blackish. Feeding on grasses. Inhabiting a case of silk covered with short lengths of slender dried grass laid most carefully parallel lengthwise, not spreading, but of equal thickness at each end; nearly cylindrical, but in the smallest degree swollen in the middle. Usually two or three of the bits of grass are longer than the rest, and project beyond the ends of the case.

Pupa also in the case; that of the female appearing as though Dipterous; that of the male of the ordinary moth form, splitting down outside the wing cases on emergence, so as to throw off all the limb cases in an unbroken piece. The case is occasionally fixed for pupation to a post or other suitable object near the ground, but usually to a grass stem, and the larva keeps so near to the ground as to be difficult to find. The male moths are active enough, at times, in the sunshine, though they generally keep down among the grass a good deal. Mr. Sydney Webb tells me that he has often observed them to assemble round probably newly-emerged females. He says, "I have frequently seen perhaps a dozen fluttering about and settling in a spot which indicated the presence of a female. They seem to arrive quite suddenly from all directions within a limited area, and almost every blade of grass within a square yard will have its occupant."

E. RETICELLA, Newman.—This beautiful little species appears to be almost unknown outside a very limited portion of our southern and south-eastern coast. There is only one record of it abroad, so far as I know.* It frequents the salt marshes of the Kent, Essex, Sussex and Hants coast, the male flitting on a still sunny afternoon from blade to blade of grass, and closely resembling the pretty little Dipterous insects, with broad hairy wings, called *Psychoda*. Its markings are merely grey nervures and cross bars on a white ground, but these are very delicate. The grey

* Dr. Heylaerts recorded it a few years ago from Breda in Holland.

crossbars, lines or stripes vary in direction, from perpendicular to the margins of the wing to oblique, and in thickness and distance apart, not only in different specimens, but usually on the two sides of each insect, the pairs of wings being hardly ever quite symmetrical. The female is naked and without wings, legs or antennæ, a mere maggot, red-brown when preserved, and with the segments deeply divided, but probably paler and much more plump when fresh. The curious brown mask which does duty for a head, has two blackish hollows in the place of eyes; a black spot where the mouth should be, and slight curved ridges at the sides, which seem to suggest antenna-cases. Anal segment terminated abruptly as though cut off, but having in its centre a protruding ovipositor in three abruptly terminated telescopic portions, the final one being a mere point. For the opportunity of examining this specimen I am indebted to Mr. B. A. Bower. It and one male (reared) are the sole result, so far as this species is concerned, of much searching on his part and that of Mr. George Bird; and a search of many days this year by Mr. F. G. Whittle, for the purpose of assisting me, furnished nothing further as regards this species.* It is safe, therefore, to conclude that the habit of the larva is excessively secret and obscure. Four cases were however found, some years ago, by Mr. W. H. B. Fletcher on the Sussex coast, and as he preserved one larva it is possible to furnish a description. This larva is, of course, small, moderately plump, and apparently thickest toward the hinder end; head shining black; 2nd, 3rd and 4th segments each with a shining dark brown plate completely across the dorsal surface, and with a similar horny spot below each on each side; body pale pink or pinkish-white; legs similar, but with dark brown claws; prolegs hardly indicated. In a soft, slender, close-fitting case, which is hardly cylindrical, but curved in, a little, at the ends, composed of silk mixed with morsels of *Conferva*, and partially covered with short bits of very slender dead grass, which look half decayed, and are dotted over with the confervoid matter so plentiful in salt marshes. The case has been found on *Artemisia maritima* in salt marshes, but there is no doubt that it is usually concealed low down among the tangled mass of *Spartina stricta* with which the drier portions are often covered. The pupæ of the male and female are as in the last mentioned species.

It is perhaps desirable to draw attention to the structure of the females of this and the last species, because females, and even cases, which evidently belong to the next genus, have been placed in some collections under these names. As the edges of salt marshes seem to be frequented by several species, an error of this description readily occurs. Mr. Whittle found and sent up cases of *E. pulla* and *Fumea robo-ricolella* while looking for those of the present species.

E. UNDULELLA, F. R.—This is also a small species, very little larger than *E. reticella*, differing from it in the cross lines, which are very slender and form a delicate reticulation over all the wings. I only mention it because in the long series of *E. reticella* in Dr. Mason's collection I find a single specimen of this species. Unfortunately it has no label, but there is no indication of a foreign origin, and the insect may prove to have a habitation in these islands. It would be very easily overlooked. Abroad it is recorded from Hungary and Southern Russia.

(To be concluded in our next).

* Since the above was written he has sent me young larvae.

AN IMPROVED ENTOMOLOGICAL PIN.

BY H. GUARD KNAGGS, M.D., F.L.S., &c.

Two opinions can hardly exist as to the inefficiency of the entomological pins at present in use; everybody grumbles about them. The tinned and gilt sorts afford little or no security against the action of insect fluids, while the enamelled kind are rough, and the temper of the metal has been so deteriorated by the hot process to which it has been subjected, that the points often turn on meeting with but comparatively trifling resistance.

For some months my attention has been directed towards investigating this matter, and after patient enquiry I have come to the conclusion, that the primary cause of failure to satisfy our wants lies in the metal itself, and in the innumerable imperfections in the wire from which the pins are formed, these imperfections having been increased by twisting in the act of "drawing," so that a surface is presented which it is seemingly impossible to coat, whether with tin, gold, silver, or nickel, with sufficient completeness to ensure the protection of the metal beneath. Such being the case, a radical change in the original material would seem to be necessary in order to produce an ideal pin. For this purpose nickel appears to be the best suited; it is as hard as iron, or nearly so, is ductile, and resists all acids excepting nitric, which it is not likely to meet with in its entomological career.* My old friend, Mr. Charles Fenn, has suggested to me aluminium, but though this is ductile, and resists all acids excepting hydrochloric, it is, in its ordinary state, a soft metal, though it is said that it may be made as hard as iron by hammering. I have not yet been able to procure wire made from nickel or hammered aluminium, and have not the run of a pin making machine, or I might write with greater authority upon the subject.

Still, though I almost despair of producing a perfect pin without a change in the metal basis, it has seemed to me that considerable improvement might be effected, in the way of remedying the defects of the article already in use, and with this end in view I have lately conducted a long series of experiments, with at any rate a moderate amount of success.

I will not weary your readers with an enumeration of my various attempts to solve the problem, but will content myself with laying before them one of the methods which appears to be as good as any, and is certainly the cheapest and simplest. First cleanse from grease and other impurities some ordinary white entomological pins by soaking them in a strong solution of washing soda or potash for not less than

* Nickel pins are advertised by Deyrolle fils of Paris. —G. C. C.

a quarter of an hour, giving the basin in which they have been placed an occasional shake ; after this pour off the liquid and let the tap run over them for another quarter of an hour or longer. Next pour off the water and do not quite dry the pins, but put them while wet into a round wide mouthed bottle and cover them with a solution of nitric acid, one part of the commercial sort to twelve parts of water, and roll them round the bottle, but not violently. After two or three minutes again drain off the fluid, and cover the pins with the strongest solution of sulphohydrate of ammonium, cork the bottle and allow them to remain for five minutes, gently inverting them for half the time, but not shaking them. The liquor may now be poured off and bottled for future use. Lastly, distribute the pins carefully, for if roughly done their surfaces being yet soft will be scratched, over a paper-covered tray and expose them to the air, and to sunshine if obtainable, until they are thoroughly dry ; if thus left for a few days they will take no harm. They will now be of a rich bronze colour, which will become darker with age. It may here be noted that the addition of half a grain of nitrate of silver to each ounce of the acid bath will yield a much darker colour, while a couple of grains of nitrate of uranium used similarly will give a richer bronze, which will ultimately become darker, though not so dark as that obtained by the nitrate of silver.

In order to test the resisting powers of all the different kinds of pins, stick examples of each into the cork of a wide mouthed bottle, then put a teaspoonful or two of strong acetic or butyric acid into the bottle and replace the cork. In the course of a few hours the vapour of the acids will show up the defects of the tinned and gilt kinds ; the latter will go first, and will be irrorated with a bright green exudation from every porous portion of the coating, and soon afterwards the former will appear to perspire a turquoise greenish-blue liquid from every pore, and the twist of the metal will be made very evident. Then, after thirty-six hours or so it will be found that the enamelling of the black pins has become brittle, and, if the enamel be removed, portions of the metal beneath will be found green. After about the same exposure the bronzed pins will be covered with a greenish bloom, and the surface will be brittle, but, if scratched off, the metal beneath will be found unaffected. The test here given is a much more powerful one than is likely to occur under ordinary entomological circumstances.

The advantages claimed for pins prepared in the manner suggested are :—that the metal is actually hardened, especially at the points ; that the surface is smoother than that of enamel, and that they consequently have superior penetrating powers ; that the colour (bronze)

is less conspicuous than tin, gold, or jet black; that they better resist the action of acids; and lastly, perhaps, that they will improve with age. The first two points any one can very soon decide, the third is a matter of opinion; for the verification of the last two time will be required, and for this purpose it will afford me much pleasure to forward samples to any entomologists who would like to give them a trial, by using them to pin such species as are likely to go greasy, and watching the result. Address as below till November 10th, after that, Camden Road, London, N.W.

A word of caution is here necessary. Pin bronzing is essentially an outdoor pastime, and can only be indulged in at home at the risk of being indicted for a nuisance, for there are not many liquids which can vie with the sulphuretted hydrogen given off in the process for vileness of odour, a few whiffs of which would amply suffice to set a whole neighbourhood sniffing, and an army of sanitary inspectors on the war path. It is likewise an occupation that should be conducted by daylight, for the gas evolved is inflammable, and when mixed with oxygen or air, explosive. The would-be operator, especially on a large scale, will therefore see the desirability of securing a shed for a workshop in some secluded spot, remote from human habitations.

Camden Villa, Lennard Road, Folkestone :

September, 1894.

AN ADDITION TO THE LIST OF BRITISH *HEMIPTERA*.

BY EDWARD SAUNDERS, F.L.S.

PLAGIOGNATHUS (*AGALLIASTES*) *EVANESCENS*, Boh.

This little species may be known at once from *Wilkinsoni*, which it resembles in the uniform brown coloration of the hemelytra, by its less shining surface, the coarser, more conspicuous yellowish-white pubescence, and the black antennæ; from *saltitans*, the unspotted hemelytra, less shining and more coarsely pubescent surface, and longer 3rd and 4th antennal joints, will easily distinguish it. The antennæ have the 2nd joint thickened, as in *saltitans*, and the 3rd and 4th joints subequal in length, each being about four-fifths the length of the 2nd, the hemelytra have no apparent membrane; the femora are testaceous at the apex, and the tibiæ testaceous at the apex, darker at the base; the spines, which are fine and black, do not spring from black spots.

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

For the addition of this species to our list we are indebted to Mr. Alfred Beaumont, who captured a few specimens amongst *Sedum* at Colwyn Bay in August, 1890, and has kindly given me the examples from which I have drawn up the above description.

St. Ann's, Woking, Surrey :
October, 1894.

TWO NEW BRITISH DIPTERA.

BY F. C. ADAMS, F.E.S.

On the 20th of July last, whilst collecting in the New Forest, near Lyndhurst, I took a single specimen of *Mallota eristaloides*, Lw. I did not know at the time what a prize I had found, but thought it was an *Eristalis* or *Criorrhina*. The insect, however, was new to me, so I kept a good look out for more, but without success, the weather being unfavourable for *Diptera* during the few remaining days of my stay. I recently took the specimen, with various other *Diptera*, to the Natural History Museum for identification, and it at once attracted the attention of Mr. Austen, who kindly named it for me.

About the middle of May I also took in the same district a *Pipunculid*, about which Mr. Austen was doubtful at first, but has since identified as *Nephrocerus flavicornis*, Zett.

Both insects are new to the British List of *Diptera*, and I have presented them to the National Collection.

68, St. Ermins Mansions, Westminster,
and Fern Cottage, Lyndhurst :
October, 1894.

TWO NEW SPECIES OF ICHNEUMONIDÆ FROM DEVONSHIRE.

BY G. C. BIGNELL, F.E.S.

PIMPLA BRIDGMANI, *n. sp.*

Head black; under-side of scape of antennæ and palpi stramineous; antennæ, upper-side of thorax and abdomen fuscous, mesothorax darkest; under-side, including coxæ, legs and scutellum, ochraceous; scutellum and adjacent part of mesothorax forming an oblong square patch; hind tibiæ light fuscous, with a ring near the base, and apex, dark. Antennæ 25-jointed; length, 3½ mm.; aculeus, 1 mm. Length of body, 5 mm. (excluding aculeus); expansion of wings, 9 mm.

A parasite on a spider, *Drassus lapidicolens*, Walck.

PRAON ABSINTHII, *n. sp.*

♀ --black; mouth and greater part of the abdomen, and terminal joints of tarsi, testaceous; antennæ, 3rd joint wholly, and 4th all but the extreme apex, pectus,

legs, apex of the upper-side of first segment of abdomen and base of the second, forming an oblong spot, ochraceous. ♂—much darker insect; antennæ and pectus black. Antennæ of male with twenty-one joints; female, nineteen. Length, 3 mm.; expansion of wings, 6 mm.

A parasite on *Siphonophora absinthii*, Linné (Koch, fig. 272).

Stonchouse, Devon:

October, 1894.

