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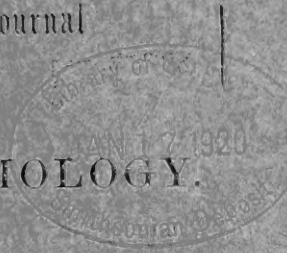
THE
ENTOMOLOGIST

AN

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- ADKIN, ROBERT, F.E.S., 76
 ALDERSON, J., 57
 AUSTEN, E. E., 128
 BAKER, HERBERT WM., 291
 BLACKIE, JOHN E. H., 52
 BLACKMAN, T. M., 269, 291, 292
 BOLAM, GEORNE, 173, 174
 BOND, MARY C., 244
 BOORNE, MORRIS J., 243
 BOWDITCH, FRED. C., 25, 72, 169, 190,
 214, 234, 253
 BRAMWELL, F. G. S., 147, 244
 BROWN, GERALD HUGH, 298
 BULL, G. VERNON, M.D., 148
 CAMPION, HERBERT, 246, 262
 CARTER, HENRY F., F.E.S., 39
 CARTER, WILLIAM, 249
 CHARTRES, S. N., 271
 CLUTTERBUCK, C. GRANVILLE, F.E.S.,
 117
 COCKERELL, Prof. T. D. A., F.E.S., 30,
 81, 109, 146, 238, 267
 CONEY, Miss B. A., F.E.S., 78, 195
 CORBET, A. STEVEN, 53, 269, 296
 CORDER, JAMES W., 248
 CORNELL, ERNEST, 51
 CRABTREE, B. H., F.E.S., 52
 CRISP, E., 77
 CROFT, E. OCTAVIUS, M.D., F.E.S., 21
 CUTHBERTSON, ALEXANDER, 53
 DAY, F. H., F.E.S., 100, 219
 DISTANT, W. L., F.E.S., 3, 40, 68, 164
 DRUITT, ALAN, 270
 EASTWOOD, JOHN E., 292
 ELLIOTT, E. A., F.E.S., 256
 ESSON, L. G., 244, 291
 FASSNIDGE, WM., 269, 290
 FLEMING, G., 173
 FORD, A., 244
 FORD, Rev. HAROLD D., 172
 FORD, LEONARD, 126
 FOUNTAINE, MARGARET E., F.E.S., 239,
 290
 FROHAWK, F. W., M.B.O.U., F.E.S., 146,
 147, 148, 201, 242, 244, 268, 295, 304
 FRYER, J. C. and F. H., 220
 GATTY, R., 293
 GILLETT, Major F., 148, 219
 GOODMAN, R. N., 147
 GOODSON, A. L., 125
 GREEN, E. ERNEST, F.Z.S., F.E.S., 198
 GREER, THOMAS, 31, 113, 173, 206, 258,
 282, 291
 HAINES, F. H., M.R.C.S., 81, 109, 174,
 198
 HALL, ARTHUR, F.E.S., 276, 278
 HANBURY, FREDERICK J., F.L.S., F.E.S.,
 268
 HAYWARD, A. R., 52
 HAYWARD, Capt. KENNETH, F.E.S., 219,
 290
 HENSHALL, G. H., 101
 HESLOP, IAN R. P., 291
 HODGE, E. CROSE, 243
 HODGSON, S. B., 174, 242
 HOLFORD, H. D., F.E.S., 271
 HOPKINS, G. H. E., 125, 173, 290
 HUGHES, C. N., F.E.S., 270
 JACKSON, F. W. J., 241
 JACOBS, STANLEY N. A., 16, 19, 148
 JAKES, J. M., 148
 JOICEY, J. J., F.L.S., F.E.S., etc., 105
 JONES, A. H., F.E.S., 245, 291
 JONES, HUGH P., 44, 70, 78, 88
 KERSHAW, G. BERTRAM, F.E.S., 127, 196
 KILLINGTON, FREDK. J., 55, 241, 301
 LANE, F. P., 244
 LIANCUNY, F. HOWARD, 98
 LITTLEWOOD, FRANK, 197
 LONG, ARTHUR, 269
 LONGHURST, A. M., 21
 LUCAS, W. J., B.A., F.E.S., 78, 94, 127,
 128, 212, 218, 221, 224, 247
 LYLE, G. T., F.E.S., 6
 MANN, F. G., 148
 MANSBRIDGE, WM., F.E.S., 6, 99, 104,
 176
 MATHEW, GERVASE F., Paymaster-in-
 Chief R.N., F.E.S., 147, 210, 294
 MAYOR, C. M., 217
 MEADEN, LOUIS, F.E.S., 18
 MELVILL, J. COSMO, M.A., F.E.S., 17,
 127
 MERA, A. W., 84

MEYRICK, EDWARD, B.A., F.R.S., 52, 76, 274	SIMPSON-HAYWARD, G. H., 292
MILMAN, P. P., 20	SLOPER, G. O., F.Z.S., F.E.S., 244
MORLEY, B., 104	SMITH, THOMAS, 218, 293
MORRIS, C. E., 17	SOUTH, RICHARD, 76, 152, 195, 202, 224, 237, 270, 271, 273
MORTON, KENNETH J., F.E.S., 177	SPILLER, A. J., 20
NICHOLSON, C., 54, 221	STAFFORD, AUGUSTUS E., 241, 243
PALMER, RAY, F.E.S., 126	STIDSTON, Engr.-Comdr. S. T., F.E.S., 219
PALMER, W. H., 101	STOWELL, E. A. C., 122, 143, 221, 293
PATON, CYRIL J., 219	TALBOT, G., F.E.S., 105
PHILLY, H., 270	TARBAT, Rev. J. E., 242
PICKARD-CAMBRIDGE, A. W., 148	THEOBALD, FRED. V., M.A., 230
PIERCE, WALTER, 101, 219	THURNALL, A., 220
POSTANS, A. T., 78	TURNER, HY. J., F.E.S., 22, 80, 103, 175, 200, 247, 272, 301
RATTRAY, Col. R. H., 295, 298	VICKERS, J. H., 101
RAYNOR, Rev. GILBERT H., 196, 242, 270	WALSH, GEO. B., 292
REID, PERCY C., 245	WARD, J. DAVIS, 196
RILEY, Capt. NORMAN D., F.E.S., 56, 152, 180	WELLS, H. O., 270
ROSA, ALBERT F., M.D., 264, 280	WHITTLE, F. G., F.E.S., 89
ROTHSCHILD, The Hon. N. C., M.A., F.E.S., etc., 241, 270	WILEMAN, A. E., F.E.S., 206, 237, 273
ROWLAND-BROWN, H., M.A., F.E.S., 3, 17, 50, 57, 98, 124, 135, 145, 151, 153, 184, 199, 222, 251, 279	WILLIAMS, C. B., M.A., F.E.S., 163
SCOTT, HUGH, M.A., D.Sc., F.E.S., 19	WILLIAMS, B. S., 126
SERJEANT, N. O. R., 217	WOOD, H. WORSLEY, F.E.S., 18, 52, 53, 243
SHELDON, W. G., F.Z.S., F.E.S., 12, 35, 64, 99, 102, 127, 129, 157, 187, 209, 217, 226, 240, 303	WOODFORD, CHARLES M., 119, 197, 246, 293
SILLS, E. H., 77, 172	WOODEFORDE, F. C., B.A., F.E.S., 8, 90, 141, 161, 285
	WRIGHTSON, M., 292

PLATES.

	FACING PAGE
1. <i>Oxigrapta literana</i> and abs.	129
2. <i>Palingenia mesoptamica</i>	177

ILLUSTRATIONS IN THE TEXT.

	PAGE
<i>Scholastes foordi</i>	30
Fossil Tipulidæ	83
<i>Pieris rapæ</i> , gynandrous ab.	201
<i>Arícia astrarche</i> ab. <i>cuneata</i> , and other forms	249

INDEX.

GENERAL.

- Aberrations of *Coccinella bipunctata*, 271
- Abisco and Bossekop revisited, 264, 280
- Abraxas grossulariata, second brood, 52
- Aceronycta alni ab. steinerti, 173
- Adaptation of caterpillars to their surroundings, The, 217
- Aglais urticae, ab., and *Cidaria immanata*, ab., 289
- Agriades corydon ab. semi-syngrapha in Sussex, 16
- Agrotis segetum in March, 148
- Amphidasys doubledayaria in the Isle of Man, 219
- Anosia plexippus in Britain, 145, 210
- Aporia crataegi, L., in Cyprus, 219
- Arctia caia utahensis, Hy. Edw., 238
- Argynnis selene, second brood at Abbott's Wood, 17
- Blood-sucking Thysanoptera, 198 ; Thrips, 163
- Brenthis euphrosyne, ab., 172
- Brenthis selene, second brood, at Abbott's Wood, 17, 243
- British Aphides, New and little known, 230
- British Braconidæ, 6
- British Neuroptera, Notes on, 212
- Butterflies in South Cornwall, 20 ; in the Isle of Purbeck, 21
- Butterflies on the South Salisbury Downs, 1921, 295
- Butterflies of note observed around Tring, 124 ; of South Bucks, 1920, 50 ; of Ventnor, 51 ; of West Sussex, 197
- Butterfly notes from Cumberland, 99
- Catocala fraxini in Scotland, 244
- Celastrina argiolus treble-brooded, 242
- Celerio euphorbiæ mauretanica, Stgr., in Porto Santo, 146
- Chrysophanus dispar, Hw., 16
- Chrysophanus phlæas aloa, 268 ; cæruleopunctata, 17 ; schmidtii, 242
- Chrysophanus phlæas var. cæruleopunctata on dry ground, 101
- Cœnonympha pamphilus vars., 242, 290
- Coleophora agramella in Essex, 219
- Colias edusa and ab. helice, 18
- Colias edusa and *Caradrina ambigua* in South Devon, 242
- Colias edusa, C. hyale, etc., on the Sussex coast, 292
- Colias edusa, etc., in Hampshire, 100
- Colias edusa, Fab. (croceus, Fourc.): its seasonal forms, varieties and aberrations, 135, 153, 184, 251 ; A further note on, 279
- Colias edusa, *Pyrameis atalanta* and *Aglais urticae* in Cambridgeshire, Guernsey and N. France, 18
- Colias hyale and *Pyrameis cardui* in Essex, 241
- Colias hyale at Hazeleigh, 242 ; in Kent, 270 ; in Sussex, 242
- Collecting in Gloucestershire, etc., 1918 and 1919, 117
- Contributions to our knowledge of the British Braconidæ, 6
- Cnephasia communans in Surrey, 127
- Crickets and refuse dumps, 246
- Curious late emergence of *Papilio alexanor*, 17
- Cyaniris argiolus, Notes on, 290
- Dark variety of *Arctia caia*, L., 292
- Descriptions of three new butterflies from Colombia, 278
- Deiopeia pulchella at Eastbourne, 270 ; in London, 270 ; in Essex, 292 ; in Sussex, 298
- Depressaria autocnista, n. sp., 76
- Dianthæcia albimacula, Borkh., in Suffolk, 126
- Disappearance of *Agriades corydon* ab. *syngrapha* from the Chilterns, 48, 98
- Dusky male form of *Dryas paphia*, 145
- Early and late occurrence of *Hesperia malvæ*, 195
- Early appearance of *Celastrina argiolus* and *Pieris brassicæ*, 147 ; of *Drepana lacertinaria*, 126 ; of *Pieris rapæ*, 126
- Early butterflies, 148 ; in 1921, 173

- Early emergence of *Coremia unidentaria*, 148; of *Tephrosia crepuscularia*, 78
 Early Lepidoptera, 147
 Early season, The, 146
 Effects of the early spring on British Lepidoptera, 84
 Electric light, 103
 Emergence of *Pieris rapæ*, The, 172
Emus hirtus in Dorset, 174
 Entomological Society of London, The 195
Erebia epiphron in 1921, 195; some notes on rearing, 57
 Erratic emergence, 196
 Esher Common, 195
Euvanessa antiopa in Sussex, 267; in Gloucestershire, 291
 Evers argiades in the New Forest, 269
- Fossil Tipulidæ from the Oligocene of the Isle of Wight, 81, 109
 Four new moths from the Philippines, 237
- Gonodontis bidentata* in March, 148
 Gynandromorphs: *Amorpha populi*, 80; *Colias edusa*, 150; *Cosmostriche potatoria*, 80; *Euchloe cardamines*, 150; *Pieris napi*, 80; *P. rapæ*, 22, 201
- Heliothis peltigera* and *Phryxus livornica* at Ventnor, 51
Hemerobius stigma, Steph., in January, 127
Hesperia, etc., in Kent, 148; emergence of, 218, 241
 Heteroptera of Indo-China, The, 3, 40, 68, 164
Hylophila prasinana in May, 148
- Iodis lactearia* larvæ hibernating, 53
Issoria lathonia near Dorchester, 246
- Lampides bæticus* at Dover, 244
Lampropteryx (Cidaria) oregiata in South Devonshire, 52
 Larvæ of *Ino globulariæ*, 240; of *Melitæa cinxia*, 217
 Lepidoptera at Alton in 1920, Notes on, 122, 143
 Lepidoptera in the Alton district, 220; in Perthshire, 89
 Life-cycle and habits of *Cydia leguminana*, Z., 226
Limenitis sibylla, 76
- LOCALITIES:
- Alton, 122, 143, 220; Berkshire, 243, 269; Brighton, 147, 244; Bucks, 50, 173, 219; Cheshire, 52, 98; Chilterns, 48, 50, 143; Cornwall, 20; Cumberland, 99, 195, 219; Delamere Forest, 103; Devonshire, 20, 219, 242; Dorsetshire, 21, 52, 174, 197, 243, 244;
- LOCALITIES—continued:
- Durham, 249; Epping Forest, 84; Essex, 219, 242; Gloucestershire, 78, 101, 117, 195; Hampshire, 44, 70, 77, 88, 100, 122, 143, 220, 269; Hertfordshire, 124; Huntingdonshire, 220; Isle of Man, 219; Isle of Purbeck, 21; Isle of Wight, 51; Kent, 244, 270; Lancs, 268; New Forest, 44, 70, 77, 88, 269; Oxfordshire, 19; Perthshire, 89; Rannoch, 101; Scotland, 244; Suffolk, 126; Surrey, 127, 148, 195, 201; Sussex, 16, 17, 19, 76, 119, 197, 243, 267, 268, 279; Warwickshire, 76, 243
- Macro-lepidoptera of County Tyrone, The, 31, 113, 206, 258, 282
 Macro-lepidoptera in the Oxford University Museum, 8, 90, 140, 161, 285
Manduca atropos on Dartmoor, 219; at Aberdeen, 291
Margarodes unionalis in Sussex, 76; in Hants, 292; and *Lucania vitellina* in South Devon, 20
 Material wanted, 221
 Melanic *Eupithecia lariciata* from Cheshire, 52
Melitæa athalia, Rott., and *M. pseudathalia*, Reverden, 97
- New aberration of *Aricia astrarche*, A, 259
 New Forest Hymenoptera aculeata (1920), 77
 New Forest notes and captures, 1920, 44, 70, 88
 New form of *Tajuria* from Ceylon, 206
 New forms of Sphingidæ, 105
 New species of mayfly from Mesopotamia, A, 177
 New Species of Noctuinæ and Hypeniniæ from the Philippines, 202
Nisoniades tages, Second brood of, 218, 241
 Non-corrosive pin, A new, 98
 North American species of *Orneodes*, The, 274
 Note from Chinnor, Oxford, 19
 Note on Breton *Epinephele jurtina*, 52
 Notes on British Neuroptera, 212; British Orthoptera (1920), 94; rearing larvæ of *Melitæa cinxia*, 244; second and third broods (1921), 240; the season of 1920 in West Sussex, 119; the variation of *Peronea cristana*, 12, 35, 64
 Notes on Lycænidæ in 1921 in North Kent, 296
- OBITUARY:
- Browne, George B., 24
 Farn, Albert Bridges, 303
 Gardner, John, 248