[The above descriptions also appear in the Presidential Address to the Plymouth Institution and Devon and Cornwall Nat. Hist. Soc., delivered by Mr. Bignell on October 12th, 1893, and published in its Transactions for 1893-4.—EDS.].

DR. HANSEN ON *HEMIMERUS*.

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

A paper on *Hemimerus* has recently appeared in Ent. Tidskr., 1894, p. 65, &c., from the pen of Dr. H. J. Hansen, of Copenhagen. Through the kindness of Dr. E. Bergroth, I am able to give an account of this interesting memoir. The insect has been a puzzle to entomologists on account of its being said to possess two palpigerous labia; it has, indeed, been proposed to exclude it altogether from the Insecta on that ground. Until lately the insect has been known only by the few specimens in our national collection, described by Walker as *Hemimerus talpoides*. Specimens of the genus have been recently received by the Stockholm Museum, found by the Naturalist Sjöstedt in Gambia. The insect proves, as its appearance suggested, to be a parasite on mammals; it was found on a very large rat, *Cricetomys gambianus*. It occurred on only two individuals of the rat, but there were in each case plenty of specimens; they were very active, running about, and even leaping. The food is unknown; Hansen suggests that it may be small parasites, but this is rather improbable; it would require an enormous stock of small parasites to keep a dozen or more *Hemimerus*—a fairly large insect—supplied with pabulum. The idea that the insect has two palpigerous lower lips is so completely erroneous that one can only wonder how it could have arisen. The mouth has the parts ordinarily found in a mandibulate insect, and nothing more.

Dr. Hansen had at his disposal only three dead specimens preserved in spirit; on cleaning one of them he was surprised to find that it had some foreign bodies inside it; these, on further examination, proved to be young *Hemimeri*; six young were found, arranged, the larger one near the hind part of the body, the smaller near the

thoracic region. So that it is evident the insect is viviparous, and that the young are born in an advanced state of development, in all probability one at a time.

Dr. Hansen thinks the insect allied to the earwigs, and he is in this probably correct. Still, the information we have about the development is very inadequate, and even the structural characters are by no means completely ascertained; indeed, it is a matter of surprise that Dr. Hansen should have been able to give as much information as he has done from so scanty a material. The form of the unborn young is apparently much more elongate than the adult; but the appendages are somewhat similar to those of the adult. A single young specimen was captured, and from the brief account given of it, the genus evidently belongs to the group of mandibulate insects with incomplete metamorphosis. How the young are nourished in the body of the parent, the exact position they occupy, and the period of life at which they are born, remain to be ascertained. Judging from Dr. Hansen's figures, his species is probably different from the *H. talpoides* of Walker.

Cambridge: September 28th, 1894.

Phibalapteryx lapidata, Hb., in South Lanarkshire.—I was delighted to observe *Phibalapteryx lapidata* flying over a rather extensive tract of upland pasture (700—900 feet) across which I had occasion to pass at the close of what had been, for the season and locality, a very fine mid-September day. The insect seemed to be especially attached to flats covered with rushes and carices intermixed with *Scabiosa*, and more rarely with meagre tufts of *Calluna*. Only a degree less interesting than the feeble flying *Phibalapteryx*, and in striking contrast to it, were swarms of *Tapinostola fulva*, which was careering about everywhere in its usual wild fashion, except when lured into the little assemblages which the virgin females gathered round them for a brief spell. These two species appeared to be the only characteristic *Lepidoptera* of the time and place. Other species represented could only be considered stragglers or belated examples belonging to an earlier period:—*Hydræcia nictitans*, *Celæna Haworthii*, *Larentia didymata*, *Cidaria testata*, one or two of each, and a few examples of *Peronea aspersana* make up the list of *Lepidoptera* seen. The locality is very bleak; it borders a great stretch of boggy and heathy moorland, with a flora and fauna which appear to have few features of interest. *Coremia munitata* is the only other insect I have yet found there which is worthy of mention; towards the end of July and beginning of August it occurs in the greatest abundance.—KENNETH J. MORTON, Carlisle, N.B.: September 25th, 1894.

Phibalapteryx lapidata in Stirlingshire.—For the last few years my friend Mr. E. Eggleton has taken a small number each season of the above scarce Geometer in South Stirlingshire. As each year came round he has asked me to accompany

him, but until this one I have not had an opportunity of doing so, when I spent September 7th and 8th with him in search of this species. During the daytime we beat the ground well, but without result; but as darkness set in on the 7th Mr. Eggleton was rewarded with a fine specimen (making his sixth of the season). My first capture was upon the 8th, and in quick succession I boxed five fine specimens, he only taking one that evening. During the following week we secured about twenty specimens, but many of them were worn.—JAMES J. F. X. KING, 207, Sauchiehall Street, Glasgow: *October, 1894.*

Scarcity of Lepidoptera.—I do not think I can recollect a season in which *Lepidoptera* have been as scarce as the present. Sugar has been a perfect failure. Night after night I have spread the sweets, only to find them despised; even such abundant species as *X. polyodon* and *T. pronuba* were few in number, and as to varieties there were none. Last year dark *X. polyodon* were numerous, this year I have only met with one; however, there is always some compensation, and mine has been that I have added to my Armagh list *Orgyia antiqua*, of which I captured a ♂ specimen in Mullinure on September 8th, and to-day I succeeded in taking some nice white forms of *Peronea variegana*; *P. perplexana*, however, is not in its usual plenty. I presume we must blame the damp, sunless summer for the paucity of Lepidopterous fauna, and to this there is added an early autumn with peculiarly cold nights.—W. F. JOHNSON, Armagh: *September 18th, 1894.*

Phylloxera punctata, Licht., at Hereford.—Without knowing its name, I have for a dozen years or so had a bowing acquaintance with this insect as a rather pernicious form of blight on some young oak trees at Burghill. This autumn I was struck with its abundance on many large oak trees at Stoke Edith, to which it gave quite a yellow and sickly hue in mid-September. Mr. Douglas, with the assent of Mr. Buckton, kindly supplies the name as above. At Burghill the leaves of our large oak trees are at present quite free from this species, but have still some common green *Aphis*, and are of a dark green colour, rendered even deeper by a thick sooty coating of the carbonized (?) honey-dew of earlier *Aphides*. The leaves of the small trees to which at Burghill, as far as my observation is trustworthy, the *Phylloxera* has always been confined, are yellowish, the site of every specimen being a distinct yellow spot, the effect on the leaf-tissues being vastly more pernicious than the work of the common green fly. I imagine the *Phylloxera* is longer lived, and continues its work at the same point for a longer period. This would not, however, explain the difference, as the green fly makes up for more than this by excessive numbers. The work of the *Phylloxera* suggests poisoning as well as drainage of sap.—T. A. CHAPMAN, Firbank, Hereford: *September, 1894.*

Aëtophilus Bonnairei, Sign., in the Isle of Wight.—On June 27th last I captured two larvæ of this insect at Totland Bay, in the Isle of Wight. They were clinging to the lower surface of very large, deeply embedded stones on the beach, just below high water mark, in company with *Aëpus marinus* and *A. Robini*, and *Micralymma brevipenne*. The mature insect is probably not to be met with earlier than the month of August. The recorded British localities for *Aëtophilus* are Cornwall, Plymouth and Lyme Regis.—G. C. CHAMPION, Horsell, Woking: *October 13th, 1894.*

Ptomaphagus varicornis, Rosenh., &c., at Guildford.—I have already recorded (cf. ante, pp. 135, 185) some few interesting *Coleoptera* from the neighbourhood of Guildford. To these I may add the results of three subsequent visits to the locality, in July, August and October:—*Ptomaphagus varicornis*, one ♂, in company with plenty of the common *P. sericeus*; *Colon viennense*, *Euplectus Abeillei*, *Scydmanus Sparshalli*, *Bythinus Burrelli*, *Choragus Sheppardi*, *Mycetoporus punctus*, *Agaricophagus cephalotes*, *Hydnobius punctatissimus*, *Anisotoma litura*, *Syntonium æneum*, *Oxygaster spectabilis* and *incrassata*, and *Oxytelus clypeonitens*; all obtained by evening sweeping. My friend Mr. R. W. Lloyd has also taken at the same place a fine ♂ of *Colon rufescens*.—*Id.*

Latheticus oryzæ, C. O. Waterh.—I have recently had forwarded to me two lively "samples" of infected barley from a London granary. The first sample was Persian, from Bussorah. It contained an immense number of *Coleoptera*, which, on examination sorted out into five species—*Latheticus oryzæ*, *Rhizopertha pusilla*, *Calandra granaria*, *Læmophlæus pusillus*, and *Tribolium ferrugineum*, the first mentioned being by far the most numerous in individuals. In the same lot I also found a single specimen of a peculiar *Anthocorid*, quite strange to me. The second sample, which was much older and dustier, came from Odessa. It contained specimens of the same species, but in more limited numbers. The *Latheticus* is very active, and when the samples were placed in the sun, or warmed, it rapidly emerged from the grain. I am informed that these insects soon spread from one bulk to another in the granaries. *Latheticus*, the real habitat of which is unknown at present, is, no doubt, of eastern origin; it appears in British and European lists as an introduced species. It will probably soon rank with such cosmopolitan forms as *Gnathocerus*, *Alphitobius*, *Palorus*, &c., and be carried to all parts of the world.—*Id.*

Rare Aculeate Hymenoptera.—I have been fortunate in taking males of the following, in spite of the wretched season:—*Methoca ichneumonides*, Latr., at Oxshott on August 1st; *Pompilus (Aporus) unicolor*, at Boxhill, on August 8th; and *Pompilus (Evaethes) bicolor*, at Oxshott, on September 1st. I am indebted to Mr. Saunders for determining the species.—ALFRED BEAUMONT, The Red Cottage, Pond Road, Blackheath: October 1st, 1894.

Hymenoptera in Shetland and Orkney.—On August 25th last I left Aberdeen by the S.S. "Rognvald," on a visit of about three weeks to Shetland, hoping to secure a good series of *Bombus Smithianus*, and perhaps to solve the mystery of *Bombus "nivalis."* I had intended at first to stay at Lerwick, but finding that my steamer (the largest and most comfortable in the service) was going on to Unst, I resolved to do the same, and on August 27th I found myself in good quarters at Mr. Weber's new hotel at Balta Sound, and ready to begin collecting.

B. Smithianus was abundant beyond all my expectations. During the week I spent in Unst I found it everywhere. The entrances to its burrows were often in the unmortared stone walls, called dykes, which in these islands take the place of hedges; and my attention was repeatedly called to them by the crowds of males, which dashed about them with loud hummings from morning till night whenever

the weather was tolerable. The females and workers were common on flowers of all kinds. I saw them visiting potatoes, clover, thistles, dead nettles, and heather, but they seemed to have a special affection for the *scabious*.

For "*nivalis*" I looked in vain in Unst, but, on returning to Lerwick, I was delighted at last to come across it. My first specimens were taken on September 4th, and from that day to the 13th, when I left Shetland, I never failed to find it on my walks over the hills, though it was by no means so common as *Smithianus*, and appeared to confine its visits entirely to the small heather, on whose flowers I took all the sexes in abundance. I did not succeed, however, in finding any of its nests. The moment I had extracted the ♂ armature, I felt satisfied that Mr. Saunders was right in his expectation (see Synopsis, p. 237), that "*nivalis*" would prove to be a variety of *Scrimshiranus*. It is, no doubt, a very distinct variety; but that it is specifically distinct seems to me no longer conceivable.

I was less surprised by what I found in Shetland, than by what I did *not* find. No bees whatever, except these two remarkable species; no wasps, nor fossors; no ants, except *Myrmica ruginodis*! Even *Apis mellifica* seems to be wholly unknown in the islands; a negative proof of which is that *Bombus Smithianus* regularly goes there by the name of the "hive bee," and its burrows are called by the natives "hives." I heard rumours of the existence in some places of a "mason wasp," which I suppose would be some kind of *Odynerus*, but I could not find it. No doubt I was late in the season, and there surely must be some kinds of *Andrena* and *Halictus* to be encountered earlier in the year; but my actual experiences were as I have stated, and I was a good deal surprised by them.

On my way home I had one day (September 14th) in Orkney, and did my best to ascertain in that time how far the *Aculeata* of the two groups of islands agreed or differed. Three kinds of bee presented themselves, *Psithyrus vestalis*, *Bombus distinguendus*, and a tawny *Bombus* with pale under-side, which I naturally took for *agrorum* or *venustus*, probably the former. However, after reaching home and extracting the armatures, I found that on comparison they agreed with neither of those species. The pale under-side prevented me from thinking of *Smithianus*, and one idea alone suggested itself, that they might be the "*cognatus*" of Schmiedeknecht, which is only known to me through his description and plate. Ultimately I sent them to Mr. Saunders, who considers that (the pale hairs notwithstanding) my insects are specimens of *Smithianus*. The normal black-haired *Smithianus* did not occur to me in Orkney, nor did I see anything there that could represent "*nivalis*." But of course one cannot lay much stress on the negative results of a single day's hunting, and that, too, in weather which was not particularly favourable for the appearance of *Hymenoptera*.—F. D. MORICE, Rugby: September, 1894.