OBITUARY—*continued* :

- Miyake, Tsunekata, 128
 Whittle, Francis George, 302
Oporabia autumnata and *Amphisa prodromana* in Glamorgan, 173
 Ortalid Fly in amber, An, 30
Ourapteryx sambucaria in October, 271
 Ovipositing of *Sesia myopiformis*, 196
 Oxford University Museum, Some notes on the collection of British Macrolepidoptera in the Hope Department of the, 8, 90, 140, 161, 285
Oxigraha literana in Lancashire, 176 ; in N. Ireland, 173 ; in Northumberland, 173
Oxigraha literana, L. : Its life-cycle, distribution and variation, 129, 157, 187, 209

Pachetra leucophæa in Bucks, 219
Panorpa communis, L. (variety), 78
Papilio bianor taken at Brighton, 244
Pararge megæra treble-brooded, 293, 294
Parasemia plantaginis, var. *hospita*, 292
Peronea cristana, Errata, 102 ; Notes on the variation of, 12, 35, 64
Phigalia pendaria monocharia, 101
Pieris rapæ, ab., 125, 201
Platyptilia rhododactylus, 220
Plebeius (Lycæna) argus = *ægon* ; second brood, 290
 Pointing entomological pins, 127
Polygonia c-album in Berkshire, 243 ; in Gloucestershire, 101 ; in Warwickshire, 243 ; on the Cotswolds, 195
Polyommatus bellargus at Portland, 241
Porthesia similis, Fues., in Cumberland, 219 ; in October, 270
Prodenia litura, 267
 Pupation of *Nonagria typhæ*, Notes on, 218
Pyrameis atalanta and *P. cardui* in Lancs, 268
Pyrameis atalanta in Berkshire, 269 ; in March, 147
Pyrameis gonerilla in New Zealand, 238
Pyrameis cardui, and *P. atalanta* in East Tyrone, 291
Pyrausta purpuralis in April, 174

 Rearing *Eupithecia indigata*, 245
 Rearing of *Hyloicus pinastri* larvæ, 77
 Rearing of the larvæ of *Melitæa cinxia*, 217
 RECENT LITERATURE :

RECENT LITERATURE - *continued* :

- Les Coléoptères d'Europe France et Régions Voisines, 224
 Les Insectes, 56
 Memoirs of the Department of Agriculture in India, 152
 Proceedings of the South London Entomological and Natural History Society, 1919-20, 22
 Report of the Proceedings of the third Entomological meeting held at Pusa, February, 1919, 152
 Studies in Arthropoda, 224
 Transactions of the London Natural History Society, 1919, 23
 Retarded development of *Cænonympha tiphon*, 147
Rhopalocera in the British Museum, Some undescribed, 180
Rumicia phlæas ab. *cupreopunctata*, Tutt, 126

Satyrus hermione in Macedonia, and some other Balkan butterflies, 123
Satyrus megæra treble-brooded, 269, 294
 Scarcity of butterflies in Gloucestershire, 78
 Scarcity of *Vespa*, 54
 Season of 1920 in West Sussex, 119
 Second broods in 1921, 293
Selenia illustraria (*tetralunaria*), Third brood of, 291
Sesia culiciformis, forced, 101
 Seven new moths from the Philippines, 273
Sirex gigas in a Clyde shipbuilding yard, 53
 SOCIETIES :

- Entomological, of Hampshire and the Isle of Wight, 301
 Entomological, of London, 148, 198, 221, 271, 299
 Lancashire and Cheshire Entomological, 55, 103, 175, 222
 London Natural History, 301
 Southampton and District Entomological, 54
 South London Entomological, 21, 78, 102, 151, 174, 199, 246, 272, 300
 South-West Yorkshire Entomological, 54
 Some dragonflies from Amboina, A note on, 262
 Some notes on rearing *Erebia epiphrons*, 57
 South American Eumolpidæ, mostly of the group *Colaspini*, 25, 72, 169, 190, 214, 234, 253
Sphecolyma inanis, 221
Sphinx convolvuli in Suffolk, 291
Spilosoma urticæ, Notes on, 270
 Supplementary note on Macedonian dragonflies, A, 262

- Sympetrum fonscolombii, de Selys, in Dorset, 197
- Synonymy of *Dione moneta*, Hübn., and *D. glycera*, Feld., Notes on the, 276
- The common cricket swarming in a refuse dump, 127
- The occurrence of *Theobaldia arctica*, Edw., in England, 39
- Theronia atalantæ*, Poda, in Britain, 148
- Three new *Stephanidæ* from Java, 256
- Tortrices* from Rannoch, bred, 101
- Trigonophora flammea* in Sussex, 19
- Triphæna pronuba*, ab., 271
- Vanessa antiopa* in Dorset, 243
- VARIETIES:
- Acronycta alni*, 56, 103
- Aglais urticæ*, 125, 289
- Agriades corydon*, 21, 125
- Agriades thetis*, 80, 247
- Arctia caia*, 104, 238, 247, 292
- Argynnis aglaia*, 124
- Aricia medon*, 125
- Brenthis euphrosyne*, 127
- Chrysophanus phlæas*, 125
- Cænonympha pamphilus*, 125, 290
- Colias edusa*, 18, 200
- Cossus ligniperda*, 79
- VARIETIES - *continued*:
- Dryas paphia*, 56
- Ematurga atomaria*, 200
- Epinephele jurtina*, 80
- Euchloë cardamines*, 80, 175, 272
- Melanargia galatea*, 125
- Nisoniades tages*, 79, 125
- Noctua castanea*, 92
- Nyssia hispidaria*, 56
- Pieris brassicæ*, 151; *napi*, 22; *rapæ*, 22, 124, 125, 172
- Polyommatus icarus*, 21, 152, 175
- Satyrus semele*, 79
- Selidosema plumaria*, 151
- Spilosoma menthastri*, 104, 200
- Tilacea aurago*, 200
- Zygæna filipendulæ*, 152, 174; *loniceræ*, 152; *trifolii*, 79, 124, 174, 272
- Vespa crabro*, 221
- Vespa* in 1920, 53
- Watson's "Speera" Binocular Magnifier, 216
- What is *Zygæna* ab. *hippocrepidis*?, 295
- Xanthorhoe sociata*, in November, 53
- Zephyrus quercus* ab. *obsoleta*, 125

SPECIAL INDEX.

New Genera, Species, Sub-Species, and Varieties are marked with an asterisk.

Order VII. ORTHOPTERA.

- albigennis** (Apterygida), 128, 287
albopunctata (Metrioptera), 131
americana (Periplaneta), 287
auricularia (Forficula), 128, 141, 287
auricularia, var. **forcipata** (Forficula), 287
australasiæ (Periplaneta), 287
bicolor (Stauroderus), 130, 131, 141, 287
bipunctatus (Tetrix), 130, 287
brachyptera (Metrioptera), 128, 287
cærulescens (Edipoda), 141
danicus (= **cinerascens**) (Pacetylus), 141
domesticus (Gryllus), 94, 95
dorsatus (Chorthippus), 141
elegans (Chorthippus), 131
grossus (Mecostethus), 130
lapponicus (Ectobius), 128
lesnei (Forficula), 287
maculatus (Gomphocerus), 130, 287
miniata (Edipoda), 141
minor (Labia), 128
morosus (Carausius), 164
nasuta (Acrida), 141
orientalis (Blatta), 287
panzeri (Ectobius), 128
parallelus (Chorthippus), 131, 287
perspicillaris (Ectobia), 240
punctatissima (Leptophyes), 129, 131, 287
riparia (Labidura), 96
religiosa (Mantis), 240, 264
roeselii (Metrioptera), 128
subulatus (Tetrix), 129
thalassina (Epacromia), 141
thalassinum (Meconema), 129, 287
subulatus, var. **stylifer** (Tetrix), 129
viridissima (Phasgonurum), 128
viridulus (Omocestus), 130

Order IX. PSOCOPTERA.

- eraciatus** (Stenopsocus), 119

Order XIII. PARANEUROPTERA.

[= ODONATA.]

- ænea** (Cordulia), 206
Æshna, 3
Agrion, 192
annulatus (Cordulegaster), 6, 192, 205
armatum (Agrion), 208
cærulescens (Orthetrum), 6, 207
constricta (Æschna), 3, 4
curtisii (Oxygastra), 96
cyanea (Æschna), 9, 192, 206, 237
cyathigerum (Enallagma), 208, 209
depressa (Libellula), 6, 55, 192, 206, 207
dubia (Leucorrhinia), 213
elegans (Ischnura), 192, 207
elegans, var. **rufescens** (Ischnura), 207
fulva (Libellula), 206
Gomphus, 205
grandis (Æschna), 9, 206, 212
imperator (Anax), 6, 206
juncæ (Æschna), 206
mercuriale (Agrion), 191, 192, 208
mixta (Æschna), 238
nymphula (Pyrrhosoma), 6, 192, 205, 208
pratense (Brachytron), 205
puella (Agrion), 6, 192, 208, 209
pulchellum (Agrion), 192, 208
pumilio (Ischnura), 208
quadrifaculata (Libellula), 55, 192, 206
quadrifaculata, var. **prænubila** (Libellula), 206
sanguinum (Sympetrum), 207
scoticum (Sympetrum), 207
splendens (Calopteryx), 158, 192, 207
sponsa (Lestes), 207
striolatum (Sympetrum), 2, 4, 207, Sympetrum, 4
virgo (Calopteryx), 6, 207
virgo, var. **anceps** (Calopteryx), 8
vulgatissimus (Gomphus), 205

Order XIV. THYSANOPTERA, 166

Order XV. HEMIPTERA.

- *Abrahameria, 126
 *abrahami (Echetra), 125
 aceris (Aleurochiton), 256
 aceris (Chaitophorus), 213
 Aleurodes, 256
 Aleurodidarum, 257
 Asterochiton, 256
 aurita (Ledra), 192, 239
 avellanæ (Asterochiton), 256
 *bagnalli (Asterochiton), 256
 bigibbosus (Peltocheirus), 125
 carpini (Asterochiton), 256
 carrenoi (Odontoptera), 125
 cheopis (Xenopsylla), 166
 *dumfriesi (Tettigades), 169
 electa (Ityræa), 141
 ericæ (Tetralicia), 256
 fasciatus (Ceratophyllus), 166
 fuscata (Echetra), 126
 gregoryii (Ityræa), 141
 lebruni (Tettigades), 169
 maculatus (Corizus), 70
 *modesta (Echetra), 125
 nigrocincta (Ityræa), 141
 parva (Tettigades), 169
 patricia (Ityræa), 141
 Peltocheirus, 125
 phalanooides (Drepanosiphum), 85
 pipistrellus (Cimex), 239
 quercus (Aleurodes), 256
 rhododendri (Stephanitis), 70
 speciosa (Ityræa), 141
 spirææ (Aleurodes), 256
 *typica (Abrahameria), 126
 vaccinii (Tetralicia), 256

Order XVI. NEUROPTERA.

- Ascalaphus, 191, 240
 capitata (Nothochrysa), 255
 Chrysopa, 119, 255
 coa (Nemoptera), 191
 communis (Panorpa), 256
 communis, var. unifasciata (Panorpa),
 255
 communis, var. aperta (Panorpa), 255
 concinnus (Hemerobius), 254
 flava (Chrysopa), 254
 fuliginosa (Sialis), 254
 germanica (Panorpa), 255
 Hemerobius, 254
 humuli (Hemerobius), 254
 longicornis (Ascalaphus), 191
 lutaria (Sialis), 254
 macaronius, var. polyvanensis (Ascala-
 phus), 191
 maculicollis (Raphidia), 254
 Myrmelion, 240
 Nemoptera, 191
 orotypus (Hemerobius), 254
 Osmylus, 192
 perla (Chrysopa), 255
 prasina (= aspersa) (Chrysopa), 254
 quadrifasciatus (Hemerobius), 254
 septempunctata (Chrysopa), 255
 sinuata (Nemoptera), 191
 vulgaris (Chrysopa), 255
 xanthostigma (Raphidia), 254

Order XVIII. LEPIDOPTERA.

- abbreviata (Eupithecia), 35, 71, 139
 abdominalis (Thecla), 30
 abietaria (Boarmia), 34, 35
 abjecta (Hama), 36
 abruptaria (Hemerophila), 158
 absinthii (Cucullia), 36
 acaciæ (Thecla), 30, 104, 109
 aceris (Neptis), 108
 achilleæ (Anthocera), 16
 achilleæ (Zygæna), 70
 acis (Nomiades), 16
 actæon (Thymelicus), 263, 277
 acuminatana (D.), 236
 addenda (Epinephele), 77, 220
 adippe (Argynnis), 31, 71
 adusta (Sarrothripus), 48
 advena (Aplecta), 48, 211
 advenaria (Epione), 35
 ægon (Plebeius), 16, 30, 33, 38, 39, 48,
 69, 70, 95, 105, 120, 144, 200, 240,
 264
 æruginosa (Nomiades), 30
 æscularia (Anisopteryx), 91, 92, 119
 æsculi (Zeuzera), 65
 ætheria (Melitæa), 108
 ætherius (Erebia), 151
 æthioppellus (Erebia), 150
 æthiops (Erebia), 48, 176
 æthiops (Papilio), 146
 affinis (Calymnia), 35, 37
 affinis (Cosmia), 95
 affinitata (Perizoma), 35
 afra (Erebia), 32
 afzelianus (Sarrothripus), 48
 agathina (Agrotis), 218
 agathina (Eueretagrotis), 218
 aglaia (Argynnis), 31, 46, 47, 79, 138,
 175, 220, 240, 261
 Aglais, 47
 alba (Chrysophanus), 200
 *alba (Epinephele), 278
 alba (Rumiccia), 70
 albicillata (Melanthia), 71
 albicillata (Mesoleuca), 16

- albicolon (Mamestra), 36
 albida (Epinephele), 210
 albimacula (Dianthæcia), 203
 albiguncta (Leucania), 263
 albipunctata (Eupithecia), 36
 *albisigna (Lyncæstis), 273
 *albomarginata (Cirphis), 122
 albonigrana (Peronea), 269
 albovenosa (Arsilonche), 211
 albulalis (Nola), 36
 albulata (Larentia), 67
 albulata (P.), 23
 alceæ (Carcharodus), 29, 105, 263
 alchemillata (Perizoma), 23, 35
 alchymista (Catephia), 89
 alciphron (Chrysophanus), 107
 alcon (Lycæna), 108
 aleyone (Papilio), 146
 alecto (C.), 22
 alexanor (Papilio), 240
 alfariata (Cidaria), 226
 algæ (Bryophila), 19, 20
 algira (Grammodes), 204
 alitæus (Arhopala), 98
 alni (Acronycta), 55, 210, 235
 alniaria (Ennomos), 23, 67
 alternana (C.), 236
 althææ (Carcharodus), 106
 alveus (Hesperia), 29
 amandus (Polyommatus), 107
 amataria (Timandra), 204
 ambigua (Caradrina), 34, 37
 americanus (Chrysophanus), 112, 132
 amhidamas (Chrysophanus), 110, 111, 132
 ampliatus (Cyclosia), 214
 amurensis (Smerinthus), 33
 andreniformis (Sesia), 35
 angularia (Cleora), 16
 angularia (Ennomos), 69
 annotinata (Acidalia), 143
 anterus (Polyommatus), 107
 anthe (Hipparchia), 109
 anthe (Satyrus), 32, 66
 antiopa (Euvanessa), 46, 109, 131, 140, 162, 166, 174, 219, 240
 antiqua (Orgyia), 275
 aphirape (Brenthis), 111, 131
 *apicalis (Stictoptera), 271
 apiciaria (Epione), 211
 apollo (Parnassius), 30, 108, 240
 appolinus (Doritis), 225
 apricatus (Parnassius), 120
 aquilonaris (Brenthis), 132
 arcania (Cœnonympha), 46
 Arctia, 167
 arcua (Agriades), 71
 arcuosa (Petilampa), 23, 36
 areola (Xylocampa), 94, 119, 139, 142
 arete (Aphantopus), 45, 177, 250
 arete (Melampias), 194
 arethusa (Hipparchia), 109
 argentea (Palimpsestis), 275
 argentula (Bankia), 211
 argiolus (Celastrina), 6, 22, 30, 39, 45, 48, 54, 67, 69, 79, 105, 116, 119, 133, 159, 163, 201, 221, 283
 argiolus (Cyaniris), 46
 argus (Plebeius), 105, 109, 113, 132, 144
 argyrognomon (Plebeius), 113, 132, 144
 Arhopala, 97, 142
 arion (Lycæna), 201, 261, 279
 armigera (Heliothis), 89
 armoricanus (Hesperia), 29
 arsilache (Brenthis), 114, 132
 artaxerxes (Aricia), 200, 239, 246
 artemis (Melitæa), 77, 220, 280
 asiliformis (Sesia), 35
 associata (Cidaria), 211
 associata (Lygris), 23
 astrarche (Aricia), 33, 40, 42, 263
 astrarche (Lycæna), 67
 atalanta (Pyrameis), 17, 22, 23, 31, 40, 45, 67, 77, 79, 94, 102, 120, 143, 158, 159, 160, 161, 162, 174, 189, 209, 210, 220, 230, 234, 235, 240, 252, 259, 261, 278, 281, 282, 283, 285
 athalia (Melitæa), 15, 18, 31, 71, 158, 175
 atomaria (Ematurga), 65, 118, 139, 264
 atomella (Depressaria), 186
 atra (Acanthopsyche), 12
 atricapitana (Eupœcilia), 236
 atropis (Acherontia), 22, 203, 258, 261
 atropis (Manduca), 15, 235, 261, 262, 274, 285
 attacus (Atlas), 213
 augur (Noctua), 23
 augustana (Steganoptycha), 13
 aurago (Ochria), 9
 aurantiaria (Hybernia), 17, 18, 67, 92, 95, 118
 aureatella (Micropteryx), 118
 aurinia (Melitæa), 15, 46, 77, 175, 188, 192, 220, 239
 ausonia (Euchloë), 18, 62, 226, 263
 autumnaria (Oporabia), 47
 autumnata (Oporabia), 166
 badiata (Anticlea), 119, 139
 baia (Noctua), 54
 balkanica (Tarucus), 107, 109
 basilinea (A.), 23
 batis (Thyatira), 275
 baton (Scolitantides), 30
 belemia (Euchloë), 65, 225, 226
 belia (Euchloë), 18, 31
 bella (Utetheisa), 142
 bellargus (Agriades), 16, 30, 33, 46, 71, 79, 200
 bellidice (Pontia), 18, 30
 bergi (Protoparce), 71
 bernensis (Erebia), 223
 betulæ (Ruralis), 95
 betulæ (Salebria), 192
 betulæ (Zephyrus), 33, 36, 46, 108, 199, 261
 betularia (Amphidasys), 71
 betularia (Pachys), 55

- bianor (Papilio), 69
 bicolor (Notodonta), 65
 bicolorana (Hylophila), 34, 35
 bicolorata (M.), 23
 bicuspis (Cerura), 55
 bicuspis (Dicranura), 259
 bidentata (Gonodontis), 23
 bidentata (Odontopera), 71
 bilineata (Camptogramma), 204
 bilunaria (Selenia), 23, 119, 139, 165,
 166, 261
 bimaculata (Bapta), 35
 bimaculosa (Miselia), 89
 binævella (H.), 236
 bisetata (Acidalia), 46
 bistortata (Tephrosia), 23, 164, 166
 biundularia (Tephrosia), 48, 54, 70
 blumei (Papilio), 214
 bœticus (Lampides), 263
 bombylifomis (Hemaris), 55
 borealis (Erebia), 114, 132
 borealis (Phragmatobia), 276
 boreata (Cheimatobia), 67, 117
 *bradanfelda (Pararge), 240
 brassicæ (B.), 23
 brassicæ (Pieris), 22, 32, 40, 61, 67, 70,
 76, 79, 114, 139, 155, 158, 159, 160,
 209, 219, 226, 263, 278, 283
 bremusa (Athetis), 124
 briseis (Hipparchia), 103
 brumata (Cheimatobia), 17, 67, 91
 brunnea (Noctua), 23, 54
 brunnea (Polyommatus), 278
 brunneata (Thamnonoma), 188, 210,
 236, 263
 bryoniæ (Pieris), 111, 114, 115
 Bryophila, 20
 bucephala (Phalera), 23, 120, 191, 275
 butlerowi (Chattendenia), 240
 c-album (Polygonia), 31, 46, 64, 131,
 157, 235, 282
 c-nigrum (Agrotis), 34
 cæca (Hyperanthus), 250
 cærulea (Cocytodes), 140
 cærulea (Polyommatus), 221, 278
 cæruleopunctata (Chrysophanus), 78,
 221, 278, 284, 285
 cæsiata (Entephria), 12
 caia (Arctia), 23, 28, 64, 70, 95, 119,
 142, 165, 276
 calabraria (Rhodostrophia), 204
 calendulæ (Cucullia), 227
 californica (Plusia), 227
 caliginosa (Acosmetia), 20
 callunæ (Lasiocampa), 56, 275
 calospila (Sinna), 272
 cambrica (Venusia), 118, 217
 camelina (Lophopteryx), 23, 275
 camelina (Notodonta), 48, 56
 camilla (Limenitis), 263
 canariensis (Euxoa), 121
 candalus (Polyommatus), 107
 candida (Utetheisa), 142
 caniola (Lithosia), 36
 capnites (Diehomeris), 115
 capsincola (Dianthœcia), 211
 cardamines (Euchloë), 6, 30, 62, 66, 67,
 69, 76, 115, 116, 119, 139, 142, 156,
 157, 158, 159, 188, 219, 239, 263
 cardui (Pyrameis), 23, 31, 34, 40, 46, 66
 79, 103, 108, 143, 158, 160, 162, 174,
 189, 209, 220, 226, 234, 260, 263, 278,
 282
 carinenta (Libythea), 71
 carmelita (Odontosis), 259
 carniolica (Zygæna), 70
 carpinata (Lobophora), 35, 54, 139
 carpini (Saturnia), 19, 54, 65, 118, 192
 carthami (Hesperia), 29
 casiphone (Elymnias), 214
 cassiope (Erebia), 145, 193, 218, 222,
 242
 castaneæ (Macrogaster), 211
 catena (Augiades), 114, 133
 caulosticta (Euchloë), 77, 219
 celerio (Chærocampa), 22, 285
 celerio (Hippotion), 65, 258, 285
 celtis (Libythea), 31, 109
 centaureæ (Hesperia), 111, 133
 centaureata (Eupithecia), 226, 227
 cerisyi (Thais), 22, 108, 226
 certa (Eucosmia), 119
 cerusella (Aphelosestia), 240
 cerusella (Elachista), 240
 cervinata (O.), 23
 cespitana (Pædisca), 21
 cespitis (T.), 23
 ceto (Erebia), 196
 chamomillæ (Cucullia), 227
 chaonia (Drymonia), 259
 chaonia (N.), 189
 *Charixena, 279
 charlonia (Euchloë), 226
 charlottana (Peronea), 268
 chi (Polia), 12, 36, 118
 chlorana (Earias), 211
 chloridice (Pieris), 22
 christi (Erebia), 245
 chromus (Prepona), 71
 chrysippus (Danais), 70, 226
 chrysitis (Plusia), 23, 214
 chrysomallus (Zegris), 214
 chrysonuchellus (Crambus), 211
 ciliaris (Naxia), 211
 ciliella (Depressaria), 13
 cinctaria (Boarmia), 35
 cinerana (Lithographia), 13
 cinerea (Agrotis), 35
 cinxia (Melitæa), 15, 31, 46, 71, 164, 175,
 263
 circe (Satyrus), 32
 circellaris (Amathes), 9, 37
 circellata (Acidalia), 16
 cirsiana (Ephippiphora), 186
 cirsii (Hesperia), 107
 citrata (Dysstroma), 143
 citronea (Euchloë), 219
 clara (Scolitantides), 30

- clathrata* (*Chiasmia*), 158, 236
clathrata (*Strenia*), 65
claudianus (*Parnassius*), 120
cleodoxa (*Argynnis*), 31
cleopatra (*Gonepteryx*), 226, 263
clodius (*Parnassius*), 120
clytie (*Apatura*), 140
cnicella (*Depressaria*), 120
cœnosa (*Lælia*), 65
comes (*Triphæna*), 70
comitata (*Pelurga*), 211
comma (*Augiades*), 29, 40, 109, 114, 133
comma (*Leucania*), 23, 211
compositella (*L.*), 236
compta (*Dianthœcia*), 89
compta (*Harmodia*), 89
conformis (*Xylina*), 89
confusalis (*Nola*), 54, 276
congelatella (*Exapate*), 118
connexa (*Aglais*), 174
connexa (*Apamea*), 45
constrictata (*Eupithecia*), 280
contaminana (*D.*), 18
contigua (*Mamestra*), 35
conversa (*Catocala*), 204
convolvuli (*Herse*), 262
convolvuli (*Sphinx*), 33, 163, 216, 258, 262, 274, 285
conwayana (*Tortrix*), 95
Coremia, 120
coronata (*Eupithecia*), 48
corticana (*Pædisca*), 118
corticea (*Agrotis*), 23, 211
corydon (*Agriades*), 16, 30, 33, 40, 46, 48, 69, 70, 79, 120, 200, 214, 261, 283
corydonis (*Agriades*), 200
corylata (*C.*), 23
coryli (*Demas*), 23
coscus (*Cossus*), 203
costana (*Tortrix*), 211
cracæ (*Toxocampa*), 280
crameri (*Euchlœ*), 62
**crassipuncta* (*Agrotis*), 122
crassipuncta (*Plebeius*), 144
cratægana (*Tortrix*), 70
cratægi (*Aporia*), 30, 61, 155
cratægi (*Trichiura*), 34, 192
crenana (*Phlœdes*), 236
crenata (*Gluphisia*), 65
crepuscularia (*Tephrosia*), 70, 139, 142, 166
cribralis (*Herminia*), 211
cribrum (*Myelophila*), 204
crinanensis (*Gortyna*), 218
crinanensis (*Hydrœcia*), 218
crisana (*Peronea*), 71, 90, 265
cruda (*Tæniocampa*), 35
cruenta (*Platyedra*), 227
cuculla (*Lophopteryx*), 259
cucullata (*Anticlea*), 36
cucullatella (*N.*), 23
culiciformis (*Sesia*), 35, 55
cultraria (*Drepana*), 116
**cuneata* (*Cirphis*), 123
**cuprea* (*Carea*), 273
curtisana (*Peronea*), 268
curtula (*P.*), 23
cyanosticta (*Vanessa*), 77, 219
cydippe (*Argynnis*), 7, 33, 36, 38, 39, 45, 47, 48, 71, 175, 278
cyllarus (*Glaucopsyche*), 105
cyllarus (*Nomiata*), 30, 263
cyparissus (*Glaucopsyche*), 110, 132
damon (*Hirsutina*), 108
daphlice (*Pontia*), 18, 29, 30, 40, 62, 66, 155, 163, 263
debiliata (*Chloroclystis*), 54
decissima (*Cirphis*), 123
decolorata (*Perizoma*), 35
decoraria (*Cosymbia*), 52, 55
decrepitata (*Larentia*), 143
defoliaria (*Hybernia*), 17, 34, 67, 71, 92, 95, 117, 118, 119
degener (*Bryophila*), 19
delphinii (*Chariclea*), 203
dentina (*Mamestra*), 23
deplana (*Lithosia*), 35, 36, 277
derasa (*Habrosyne*), 275
desfontainana (*Peronea*), 270
designata (*C.*), 23
designata (*Ochyria*), 70
deyrollei (*Thais*), 226
dia (*Brenthis*), 31, 46
diagramma (*Cirphis*), 123
dictæoides (*Notodonta*), 94, 118
dictæoides (*Pheosia*), 23, 94, 275
didyma (*Melitæa*), 31, 63, 66, 108, 263
diffinis (*Calymnia*), 37
diluta (*Asphalia*), 9
dilutata (*Oporabia*), 118, 166, 218
diniensis (*Leptosia*), 31
diniensis (*Leucophasia*), 156
dinavana (*Trachea*), 271
dipsacea (*Heliothes*), 211
disa (*Erebis*), 114
**discisignata* (*Trachea*), 271
disco-elongata (*Plebeius*), 144
dispar (*Chrysophanus*), 10, 16, 70, 89, 107, 199
dispar (*Lymantria*), 164
dispar (*Oeneria*), 65
dissimilis (*Hadena*), 211
distan (*O.*), 236
distinctaria (*Eupithecia*), 217
ditrapezium (*Noctua*), 36
dominula (*Callimorpha*), 48, 65, 192
dorilis (*Chrysophanus*), 278
dorus (*Cœnonympha*), 109
dotata (*Cidaria*), 211
dromedarius (*Notodonta*), 48, 56, 275
dryas (*Enodia*), 32, 109
dubia (*Zygæna*), 46
dubitana (*Eupœcilia*), 236
dumerilii (*Luperina*), 89
duplaris (*Palimpsestis*), 259, 275
duplexa (*Parallelia*), 273
duponcheli (*Leptosia*), 31