Bombus soroensis, Fab., at Ilfracombe.—Some years ago I captured a single ♂ of *Bombus soroensis* in this neighbourhood, but have not met with it anywhere else, so that I have never had any opportunity of becoming acquainted with the species in the field. I have, however, during the last week met with it in tolerable plenty and in several localities, so that I imagine that it is pretty generally distributed about Ilfracombe. It seems to prefer the ordinary *Centaurea* (*C. nigra*) to any other plant; occasionally I have found it on thistles, and once or twice on brambles, but

otherwise always on *Centaurea*. The similarity of the white tailed form of the ♀ of *soroensis* (the only one I have found about here) to that of *terrestris*, var. *lucorum*, is extreme. The first day that I met with it I caught two or three males, this made me look specially for the ♀, and I captured several specimens, hoping that they might prove to be of this species, but on my return home I was quite unable to feel certain that they were distinct from *terrestris*. I had no individuals of *terrestris* to compare them with, and although from taking them all on *Centaurea*, which the ♂ also visited, I felt confident that they ought to be *soroensis*, it was not until to-day, when I caught a veritable ♀ *lucorum*, that I was able to make up my mind for certain as to their identity. With the two species in front of one it is not very difficult to separate them, but it is difficult to express in words the exact characteristics of each; *soroensis*, as is well known, is most protean in its coloration, sometimes resembling *terrestris*, sometimes *pratorem*, and occasionally occurring nearly black; from *terrestris* the white tailed form of the ♀ can only be distinguished by the rather less definite abdominal bands, the 1st segment having a few yellow hairs on each side, and the 2nd a few black hairs at the apex, especially in the middle, which disposition of the hairs gives the bands a less straight and definite appearance; the face is also distinctly longer and more narrowed towards the apex than that of *terrestris*. Still I cannot help feeling great doubts whether I should have suspected the workers I have caught here of being those of *soroensis* had I not first captured some males; these are quite distinct from *terrestris* ♂, being much narrower and less bulky, the legs much thinner, and the posterior metatarsi finer and more narrowed at the base, and fringed on their upper margin with long, fine hairs. The scarcity of *Hymenoptera* at Ilfracombe is very extraordinary; although the weather has been magnificent, I have met with no Aculeates except humble bees and wasps, with the exception of a very few *Halicti*, two or three *Crabro*'s, and two females of *Andrena denticulata*. In most places yellow *Compositæ* would swarm with ♂ *Halicti*, but here one passes any quantity of these flowers without seeing a single individual.—EDWARD SAUNDERS, Ilfracombe: *September 15th*, 1894.

Pericoma revisenda, Etn., and *Psychoda erminea*, Etn., near Sherborne, Dorsetshire.—However wide may be their distribution (the *Psychoda* ranges to Algeria) these species are apparently so very local that their occurrence in a new locality seems worth recording. Between six and seven miles from Sherborne, on the way to Dorchester, an old cart road leads through the woods and fields to the right, on the confines of Middlemarsh Common and Grange Wood, and soon forks right and left. The left hand branch runs southwards to Lyon's Gate, passing between Grange Wood and Gore Wood as an enclosed lane. Near the southern end of this lane a specimen of *P. revisenda* was beaten out of hazel at the side of a streamlet by a cottage on the 4th instant. Two specimens of *Ps. erminea* were caught the same day—one beaten out of the hedge of Gore Wood in the lane, at a damp corner by a gate; the other out of low herbage or hazel at a moist place in the hedge dividing Grange Wood from the aforesaid Common. A third specimen was taken at the very same spot on August 29th. In the net *Ps. erminea* appears darker than *Ps. phalaenoides*, but not quite so dark as *Ps. sexpunctata*; and the dark tufts and spots on the wings, indistinctly visible to the unaided eye, contribute to its recognition.—A. E. EATON, Westrow, Holwell, Sherborne, Dorset: *September 11th*, 1894.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *September 12th*, 1894.—Mr. G. H. KENRICK, F.E.S., President, in the Chair.

Mr. Valentine Smith, Wellington Road, Edgbaston, was elected a Member of the Society.

Messrs. R. C. Bradley and C. J. Wainwright showed a collection of insects made during ten days spent in the New Forest in the middle of July this year. The *Lepidoptera* included freshly emerged specimens of *Lithosia mesomella* and *Erastria fuscula*, which were thus a full month late, *Cleora glabraria*, *Calligenia miniata*, etc.; there were 11 species of dragon-flies, and a number of Aculeate *Hymenoptera*, including *Ammophila sabulosa*, *Crabro vagus*, *cribrarius*, &c. The chief part of the collection, however, consisted of *Diptera*: *Alophora hemiptera* and *Echinomyia grossa* were in good series; one specimen of *E. lurida* fell to each, also *Myolepta luteola*, *Laphria marginata*, *Dioctria Reinhardi*, *D. flavipes*, *Limnobia bifasciata*, and many others not yet fully identified, including one *Dicranomyia* taken by Mr. Bradley, belonging probably to an undescribed species. Mr. E. C. Rossiter showed a fine collection of *Lepidoptera* taken during a month's collecting in July at Brockenhurst, including *Triphæna subsequa*, *Cleora glabraria* and *lichenaria*, *Macaria alternata*, and long series of the species more usually met with. Mr. R. G. B. Chase and Mr. W. Harrison also showed New Forest captures—the former series, bred this year, of *Limenitis sibylla*, *Apatura Iris*, &c.; and the latter, insects captured in former years, including *Selidosema plumaria*. There were also exhibited by Mr. E. C. Rossiter, *Asthenia Blomeri*, *Cymatophora fluctuosa*, &c., from Arley; and a series of *Hepialus vellea* from Clent, where he said it had occurred more freely than usual this year, but the specimens were much smaller; last year he took only a few, but much larger. And by Mr. C. F. Haines, insects taken by his father 30 years ago, including *Cymatophora octogesima* from Bewdley.—COLBRAN J. WAINWRIGHT, *Hon. Secretary*.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY: *October 8th*, 1894, Opening Meeting of the winter session.—Mr. S. J. CAPPER, F.L.S., F.E.S., President, in the Chair.

Mr. C. S. Gregson stated that *Orgyia fascelina*, which he supposed had been exterminated from the sandhills, was in profusion at Formby in the larval state. Mr. Percy Bright, F.E.S., of Bournemouth, made some interesting remarks on various *Lepidoptera*, which he had collected from the north of Scotland, and brought with him for exhibition. Mr. F. N. Pierce, F.E.S., read a short note respecting the genitalia of two specimens of *Bombyx quercus*. During the evening the President exhibited a fine series of *Calymnia trapezina*. Mr. Gregson, specimens of *Lithosia sericea*, taken by himself this year; *Melanippe hastata*, var. *hastulata*, Hb., from Sutherlandshire; and varieties of *Arctia Caja*, bred by himself this year. Mr. C. E. Stott, on behalf of Mr. H. S. Clark, of the Isle of Man, two specimens of *Sphinx pinastri*.—F. N. PIERCE, *Hon. Sec.*, 7, The Elms, Dingle, Liverpool.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *September 27th*, 1894.—E. STEP, Esq., President, in the Chair.

Mr. Auld exhibited a larva of *Phorodesma smaragdaria*, Fb., which had been

feeding fourteen months. Mr. Jäger exhibited the series of *Callimorpha Hera*, L., taken by him in S. Devon this year. Mr. Winkley, two specimens of a second brood of *Smerinthus populi*, L., bred this year. Mr. Filer, long series of bred *Papilio Machaon*, L., from Cambridge, one specimen having the marginal band of the hind-wing extended so as to unite with the discoidal spot. Mr. H. Moore, a specimen of *Vanessa urtica*, L., from Vienne, having the two spots only represented by a few dark scales. Mr. A. Hall, about twenty species of *Rhopalocera* from Japan, identical, or almost identical, with British species. Mr. T. W. Hall, a long series of *Melanippe fluctuata*, L., from Perth, one being ochreous, many dark, and several were var. *neapolisata*. Mr. Adkin, *Zygæna exulans*, Hoch., from Braemar; *Sesia scoliiformis*, Bork., from Rannoch; light and dark forms of *Abraxas grossulariata*, L., and grey forms of *Melanippe fluctuata*, L., from Aberdeen. Mr. West (Greenwich), on behalf of Mr. Tugwell, a large number of *Zygæna exulans*, Hoch., taken this year at Braemar, with cocoons *in situ*, on Crowberry. Mr. Tutt made some very interesting remarks on the different climatal conditions which the same species of *Lepidoptera* experienced in the High Alps and in our own country, and noted various modifications of habits resulting therefrom.

October 11th, 1894.—The President in the Chair.

Mr. E. H. Trenerry, of Clapham Park, was elected a Member.

Mr. Oldham exhibited the following species from his own garden at Woodford: a very varied series of *Triphæna pronuba*, L., a series of *T. orbona*, Fab., and a few *Plusia gamma*, L. Mr. R. Adkin, on behalf of Mr. South, series of *Pædisca sordidana*, Hb., *Peronea hastiana*, L., *P. comparana*, Hb., *P. comariana*, Zell., and *P. Schalleriana*, L., from Macclesfield, and read notes; a long discussion took place on the perplexities in differentiating the last three species; on behalf of Rev. J. G. Greene, a series of well executed drawings of the most striking vars. of *Abraxas grossulariata*, L., bred by him during the last few years, and read notes; and, on behalf of himself, series of *Acronycta rumicis*, L., from many localities, and a bred series of *Eupithecia jasideata*, Crewe, from Ireland, and read notes. Mr. Mansbridge, long varied series of *A. grossulariata* and *A. sylvata* from Yorkshire, and contributed notes. Mr. H. Moore, a female *Lycæna Corydon*, Fb., with male coloration, and specimens of *Bombyx quercus*, L., *Catocala nupta*, L., and *Ocneria dispar*, L., with a batch of ova of the last species, all from France; a long discussion on *O. dispar* ensued. Mr. McArthur, series of *Toxocampa craccæ*, Fb., *Noctua glareosa*, Esp., *Acronycta rumicis*, L., and *Agrotis agathina*, Dup., all from N. Devon. Mr. C. A. Briggs exhibited specimens of *Plusia ni*, Hb. Mr. Tutt, a narrow-winged specimen of *Eupithecia subnotata*, Hb., *Agrotis ripæ*, Hb., from St. Anne's-on-Sea, and two specimens of *Eupithecia subfulvata*, Haw., var. *oxydata*, Tr. Mr. Fenn, series of *Cirrhædia xerampelina*, Hb., from the Isle of Man, and series or examples of *Aporophyla australis*, Gn., *Epunda lutulenta*, Bork., *E. lichenea*, Hb., *Anchocelis lunosa*, Haw., *Calocampa vetusta*, Hb., and *Xylina semibrunnea*, Haw., all from Deal. Mr. Tugwell and Mr. Tutt exhibited a large number of Scotch and Swiss specimens of *Zygæna exulans*, Hoch., and contributed papers thereon; a considerable discussion ensued.—HENRY J. TURNER, Hon. Secretary.

ENTOMOLOGICAL SOCIETY OF LONDON: *October 3rd, 1894.*—The Right Hon. LORD WALSHINGHAM, M.A., LL.D., F.R.S., Vice-President, in the Chair.

Mr. Alick Marshall, of Bexley, Kent, was elected a Fellow of the Society.

Mr. W. F. H. Blandford exhibited specimens of a sand-flea, chigoe or nigua, received from Mr. Szigetváry, of the Imperial Maritime Customs, China, who had found them in the ears of sewer-rats trapped at Ning-po. [*Vide Ent. Mo. Mag., ante pp. 228—230.*—Eds.]. Colonel Swinhoe, Mr. McLachlan, Lord Walsingham, Mr. Champion, Mr. J. J. Walker, Mr. Barrett, and others, took part in the discussion which ensued.

Mr. F. C. Adams exhibited a specimen of *Mallota eristaloïdes*, a species of *Diptera* new to Britain, taken by himself in the New Forest on the 20th July last. He said that the species had been identified by Mr. Austen, of the British Museum, and that he had presented the specimen to the National Collection. Mr. Verrall made some remarks on the species, and on the distribution of several allied species in the United Kingdom.

Mr. Tutt exhibited specimens of a form of *Zygæna exulans*, well scaled, and with the nervures and fore-legs of a decidedly orange colour, collected during the last week in July by Dr. Chapman in the La Grave district of the Alps, at a considerable elevation; also specimens of the same species taken by Dr. Chapman near Cogné, and another locality, which were less well scaled. He also exhibited Scotch specimens for comparison, and stated that he was of opinion that the latter were probably as thickly scaled as the Continental ones, but that, owing to the differences in the climate of Scotland and Switzerland, collectors had fewer opportunities of getting the Scotch specimens in good condition.

Mr. P. M. Bright exhibited a remarkable series of varieties of *Arctia menthastris* from N. Scotland, also series of *Liparis monacha* (including dark varieties) and *Boarmia roboraria* from the New Forest; *Zygæna exulans*, from Braemar; *Noctua glareosa*, from Montrose and the Shetlands; *Agrotis pyrophila*, from the Isle of Portland, and Pitcaple, N.B.; red varieties of *Teniocampa gracilis*; and a specimen of *Sterrhæ sacraria*, taken at light, at Mudeford, in October, 1893; also living larvæ of *Eulepia cribrum*.

Mr. J. J. Walker exhibited a living specimen of a large species of Flea, which he believed to be *Hystricopsylla talpæ*, Curtis, taken at Hartlip, Kent. Mr. Verrall and the Chairman made some remarks on this and allied species.

Mr. K. J. Morton communicated a paper, entitled, "Palæarctic *Nemouræ*."