- edusa (*Colias*), 23, 31, 36, 40, 44, 46, 62,
 66, 67, 70, 79, 108, 115, 156, 160, 162,
 164, 209, 225, 234, 259, 260, 278, 280,
 281, 282, 285
 edwardsi (*Attacus*), 69
 egea (*Erebia*), 224
 egea (*Papilio*), 146
 egea (*Polygonia*), 18, 31
 egeria (*Pararge*), 32, 33, 34, 67, 90, 176,
 240, 263, 278
 egerides (*Pararge*), 6, 37, 77, 220, 240,
 278
 egyptiaca (*Euchloë*), 226
 eleus (*Chrysophanus*), 163, 200
 elinguarina (*Crocalis*), 16, 23, 43, 48
 elpenor (*Chærocampa*), 191, 211, 258
 elpenor (*Eumorpha*), 14, 15, 274
 elutata (*Hydriomena*), 239
 embla (*Erebia*), 110, 111, 132
 enervata (*Satyrus*), 66
 eos (*Melitæa*), 15
 ephialtes (*Zygæna*), 215
 epiphron (*Erebia*), 145, 176, 193, 222,
 242
 epiphron (*Maniola*), 146
Erebia, 145
 ergane (*Pieris*), 108
 ericetana (*Eriopsela*), 11
 ericetaria (*Selidosema*), 218
 ericetella (*Gelechia*), 118
 erigerana (*Eupœcilia*), 236
 eroides (*Polyommatus*), 108
 erysimi (*Leucophasia*), 156
 erythrocephala (*Cerastis*), 39
 erythrus (*Zygæna*), 47, 70
 escheri (*Agriades*), 108
 esperi (*Euchloë*), 62
 ethlius (*Calpodès*), 62
 eupheme (*Zegris*), 65
 euphemus (*Lycæna*), 30
 euphenoides (*Euchloë*), 108
 euphorbiæ (*Deilephila*), 33, 65, 258
 euphorbiæ (*Hylas*), 15
 euphrosyne (*Brenthis*), 6, 36, 37, 46, 54,
 69, 70, 110, 111, 132, 175, 239, 278
 euxinus (*H.*), 32
 evonymella (*Hyponomeuta*), 212
 exigua (*Laphygma*), 285
 exoleta (*Calocampa*), 210
 extensaria (*Tephrosia*), 210
 extimalis (*Orobena*), 211
 extranea (*Leucania*), 89, 263, 285
 exulans (*Anthrocera*), 16, 143
 exulis (*Crymodes*), 89
 fagaria (*Scodiona*), 36
 fagi (*Stauropus*), 35, 188, 259
 falcataria (*Drepana*), 23, 191, 237, 276
 falcula (*Drepana*), 35, 218
 farinalis (*Pyralis*), 204
 farinata (*Chesias*), 204
 fascelina (*Dasychira*), 218, 275
 fasciata (*Sarothrips*), 48
 fasciella (*Dichomeris*), 115
 fasciella (*Ypsolophus*), 115
 fausta (*Teracolus*), 66
 favicolor (*Leucania*), 36
 ferrugata (*C.*), 23
 festiva (*Noctua*), 211
 festucae (*Plusia*), 43, 47, 211, 214
 fieldii (*Colias*), 156
 filigrammaria (*Oporabia*), 118
 filipendulæ (*Zygæna*), 5, 47, 70, 138
 187, 202, 212, 214, 262
 fimbria (*Triphæna*), 9, 54, 70
 fimbriana (*Coccyx*), 139
 fingsal (*Brenthis*), 111, 132
 flabellaria (*Zamacia*), 226
 flammatra (*Agrotis*), 39
 flammea (*Meliana*), 211, 262
 flava (*Adopæa*), 42, 106, 277
 flava (*Augiades*), 29, 39
 flavago (*Xanthia*), 9
 flavago (*Xanthocæcia*), 23
 flavescens (*Pieris*), 166
 flavicincta (*Polia*), 34, 37, 48, 263
 flavicornis (*Polyplœca*), 35, 275
 flavostriana (*Peronea*), 270
 flexula (*Laspeyria*), 35
 florella (*Catopsilia*), 142
 fluctuata (*Xanthorhœ*), 23, 139, 158
 fluviata (*Cidaria*), 227
 fontis (*Bomolocha*), 54
 forskaleana (*Tortrix*), 95
 fractifasciana (*Eriopsela*), 11
 fractilineata (*Ptychopoda*), 227
 francillana (*C.*), 236
 fraxini (*Catocala*), 89, 210
 freijsa (*Brenthis*), 29, 111, 112, 132
 frigga (*Brenthis*), 111
 frigida (*Pieris*), 114
 fritillum (*Hesperia*), 107
 frivaldskeyi (*Janthinea*), 203
 frumentalis (*Evergestis*), 203
 fuciformis (*Hemaris*), 36, 240, 259
 fuliginaria (*Parascotia*), 16, 69
 fuliginosa (*Phragmatobia*), 211, 276
 fulvago (*Xanthia*), 9
 fulvimitrella (*Tinea*), 118
 fulvopicata (*Abraxas*), 70
 fulvostriana (*Peronea*), 270
 funerella (*Anysychia*), 211
 furcata (*Hydriomena*), 23, 164, 239,
 264
 furcifera (*Xylina*), 89
 furcula (*Cerura*), 211, 274
 fuscana (*Peronea*), 267
 fuscantaria (*Ennomos*), 23
 fuscata (*Hybernia*), 91
 fusculana (*Sarothrips*), 48
 gædarella (*Argyresthia*), 118
 galatea (*Melanargia*), 5, 32, 104, 108,
 176, 187, 233, 240
 galii (*Deilephila*), 65, 258
 gamma (*Plusia*), 2, 22, 23, 141, 203, 227,
 277, 282, 285
 geminana (*Steganoptycha*), 21
 gemini (*A.*), 23
 geminipuncta (*Nonargria*), 36, 48, 120

- gemmaria (Boarmia), 23
 geniculeus (Crambus), 236
 genistæ (Mamestra), 35
 geometrica (Grammodes), 204
 geryon (Ino), 188
 gigantellus (Schœnobiuss), 211
 gigas (Pyrgus), 107, 109
 gilvaria (Aspilates), 236
 glandifera (Bryophila), 36
 glareosa (Noctua), 37
 glauca (Hadena), 118
 glaucata (Cilix), 23, 276
 glauce (Euchloë), 225, 226
 glaucinalis (P.), 93
 gordius (Chrysophanus), 107
 gorgoniades (Pterogon), 33
 gothica (Tœniocampa), 119, 139
 gracilis (Tœniocampa), 35, 139
 græca (Melitæa), 108
 graminis (Charæas), 23, 47
 grisealis (Z.), 23
 griseata (Lithostegæ), 211
 grossulariata (Abraxas), 16, 43, 44, 48,
 70, 189, 192
 gruneri (Euchloë), 108, 109
 gryphipennella (Coleophora), 227
 halterata (Lobophora), 217
 harpagula (Drepana), 63
 hastata (Eulype), 35, 217
 hastata (M.), 54
 haworthiata (Eupithecia), 217
 hecate (Brenthis), 140
 hecla (Colias), 113, 115
 hectus (Hepialus), 118
 hela (Brenthis), 113, 131
 helicina (Colias), 108
 helice (Colias), 31, 36, 62, 156, 209, 234,
 259, 260, 278, 280, 282
 Heliconius, 141
 helvola (Amathes), 9
 hepatariella (Depressaria), 21
 hepatariella (Pinaris), 20
 hepatica (Xylophasia), 217
 hera (Callimorpha), 36
 herbariata (Acidalia), 16
 hermanella (Nannodia), 181
 herminata (Diplodoma), 12
 hermione (Satyrus), 109
 hiera (Pararge), 110, 132
 hippocastanaria (Pachynemias), 35
 hippocrepidus (Zygæna), 187, 212, 262
 hippolyte (Hipparchia), 32
 hippothoë (Chrysophanus), 113, 132
 hirtaria (Biston), 92
 hirtaria (Lycia), 11
 hispidaria (Apocheima), 34, 35, 92, 139,
 142
 honrathi (Tænaris), 164
 humeralis (Xenolechia), 11
 humuli (Hepialus), 158, 214
 hutchinsoni (Polygonia), 157
 hyale (Colias), 30, 46, 62, 156, 209, 259,
 260, 280, 281, 282
 hyalinalis (Botys), 204
 hyperbia (Melampias), 194
 Hybernia, 119
 hylas (Agriades), 108
 hyperanthus (Aphantopus), 33, 39, 45,
 46, 69, 70, 77, 80, 137, 165, 177, 187,
 220, 250
 hyperbius (Pseudonympha), 194
 hypericana (Tortrix), 57
 hypophlæas (Chrysophanus), 112, 132
 ianira (Epinephele), 32, 67, 80, 137, 233,
 234, 263
 ianthe (Papilio), 146
 ianthina (Triphæna), 22
 ianthinarium (Cosymbia), 54
 ibericata (Cidaria), 226
 ibipennella (Coleophora), 264
 icarinus (Polyommatus), 120, 200, 221
 icarus (Polyommatus), 16, 30, 34, 39,
 47, 67, 70, 105, 107, 120, 132, 159,
 200, 218, 221, 234, 263, 278, 282
 ichnusoides (Aglais), 173
 ictis (Aphnæus), 142
 ida (Epinephele), 109, 263
 ilia (Apatura), 108, 115, 140, 214
 ilicifolia (Epicnaptera), 65
 ilicis (Nordmannia), 164
 illunaria (Ennomos), 192
 illustraria (Selenia), 16
 imitaria (Acidalia), 204
 immaculata (Colias), 115
 immanata (Cidaria), 71, 277
 immanata (Dysstroma), 143
 immutata (Acidalia), 23, 211
 imperialis (Basilona), 47
 impluviata (Hydriomena), 164
 impudens (Leucania), 211
 impura (Leucania), 211
 incerta (Tœniocampa), 119, 139
 indigata (Eupithecia), 217
 indigenata (Eucrostis), 204
 infuscata (Hydriomena), 239
 innotata (Eupithecia), 36
 inopiana (Hysterocia), 68
 inornata (Acidalia), 56, 218
 inornata (Ptychopoda), 218
 intermedia (Chrysophanus), 78, 107, 200,
 221
 *intermedia (Epinephele), 278
 intermedia (Pararge), 32, 278
 intermediana (Peronea), 270
 inyrus (Epargyreus), 192
 io (Vanessa), 23, 31, 39, 40, 45, 64, 67,
 71, 77, 79, 120, 158, 159, 160, 162,
 165, 166, 173, 174, 209, 219, 232, 234,
 235, 278, 282, 283
 iochalcea (Abraxas), 70
 iota (Plusia), 143
 iphis (Cœnonympha), 109
 iris (Apatura), 8, 29, 38, 39, 46, 108,
 156, 165, 240
 irregularis (Dianthæcia), 236
 irrorella (Setina), 65
 irrorellus (Hyponomeuta), 213
 j-album (Polygonia), 18

- jacobæ* (*Hipocrita*), 23, 65, 119, 143, 240, 276
janthe (*Melampias*), 194
jasius (*Charaxes*), 109
jubata (*Cleora*), 35
juncta (*Chrysophanus*), 200
**juncta* (*Plusia*), 43
jurtina (*Epinephele*), 32, 38, 39, 48, 70, 77, 103, 137, 176, 220, 223, 278
jutta (*Eneis*), 29, 110, 132
kefersteini (*Erebina*), 244
kindermanni (*Amathes*), 227
kindermanni (*Orthosia*), 227
kochi (*Chrysophanus*), 200
kochi (*Rumicia*), 164
l-album (*Eugonia*), 108
lacertinaria (*B.*), 23
lacertinaria (*Drepana*), 218, 276
lacticolor (*Abraxas*), 48, 70
laertes (*Morpho*), 141
lambda (*Polia*), 89
lambda (*Xylina*), 279
lanceolata (*Aphantopus*), 69, 252
lanceolata (*Argynnis*), 36
lanceolata (*Cœnonympha*), 69
**lapidaria* (*Nigramma*), 272
lappa (*Erebina*), 111, 112, 132
lapponica (*Brenthis*), 112, 113, 114, 132
lapponica (*Colias*), 113, 114, 115
lapponica (*Plebeius*), 113, 114, 132, 144
lariciata (*Eupithecia*), 217
larissa (*Melanargia*), 104, 108
lathonia (*Issoria*), 31, 46, 63, 108, 164, 175
lathyri (*Leptosia*), 115
latifasciata (*Oporabia*), 166
latona (*Cyligramma*), 140
lavateræ (*Carcharodus*), 29
leander (*Cœnonympha*), 109
lefebvrei (*Erebina*), 247
lemnata (*Cataclysta*), 211
leporina (*Acronycta*), 36, 55
leucocarpis (*Carea*), 273
leucophæa (*Pachetra*), 144
leucophæaria (*Hybernia*), 35, 91, 92, 95, 142, 165, 166
levallantii (*Euchloë*), 226
levana (*Araschnia*), 46, 131
libatrix (*Scoliopteryx*), 9
lichenana (*Peronea*), 266
lichenaria (*Cleora*), 35
lichenea (*Epunda*), 37
lichenia (*Epunda*), 34
lienigialis (*Pyrallis*), 65
ligea (*Erebina*), 114, 132, 147
lignea (*Nigramma*), 272
ligniperda (*Cossus*), 191
ligula (*Orrhodia*), 217
ligustri (*Sphinx*), 15, 188, 211
lilacina (*Celastrina*), 201
limacina (*Cyligramma*), 141
lineata (*Deilephila*), 65, 210
lineola (*Adopæa*), 67
literana (*Leptogramma*), 165
litnargyria (*Leucania*), 23
Lithosia, 167
littoralis (*Leucania*), 36
littoralis (*Sericoris*), 212
litura (*Amathes*), 9
liturata (*Semiothisa*), 70
lividaria (*Nychiodes*), 204
livornica (*Deilephila*), 33, 162, 190, 210, 235, 262, 263
livornica (*Phryxus*), 65, 239, 240, 258, 262, 285
longicornis (*Gelechia*), 95, 118
loniceræ (*Zygæna*), 65
lota (*Amathes*), 37
lotha (*Amathes*), 9
lucernea (*A.*), 120
lucida (*Acontia*), 204
lucilla (*Euchloë*), 66
lucilla (*Neptis*), 108
lucina (*Hamæaris*), 240
lucina (*Nemeobius*), 6, 18, 33, 37, 143, 177, 188
lucipara (*E.*), 23
luctuosa (*Acontia*), 204, 211
**luminosa* (*Agrotis*), 121, 122
lunaris (*Ophiodes*), 89
lunaris (*Pseudophia*), 89
lunosa (*Anchoelid*), 9
lupulinus (*Hepialus*), 203
luridata (*Tephrosia*), 164
lurideola (*L.*), 23
lutea (*Plebeius*), 144
lutea (*Xanthia*), 9
luteago (*Dianthæcia*), 280
luteolata (*Opisthograptis*), 23
lutescens (*Callimorpha*), 277
lutosa (*Calamia*), 48
lutulenta (*Aporophyla*), 34
lutulenta (*Epunda*), 89
**luzonensis* (*Euxoa*), 121
**luzonensis* (*Trachea*), 123
lycaon (*Epinephele*), 32, 103
lychnidis (*A.*), 23
lychnitis (*Cucullia*), 37
lyllus (*Cœnonympha*), 103, 279
lyssa (*Pararge*), 103
maccana (*Peronea*), 13
machaon (*Papilio*), 30, 37, 40, 42, 46, 60, 66, 154, 211, 263, 278
macilenta (*Amathes*), 9
macularia (*Venilia*), 16
maculosa (*Dione*), 47
mæra (*Pararge*), 109
magnificella (*Elachista*), 120, 165
magnipuncta (*Chrysophanus*), 200
major (*Saturnia*), 203
malvæ (*Hesperia*), 6, 29, 37, 67, 70, 106, 133, 158, 188, 201
mandarinella (*Agrotis*), 122
Maniola, 195
manni (*Pieris*), 18
margaritosa (*Agrotis*), 70
marginaria (*Hybernia*), 91, 92, 143, 211
marginata (*Euchloë*), 219

- marginata (Lomaspilis), 23, 65, 69
 maritima (Senta), 164, 211
 marloyi (Nissoniades), 109
 *marmoraria (Agrotis), 122
 masseyi (Plebeius), 48, 95, 200
 matura (C.), 22, 23
 matura (Melitea), 32
 matutia (Euchloë), 18
 maurus (Attacus), 71
 *mediifascia (Parallela), 273
 medon (Aricia), 30, 33, 42, 70, 105, 200,
 217, 239, 246, 277
 medusa (Erebia), 113, 132
 megacephala (Acronycta), 23, 217
 megæra (Pararge), 22, 32, 34, 36, 37,
 39, 42, 67, 77, 90, 103, 117, 158, 159,
 160, 176, 189, 220, 233, 234, 240, 263,
 278
 Melampias, 194
 melampus (Erebia), 146, 194, 223, 242
 melanoschista (Lyncestis), 274
 melanosticta (Sarrothripus), 48
 melas (Erebia), 247
 meleager (A.), 30
 meleager (Polyommatus), 107
 melia (Erebia), 245
 meliloti (Zygæna), 65
 memnon (Papilio), 264
 mendica (A.), 23
 mendica (Diaphora), 119, 276
 mendica (Spilosoma), 65
 menthastri (Spilosoma), 23, 65, 70, 119,
 120, 262, 276
 menyanthidis (Acronycta), 118
 Metachrostis, 20
 meticulosa (E.), 23
 meticulosa (Phlogophora), 37, 116, 191
 mi (Euclidia), 48, 159
 micæa (Hydræcia), 23
 microdactylus (Leioptilus), 211
 miniata (Mitochrista), 23
 minimus (Cupido), 30, 33, 105, 158,
 200, 201
 miniosa (Tæniocampa), 35
 ministrana (Lophoderus), 11
 minoides (Zygæna), 47
 minor (Papilio), 146
 minor (Polyommatus), 107
 mirabilis (Acræa), 73
 mirabilis (Arhopala), 98
 *miranda (Acræa), 74
 misippus (Hypolimnas), 70
 mnemon (Erebia), 146, 193, 223, 242
 mnemosyne (Parnassius), 107
 mnestra (Erebia), 150, 194
 modesta (Dasycephala), 226
 modesta (Dasycorsa), 226
 moldavica (Botys), 204
 monacharia (Phigalia), 94
 moneta (Plusia), 22, 23, 48, 214, 261
 monodactylus (Pterophorus), 211
 monoglypha (X.), 23
 montanata (Xanthorhœ), 16, 23
 mucronalis (Schœnobia), 211
 *multilinea (Athetis), 124
 multistrigaria (Malenydris), 94
 muralis (Bryophila), 47, 48, 235
 muricata (Hyria), 9, 21
 musculosa (Synia), 89
 mygindana (Orthotenia), 11
 myrmidone (Colias), 108
 napææ (Pieris), 114
 napi (Pieris), 6, 30, 39, 45, 46, 62, 67, 76,
 79, 80, 113, 114, 116, 139, 155, 157,
 166, 219, 278
 napoleon (Dynastor), 164
 nastes (Colias), 111, 115, 120
 nææra (Melitea), 31
 nebulosa (Aplecta), 23, 48
 neglectana (Gypsonoma), 95
 nelamus (Erebia), 146, 197, 224, 242
 nerii (Chærocampa), 22, 258
 nerii (Daphnis), 14, 33, 65, 258
 nervosa (Depressaria), 181
 neustria (N.), 23
 nictitans (Hydræcia), 23
 nigra (A.), 263
 nigra (Aporophyla), 34
 nigra (Calymnia), 192
 nigra (Epunda), 37
 nigra (Gonodontis), 91
 nigra (Odontopera), 71
 nigrana (Peronea), 269
 nigricans (Agrotis), 48
 nigricata (Boarmia), 21
 nigrina (Limenitis), 7, 47, 69, 157
 nigrocincta (Polia), 280
 nigrocostana (Peronea), 269
 nigrocristana (Peronea), 266
 nigrofasciaria (Anticlea), 35, 36
 nigrofulvata (Triphæna), 70
 nigromaculana (C.), 236
 nigromaculata (Polyommatus), 221
 nigro-roseata (Cosymbia), 53
 nigroruficostana (Peronea), 269
 nigrosparata (Abraaxas), 70
 nigrosubvittana (Peronea), 266
 nigrovirgata (Calymnia), 192
 nobilis (Papilio), 95
 noctuella (Nemophila), 236
 norna (Eneis), 113, 132
 nostrodamus (Gegenes), 107, 109
 notata (Macaria), 54
 notulana (Eupæcilia), 182
 nubeculosa (Brachionycha), 11
 nubilus (Aphnæus), 142
 nupta (Catocala), 22, 163, 236
 nymphæata (Hydrocampa), 204, 211
 oblongata (Eupithecia), 226, 236
 obscura (Chrysophanus), 111, 132
 *obscura (Proxenus?), 124
 obscurana (Sphæxæca), 21
 obscurata (Gnophos), 36, 48
 obsoleta (Agriades), 69, 200, 284
 obsoleta (Aphantopus), 251
 obsoleta (Chattendenia), 240
 obsoleta (Erebia), 146, 176, 197, 245
 obsoleta (Leucania), 211

- obsoleta (Plebeius), 69
 obsoleta (Polyommatus), 120
 obstipata (Cidaria), 227
 occulta (Aplecta), 21
 occultana (Pædisca), 118
 ocellaris (Mellinia), 20
 ocellata (M.), 23
 ocellatus (Smerinthus), 15, 211, 257, 274
 ocellatus (Teracolus), 73
 ochracea (Nyssa), 48
 ochraceella (Myrmecocella), 236
 ochrea (Euchloë), 76, 219
 ochrearia (Amphidasys), 48
 ochrearia (Aspilates), 204, 236
 ochrodactyla (Platyptilia), 211
 ochroleuca (H.), 236
 ochroleucata (Acidalia), 227
 octogesima (Palimpsestis), 211
 oleracea (M.), 23
 *olivana (Aiteta), 272
 omphale (Chrysophanus); 104
 opima (Tæniochampa), 139
 oppositata (Trachea), 123
 Opsiphanes, 164
 optilete (Glaucopsyche), 110, 113, 114, 132
 orbicularia (Cosymbia), 52
 orbifer (Pyrgus), 29, 106
 Oreina, 242
 orion (Diptera), 36
 orion (Scolitantides), 30, 108
 *ormistoni (Arhopala), 97
 ornata (Idæa), 204
 ornatrix (Utetheisa), 142
 ornithopus (Graptolitha), 9, 68
 ossianus (Brenthis), 111, 131
 ottomanus (Chrysophanus), 107, 109
 oxyacanthæ (Miselia), 37, 89
 oxytropis (Zygæna), 47, 70
 palæmon (Carterocephalus), 8, 37
 palæmon (Cyclopides), 45
 palæno (Colias), 113, 114, 115
 paleacea (Cosmia), 45
 palealis (L.), 236
 pales (Brenthis), 112, 113, 114, 132
 pallens (Leucania), 23, 211
 pallida (Colias), 31, 62, 282
 pallida (Polyommatus), 200
 pallida (Pyrameis), 143
 palpina (Pterostoma), 211, 275
 paludata (Carsia), 48
 palustris (Hýdrilla), 89
 pamphilus (Cœnonympha), 32, 37, 38, 39, 42, 67, 69, 70, 78, 103, 120, 132, 159, 165, 177, 221, 263, 279
 pandora (Dryas), 31, 63, 363
 paphia (Dryas), 7, 8, 31, 33, 36, 38, 45, 46, 47, 63, 69, 70, 71, 77, 80, 138, 175, 188, 192, 218, 278
 paphos (Glaucopsyche), 142
 parasitum (Oenogyna), 202
 parca (Alucita), 227
 parthenias (Brepheos), 35, 48, 139, 142
 parthenie (Melitæa), 158
 parvipuncta (Chrysophanus), 200
 parvipuncta (Plebeius), 144
 pauli (Amathes), 227
 pauli (Orthosia), 227
 pavonia (Saturnia), 19, 22, 65, 203, 276
 pedaria (Phigalia), 35, 67, 91, 92, 94, 117, 119, 165, 166
 peltigera (Heliothis), 36, 89, 236
 pendularia (Cosymbia), 52, 55
 pendularia (Zonosoma), 48
 pennaria (Himera), 17, 18, 67, 70, 71, 91, 119
 pentadactyla (Acipitilia), 204
 peregrina (Hadena), 89
 perla (Bryophila), 23, 36, 71, 236, 262
 perlellus (Crambus), 236
 permixtana (Lobesia), 25, 68
 perochraria (Acidalia), 16
 persicariæ (Mamestra), 23
 perspicillaris (Cloantha), 70
 pharte (Melampias), 194
 phegea (Syntomis), 263
 phidias (Papilio), 141
 Philpottia, 279
 phisadia (Teracolus), 73
 phisiotis (Spatalia), 214
 phlæas (Chrysophanus), 15, 30, 39, 42, 45, 48, 67, 78, 95, 104, 112, 117, 118, 132, 163, 188, 200, 221, 226, 233, 263, 278, 282, 284, 285
 phlæas (Rumicia), 17, 70, 164, 214
 phœbe (Melitæa), 63, 64, 108
 phœbe (Notodonta), 259
 phœbus (Parnassius), 120
 phragmitellus (Chilo), 211
 phryganella (Chimabache), 118
 pigra (Pygæra), 36, 275
 pilella (Nemophora), 11
 pilosellæ (Zygæna), 202
 pinastri (Sphinx), 258
 pinarius (Bupalus), 118
 piniperda (Panolis), 35, 118
 pirene (Erebia), 150
 pisi (Hadena), 211
 pistacina (Amathes), 37
 pistacina (Anchocelis), 9
 plagiata (Anaitis), 48, 204
 plantaginis (Parasemia), 35, 120, 264, 276
 plecta (Noctua), 23
 plumbeolata (E.), 55
 plumigera (Ptilophora), 259
 Plusia, 164
 podalirius (Iphiclidides), 30, 40, 42, 61, 154, 240, 263
 polaris (Aglais), 112, 114, 131, 174, 219
 polaris (Erebia), 113, 132
 politana (Cnephasia), 118
 polychloros (Eugonia), 9, 31, 38, 46, 64, 116, 142, 157, 162, 165, 209, 278
 polyodon (Cloantha), 70
 polyxena (Thais), 30, 61
 pontica (Acronycta), 33
 popularis (E.), 23