Lord Walsingham read a paper, entitled, "A Catalogue of the *Pterophoridaæ*, *Tortricidæ*, and *Tineidæ* of the Madeira Islands, with Notes and Descriptions of New Species." In this paper sixty-six species of *Lepidoptera* belonging to these Families were recorded as occurring in the Madeiras, of which thirty were noticed as peculiar to the Islands, twelve as common to the Madeiras and Canaries, of which two were not known as occurring elsewhere, and one extends its range only to North Africa. Over thirty species were added to the list, and one new genus, seven new species, and two new varieties were described. Mr. Jacoby and Mr. Bethune-Baker made some remarks on the species and their geographical distribution.

Mr. Blandford read a paper, entitled, "A Supplementary Note on the *Scolytidaæ* of Japan, with a List of Species."—H. Goss, *Hon. Secretary*.

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Some additions to the Neuropterous Fauna of New Zealand (<i>continued</i>).— <i>R. McLachlan, F.R.S.</i>	241
Two species of Psocidæ new to Britain.— <i>Id.</i>	243
A new species of Coræbus (Buprestidæ) from Japan.— <i>George Lewis, F.L.S.</i> ...	244
Exochlænus, Shipp, a new genus of Leucospidæ.— <i>J. W. Shipp</i>	245
A Holiday in the Pyrenees (<i>concluded</i>).— <i>W. E. Nicholson, F.E.S., and F. C. Lemann, F.E.S.</i>	246
The British species of the genus Psyche and its allies (<i>continued</i>).— <i>C. G. Barrett, F.E.S.</i>	249
An improved Entomological Pin.— <i>H. Guard Knaggs, M.D., F.L.S.</i>	252
An addition to the List of British Hemiptera.— <i>E. Saunders, F.L.S.</i>	254
Two new British Diptera.— <i>F. C. Adams, F.E.S.</i>	255
Two new species of Ichneumonidæ from Devonshire.— <i>G. C. Bignell, F.E.S.</i> ...	255
Dr. Hansen on Hemimerus.— <i>Dr. D. Sharp, M.A., F.R.S., &c.</i>	256
Phibalapteryx lapidata, Hb., in South Lanarkshire.— <i>K. J. Morton, F.E.S.</i>	257
Phibalapteryx lapidata in Stirlingshire.— <i>J. J. F. X. King, F.E.S.</i>	257
Scarcity of Lepidoptera.— <i>Rev. W. F. Johnson, M.A., F.E.S.</i>	258
Phylloxera punctata, Licht., at Hereford.— <i>T. A. Chapman, M.D., F.E.S.</i>	258
Aëpophilus Bonnaïroi, Sign., in the Isle of Wight.— <i>G. C. Champion, F.Z.S.</i> ...	258
Ptomaphagus varicornis, Rosenh., &c., at Guildford.— <i>Id.</i>	259
Latheticus oryzæ, C. O. Waterh.— <i>Id.</i>	259
Rare Aculeate Hymenoptera.— <i>Alfred Beaumont, F.E.S.</i>	259
Hymenoptera in Shetland and Orkney.— <i>Rev. F. D. Morice, M.A., F.E.S.</i>	259
Bombus soroensis, Fab., at Ilfracombe.— <i>E. Saunders, F.L.S.</i>	260
Pericoma revisenda, Etn., and Psychoda erminea, Etn., near Sherborne, Dorsetshire.— <i>Rev. A. E. Eaton, M.A., F.E.S.</i>	261
SOCIETIES.—Birmingham Entomological Society	262
Lancashire and Cheshire Entomological Society	262
South London Entomological, &c., Society	262
Entomological Society of London.....	264

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IX. 264

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15th November, 1894.

THE BRITISH SPECIES OF THE GENUS *PSYCHE*, AND ITS ALLIES.

BY C. G. BARRETT, F.E.S.

(Concluded from page 251).

FUMEA, Hüb.—The species of this genus have given me a great deal of trouble and anxiety. Undoubtedly the easier plan, and one worthy of very serious consideration, is to lump the majority of them together, as Mr. Stainton has done, under the name of *nitidella*.

There are, however, two difficulties in the way of this:—one is, that Hübner's figure of *nitidella* really does not represent either of the forms, and it is uncertain what species he had before him. This point has been gone into at considerable length, and with great care, by Bruand, and his conclusion is, I think, incontrovertible, that the name *nitidella* should be abandoned. The other difficulty is that, although difficult to separate, there certainly exist different forms, or races, and that our knowledge of them is not sufficient to enable us at present to say that they are not distinct species. Bruand gave great care to their elucidation, and achieved some success. Of his species we appear to have six.

FUMEA CRASSIORELLA, Bruand.—Introduced as British by the late Mr. F. Bond in 1868. Afterwards taken by Dr. Knaggs and Mr. Mitford, its localities being Hornsey Wood and Bishop's Wood, Highgate. This is the largest of this genus with us, being six-tenths of an inch (15 mm.) in expanse. Its wings are rather broad, of an elongate ovate shape, clothed, but not very densely so, with large, glistening, dark purplish-brown scales; the hind-wings rather paler; cilia faintly paler at the tips. Female plump, completely bent into a hump, almost a semicircle, so that the anal segment touches its case almost in contact with the head. The head is small, horny and shining, the body reddish, with six bars of black-brown colour, of a rectangular form, on the backs of the segments after the 4th; the 2nd, 3rd, and 4th, which are rather contracted, are covered, in each case, by a blackish horny shield. The legs are long and strong. The anal extremity is abruptly terminated

by a thick tuft of downy scales which are brown beneath, greyish-white or yellowish above; from within this, and from the middle of the body, projects a long ovipositor in three telescopic sections. Antennæ very short, but visible under a magnifier. I have condensed Bruand's description, the preserved specimens hardly furnishing sufficiently accurate characters. On emerging from the pupa the female withdraws herself from the case, but remains upon it, clinging tightly with her long strong legs, and keeping her ovipositor inserted in the opening from which she has emerged.

The larva is light purplish-brown, with two deep red dorsal lines, and another below the spiracles, extending along the 2nd to 4th segments, afterwards becoming obliterated; between the dorsal lines, on the 2nd and 3rd segments, is a deep brown spot; head horny, shining, light brown or red-brown, with numerous slender blackish markings. The case is formed inside of silk, outside of bits of dried grass, or occasionally slender twigs of dried plants, placed longitudinally and nearly parallel; it is thick in proportion to its length, and often formed of rather stout materials. The pupa state is passed in the case.

The original localities, here, have been destroyed or rendered inaccessible, and I know of no recent captures of the species, but it must occur in other woods skirting the valley of the Thames.

F. INTERMEDIELLA, Bruand.—This is smaller than the last, the apex of its fore-wings rather more rounded, but the costa rolled back slightly in the middle so as to interfere with the regular ovate form of the wings. It has a bright golden, or bronzy, gloss over its dark brown colour, and is well and generally known, its case being found on fences, palings, and tree trunks in woods over a large portion of the country. By collecting these when they are fastened down for pupation, the insect is easily reared. The female is very like that of the last species, the anal tuft rather more brown, but it has slender, drooping antennæ lying in a curve close to the head; its habits are similar. The male flies in a very lively manner in the early morning sunshine, and again in the sunshine late in the afternoon, and is readily captured. The larva is deep purple-brown; head dark brown or blackish, with faint yellowish lines; three following segments yellowish, each with a transverse blackish plate, extending downwards to the legs, which are long and strongly made, blackish. Case rather thinly constructed, of silk covered with slender bits of dried grass placed longitudinally, some parallel, some rather diverging, so as to give it a rather loose appearance. Pupa of the male of ordinary form, the wing and limb cases thrown off in one piece when it emerges; of the female very like that of a Dipteron, except that the leg cases appear in a little bunch close to the head. This species occurs also in both Scotland and Ireland.

F. ROBORICOLELLA, Bruand.—The male has its fore-wings decidedly broader and rounder than those of any other of this group, yet is *very* closely allied to the two preceding. Its colour is darker, bronzy blackish-brown, shot with purplish, not so smoothly glossy as in *F. intermediella*; the female similar in appearance and in habits to that of the preceding, but having a white tuft to the anal segment. Larva purplish-brown, with the head and dorsal plate black, and short black stripes on the 3rd and 4th segments. Its case is formed of silk, usually covered with short bits of dried grass, but often with bits of fir needles, bits of various dead stalks, or thin

filaments of bark, all laid lengthwise but not strictly parallel, as some of the short fragments curl outwards, or are placed a little divergently. Bruand believed that this species was principally attached to oak trees, feeding on the lichens. It, however, is often found on pine and birch trunks, and sometimes on rocks. It is by no means restricted to the fine powdery lichens, but certainly eats some low plants, and probably a little grass. Mr. A. H. Hamm has a brood at the present time feeding up well upon *Polygonum aviculare*. It seems to be mainly attached to woods and hills. Mr. Chas. Briggs finds large dark specimens at Leatherhead, Surrey; others sent by Messrs. Richardson and Bankes from Portland are rather smaller; I have found it at Haslemere and at Cannock Chase, and Mr. Fletcher has specimens from the South of Ireland. Its range, therefore, is wide, but the records of captures available rarely furnish evidence whether this species or the previous is intended.

F. BETULINA, Zeller.—In this species, which appears undoubtedly to be distinct, the fore-wings of the male are a little longer than in the two preceding, and differently shaped, being slightly narrower and decidedly more pointed. The colour is very dark glistening bronzy-brown, smooth, and opaque; hind-wings dark grey, with a faint purple gloss; the cilia are extremely glossy. The female is very much like those of the preceding species, but the tuft of the anal segment is said to be snowy-white. In dried specimens it probably becomes more dingy, since the specimens before me hardly possess snowy-white tufts, but their bodies are very brown and shrivelled, and quite unlike the living creature. The curve of the body is as in the other species, and it has strong legs with which to hold to the case. The head is provided with curved, drooping antennæ, as part of the brown mask which serves for a face.

The larva is purplish-brown, with a black head, and a large black plate on the 2nd segment, extending downwards on both sides; and on the 3rd and 4th segments much narrower plates, so slender as almost to be linear; legs dark grey, with strong black claws. In a rather pointed blackish case, thickest in the middle, and somewhat spindle-shaped, formed of silk, and covered with minute morsels of lichen or bark and bits of leaf, which are patched on in an irregular manner, and give the case a deceptive resemblance to a bit of rough dead twig. Apparently no grass in any condition is used by this species. It frequents old bushes of willow, crab, blackthorn, and buckthorn, usually keeping upon the lichen covered branches.

First found in Bishop's Wood, Hampstead, by the late Mr. Mitford, who devoted himself with great energy to the working up of this group; and it has since been found at Box Hill and Epping Forest. Two cases containing the larva were found in the New Forest by Mr. Fletcher, who sacrificed his hope of the imagines to secure the preserved larvæ. But for this I should have had no opportunity of obtaining a description.

Bruand described what appears to be this species under the name of *F. anicanella*, but he was, from his own statement, not well acquainted with the species, and rather threw his description into confusion by the expression of a doubt whether *F. anicanella* was more than a variety of *F. roboricoletta*. Possibly he lost sight of the contrast between the very round wings of the male of the latter, and the longer

more pointed wings of the present species, and was impressed by the agreement between them in the whiteness of the anal tufts of the females.

F. SALICOLELLA, Bruand.—Staudinger calls this *salicolella*—which is doubtless what was intended—though not published. This is a curious little species, the forewings of the male being decidedly narrow, so as to form a long slender oval, not pointed at the apex; shining brownish-black; hind-wings rather short, rounded, pale grey-brown with darker nervures. Bruand describes the female as like that of *F. crassiorella*, but smaller, the anal tuft light yellow-brown. He also describes the larva as dirty grey or very light brown, head shining black, jaws whitish; feet black; the 2nd, 3rd, and 4th segments with divided, blackish, horny plates; in a case which is a little constricted at the mouth, but swells out in the middle and terminates in a blunt point; covered with little fragments of bark. Very similar to that of *F. betulina*, and living on lichens on old willow bushes.

This species was first recorded, in this country, in 1858, when both sexes were said to have been reared, but I have not seen the specimens. Mr. Mitford afterwards recorded finding three cases, from which he reared a male and two females, but, unfortunately, his specimens, which are in Dr. Mason's collection, do not appear to represent this species; the male is certainly *F. betulina*. In Mr. Bond's collection is a case, possibly of this species, but which does not appear to have produced anything. The only British specimen of which I have any personal knowledge was taken, more than twenty years ago, by my old friend and companion, long since deceased, Edward G. Baldwin. It was captured by him, if I do not mistake, on the wing early one evening at Bishop's Wood, Hampstead—which, indeed, seems to have been the head quarters of the group—and I have the most perfect recollection of it, since I lost no opportunity of examining so unusual a species. It agreed precisely in shape with Bruand's figure. I regret to say that I have utterly lost all trace of the specimen, and cannot find out what became of Mr. Baldwin's collection.