populata (Lygris), 11
 populi (Amorpha), 70, 274
 populi (Limenitis), 108
 populi (Pœcilocampa), 17, 67, 275
 populi (Smerinthus), 23, 56, 257
 populi-ocellatus (Smerinthus), 257
 porata (Ephyra), 53
 porcellus (Chærocampa), 191, 258
 porcellus (Metopsilus), 258
 poros (Terinos), 214
 *postalba (Gandaritis), 241
 posticana (Retinia), 12
 potatoria (Cosmotriche), 22, 48, 211, 275
 potatoria (Odonestis), 203, 211
 *poweri (Sinna), 272
 præclara (Melitæa), 77, 220
 præcocella (Argyresthia), 12
 prasina (Eurois), 35
 prasinana (Hylophila), 48, 276
 primulæ (N.), 23
 proboscidalis (Hypena), 23
 promissa (Catocala), 6, 9, 33
 promutata (Acidalia), 36, 236
 pronubana (Tortrix), 80, 163
 prorsa (Araschnia), 46
 prosapiaria (Ellophia), 35, 48
 proteus (Hadena), 6, 9
 protheon (Pyrgus), 29
 proto (Pyrgus), 29
 provittana (Peronea), 270
 pruni (Procris), 202
 pruni (Strymon), 70
 pruni (Thecla), 8, 48, 108, 199
 pterodactylus (M.), 137
 pudibunda (Dasychira), 23
 puerpera (Catocala), 204
 pulchella (Deiopeia), 65
 pulchella (Utetheisa), 22, 142
 pulchellata (Eupithecia), 23
 pulchrina (Plusia), 1, 23, 43, 141
 pulveraria (Numeria), 120
 pulverulenta (Tæniocampa), 119, 139
 pumilata (Eupithecia), 139
 pumilata (Gymnoscelis), 119, 226
 punctularia (Boarmia), 142
 punctum (Zygæna), 70
 punicealis (Pyrausta), 212
 purdeyii (Retinia), 120
 purpuraria (Lythria), 204
 purpurina (Anthophila), 204
 pusaria (Cabera), 16, 23
 pusillata (Eupithecia), 139
 pustulata (Euchloris), 36
 puta (Agrotis), 9, 23
 putrescens (Leucania), 37
 pygmæata (Eupithæcia), 120
 pyralina (Calymnia), 192
 pyramidea (Amhipyrra), 9, 23, 45
 pyrenaica (Erebia), 146, 224, 242
 pyri (Saturnia), 239
 pyrha (Erebia), 148
 quadra (Enistis), 36
 quadrimaculata (Venilia), 16
 quadripunctaria (Callimorpha), 277

quadripunctata (Caradrina), 94
 quercana (Halias), 57
 quercus (Bombyx), 141
 quercus (Lasiocampa), 21, 65, 275, 277
 quercus (Zephyrus), 6, 8, 33, 38, 46, 48
 138, 199, 278
 radiata (Abraxas), 70
 radiata (Chrysophanus), 200
 radiata (Euchlœ), 77, 219
 radiata-lutea (Abraxas), 192
 ramosana (Sarrothripus), 48
 rapæ (Pieris), 17, 18, 22, 30, 39, 45, 62,
 66, 76, 79, 116, 139, 155, 157, 158,
 159, 160, 219, 226, 263, 278
 ravulana (Sphæræca), 21
 regina (Eumera), 226
 relictata (Acidalia), 143
 remutaria (Acidalia), 36
 repandata (Boarmia), 20, 54, 120
 reticulata (Neuria), 211
 retro-juncta (Plebeius), 144
 retro-puncta (Plebeius), 144
 retusia (Plastenis), 35
 revayana (Sarrothripus), 48, 71, 217, 276
 rhamnata (Scotosia), 35
 rhamni (Gonepteryx), 6, 17, 31, 37, 54,
 63, 67, 109, 131, 141, 156, 158, 160,
 190, 234, 263, 280, 281
 rhizolitha (Graptolitha), 9
 rhodia (Melampias), 146, 194
 ridens (Polyploca), 259
 ridleyanus (Papilio), 141
 rimicola (Eriogaster), 22
 rinaldus (Brenthis), 131
 ripæ (Agrotis), 36
 roboraria (Boarmia), 23, 35, 36
 roseæ (Hippocrita), 240
 roseana (Eupœcilia), 181, 236
 rossii (Pieris), 18
 rothliebii (Cœnonympha), 177
 roxelana (Pararge), 32
 rubi (Bombyx), 94
 rubi (Callophrys), 6, 8, 11, 30, 33, 37, 46,
 54, 67, 70, 78, 104, 118, 133, 139, 158,
 188, 192, 199, 218, 221
 rubi (Macrothylacia), 34, 36, 54, 188, 275
 rubi (Noctua), 23, 34
 rubicundus (Zygæna), 47
 rubiginata (Acidalia), 211, 236
 rubiginata (Idæa), 204
 rubricollis (Atolmis), 277
 rubricollis (Lithosia), 36
 rubricosa (Pachnobia), 35, 119, 139
 rufa (Cœnobia), 48, 211
 rufana (Peronea), 13, 93
 rufillana (Semasia), 186, 236
 rufinigrana (Peronea), 269
 rufopunctatus (Lycena), 78
 rufopunctatus (Polyommatus), 221
 rumicis (Acronycta), 22, 36
 rupicaprararia (Hybernia), 91, 92
 rusina (Dasyopthalma), 141
 russula (Diacrisia), 55
 rustica (Diaphora), 276

- rusticata (A.), 236
 rutilus (Chrysophanus), 10, 107, 214
 sacraria (Rhodometra), 227
 sacraria (Sterrha), 65, 190
 sagittata (Plebeius), 144
 salicalis (Madopa), 65
 salicella (Olethreutes), 95
 salicicola (Endagria), 33
 salmacis (Aricia), 200, 239, 246
 salonicæ (Melanargia), 108
 sambucaria (Ourapteryx), 23
 sanio (Diacrisia), 9, 55
 sao (Pyrgus), 29, 263
 sarmatis (Aricia), 30
 satellitia (Scopelosoma), 9
 saucia (Agrotis), 9, 34, 37, 70
 scabriuscula (D.), 23, 237
 scalella (C.), 95
 schmidtii (Chrysophanus), 78, 118, 163, 221
 schmidtii (Rumicia), 15
 scoliiformis (Sesia), 13
 scotica (Cœnonympa), 220
 scotica (Melitæa), 77
 scutulana (Ephippiphora), 185
 sebrus (Cupido), 108
 secalis (A.), 277
 segetum (Agrotis), 23
 selene (Brenthis), 6, 7, 36, 46, 47, 55, 70, 113, 131, 175
 selene (Tænaris), 164
 *selousi (Acræa), 75
 semele (Hipparchia), 23, 32, 39, 176, 263, 278, 287
 semele (Satyrus), 70, 120
 *semialba (Epinephele), 278
 semiargus (Nomiades), 16, 30, 201
 semilutea (Abraxas), 70
 semisyngnatha (Agriades), 48, 200, 284
 semiustana (Peronea), 270
 senex (Nudaria), 211
 septembrella (Nepticula), 192
 sequella (Cerostoma), 95
 serena (Hecatera), 211
 sericana (Peronea), 270
 sexualisata (Lobophora), 35, 211
 sibylla (Limenitis), 7, 8, 33, 36, 38, 45, 46, 47, 69, 70, 71, 80, 108, 156, 209, 235
 sricula (Drepana), 65
 sidæ (Hesperia), 106
 signatipennis (Crocallis), 43, 48
 silacea (Eustroma), 23
 silesiana (Erebia), 223
 similis (Porthesia), 23, 46
 simpliciana (D.), 236
 simulans (Agrotis), 23
 sinapis (Leptosia), 31, 46, 115, 263, 280
 sinapis (Leucophasia), 35, 156
 sinuella (Homœosoma), 211, 236
 smeathmanniana (C.), 236
 sobrinata (Eupithecia), 12, 21, 35
 socia (Lithophane), 9, 37
 sociata (Xanthorhoë), 286
 sodorensium (Boarmia), 21
 solandriana (Pædisca), 21, 118
 Solenobia, 12
 solidaginis (Cucullia), 117
 solieri (Eumichtis), 227
 solieri (Hadena), 227
 solitaria (Diacrisia), 241
 solitaria (Spilosoma), 241
 sorbi (Lithocolletis), 120
 sorbiella (Argyresthia), 12
 sordida (Hama), 35
 sordida (Mamestra), 211
 sparsata (Collix), 211
 spartiata (C.), 23
 sphegiformis (Sesia), 55
 spini (Saturnia), 203
 spiniella (Argyresthia), 118
 spinolella (Lithocolletis), 12
 spoliatricula (Bryophila), 19
 sponsa (Catocala), 9, 33, 45
 stabilis (Tænio-campa), 35, 94, 119, 139
 stagnata (Hydrocampa), 211
 statices (Adscita), 192
 statices (Ino), 214
 statices (Procris), 202
 statilinus (Satyrus), 32
 steeveni (A.), 30
 stellatarum (Macroglossa), 22, 36, 79, 118, 189, 202, 258, 274, 277
 stevenariâ (Gnophos), 33
 steveni (Polyommatus), 107
 stieberi (Chrysophanus), 113, 114, 132
 stœchadis (Zygæna), 47, 70
 stolidia (Leucanitis), 204
 stoninus (Sarrothripus), 48
 straminea (Leucania), 211
 strataria (Amphidasys), 48
 strataria (P.), 139
 stratiolata (Cataclysta), 211
 striata (Agriades), 48, 69, 71
 striata (Coscinia), 202
 striata (Plebeius), 69
 strigilis (Miana), 23
 strigillaria (Perconia), 218
 strigosa (Acronycta), 65
 strigula (Nola), 35
 stygné (Erebia), 150
 subaquilia (Acompsia), 12
 subcapucina (Peronea), 268
 subflava (Metaporja), 204
 sublustris (Xylophasia), 217
 subrosea (Noctua), 89
 subroseata (Cosymbia), 53, 55
 subroseata (Zonosoma), 48
 subsequa (Triphæna), 211
 subsericeata (Acidalia), 35
 subtusradiata (Celastrina), 163, 201
 suffumata (L.), 139
 suffusa (Agrotis), 34, 37
 suffusa (Chrysophanus), 200
 sulfureovenata (Euchloë), 219
 sulitelma (Colias), 113
 superba (Isamia), 214
 suspecta (Dyschorista), 218

- sylvanus (Augiades), 29, 38, 39, 67
 syngnatha (Agriades), 69, 200, 283
 syringaria (Hydrochroa), 23
 tabaniformis (Sciopteron), 164
 tæniata (Perizoma), 21, 36, 217
 tages (Nisoniades), 6, 29, 37, 158, 188
 tages (Thanaos), 46
 taras (Hesperia), 201
 taraxaci (Crateronyx), 23, 203
 tau (Aglaiæ), 164
 telephassa (Satyrus), 66
 telicanus (Langia), 107
 telicanus (Tarucus), 105
 tenebrata (Heliaca), 158
 tenebrosa (Rusina), 23
 tenera (Leucanitis), 22
 tenuicornis (Incurvaria), 95
 tessellum (Pyrgus), 107, 109
 testacea (Luperina), 23, 70
 tetralunaria (Selenia), 16, 240
 tetraquetra (Phlæodes), 11
 thalassina (Hadena), 211
 thalia (Brenthis), 131
 thaumas (Adopæa), 42, 46, 67, 263
 thersamon (Chrysophanus), 30, 104, 107
 thetis (Agriades), 214
 thetis (Chrysophanus), 107, 109
 thyter (Uthetheisa), 142
 tiliæ (Mimas), 35, 70, 257
 tineta (A.), 54
 *tineta (Epinephele), 278
 tineana (Ancyli), 12
 tirhaca (Pseudophia), 14
 tiphon (Cenonympha), 66, 69, 78, 177,
 220, 221
 tithonus (Epinephele), 22, 39, 67, 70,
 140, 143, 176, 210, 233, 234, 239, 278
 tityus (Hemaris), 35, 240, 259, 274
 tityus (Macroglossa), 77
 tolna (Peronea), 269
 Tortrix, 12
 totrix (Utetheisa), 142
 trabealis (Agrophila), 211
 trabealis (Emmelia), 204
 tragopogonis (Amphipyra), 20
 transalpina (Zygæna), 70, 141, 215
 transversana (Peronea), 268
 trapezina (Calymnia), 9, 33, 192
 tremula (Pheosia), 23, 275
 tremulæ (Smerinthus), 33
 trepida (Notodonta), 55
 triangulum (N.), 23
 tricaudata (Thais), 226
 trifolii (Pachygastris), 286
 trifolii (Zygæna), 35, 36, 39, 65, 116, 187,
 188, 262, 277
 trigrammica (Grammesia), 23, 33, 35
 trimacula (Drymonia), 259
 tripartita (Abrotola), 12
 tristellus (Crambus), 118
 tritophus (Notodonta), 164, 259
 trivialis (Melitæa), 64
 trochilus (Chilades), 108
 troglodytella (Coleophora), 181, 182
 truncata (Cidaria), 37, 48, 142
 truncata (Dysstroma), 102, 143
 tubulosa (Taleporia), 143
 turatii (Euchloë), 18
 turca (Leucania), 36
 typhæ (Nonagria), 36, 47
 typhon (Cenonympha), 218
 uliginosellus (Crambus), 120, 211
 ulmana (Anisotænia), 68
 umbra (Pyrrhia), 36, 236
 unanimis (Apamea), 211
 unca (Hydrelia), 48
 uncula (Erastris), 218
 uncula (Hydrelia), 211, 218
 unidentaria (C.), 23
 unifasciana (Caccæcia), 49, 93
 unipuncta (Leucania), 262, 285
 uralensis (Euchloë), 31
 urticæ (Aglais), 17, 23, 31, 34, 39, 40, 42,
 44, 45, 47, 66, 67, 70; 76, 77, 79, 90,
 112, 114, 117, 131, 139, 143, 157, 158,
 159, 160, 161, 162, 165, 173, 209, 210,
 219, 232, 261, 278, 282
 urticæ (Spilosoma), 211
 ustomaculana (Asthenia), 11
 vacciniella (Lithocolletis), 11
 vaccinii (Orrhodia), 9, 37, 139
 *vagus (Teracolus), 73
 valesiaca (Erebia), 223, 245
 valesiana (Erebia), 146
 valesina (Dryas), 7, 33, 36, 38, 45, 63,
 69
 vanadis (Anthrocera), 143
 vanillæ (Dione), 47
 variata (Thera), 35
 variegana (Acalla), 95
 variegana (Tortrix), 227
 variegata (Sarrothrips), 48
 varleyata (Abraxas), 48, 192
 venosa (Tephrosia), 48
 venulia (Agraulis), 214
 venusta (Utetheisa), 142
 versicolora (Dimorpha), 187, 188, 287
 versicolora (Endromis), 187, 287
 verticalis (Spilodes), 211
 vestigialis (Agrotis), 218
 vestigialis (Euxoa), 218
 vetulata (Scotosia), 35, 211
 vetusta (Calocampa), 13
 viduaria (Cleora), 16
 villica (Arctia), 35, 64, 159, 202
 viminalis (Bombycia), 13
 viminalis (Bombycina), 23
 vinula (Dieranura), 23, 54, 187, 275
 viretata (Lobophora), 54, 189, 236
 virgata (Melitea), 220
 virgata (Mesotype), 35
 virgularia (Acidalia), 23
 viridana (Tortrix), 34, 37, 190
 viridaria (Amœbe), 277
 viridata (Nemoria), 211
 vitellina (Leucania), 37, 236, 262, 285,
 286
 vitisella (Coleophora), 11