F. TABULELLA, Bruand.—I had given this species up. The specimens in Mr. Bond's collection were obviously erroneous—apparently *F. roboricolella*; one from Mr. Mitford's collection, in the possession of Mr. Philip Crowley, is really a faded *Epichnopteryx pulla*; and the specimen reared by our lamented friend, Mr. Machin, from a case beaten out of blackthorn at Box Hill, and which he gave to me before his death, is certainly *Fumea betulina*, both moth and case agree accurately. The only remaining evidence appeared to be that of the specimen caught forty years ago "flying round beeches, at Mickleham," and one similarly obtained from Epping Forest; and indeed captured specimens in this group are difficult to depend upon, unless there is a reliable difference in *shape*. But the appearance of the first instalment of the present notes brought me a letter from an entomologist well known for his acuteness and skill in finding and rearing larvæ of our more difficult minute moths, and a zealous helper of Mr. Stainton, Mr. J. E. Fletcher, of Worcester, which changed the whole aspect of the question. After asking whether I had any knowledge of a *Fumea* larva on spruce-fir, and receiving my prompt request for information, he wrote the following:—

"The little I know of the *Fumea* of the spruce is as follows:—In the spring of the year 1858, I beat from an old spruce (*Abies excelsa*) a single case-bearing larva, from which, in the following summer, appeared a small brown ♂ moth, the wings of one side of which were cramped. By some misadventure the moth was lost.

"In the spring of the year 1877, I revisited the place where the above-mentioned insect was taken, the Old Hills, in Worcester, and succeeded in obtaining four larvæ. Two I sent to the late Mr. Stainton, who wrote, July 10th, that he had bred a ♂ moth from one case, and that it was 'in very good condition on one side, but rather crippled on the other.' This specimen should be discoverable in the collection left by that gentleman. In December he wrote again to say that 'the second case had not favoured him with a moth.' The cases I retained yielded me nothing.

"The next, and last, time I sought for the creature was in the spring of 1882, when I took five larvæ. From one of these was bred a ♀ moth; from another a pupa fell out, and died; a specimen of a species of *Braconidæ* came from a third; while the others contained dried-up larvæ.

"The larva is stout, and brown, with head and corselet black. The larva-case has no anal opening. The boughs on which the larvæ occurred bore a good crop of lichen.

"The ♀ moth emerges completely from its case, and stands thereupon, with its head towards the twig, and its ovipositor directed outward and prominent. I watched the creature from time to time during two or three days before disturbing it, during which time it maintained the same posture.

"I forward the male moth and the pupa for inspection, also one of the larva-cases."

Upon looking at this case, I instantly recognised Bruand's "thick ovate case, which stands perpendicularly from the plane of its position," and in Mr. Fletcher's clear description of the posture of the female, precise agreement with that figured by the same author. Finally, I went to South Kensington, and looked at our late friend Stainton's collection. Among the *Psychidæ*, placed with the other *Bombyces*, disappointment met me: they were all evidently well-known species; but, by good fortune, the idea of looking among the *Solenobiæ* presented itself, and there, very obviously, was the moth, rather crippled on one side, but on the other agreeing most accurately with Bruand's figure and description—*F. tabulella* evidently, but unnamed. It is very nearly of the size and shape of *F. betulina*, but with the forewings slightly narrower and more pointed, and the apex of the hind-wings also more produced and pointed, so that the hind-margin of these wings is very little rounded; colour, pale bronzy grey-brown. The female is very like that of the previous species, its anal tuft brownish.

The larva has a shining black head, legs, and dorsal plates, but its body colour is variously stated to be brown, pale ochreous, and blackish-grey, so that our knowledge of it is not yet complete. The pupa of the male is exceedingly neat, short, plump, prettily rounded, with short abdomen, the segments well supplied with the minute points which enable it to wriggle itself out of its case, and into danger. The case is round, short, thick, with the base broad and open, so that it does not lie obliquely, like those of most other species. Bruand found it on old oak palings, and on mossy branches of wych-elm. The larva becomes full-fed in June, and the moth emerges in July.

39, Linden Grove, Nunhead, S.E.:

October 19th, 1894.

SOME ADDITIONS TO THE NEUROPTEROUS FAUNA OF NEW ZEALAND, WITH NOTES ON CERTAIN DESCRIBED SPECIES.

BY ROBERT McLACHLAN, F.R.S., &c.

(Concluded from page 243).

PSEUDO-NEUROPTERA.

Fam. *PSOCIDÆ*.

MYOPSOCUS NOVÆ-ZEALANDIÆ, Kolbe, Ent. Nachrichten, ix, p. 145 (1883), = *Psocus zealandicus*, Hudson, Man. N. Z. Ent, p. 107, pl. xvi, fig. 2 (1892).

The types of Kolbe's species, in very bad condition (Wellington; I believe from Mr. Hudson), are in my collection. There seems to be no doubt that Mr. Hudson's insect is identical, but his figure (of the perfect insect) leaves much to be desired.

Fam. *EPHEMERIDÆ*.

EPHEMERA HUDSONI, n. sp.

♂ *imago*. Body castaneous (abdomen mutilated after its 4th segment; its segmental divisions narrowly darker), paler beneath. Eyes liver-red. Legs pale dingy yellowish; anterior femora with a short blackish line internally, and their tips, and those of the same tibiæ and tarsal joints, darker. Anterior wings vitreous, iridescent, the costal margin as far as the radius, from close to the base to the extreme apex, dark reddish-brown, otherwise these wings are quite without markings; neuration black, but the roots of the chief nervures and the cellules enclosed thereby, are pale yellowish; pterostigmatic region with mostly two rows of irregular cellules, most of the nervules being connected, the cellules of the lower row mostly larger. Posterior wings vitreous, without markings, the dilated basal costal portion faintly tinged with yellowish; neuration black, principal nervures yellowish at extreme base.

Length of body (♀). Expanse of anterior wings, 41 mm. Length of anterior wing, 19½ mm.

♂ *subimago*. Body dull greyish-brown, without markings, save that the segmental divisions of the abdomen are narrowly darker. Legs pale whitish-yellow, the articulations blackish, and the last tarsal joint and claws also blackish or fuscous. Outer setæ long (the tips wanting), pale greyish-brown, finely pubescent; middle seta (in the example before me) rudimentary, shorter than the appendages, dilated and rounded at the apex, consisting of not more than ten transverse joints. Appendages greyish-yellow, the long 2nd joint nearly straight, terminal two joints short, subequal and slightly incurved. Anterior wings sub-opaque, pale greyish, with the costal margin and neuration as in the imago, and in addition there are two oblique, irregular, transverse, smoky-grey fasciæ, one nodal at its origin, and not extending to the inner margin, the other sub-stigmatal, and extending right across, the sub-apical margin bordered with the same colour. Posterior wings concolorous with the anterior, with a faint, smoky-grey, median, oblique fascia, and the apical portion also smoky-grey.

Length of body, 20 mm. Expanse as in imago.

♀ *subimago*. Almost entirely similar to the ♂ subimago, but larger and more

robust. The middle seta (in the example before me) long and well developed, but considerably shorter than the two outer, and its apex apparently flattened and dilated (? inflated during life). Wings as in the ♂ subimago, but the ground has a slight greenish tinge; the dark costal margin of anterior more smoky, with scarcely any reddish tinge.

Length of body, 20 mm. Expanse, about 43 mm. (the tips of wings broken).

Wellington (*Hudson*). I have 1 ♂ imago, 1 ♂ subimago, and 1 ♀ subimago. This is the *Ephemera* from New Zealand mentioned, but not described, by Eaton in his *Revis. Monogr.*, p. 59; he had then seen only the mutilated imago; such a geographical distribution is anomalous for the genus. A very remarkable species in coloration, and still more remarkable for the condition of the median caudal seta as exhibited in the ♂ and ♀ subimago in my collection; such a condition, if constant, being probably sufficient for generic separation, showing relationship with *Heptagenia* on the one hand, and *Pentagenia* on the other: the precise condition remains to be confirmed and elucidated from an examination of many specimens of both sexes and in both winged stages.

ODONATA.

Sub-fam. LIBELLULINA.

SYMPETRUM BIPUNCTATUM, Brauer, *var. n.* NOVÆ-ZEALANDIÆ.

♀. Apparently differing from the type form chiefly in the extension of the yellow at the base of the wings, and its deep tint. In the anterior wings this colour extends to the 2nd ante-cubital nervule, to the arculus, and to near the end of the median (or lower basal) cell, and in the posterior it forms a triangular basal space reaching the triangle, and continued in an oblique manner to the anal margin some distance below the end of the membranule.

I have three females before me from Paikakariki, on the coast about 20 miles north of Wellington (*Hudson*). I am not aware that the ♂ has been discovered. Another ♀, from near Auckland (*Col. Bolton*) has been in the British Museum Collection for 40 years; it differs slightly from those from near Wellington, the yellow at the base of the wings being less extended, and hence more typical, and the dark dorsal line of the abdomen appears to be wanting (it is present in the others, and is indicated in Brauer's description).

An examination of the ♂ is desirable, but *at present* I see no reason to consider the examples as forming more than a local race of *S. bipunctatum*, a species apparently widely distributed in Australia and the Polynesian Islands, and which is probably liable to local variation. I have, at present, no ♀ before me that I can refer to *bipunctatum* (type), but those from New Zealand agree (with the exception stated) with Brauer's description, even to the structure of the vulvar scale (a crucial point).

This is the only species of *Libellulina* at present known from New Zealand, and adds another to the ridiculously small number of Dragon-flies that appear to exist in the Colony.

N.B.—Brauer quite correctly placed this species in *Sympetrum* (*Diplax*) as characterized by (*inter alia*) the large elevated bilobate posterior lobe of the prothorax. Mr. Kirby, ignoring this important character, places it, and others with the same form of prothorax, in *Trithemis*, Brauer, in the true species of which the prothorax is very differently formed (Catalogue of *Odonata*, p. 18).

Sub-fam. ÆSCHNINA.

ÆSCHNA BREVISTYLA, Ramb.—The examples from New Zealand have perhaps a slightly different *facies* from the Australian typical form. My examples are all from Canterbury, but when compiling my list of New Zealand *Neuroptera* in 1873, I overlooked the fact that Brauer had already recorded the species from Auckland (Reise der "Novara"); it is in the British Museum from Canterbury, Wellington and Auckland.

Sub-fam. AGRIONINA.

TELEBASIS.—The two species from New Zealand placed under this generic term have since been transferred by De Selys to *Xanthagrion*, Selys, and a doubtful "race" of *X. zelandicum* is described by him under the name *antipodum*, from a single imperfect ♀, differing from the type chiefly in small colour characters. Of *X. sobrinum*, McLach., there are further examples in the British Museum. Colonial entomologists will do well in carefully studying these small Dragon-flies.

Lewisham, London :

August, 1894.

NEPTICULA CONFUSELLA, A NEW BIRCH-MINING SPECIES.

BY JOHN H. WOOD, M.B.

Early in last May I had the satisfaction of breeding a few moths from the new *Nepticula* larvæ, provisionally known as "No. 1," which were described at pages 95-6 *ante*, mining in the leaves of birch. They were recently submitted to Lord Walsingham, who has most kindly drawn up for me the following description :—

Antennæ in the ♂ long (reaching to the fascia when laid back at rest), shorter in the ♀, cinereous; eye-caps whitish. Head amber-yellow. Thorax brownish-cinereous. Fore-wings brownish-cinereous, with a slight purplish lustre in a strong

light, especially towards the apex; a broad, ill-defined, whitish fascia at two-thirds of the wing length, scarcely oblique, but slightly inclining outwards from the costal margin to before the anal angle, somewhat narrower in the middle than on the costal and dorsal margins; cilia brownish-grey, paler on their outer half and about the anal angle. Hind-wings greyish, cilia with a slightly browner tinge. Abdomen brownish-cinereous. Posterior legs pale cinereous.

Exp. alar., 4.5—6 mm. Vb (in confinement).

Larva greenish-white; head pale amber, immediately behind which are a pair of conspicuous dark spots, the cephalic ganglia; burrows in the leaf with the back uppermost. Mine a long angular gallery, moderately wide, with the frass black throughout and deposited in a thread-like line. Egg on the under-side of the leaf. Single brooded. VII.

Cocoon an imperfect oval, being wider at the mouth than at the other end, smooth and dark brown; on, or just beneath, the surface of the soil.

The perfect insect comes very near *lapponica*—"painfully" so as Lord Walsingham observed, but may be known by its darker colour and more distinct fascia. Its position as an unquestionably good species must, therefore, chiefly rest on the larval characters, and these are ample for the purpose. Thus, instead of greenish-white, the larva of *lapponica* is yellow, with a black head and black plate on segment 2, the latter much obscuring the brown cephalic ganglia. The mine also of *lapponica* is quite distinct: in the early part the frass is green, coiled, and quite fills the bore; afterwards and concurrently with the last moult, it gets collected into a central thread and changes from green to black, becoming from this point a *facsimile* of the mine of the other.

Like *lapponica* it is probably none too easy to rear. Some two or three dozen mines were collected in 1893, but only seven moths were bred. This year I was very anxious to lay in again a store of the mines, as well as of those of *lapponica*, but both were so scarce that it was idle attempting to collect them. Few however as they were, they held true to their relative dates, *confusella* just beginning to appear when *lapponica* was well over. It will, doubtless, be found to be pretty widely distributed. Lord Walsingham has been able to ascertain from dry specimens of the mine I sent him that it occurs near Merton, quite at the opposite side of the country. And in a good series of *lapponica* bred by Mr. Vine, of Brighton, which he very kindly allowed me to see, was one specimen which, by its dark colour, should be referable to the new species, though, until long and pure series of both insects have been bred, it must remain uncertain how far reliance can be placed upon the characters of the imago alone.

Tarrington, Ledbury:

November 16th, 1894.

THE NEW "NICKEL PIN."

BY H. GUARD KNAGGS, M.D., F.L.S.

On the eve of the publication of my "improved pin" paper, it is an agreeable surprise to receive from my good friend McLachlan, a copy of the "Naturaliste," containing an account of a new "nickel pin," the more so as I have stated that my bronze pin is at best but a makeshift, albeit superior to anything yet in use in this country; that no perfect pin is to be expected with the present metal basis—brass; and that nickel appeared to me to be the metal best adapted for the pin of the future. Under these circumstances, it affords me great satisfaction to find that Messrs. Deyrolle, of Paris, have just introduced a nickel pin. The following is extracted from "Le Naturaliste" of 15th of the present October:—

"For collections of Coleopterous, Lepidopterous, and other insects, the pin is a question of paramount importance. Ordinary pins of brass, even though well tinned, frequently oxidize in the very body of the insect, and, in course of time, have the great inconvenience of developing oxide of copper, produced by the grease of the insects; it forms around the pin, within the insect, a sort of pad which continually increases in size, and this distends the interior of the insect until it causes it to burst. All collectors know this well to their sorrow, but we mention it only as a reminder. To remedy this, people have made black varnished pins, and pins coated with silver. The black pins are of two sorts, brass and steel; should the varnish crack, leaving the metal exposed, the same annoyance is produced by the brass pins; as for the steel ones, they rust, entailing in consequence the loss of the specimen. The plated pins* have not any of these drawbacks, but they frequently end in turning black, and presenting anything but a pleasing appearance to the eye.

"The problem, then, was to find a metal which had not any of the defects mentioned, but which might possess all the advantages. Nickel appeared to be in every way indicated, but the difficulty was to adapt it to the special use for which it was destined. For two years Messrs. Deyrolle have sought to make insect pins of nickel, and by dint of study and experiment, they are enabled to offer nickel pins, not of absolutely pure nickel, but of an alloy of which nickel is the principal component part. Pure nickel, in point of fact, cannot conveniently be drawn into a wire, it is brittle, and has but little power of resistance, it was therefore necessary to find a compound of nickel which had all the advantages of the pure metal, and it was to this class especially that their investigations were directed. The result obtained is conclusive, and nickel pins bid fair to be in demand for all Entomological collections, although the price may be a little higher than that of ordinary pins, but the advantages are such that we doubt if collectors will hesitate.—L. F."

At my request, Messrs. Deyrolle have obligingly forwarded specimens of their wares, and it seems to me that although the nickel

* N.B.—I think Messrs. Deyrolle will find that plated pins will *not* resist the action of insect acids. Dr. Sharp's solid silver ones will; and in my opinion, the tarnishing of them is an improvement to their appearance:—but then, the price!—H. G. K.

pin is by no means perfect, especially from a British collector's point of view, it is, nevertheless, the first stride in the right direction; and now that the ball has been set rolling by a French firm, our British pin makers will probably wake up and be upon their mettle.

I would suggest to Messrs. Deyrolle that their metal might be stiffened and rendered more elastic, with advantage; and that the element of copper which I find to be present should be eliminated. The latter has, no doubt, been added as a component of the alloy for hardening purposes, but surely some substitute for it could be found, for Entomologists have such a horror of copper. Then, of course, for the British market, the style would have to be considerably altered—the length of the pins reduced, the heads made solid, the points more tapering, and smaller sizes introduced. With these modifications there does not appear to be any particular reason why we should not ultimately enjoy the privilege of possessing A PERFECT PIN!

Folkestone: *October, 1894.*

Phibalapteryx lapidata in *South Argyleshire*.—I saw and took two this autumn (both ♀), one on September 24th, and the other on October 3rd. The two specimens were taken not far from the head of Loch Striven, at spots about two miles apart, but on the same hill, a rather grassy one, at 600 and 800 feet high. They were both taken where many rushes grew; they were fluttering feebly in the sun in the early afternoon. It struck me that they much resembled *Cidaria testata* when flying.—W. M. CHRISTY, Watergate, Emsworth: *November 6th, 1894.*

Phibalapteryx lapidata at *Glen Messin, Argyleshire*.—Some time ago I was shown an insect which was taken at Glen Messin on September 9th, 1892, by Mrs. Teacher, of this city; although a worn specimen, I recognised it as *Phibalapteryx lapidata*; to-day I had another look at it, and find that my determination was correct. This gives another locality for this interesting species.—JAMES J. F. X. KING, 207, Sauchiehall Street, Glasgow: *October 22nd, 1894.*

Lita suadella NOT FOUND in *Lancashire*.—On p. 82 of the current volume of this Magazine I inserted "Lancashire (*teste* J. B. Hodgkinson)" as one of the localities for *Lita suadella*, and on p. 125 I wrote "Mr. J. B. Hodgkinson tells me that he bred this species in July, about the year 1872, from larvæ found in May or June in shoots of *S. fruticosa*, near the mouth of the Wyre in Lancashire," but added a foot-note to the effect that Mr. Hodgkinson, although forwarding other allied species under the idea that they were *suadella*, and probably some of the specimens that he had then bred, had failed to send me any of the Simon Pure, and that no evidence of the occurrence of *Suada fruticosa* in Lancashire was forthcoming. I had no choice but to make these entries, because, after a long correspondence with Mr. Hodgkinson—

to whom I had given some bred *suædella*, he could not entertain the idea that he might have been mistaken. I have since identified some more saltmarsh *Litæ* and plants for him, and Mr. Hodgkinson has now come to the conclusion that he has never met with either *L. suædella* or its food-plant *S. fruticosa*. It is, therefore, advisable to cross out the above-quoted extracts from the text of my paper.—EUSTACE R. BANKES, West Wickham: November 18th, 1894.

Notes on Aphodii.—*A. porcus*: the record of this species in Fowler's *Coleoptera* is, that it is local, and, as a rule, not common. I first met with it last autumn (1893), when early in September I secured a single specimen near Sandown, Isle of Wight, with it *rufescens* occurred in plenty. This September I found another close to the same spot, and again in the same neighbourhood a few days later took three, but all of them singly, though in the same field.

On September 14th, during a visit to Box Hill, I obtained more specimens, and a few days afterwards I met with the species in a field close to my house at Richmond. The species appears, therefore, to be an autumn one, but apparently occurs in very sparse numbers.

All through September *contaminatus* has occurred in this neighbourhood, and in other districts in Surrey, in the most extraordinary profusion, its habitat often being one living mass, yet at other periods of the year it is scarce about here.

A. subterraneus occurs in abundance near Chobham, both in spring and autumn, and I have found it not uncommonly in other localities.

A. fœters, said by Fowler to be not common in the London district, I have secured in fair numbers (always in small colonies) in this neighbourhood, but always in the autumn.

Amongst the better species I have this year taken *sordidus*, on the banks of the Thames, and again lately on the sea shore at New Brighton; *tristis* at Chobham in the spring; *sticticus* at Mickleham, and a single specimen of *Zenkeri* flying in the vicinity of Box Hill.—T. HUDSON BEARE, Park House, King's Road, Richmond: October 13th, 1894.

Coleoptera in 1894.—Amongst the *Coleoptera* taken by us during the past season the following are the most noteworthy:—at Easter, on the mud flats between Shoreham and Lancing, we found a fair number of the early *Carabidæ*, including one *Pogonus luridipennis* and one *Bembidium ephippium*. Whitsuntide in the New Forest was not so good this as last year. *Haplocnemus impressus*, *Ischnomera sanguinicollis*, *Cænopsis fissirostris*, and *Grammoptera præusta*, being about the best of the things taken. We were, however, very fortunate at the Lyminster Salterns the morning after one of the largest of them had been flooded, and amongst the *débris* were *Bembidium ephippium*, *Tachys scutellaris* and *Anthicus salinus* in plenty. Along the tidal mark under large stones were *Aëpus marinus* and *Robinii*, *Cillenus lateralis*, *Diglossa mersa*, *Hygronoma dimidiata*, and *Bryaxis Waterhousei* in fair numbers. A day with Mr. Donisthorpe at his locality at Shirley produced a fine series of the rare *Eumicrus rufus*, and about three days later we turned up a single specimen under bark of a dead tree in Putney, quite close to its original locality, Richmond Park. Wimbledon Common produced *Lyctus brunneus*, *Sericosomus brunneus*, *Balaninus cerasorum* and *rubidus*, and the very rare *Zeugophora*

flavicollis; Mr. F. H. Waterhouse also captured a specimen of the *Zeugophora* the day previous to our taking it. The neighbourhood of Swanage was also good this year, *Cicindela germanica* being not uncommon; and *Brosicus cephalotes*, *Bembidium pallidipenne*, *Ocypus pedator*, *Antherophagus silaceus*, the melanic var. of *Homaloptia ruricola*, and *Anomala Frischii* and its var. *Julii* (four specimens), were also found in some numbers there. Wicken Fen, owing to the incessant rain, was not quite as good as it might have been: among our captures there were *Silis ruficollis*, *Lixus paraplecticus* and *Saperda carcharias*, the two latter in large numbers. The river just above Sunbury produced *Bryaxis hæmatica*, *Synaptus filiformis* (six specimens) and *Erirhinus bimaculatus*. *Aphodius Zenkeri* was very common in Richmond Park in the autumn, under the old oak trees. A visit to an old cellar in Shoe Lane rewarded a few hours' search with endless *Mezium affine*, six of which were in their perfect form with the bristles all over the elytra, and *Gibbium scotias*; of these two we have still a good many in duplicate, if any collectors are in want of them. A day's collecting at Bardon Hill, Leicester, produced a fine series of *Anisotoma cinnamomea* and one specimen of the rare *Triarthron Märckeli*. A capture of *Asemum striatum*, in the New Forest at Whitsun, 1893, was not recorded; we believe this to be the earliest record of the species from south of the border.—BERTRAM G. RYE and PERCY F. SKINNER, 212, Upper Richmond Road, Putney: November, 1894.

Coleoptera in 1894.—During the past season I have not had many opportunities for collecting; and on the few occasions when I had a little spare time on my hands the weather, as a rule, was unfavourable. Nevertheless, I managed to take a few things, which may perhaps be deemed worthy of record.

At the end of April I spent four days with my brother in the New Forest. The wind was cold, and a good deal of rain fell, so that I could not do very much, except in the way of searching decaying wood. The active little *Orchesia undulata* turned up under bark and in a faggot, and, thanks to my waterproof sheet, I succeeded in securing seven specimens. *Thymalus limbatus* was unusually common; and a dead oak yielded a couple of *Mycetophagus piceus* and three *Anaspis Garneysi*. In the course of our wanderings we hit on a small dead birch, still standing, which had already been visited by a Coleopterist, and partly pulled to pieces. But he had done his work very imperfectly, for on overthrowing the tree by a combined push, and completing its demolition, we found no less than five red *Elaters*—one *E. lythrop-terus*, one *E. sanguinolentus*, of the immaculate variety, and three *E. pomonæ*. Two other specimens of the last named occurred under bark of an old log, and a sixth on the branch of a partly decayed tree. A dead oak on the road between Lyndhurst and Brockenhurst was simply swarming with the common *Dryocates villosus*; there must have been many thousands in the tree. Among these, however, was a specimen of *Callidium variabile*, just out from the pupa, which I had to keep alive for nearly a week, in order that its colour might develop; and from a pupa taken from the same tree I bred out a second example a fortnight later. Another pupa, from an old stump, produced a beautiful example of *Cistela ceramoides*, which I had never met with before.

In May I got an afternoon or two at Oxshott, where *Pityophagus ferrugineus* was very abundant on the stumps of newly-cut pines. With it were a few *Clerus formicarius*; *Ditoma crenata* and *Silvanus unidentatus* turned up under bark of an oak stump; *Ennearthron affine* was fairly common in *boleti* in one small spot, and all

three species of *Corynetes* occurred in the dried carcase of a dog, *C. ruficollis* and *C. violaceus* being in the utmost profusion; *Magdalinus cerasi* tumbled into my umbrella, from hawthorn blossom; and two days after my first visit to this locality, I found a specimen of *Callidium alni* behind the ribbon of my hat, on which I suppose it must have fallen while I was engaged in shaking the branches of trees. A single example of *Anisotoma nigrita* found its way into my sweeping-net, but I had no opportunity of working for the genus at dusk.

In the middle of June I had one day at Darent, but unluckily the place was over-run with wood ants, which must have been present literally in millions. One could not sit down for them; they filled the sweeping-net, and, worse still, they appeared to have eaten all the beetles. So all I got were a couple of *Agrilus laticornis*, a single *Cryptocephalus fuleratus* from a dwarf birch, and an example of *Magdalinus barbicornis*, besides a few common things.

A week later I had a couple of days' collecting at Newbury, and worked carefully along the canal from Thatcham. My best captures were a couple of *Dasytes niger* and a solitary *Phyllotreta sinuata*; *Baris T-album* was fairly plentiful in a marshy meadow, and *Dryophilus pusillus* swarmed at dusk on the grass beneath trees in a little copse.

A couple of days at Happisburgh, Norfolk, in the middle of September, were rather disappointing, but an easterly wind was blowing. Fungi growing on old trees, however, yielded plenty of *Triphyllus punctatus* and a single *Orchesia micans*; seven *Nebria livida* turned up on the shore, under leaves of coltsfoot resting upon the sand; and a single *Trechus micros* was walking along the foot of the cliff, apparently bent on a voyage of discovery. My strangest capture was a specimen of *Donacia bidens*, hiding under rubbish on the shore, and miles away from the nearest fresh water. A nice example of *Saperda carcharias*, taken close by, was given me by a friend.—THEODORE WOOD, 23, Brodrick Road, Upper Tooting, S.W.: October 10th, 1894.