vittana (Peronea), 270
 vittata (Phibalapteryx), 211
 vogesiaca (Erebina), 244
 vogleri (Citheronia), 71
 vulgata (Eupithecia), 23
 w-album (Chattendenia), 240
 w-album (Thecia), 15, 30, 38, 199, 263
 walkeri (Spilosoma), 70
 wardi (Arctia), 159
 wauaria (Thamnonoma), 16
 werdandi (Colias), 111, 115

xanthographa (Noctua), 69
 xanthomelas (Eugonia), 31
 xerampelina (Cirrædia), 9, 48, 69
 xylostearia (Tortrix), 70
 ypsilon (Agrotis), 9
 zephyrana (P.), 236
 zephyrus (Plebeius), 108
 ziczac (Notodonta), 48, 211, 275
 zinckenii (Polia), 89
 zonaria (Nyssia), 48, 92

Order XIX. COLEOPTERA.

Ablattaria, 173
 acuminata (Melanophila), 164
 Agrypnus, 173
 Arrhaphipterus, 173
 aurata (Cetonia), 70, 119
 bennetti (Rhinoscapha), 120
 biguttatus (Endomychus), 100
 bipustulatus (Chilocorus), 172
 birecurva (Coryna), 173
 brevicollis (Nebria), 119
 Broscus, 172
 caraboides (Melandrya), 56
 cervus (Lucanus), 119
 chalcites (Chrysomela), 173
 coccineus (Endomychus), 98
 crenata (Dailognatha), 172
 curculionoides (Attelabus), 239
 Cymindis, 172
 Endomychus, 100
 equestris (Cassida), 192
 erichsoni (Lema), 239
 fagi (Orchestes), 58
 fuscipes (Calathus), 172
 fuscipes (Melanotus), 173
 germanica (Cicindela), 239
 giganteus (Amnodelis), 172
 græcus (Hister), 173
 granarius (Aphodius), 173
 hederæ (Ochina), 58
 herculeana (Tentyria), 172
 hirtus (Emus), 286
 hispidus (Trox), 173
 humator (Necrophorus), 119, 164
 impressus (Dendarus), 172
 inquisitor (Rhagium), 119
 lateralimarginalis (Cybister), 172
 laticollis (Tentyria), 172
 libani (Opatrum), 172
 ligustici (Otiorrhynchus), 214
 lineola (Galerucella), 192
 Lithophilus, 173

longulus (Opatroides), 172
 lunaris (Copris), 164
 lunulata (Cicindela), 172
 madidus (Pterostichus), 119
 Meloë, 192
 mitrei (Pimelia), 172
 mortuorum (Necrophorus), 9
 nazarena (Pimelia), 172
 Necrophorus, 240
 nigra (Cetonia), 70
 nitens (Attelabus), 239
 noctis (Gymnetron), 60
 notata (Pissodes), 58
 nucum (Balininus), 164
 Orchestes, 57
 paradoxus (Metæcus), 264
 parallelopipedus (Dorcus), 119, 240
 pectinicornis (Corymbites), 56
 perlatus (Trox), 173
 populnea (Saperda), 142
 Pristonychus, 172
 puncticollis (Scaurus), 172
 punctulatus (Carabus), 171
 punctulatus (Opatroides), 172
 quercus (Orchestes), 58, 59
 rufipes (Anobium), 58
 rufipes (Necrobia), 173
 rugulosus (Cossyphus), 172
 rusticum (Gonocephalum), 172
 serricorne (Lasioderma), 173
 Silpha, 240
 titillator (Monohammus), 47
 tortrix (Dorytomus), 143
 ulcerosa (Adesmia), 172
 vacca (Onthophagus), 164
 vaporariorum (Stenolophus), 172
 variabilis (Hypera), 172
 versicolor (Melyris), 173
 vulgaris (Melolontha), 192
 vulpinus (Dermestes), 173

Order XXI. DIPTERA.

*africana (Ptychoptera), 101
 amœna (Alloidia), 86
 annulata (Thereva), 170
 ater (Xylophagus), 95
 atrata (Platyura), 87

atrata (Xiphura), 56
 atricauda (Platyura), 88
 autumnalis (Musca), 141
 autumnalis (Tabanus), 7
 basalis (Boletina), 87

- bifurcatus* (Anopheles), 120
bimaculata (Mycetophila), 85
bovinus (Tabanus), 7
bromius (Tabanus), 7
cæcutiens (Chrysops), 7
cantans (Culex), 7
capensis (Ptychoptera), 102
carbonaria (Sciara), 85
caudata (Allodia), 86
centralis (Macrocera), 88
Ceroplatus, 88
cingulum (Mycetophila), 85
Cordyla, 85
Corethra, 120
corvina (Musca), 141
crassicornis (Docosia), 86
crassicornis (Megophthalmidia), 86
crucigera (Exechia), 86
cylindrica (Glaphyroptera), 87
dimidiata (Mycetophila), 86
dispar (Chironomus), 95
dispecta (Boletina), 87
distincta (Ptychoptera), 102
distinguendo (Theriopectes), 7
domestica (Rhymnosia), 86
dorsalis (Chironomus), 95
**electrella* (Psilocephala), 170
fasciata (Macrocera), 88
fasciata (Platyura), 87
fasciata (Rhymnosia), 86
fasciata (Sciophila), 87
fasciata (Stegomyia), 165
fasciipennis (Glaphyroptera), 86
ferruginosa (Diadocidia), 88
festiva (Exechia), 86
flava (Platyura), 87
flavipes (Odontomyx), 88
flavipes (Sciara), 85
fulvus (Atylotus), 7
fungorum (Exechia), 186
fungorum (Mycetophila), 85
fuscicorne (Dynastoma), 85
geniculatus (Ochlerotatus), 166
glabrata (Bolitophila), 88
Glaphyroptera, 86
Glossina, 69, 166
guttata (Mycetophila), 86
guttiventris (Exechia), 86, 89
hemiptera (Alophora), 7
hirtum (Lasiosoma), 87
inanis (Sphecolmya), 213, 238, 263
incisurata (Sciophila), 87
intincta (Platyura), 87
Leiomyia, 86
lineatus (Ceroplatus), 88
lineola (Mycetophila), 85
lucorum (Mycomyia), 87
lugens (Allodia), 86
lutea (Macrocera), 88
Macrocera, 127
maculicornis (Tabanus), 7
maculipennis (Anopheles), 166
marginata (Mycomyia), 87
marginata (Platyura), 87
marginata (Sciophila), 87
Microdon, 240
Mochlonyx, 120
morsitans (Glossina), 166
nemerusus (Ochlerotatus), 120
nemoralis (Anaclinia), 87
nemoralis (Platyura), 87
nigrum (Asindulum), 87
notata (Zygomyia), 86
pallidipes (Mycetobia), 88
palpalis (Glossina), 166
parva (Exechia), 86
phalerata (Macrocera), 88
pipiens (Culex), 87
Platyura, 87
plumbeus (Anopheles), 166
plumosus (Chironomus), 95
pluvialis (Hæmatopota), 7
Ptychoptera, 101
punctata (Mycetophila), 85
quadrata (Chrysops), 7
reducta (Actia), 58
rostratum (Asindulum), 87, 88
Sciara, 85
sciarina (Docosia), 86
semirufa (Platyura), 87
stigma (Macrocera), 88
subfasciatus (Glaphyroptera), 87
submaculata (Trichonta), 86
tenax (Eristalis), 238
thomas (Sciara), 84
tipuloides (Ceratoplatus), 88
trivittata (Exechia), 86
tropicus (Theriopectes), 7
unicolor (Platyura), 88
valida (Docosia), 86
valida (Zygomyia), 86
vallata (Beris), 163
varius (Tanypus), 95
vesparum (Homalomyia), 264
vestata (Oscinus), 58
walkeri (Leptomorphus), 87
winthemi (Glaphyroptera), 87
zonata (Platyura), 88

Order XXII. HYMENOPTERA.

- aceris* (Phyllotoma), 192
aericeps (Dolerus), 163
Agathis, 178
Allodorus, 57
ambiguus (Sigalphus), 58
Andrena, 133
anglica (Agathis), 180, 181
Apanteles, 178
apterus (Chasmodon), 58
austriaca (Vespa), 44
balucha (Andrena), 133
**beharica* (Andrena), 135

- bilineatus (Diastephanus), 82
 bipartita (Andrena), 133
 Bombus, 43
 brevicaudis (Microdus), 182
 brevisetis (Agathis), 180, 181
 calculator (Microdus), 182, 183, 230
 caledonicus (Sigalphus), 59
 camberiana (Andrena), 135
 candatus (Sigalphus), 57, 59
 Cimbex, 56
 cingulipes (Microdus), 183, 186
 circulans (Andricus), 239
 clausthalianus (Microdus), 183, 185
 conspicuus (Microdus), 182, 183
 daviesana (Colletes), 239
 degener (Acrodactyla), 68
 delusor (Earinus), 229, 249
 Diosphrys, 230
 dispar (Colax), 100
 dispar (Gnatho), 100
 Earinus, 177, 228
 ecus (Tetrastichus), 58
 endomychi (Pteromalus), 100
 Eumicrodus, 182
 flavipes (Endomychobius), 100
 floricola (Sigalphus), 59
 fulvipes (Triaspis), 58
 germanica (Vespa), 213, 238, 264
 gigas (Sirex), 47, 120
 gloriatorius (Bassus), 249
 Habrocytus, 58
 halidayi (Neoneurus), 179
 harrietæ (Andrena), 133
 ilerda (Andrena), 133
 *inglisi (Andrena), 133
 jaculator (Fœnus), 212
 jonillus (Bombus), 44
 juveneus (P.), 120
 lapponicus (Bombus), 44
 latreillelus (Bombus), 44
 lepidus (Allodorus), 57
 lepidus (Triaspis), 57
 leucodontus (Diastephanus), 81
 lineolata (Athalia), 163
 linguarius (Microdus), 182, 185
 lucorum (Bombus), 44
 lugubator (Microdus), 228
 luteipes (Sigalphus), 58
 malvacearum (Agathis), 180
 mediator (Microdus), 183, 228
 Megachile, 141
 Melitta, 133
 Meteorus, 180
 Microdus, 177, 182
 Neoneurus, 177
 nigra (Agathis), 180
 nitidiuscula (Adrena), 135
 nitidulus (Earinus), 229
 nugax (Microdus), 183, 186
 obscurellus (Sigalphus), 60
 ochropes (Earinus), 229, 248
 Orgilus, 177
 pallidipes (Sigalphus), 58
 *peridonea (Andrena), 134
 pictus (Odynerus), 192
 quadricolor (Psythyus), 44
 *quadridens (Diastephanus), 81
 rufa (Vespa), 44
 rufipalpis (Agathis), 180, 181
 rufipes (Microdus), 183, 227
 rugulosus (Microdus), 183, 228
 serva (Selandria), 163
 Sigalphus, 57
 *simillimus (Diastephanus), 82
 solskyi (Stigmus), 88
 striolatus (Sigalphus), 58
 *sulcatus (Diastephanus), 80
 sylvarum (Cimbex), 11
 sylvestris (Vespa), 264
 Therophilus, 182
 thoracicus (Earinus), 229, 230
 thoracicus (Sigalphus), 58
 *transversus (Earinus), 229, 249
 Trichosomæ, 56
 tricolor (Neuroterus), 239
 *trilineatus (Diastephanus), 81
 *trilobatus (Diastephanus), 82
 tristator (Hemiteles), 68
 tuberculatus (Earinus), 229, 249
 tumidulus (Microdus), 183, 185
 undulatus (Ophion), 56, 141
 urometæna (Andrena), 133
 Vespa, 43
 vesparum (Specophaga), 264
 vulgaris (Vespa), 264
 zonatus (Earinus), 183

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[No. 680

EDITORIAL.

WE have to announce, with very much pleasure, that Messrs. W. G. Sheldon and N. D. Riley have kindly consented to act on the Reference Committee of this Journal.

A NEW FORM OF *PLUSIA PULCHRINA*, HAW.

BY C. GRANVILLE CLUTTERBUCK, F.E.S.