Adimonia olandica, Boh., at Westward Ho!—I have lately had the pleasure of naming a specimen of this rare insect, which was found by a young lady floating in the swimming bath at Westward Ho! Oddly enough, an example of the only other British species of the genus (*A. tanacetii*) was taken in the same place and at the same time.—ID.

Coleoptera in the Plymouth district.—The following species have, with one or two exceptions, been taken by me in the neighbourhood of Plymouth since the publication of my last note in this Magazine (cf. vol. xxviii, pp. 23, 24):—

Elaphrus uliginosus, singly, on two occasions, on damp spots on the moor; *Harpalus tenebrosus*, frequent, in Mr. J. J. Walker's old locality at Whitsand Bay; *Pterostichus dimidiatus*, a single specimen, given to me by Mr. Lemann, caught near Salcombe; *Aëpus marinus* and *Aë. Robini*, both in numbers on the shore; *Dytiscus punctulatus*, in a weedy ditch, very local, in just one spot; *Deronectes latus* (2), *D. depressus*, and *D. 12-pustulatus*, in quantity; *Hydroporus septentrionalis* and *H. rivalis* and *Orectochilus villosus*, in plenty, out of weed in the river Meavy; *Hydræna gracilis*, several specimens, and *H. pygmaea*, a single example (identified by Mr. Champion), in flood refuse about an old stump in the same river; *Diglossa mersa*, one specimen, under a stone on the shore; *Ocypus brunripes* (1), under bark;

Phlæocharis subtilissima (1), in moss; *Quedius puncticollis* (1), under bark, *Q. scintillans*, in hedge clippings; *Hypocyptus læviusculus*, one specimen by sweeping, and another at the roots of grass, *H. seminulum* (1), with the preceding; *Philonthus decorus*, trapped in sugar, *P. fumigatus* (1), in hedge cuttings; *Dianthus cærulescens*, abundant in moss in the river and in flood refuse; *Stenus Guyneneri* (3), with the preceding, *S. geniculatus*, at the roots of grass; *Stilicis similis* (2), amongst needles of a felled pine; *Trogophlæus arcuatus*, in moss on stones in the river Plym; *Homalium planum* (1), under bark; *Scaphidium 4-maculatum*, several, in alder chips in the woods; *Trichopteryx angusta* (identified by the Rev. A. Matthews) (2), under bark of aspen; *Ptinella denticollis*, several, under oak bark; *Agathidium nigripenne*, several, in a pile of bark put up on a "trap," *A. lævigatum* (1), by sweeping, *A. atrum* and *A. seminulum*, frequent, in alder chips, and *A. rotundatum*, several, in the same place; *Colon brunneum* (1), at the roots of grass; *Leptinus testaceus* (1), in the alder chips; *Necrophorus interruptus* and the var. *gallicus* (confirmed by the Rev. W. W. Fowler), in traps—these are old captures of 1885; *Omosita depressa* (2), in a dead dog; *Pria dulcamarae*, on *Solanum dulcamara*, on the shore; *Rhizophagus parallelocollis* (1), at rest on a tombstone in Salecombe Churchyard; *Hippodamia variegata* (1), by sweeping; *Coccinella 5-punctata*, several specimens, in 1893-4, chiefly by beating dwarfed sallow, growing in sand, near Yelverton, but also taken off gorse and found at roots of grass in the same locality; *Chilocorus similis*, off alder; *Scymnus pygmaeus* (1), in alder chips, *S. capitatus* (1), in moss; *Geotrupes vernalis* (5), in the pathways on the moor in hot sunshine; *Hydrocyphon deflexicollis*, on shrubs, especially broom, beside the Erme and Plym; *Cis alni* (1), by beating; *Orchesia undulata* (3), off felled oak, and *O. micans*, beaten off holly, in Cann Woods; *Cænopsis fissirostris* (2), at roots of grass in sandy soil, *C. Waltoni*, many specimens, sifted out of moss on oaks; *Larinus carlinae*, on thistles, several, in May, 1893, none to be found in 1894; *Erirehinus tremulae* (1), in flood refuse; *Elleschus bipunctatus* (1), in moss on oak; *Phlæophagus æneopiceus*, in ash, *P. spadix*, in a balk of timber lying on the shore; *Apion Hookeri* and *A. confluens* (the latter in swarms), at roots of *Matricaria* on the shore; *Phlæophthorus rhododactylus* (1 only), in hedge clippings near the moor; *Gracilia pygmaea*, frequently in old baskets, &c.; *Leptidea brevipennis*, I have recently had given to me a batch of this introduced species, bred from a hamper which has been in the donor's possession about two years; *Pogonochærus dentatus*, *P. bidentatus*, and *Pachyta 8-maculata*, off holly, the latter sometimes in great profusion; *Chrysomela goettingensis* (1), under stone on a slope leading to the sea; and *Mniophila muscorum*, in numbers, sifted out of moss on oaks.—JAMES H. KEYS, 7, Whimble Street, Plymouth: October 25th, 1894.

Coleoptera from Herefordshire.—I have received during the last two years a great many *Coleoptera*, collected by my friend, the Rev. H. C. Binstead, in the neighbourhood of Eardisley, Herefordshire. The following species seem worthy of being recorded:—*Anchomenus oblongus*, *Bembidium atrocæruleum*, *femoratum*, *fluviale*, *varium*, *prasinum*, and *punctulatum*, along with several commoner ones, and *Tachypus flavipes*. The district is also pretty rich in *Hydradephaga*. The following species, amongst many commoner ones, were sent to me:—*Brychius elevatus*, *Noterus capricornis*, *Cælambus inæqualis*, *versicolor*, and *decoratus*, *Deronectes 12-pustulatus*,

depressus, and *assimilis*, *Hydroporus septentrionalis*, *pictus*, *nigrita*, and *morio*, *Platambus maculatus*, *Ilybius ater*, *Octhebius exsculptus*, *Hydræna testacea*, *nigrita*, *gracilis*, and *pygmæa*, *Staphylinus stercorarius*, *Philonthus umbratilis*, *Baptolinus alternans*, *Dianöus cærulescens*, *Stenus bipunctatus*, *pubescens*, *pallitarsis* var. *niveus*, and *pallipes*, *Bledius fracticornis*, *Omalium pusillum* and *vile*, *Agathidium nigrinum*, *Meligethes morosus*, *Pocadius ferrugineus*, *Ips quadripustulatus*, *Rhizophagus bipustulatus* and *dispar*, *Cerylon angustatum*, *Pediacus dermestoides*, *Anisosticta 19-punctata*, *Halyzia 14-guttata*, *Chilocorus similis*, *Endomychus coccineus*, *Elmis æneus* and *Volkmaria*, *Potaminus substriatus*, *Corymbites pectinicornis* and *quercæ* var. *ochropterus*, *Melandrya caraboides*, *Rhinoncus perpendicularis*, &c., *Cissophagus hederæ* (a single specimen), *Prionus coriarius*.—ALFRED THORNLEY, South Leverton Vicarage, Notts.: October, 1894.

Coleoptera from the Lake District.—I have also received some very interesting species of *Coleoptera* from the Eskdale district of the Cumberland Lakes. They were collected by Mr. Binstead between June 20th and July 9th, 1894. *Carabus glabratus*, a fine series; *C. arvensis*, a series showing considerable variation in colour, from black, through dark green, to copper; along with these a few black specimens of *C. catenulatus*. *Notiophilus substriatus*, from near one of the Tarns. *Agabus arcticus*, from a shallow peaty pool near Angle Tarn, along with *A. unguicularis*, *Hydroporus morio*, and several other common water beetles. *Donacia comari* was very common on water plants in a small Tarn. By beating broom and sweeping, *Gonioctena pallida* was obtained, and *Luperus betulinus* in abundance, with a single *L. flavipes*. The *Sternozi* were in great force, and were chiefly obtained by sweeping braeken. *Sericosomus brunneus*, *Athöus niger*, *Limonius minutus*, *Cryptohypnus riparius*, *Corymbites cupreus* (out of about eighteen specimens only one was the type form, all the rest being var. *æruiginosus*); *C. tessellatus*, a pair; *Athöus vittatus* and *Agriotes sobrinus*. Amongst the *Malacodermata*, *Dascillus cervinus* and *Lampyris noctiluca* were abundant; and several specimens of *Helodes marginata*. Amongst the *Brachelytra*, three often associated species turned up, *Dianöus cærulescens*, *Stenus Guynemeri*, and *Quedius auricomus*.—Id.

Eros (Platycis) minutus in *Nottinghamshire*.—I took a single specimen of this local beetle in a little wood at Treswell near here, on the afternoon of September 12th, 1894. We have now records for both *minutus* and *affinis* in this county.—Id.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: October 15th, 1894.—Mr. G. T. BETHUNE-BAKER, Vice-President, in the Chair.

Mr. Wainwright showed a small collection of *Hymenoptera* made chiefly during the present year. Mr. R. C. Bradley showed a small collection of *Aculeates* made in the New Forest last July, which had been named for him by Mr. Saunders; it contained, amongst other species *Pompilus spissus* and *Myrmosa melanocephala*. Mr. W. Harrison showed insects, including *Lycæna Adonis* and *L. Astrarche*, taken in September last on Rodborough Hill, near Stroud; also *Trochilium apiforme*, which he had succeeded in breeding from larvæ obtained at Arley in April last; he

had on several occasions obtained larvæ in the autumn before hibernation, and always failed to rear them, these, however, taken in the spring, he had found much easier to rear. Mr. A. H. Martineau showed a few insects taken at Nevin, North Wales, in September last; there were three specimens of *Syrphus annulipes*, Zett., the species which was introduced to the British list by Mr. Wainwright on the strength of one specimen taken by himself on the Cotswolds, near Stroud, in June last; there were also specimens of *Arctophila mussitans*, and Mr. Martineau remarked upon the extraordinary resemblance of this species, particularly when on the wing, to *Bombus muscorum*; he had found it most difficult to distinguish them. Mr. Bethune-Baker remarked upon the unusual numbers of *Syrphidæ* he had seen in his garden this autumn. Mr. Wainwright said that he had also been struck by the unusual numbers flying in his garden, *Syrphus balteatus* and *corollæ* being particularly abundant. Mr. Bradley had had similar experiences, and said that in Sutton Park *Catabomba (Syrphus) selenitica*, which he had never noticed in the district before, had been quite common this autumn. Mr. A. W. Walker showed insects collected this summer in Devonshire, at Mort Hoe and Woolacombe, amongst others being *Epeolus rufipes*, Thoms.—COLBRAN J. WAINWRIGHT, *Hon. Secretary*.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY: *November 12th, 1894.*
—MR. S. J. CAPPER, F.L.S., F.E.S., President, in the Chair.

Mr. W. Hewett, Vice-President of the York and district Field Naturalists' Society, read a paper on "*Arctia lubricipeda* and its varieties *radiata*, *fasciata*, and *eboraci*, &c., in Yorkshire, Durham and Lincolnshire," in which he spoke of the older specimens of *radiata* previous to 1891, and after giving a complete history of the present brood, stated that he believed this form to be genuine, and congratulated Mr. Harrison on his success. The paper was illustrated by a large number of varieties of the various forms, besides a number of specimens the result of crossing. Mr. Robson, of Hartlepool, exhibited also a number of exotic species of the genus. Mr. Capper, Mr. Crabtree, Mr. C. F. Johnson, and others exhibiting fine series of the species, Mr. G. T. Porritt's intermediate forms being much admired. Mr. Crabtree exhibited a number of Scottish *Lepidoptera*, including *Sesia scoliaformis*, *Zygæna exulans*, *Crambus myellus*, &c. Mr. Gregson, specimens of *Acidalia humiliata*, with continental specimens of *A. osseata* for comparison. Mr. Watson exhibited *Parnassius Delius* and *P. Smintheus*, with microscopic preparations of their palpi and antennæ, and stated that after careful examination he had come to the conclusion that these so-called varieties were distinct species. Mr. Hewett had a box of varieties of *Polia chi*, including the forms of var. *olivacea*, also two olive-brown specimens of *Bombyx quercus* (♂ and ♀) from Rhanbolds Moor, Yorks. Mr. Newstead, a collection of *Hemiptera-Heteroptera* and *Homoptera*, including three cases of life-histories prepared by his brother, Master A. Newstead, a boy of 14, for which he had received the Kingsley Prize. Mr. Arkle, of Chester, a fine variety of *Chelonia plantaginis*, bred from larvæ taken at Winchester, and a female of *Erebia Blandina* from Witherslack, with five ocelli on each primary.—F. N. PIERCE, *Hon. Secretary*, 7, The Elms, Dingle, Liverpool.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY:
October 25th, 1894.—E. STEP, Esq., President, in the Chair.

Mr. Henry Lamb, of Maidstone, and Mr. Arthur Cosway, of Watford, were elected Members.

Mr. Jobson exhibited a var. of *Abraxas grossulariata*, L., from his garden, having only a few black scales in place of the usual markings. Mr. McArthur, bred series of *Hypsipetes sordidata*, Fb., from North Devon, the lighter specimens from bilberry-fed larvæ, and the darker ones from sallow-fed larvæ. Mr. Frohawk, xanthic examples of *Epinephele hyperanthus*, L., and *E. Janira*, L.: a long discussion ensued as to the causes of this class of variation, and the effect upon the imago of injuries to the larva and pupa, with the bearing of Weismann's theory thereon. Mr. Tutt, perfectly white vars. of *Emydia cribrum*, L., from the Alps, with New Forest examples for comparison; also two specimens of the new British species, *Cataplectica Farreni*, Wals., from Cambridgeshire. Mr. Mansbridge, the dry carcase of a mole taken from a barn door, which was covered with Lepidopterous cocoons and pupa cases. Mr. H. Moore, two specimens of the Violet Carpenter Bee, *Xylocopa violacea*, L., from Podensac, Gironde. Mr. R. Adkin, bred series of *Asphalia ridens*, Fb., from the New Forest; and a *Lycæna Egon*, Schiff., from Oxshott, having the two costal spots on the under-side of the lower wing united. Mr. Tutt read a paper, entitled, "*Zygæna carniolica*, Scop., and its varieties," in which he gave a graphic description of the scenery at the foot of Mont Blanc, and the delight it afforded to an entomologist by the beauty and abundance of the *Lepidoptera* to be obtained there.

November 8th, 1894.—The President in the Chair.

Mr. R. South exhibited a large number of *Lepidoptera*, representing his captures of the season, and stated that it was the most barren year he had ever experienced: among the specimens were a bred series of *Cidaria truncata*, Hufn., var. *centumnotata*, Fab., a unicolorous *Hepialus velleda*, Hb., and a series of *Crambus margaritellus*, Hb. Mr. Frohawk, bred specimens of *Vanessa Atalanta*, L., with an incipient white blotch in the red band, and a pale *Thecla rubi*, L. Mr. H. Moore, a series of *Chrysophanus Phlæas*. Mr. Edwards, specimens of *Plusia moneta*, Fab., *Phibalapteryx lapidata*, Hb., *Noctua depuncta*, L., *Aicialia immorata*, L., *Dasygampa rubiginea*, Fb., &c. Mr. R. Adkin, bred series of *Dicranura bifida*, Hb., from Bucks, and of *D. furcula*, L., from Hants, and in remarking upon the similarity of the two species, pointed out their distinguishing features. Mr. Fremlin, nice varied series of *Emydia cribrum*, L., from the New Forest, and a series of *Dasygampa rubiginea*, Fb., from Berks. Mr. C. A. Briggs, very fine varieties of *Lycæna bellargus*, Rott., from Kent: among them were (1) an under-side with the black spots much elongated; (2) an under-side with most of the black spots absent; and (3) an under-side with a considerable increase in size of all the white and lighter markings. Mr. Feun, a Shetland form of *Cidaria immanata*, Haw., and Scotch forms of *Hepialus humuli*, L., *Emmelesia albulata*, Schiff., *Pygæra pigra*, Hufn., *Hypsipetes ruberata*, Frr., and *Phibalapteryx lapidata*, Hb. Mr. Trenerry, a light var. of *Chrysophanus Phlæas*, L., from North Cornwall. Mr. Manger, a very large *Vanessa cardui*, L., the unusually fine band containing a white spot. Mr. Perks, a specimen of *Blatta germanica*, L. Mr. Carrington, a number of large galls on a species of golden rod, and a large water bug from British North America; he also gave an interesting account of his recent visit to Manitoba. Mr. Tutt read a descriptive account of his observations of *Zygæna achilleæ*, Esp., in the Alps, illustrating his remarks by a large number of specimens taken this year.

On December 13th Mr. William Mansbridge will read a paper on "The *Lepidoptera* of the Indian Territory, U. S. A., as observed by himself in 1893-94, with special reference to allied British species."—H. J. TURNER, Hon. Secretary.

ENTOMOLOGICAL SOCIETY OF LONDON: *October 17th, 1894.*—HENRY JOHN ELWES, Esq., F.L.S., F.Z.S., President, in the Chair.

Dr. H. G. Breyer, of Prætoria, Transvaal, South Africa, was elected a Fellow of the Society.

Mr. G. C. Champion read a letter, dated 15th August last, from Mr. J. Y. Johnson, of Funchal, Madeira, on the subject of a recent visitation of Locusts to the Island, and exhibited specimens. Mr. Johnson mentioned that Darwin, in his "Origin of Species," recorded that in November, 1844, dense swarms of locusts visited Madeira. He said that since then, until August last, these insects had not visited the Island. Mr. Champion remarked that the species sent by Mr. Johnson was *Decticus albifrons*, Fabr., not a true migratory locust. Mr. Champion also exhibited specimens of *Anthaxia nitidula*, *Velleius dilatatus* and *Athous rhombeus*, taken in the New Forest during the past summer.

Mr. H. Goss read a letter he had received from Captain Montgomery, J.P., of Mid-Ilovo, Natal, reporting vast flights of locusts there, extending over three miles in length, on the 31st August last, and exhibited a specimen of the locust, a species of *Acridium*. Captain Montgomery stated that, as a rule, his district and most of Natal was free from the pest, but that an exceptional invasion had occurred in 1850.

Mr. J. W. Tutt exhibited four typical specimens of *Emydia cribrum* from the New Forest, and, for comparison, four specimens of the variety, *candida*, of the same species, taken at an elevation of 4,000 feet, near Courmayeur, on the Italian side of Mont Blanc. He stated that he had also met with this form in the Cogne Valley, at an elevation of from 6,000 to 8,000 feet.

Mr. R. Adkin exhibited for Mr. H. Murray a specimen of *Erebia æthiops*, in which the left fore-wing was much bleached, taken in August last, near Carnforth. Mr. Adkin also exhibited a series of *Acronycta rumicis* from Co. Cork, Ireland, including light and black forms, with examples from the Scilly Isles, Isle of Man, and North of Scotland for comparison.

Mr. Elwes exhibited a series of *Chionobas Alberta*, ♂ ♀, *Chionobas Uhleri*, var *varuna*, and *Erebia discoidalis*, from Calgary, Alberta, N.W. Canada, collected in May last, by Mr. Woolley-Dod. He said that the validity of *C. Alberta*, which had been questioned by Mr. W. H. Edwards, was fully established by these specimens.

Professor Poulton gave an account of the changes he had recently made at Oxford in the arrangement of the Hope Collections in the Department of Zoology, and as to the rooms now available for students working at these collections.

Mr. G. T. Bethune-Baker communicated a paper, entitled, "Descriptions of the Pyralidæ, Crambidæ, and Phycidæ, collected by the late T. Vernon Wollaston in Madeira."—H. Goss, *Hon. Secretary*.

November 7th, 1894.—Colonel CHARLES SWINHOE, M.A., F.L.S., Vice-President, in the Chair.

Mr. W. P. Blackburne-Maze, of Shaw House, Newbury, Berkshire, and Mr. Bertram George Rye, of 212, Upper Richmond Road, Putney, S.W., were elected Fellows of the Society.

Colonel Swinhoe exhibited a female of *Papilio Telearchus*, Hewitson, which he had received by the last mail from Cherra Punji. He said that this was the only

known specimen of the female of this species, with the exception of one in Mr. L. de Nicéville's collection, which he had described in the Journal of the Bombay Natural History Society in 1893; he also exhibited a male of the same species for comparison.

Mr. C. G. Barrett exhibited abnormal forms of *Pararge Megæra*, *P. Ægeria*, *Melitæa Athalia*, *Chrysophanus Phlæas*, *Charæas graminis*, *Lophopteryx camelina*, *Plusia gamma*, *Cucullia chamomilla*, *Boarmia repandata*, var. *conversaria*, *Cidaria psittacata*, and other species, all collected by Major J. N. Still on Dartmoor, Devon; he also exhibited for Mr. Sydney Webb, of Dover, a long series of most remarkable varieties of *Arctia Caja* and *A. villica*.

Mr. Gervase F. Mathew exhibited seven beautiful and striking varieties of *Arctia villica*, bred from larvæ obtained on the Essex Coast near Dovercourt, in March and April, 1893 and 1894.

Herr Jacoby exhibited two specimens of *Blaps mucronata*, with elytra which had not hardened, although the insects had been kept for some time, taken on a wall at Hampstead. The Rev. Canon Fowler and Mr. G. C. Champion made some remarks on the subject of the elytra of immature beetles.

Mr. H. Goss exhibited a specimen of *Periplaneta australasiæ*, received from Mr. C. E. Morris, of Preston, near Brighton. Mr. McLachlan said the species had been introduced into this country, but was now considered a British insect.

Mr. B. G. Rye exhibited specimens of the following rare or local species of *Coleoptera*, and gave the names of the localities in which they had been taken:—*Cicindela germanica*, *Eumicrus rufus*, *Triarthron Märkeli*, *Mezium affine*, *Homalopia ruricola*, *Anomala Frischii*, var. *julii*, *Synaptus fliformis*, *Lixus paraplecticus*, *Balaninus cerasorum*, *Asenum striatum*, and *Zeugophora flavicollis*.

Mr. McLachlan exhibited for Mr. G. C. Bignell, of Plymouth, two new species of *Ichneumonidæ* from Devonshire, viz., *Pimpla Bridgmani*, Bign., a parasite on a spider, *Drassus lapidicolens*, Walek., and *Praon absinthii*, Bign., a parasite on *Siphonophora absinthii*, Linné, together with *Pimpla epeiræ*, Bign., also a parasite on a spider.

Mr. C. O. Waterhouse stated that the *Acridium* received from Capt. Montgomery, and exhibited by Mr. Goss at the last Meeting, was *Acridium septemfasciatum*, and he exhibited the species with the wings extended.

Mr. Ridley exhibited a species of a scale insect (? *Lecanium*) found on a nutmeg tree in Malacca, and made some remarks on *Formica smaragdina*, which makes its nest on the trees, joining the leaves together by a thin thread of silk at the ends. The first step in making the nest is for several ants to bend the leaves together and hold on with their hind legs, and one of their number after some time runs up with a larva and irritating it with its antennæ makes it produce a thread with which the leaves are joined; when one larva is exhausted a second is fetched, and the process is repeated.

Mr. Waterhouse read a paper, entitled, "Some remarks on the Antennæ of Insects." A discussion followed, in which Messrs. Champion, Jacoby, McLachlan, and Gahan took part.—H. GOSS and W. W. FOWLER, *Hon. Secretaries*.

CHANGE OF ADDRESS.

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G. LEWIS, from Wimbledon, to St. Regulus, Archer's Road, Southampton.

EXCHANGE.

Duplicates: Phibalapteryx lapidata. *Desiderata*: very numerous, especially Sphinges, Bombyces, Leucaniidæ, Acidaliæ, &c.—K. J. MORTON, Glenview Cottage, Carluke, N.B.

ENTOMOLOGICAL SOCIETY OF LONDON, WEDNESDAY,

DECEMBER 5TH, at 8 p.m. *Papers to be read*:—

- (1) "A List of the *Lepidoptera* of the Khasia Hills, Part III." by Colonel Charles Swinhoe, M.A., F.L.S. (2) "A Monograph of British *Braconidæ*, Part VI." by the Rev. T. A. Marshall, M.A., F.E.S. (3) "On the Longicorn *Coleoptera* of the West India Islands:" by Charles J. Gahan, M.A., F.E.S. (4) "Notes on the Fungus eating habit of *Sericomyrmex opacus*, Mayr:" by Frederic W. Ulrich, F.E.S.

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CONTENTS.

	PAGE
Congratulatory to John William Douglas	265
The British species of the genus <i>Psyche</i> and its allies (<i>concluded</i>).—C. G. Barrett, F.E.S.	265
Some additions to the Neuropterous Fauna of New Zealand (<i>concluded</i>).—R. McLachlan, F.R.S.	270
<i>Nepticula confusella</i> , a new birch-mining species.—John H. Wood, M.B.	272
The New "Nickel Pin."—H. Guard Knaggs, M.D., F.L.S.	274
<i>Phibalapteryx lapidata</i> in South Argyleshire.—W. M. Christy, F.E.S.	275
<i>Phibalapteryx lapidata</i> at Glen Messin, Argyleshire.—J. J. F. X. King, F.E.S.	275
<i>Lita suadella</i> not found in Lancashire.—E. R. Bankes, M.A., F.E.S.	275
Notes on Aphodii.—T. Hudson Beare	276
Coleoptera in 1894.—Bertram G. Rye, F.E.S., and Percy F. Skinner	276
Coleoptera in 1894.—Rev. Theodore Wood, F.E.S.	277
<i>Adimonia celandica</i> , Boh., at Westward Ho!— <i>Id.</i>	278
Coleoptera in the Plymouth District.—James H. Keys	279
Coleoptera from Herefordshire.—Rev. A. Thornley, M.A., F.E.S.	279
Coleoptera from the Lake District.— <i>Id.</i>	280
<i>Eros (Platycis) minutus</i> in Nottinghamshire.— <i>Id.</i>	280
SOCIETIES.—Birmingham Entomological Society	280
Lancashire and Cheshire Entomological Society	281
South London Entomological, &c., Society	282
Entomological Society of London	283
TITLE PAGE, INDEX, &c.	i—xiv

* * * After the present No. had been made up, we heard with much regret of the death of Mr. J. R. WELLMAN, who was well known as a British Lepidopterist, and especially as a skilful rearer of *Geometridæ*.

ENTOMOLOGICAL SOCIETY OF LONDON.—Meetings for the Session 1894–5:—

Wednesday, December 5th, 1894, and (Annual), January 16th, 1895.

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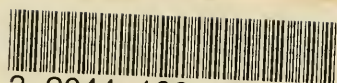
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