THE accompanying figure shows a form of *pulchrina* taken by me on our hills near Gloucester on June 21st, 1919, together with a type taken here on May 26th, 1893, for comparison. The variation may be described as slightly larger than the type, the purple-brown ground-colour being more brilliant and the usual golden Y-mark being replaced by a large wedge-shaped golden blotch. The space between the hind margin and the subterminal line on the fore wings is filled in with a beautiful pink shade. The specimen, a male, was taken at rest on a leaf of a small ash-tree growing by the side of the wood-path, and is in perfect condition, with the exception of the apex of the right fore wing, which is chipped slightly. It was shown to Mr. H. Rowland-Brown, F.E.S., a few days after capture, and pronounced by him to be a new form, if not a new species. I had the pleasure of showing him the bush from which it was taken. I have also shown it to Mr. A. B. Farn, who is kind enough to say it is "the catch of the season." It is a species very little liable to variation, and in Mr. Farn's long series there is only one variety, and in that the golden Y is replaced by a small golden dot. Mr. E. W. Lipton has kindly shown me his copy of Seitz' 'Macro-lepidoptera of the World,' and there is nothing like this variety figured in that work. Barrett says, in vol. vi, p. 117: "Variation is usually very slight, and confined to the degree of completeness of the Y and the extent of chocolate shading. Some specimens, however, taken in Gloucestershire by the Rev. Alexander Nash, are pale pinkish-purple, with violet reflections and a very pretty curved stripe of paler colour close to the base. In Sligo, Westmeath, and elsewhere in Ireland it is found in a rich, dark, strongly rippled

form, and at Omagh with a large orange spot in the middle of the fore wings. Very dark forms are found in the North of Scotland."

I have also shown the specimen to Sir George F. Hampson at the British Museum (Natural History Department), and he has kindly confirmed the identity of the species. Lord Rothschild



had brought up from Tring a fine dark aberration of *Plusia gamma* for comparison.

23, Heathville Road,
Gloucester.

NOTE ON COPULATION AND OVIPOSITION IN THE
DRAGONFLY *SYMPETRUM STRIOLATUM* (CHAR-
PENTIER).*

By W. D. LANG, ScD., F.Z.S.

Sympetrum striolatum was observed at noon on October 4th, 1919, flying in numbers over a small pond. This pond, some ten by fifteen yards in extent, is situated in a pasture immediately behind the pebble ridge above the fore-shore between Worthing and Goring. It was very shallow, with down-trodden banks

* Besides descriptions and figures in the works quoted below, there is a very complete account of the copulation of dragon-flies by Erich Smidt (1915, 'Vergleichende Morphologie des 2 und 3 Abdominal segments bei männlichen Libellen'; Dr. J. W. Spengel's 'Zoologischen Jahrbuch, band xxxix, heft i, pp. 87-200, pl. ix-xi). I am indebted to Mr. H. Champion for this reference as well as for the references quoted below to papers by Calvert, Williamson and Walker.

occupied by a thick growth of *Carex* sp. from one to two feet high. There was little or no vegetation other than algal in the water of the pond, and hardly any animal life of much more than microscopic size, since the only animals noticed were a species of *Gyrinus* and the mollusc *Aeroloxus lacustris* (Müller). The weather was very fine, but rather misty, with little or no wind, and hot for the time of year.

The *Sympetrum* were united in pairs in the *tandem* position, and the females of each pair were ovipositing, flicking the surface from time to time with the abdomen. In one case there were three individuals coupled *tandem*, two males in front, and a female behind. I was able to secure them all, but they disjoined themselves as soon as they were in the net, so that I could not determine which male was the foremost. Mr. H. Campion has kindly examined these specimens for me, and besides identifying the species, he pointed out that one male (which was decidedly the smaller) had probably emerged more recently than the other, as was shown by the more hyaline wings and duller stigmata, compared with the more deeply-stained wings and bright red stigmata of the larger male. Mr. Campion is inclined to think that the latter was the functional male, and that it was the smaller and less mature insect that, clasping the functional male *per collum*, caused the unusual phenomenon of three dragon-flies flying *tandem*. The smaller male also had an abnormal wing; the tip of one hind-wing had been regenerated after an injury early in its development. Besides the coupled pairs, one or two unattached males were generally to be seen hovering over the pond or flying wildly in its neighbourhood.

I was fortunate to see the meeting of an unattached male with a female. Their approach was unnoticed, but they met with some commotion of wings over the middle of the pond and immediately united, the male seizing the female by the back of the head with his anal appendages, and the female curving her abdomen under that of the male and coupling her ovipositor with the copulatory apparatus of his second abdominal segment. In this position they drifted rather than flew down to the ground among some stones on the bank. On walking over to find them on the stony ground I disturbed them, and they flew in a drifting manner into the grass some twenty yards from the pond. There I was able to approach them closely, finally lying down and examining them with a pocket lens; therefore they were not at all readily alarmed. The male grasped the herbage with his legs, while all but the terminal segments of his abdomen were straight and in a line with the thorax, and not curved, as in Calvert's figure of *Æschna constricta*, Say (P. P. Calvert, 1906, 'Entomological News,' vol. xvii, pl. vii), and Walker's figure of the same species (E. M. Walker, 1912, 'The North American Dragonflies of the Genus *Æshna*,' University of Toronto Studies, Biological

series, No. 11, pl. ii, fig. 1). The last few abdominal segments were closely appressed to the head of the female over the suture between the eyes (the median eye-line of R. J. Tillyard, 1917, 'The Biology of Dragon-flies,' fig. 1, A, on p. 10, *me.*), and curling tightly round to the back of the head, concealed the anal appendages, which were deeply plunged into the cleft between the head and the thorax, so that the details of clasping could not be observed. But it seems impossible to suppose that the inferior appendage bent forward so as to rest upon the top of the head, as described by Williamson for four Anisopterous genera, including *Sympetrum* (E. B. Williamson, 1906, 'Entomological News,' vol. xvii, p. 143), figured by Calvert and by Walker in *Æschna constricta*, Say (P. P. Calvert, *loc. cit.*, and E. M. Walker, *loc. cit.*, and pl. ii, figs. 2-4), and claimed by Tillyard (*op. cit.*, p. 33) for Anisoptera generally; for the whole of the last segment appeared to be in the post-cephalic valley, while the ninth segment lay over and between the eyes, and closely appressed to them. I had not, however, in my mind, when the observation was made, the exact position of the inferior appendage noted in the above descriptions; and would hesitate, since I was not looking out especially for this point, to claim the case of *Sympetrum striolatum* as an exception to the general rule expounded by the authors quoted. The female's thorax was bent on her head so as to oppose its lower surface to the ventral surface of the male's abdomen, which she clasped in the neighbourhood of the sixth, seventh and eighth segments with all three pairs of her legs. Her abdomen continued the thoracic bending, and as it approached the male abdomen, bent slightly away again, thus bringing the ovipositor opposite the copulatory apparatus on the male's second abdominal segment. The anal appendages of the female approximated to, but did not touch, the ventral surface of the male's thorax. When the couple were first observed in the grass there was a pulsating movement within the copulatory apparatus; but this soon slowed down, and after from five to ten minutes from their first meeting the insects showed a restlessness, the female next disconnected and straightened her abdomen, and the pair, in the *tandem* position, first rose into the air for about ten feet and then made directly for the pond. I failed to follow so as not to lose them among the several ovipositing couples, but closely observed one of these as the female constantly flicked, or quickly stroked the water with the tip of her abdomen, irregularly, but on the average of about once a second, and approximately in the same place. The upstroke and the first part of the downstroke were quick, but the downstroke after the abdomen touched the water slightly slower, so that the female did not appear to be merely dropping her eggs, but rather wiping them off her abdomen on to the surface of the water, or just below it. Doubtless the function of the male was to balance her during this

action, so as to keep her horizontal when this wiping pressure was applied. After a few minutes of ovipositing the couple separated, and I was unable to follow the after-adventures of the female. On examining an alga-covered* stone lying just beneath the surface where the female had been ovipositing, I found on it a few elongated eggs, corresponding in size and shape with those extruding in a gelatinous mass from the oviduct of the female above mentioned as caught in connection with two males. Presumably, therefore, these were the eggs of the female whose oviposition I had been observing.

1919 IN THE NEW FOREST.

BY HUGH P. JONES.

ALTHOUGH allowance must be made for the undoubtedly bad season, my this year's collecting in the Forest compares badly with that of 1918 in Northants, Hunts, and Cambridge, and I have scarcely a rarity to record. Nevertheless, the following observations and captures made, as they were well off a well-beaten track around Brockenhurst and Lyndhurst, may be of some interest. I was somewhat astonished to find that many wood-haunting species of the east-midland counties are here absent from the Forest, or *vice versa*. For instance, *Melanargia galatea*, locally abundant in most woods from Huntingdon to Stamford, here shuns the woods altogether, but becomes common again on the downs in Dorset, etc. Again, *Zygæna filipendule* swarms on the thistles in Monks' Wood, Hunts, but in other localities is a chalk insect. These examples could be greatly multiplied, and it must be remembered that a former famous locality for *Lycæna arion* in Northants., Barnwell Wold, is a wood.

This question of distribution is best worked out by means of the butterflies and moths, but equally applies to other insects. The counties of Northants. and Hunts. seem to accommodate a large portion of the south-western insect fauna in their woods—the only land, by-the-bye, that is uncultivated.

I did not arrive down here (Lymington) until towards the end of May, therefore missing many of the spring insects, and an inability to obtain the requisite apparatus, combined with a not unnatural mania for exploration, undoubtedly militated at first against success in collecting, so I will date my notes from the beginning of June, when work began in earnest.

After considerable prospecting in the neighbourhood of Brockenhurst and Lyndhurst, I finally abandoned the better-known localities in favour of the woods near Lymington, settling down for a time in a large patch of chiefly second-growth birch

* Probably *Monostroma* or *Enteromorpha*.

forest, belted with oaks and an occasional beech. The beech trees in this part—which appears to be little worked by collections—are seldom allowed to grow to any size; being cut down periodically for use in toy-making at Brockenhurst, so the wood is rather open, with a tangled undergrowth of brambles, *prunus*, privet, etc., with here and there a patch of heath and gorse. The familiar forest streams are greatly in evidence, and make the ground very boggy in parts, forming small mosses, whilst a large area of elevated ground to the north having been thickly planted with pines and other conifers, we get an immense variety of plant life, which is not without its effect upon the insect population. Seldom have I seen the gorgeous dragonfly *Calopteryx virgo* in such abundance as here, hanging to, and fluttering about the thick growth of alders, willows, and other bushes, bordering the streams—which, small as they are, come down with such force in the winter that in many places they have worn out gullies, measuring from 6 to 8 ft. in depth. Like all dragonflies *C. virgo* is more easily seen than captured, the first few strokes of the kite-net causing them to vanish with almost astonishing rapidity, considering their slow and lethargic flight. Butterflies were abundant in the open parts of the wood at the beginning of June, and I found the following all flying together: *Brenthis euphrosyne* and *Brenthis selene* (the latter just emerging), *Pararge egerides*, *Nemeobius lucina*, *Callophrys rubi* (also common at Milford-on-Sea in May), *Celastrina argiolus*, *Hesperia malva*, *Nisoniadis tages* and the usual *Gonepteryx rhamni*, *Pieris napi* and *Euchloë cardamines*. Larvæ beating produced a few full-fed *Zephyrus quercus*, *Catocala promissa*, and a number of commoner oak-feeders, including *Hadena proteus* and many Geometræ. The pretty carnivorous beetle *Calasoma inquisitor* also fell now and again into the tray, but Coleoptera taken in this way were scarce, even from whitethorn blossom.

The great feature of the wood in June was the Odonata, and it would be difficult to say which of the following was the commonest: *Libellula depressa*, *Cordulegaster annulatus*, *Pyrrhosoma nymphula*, or *Calopteryx virgo*. *Orthetrum cærulescens*, although scarce in the Forest, was very abundant on the marshes bordering the Lymington river south of Boldre, and I found a few *Agrion puella* sharing the haunts of *C. virgo*. A splendid ♀ *Anax imperator* haunted an open part of the wood for some days (I trying to capture it all the time!), but this beautiful species disappeared from the Forest after a spell of bad weather in July, although its almost equally handsome relative, *Cordulegaster annulatus*, continued in being up to September.

I several times watched the latter ovipositing, which it does with scarcely a second's interval between each thrust of the abdomen, always choosing the pools in *deep shade*.

Towards the end of June the flies, hitherto only an annoy-

ance, became a veritable plague, and never before have I been so bitten! I give a brief list of "blood-suckers," chiefly interesting because they were all taken in the act of biting my person one afternoon in July: *Culex cantans*. *Hematopota pluvialis* ("Cleg"), *Therioplectes tropicus*, *Th. distinguendo*, Verr., *Atylotus fulvus* (not uncommon locally, a beautiful thing in life), *Tabanus bovinus* (on my stocking), *T. autumnalis*, *T. bromius*, *T. maculicornis* (the smallest Br. "Gad."), *Chrysops cæcutiens* (in scores), and one *C. quadrata*.

For several days in July I was forced to give up collecting owing to the sight of both eyes almost disappearing, chiefly the work of *Chrysops cæcutiens*, who delighted to bite on the forehead, just over the eye.

Another handsome although somewhat repulsive plague was *Th. distinguendo*, Verr., but being larger and noisy was easier to avoid. *T. bovinus* settled to bite (as noted above) but did not actually penetrate.

(For identification of several of above I am indebted to Miss E. K. Pearce, of Bournemouth, and Mr. N. O. F. Pearce, of Cambridge, without whose kind aid a number of my "blood-suckers" would yet remain unnamed.)

The great *Tabanus bovinus** was continually "booming" around throughout July and August, but seldom settled until late in the afternoon, when it sometimes frequented decayed and fallen tree-trunks, as I discovered whilst searching for the quaint-looking dipteran *Alophora hemiptera*. During August, whilst armed with a tube of '880 ammonia ready for immediate application, I rather encouraged *T. bovinus* to bite my hand as an experiment (probably for both of us!), but without success. Such shyness has its good points. Whilst battling with the flies I managed to find time to search the three large "fritillaries" and *Limenitis sibylla* for aberrations, with a fair amount of luck. Sad to say, although early in the season, the better forms were considerably worn, especially those approaching *ab. nigrina* of the latter species, of which I found three females so hopelessly worn that I could do nothing with them except try and obtain ova. They died without laying, however, and but for a fine and perfect intermediate and two ♂ *D. paphia* with confluent spots, I should have had a very poor share of this year's varieties, although minor forms of *B. selene* and *A. cydippe* were not infrequent. A fine ♀ *paphia* with confluent spots was also seen—and missed!

Var. *valezina* † was rather scarce near Lymington, although very fine and large, but on higher land towards Cadnam it in one

* Abundant near Lymington. I caught 20 ♀♀ one afternoon in July, when flying round me, and probably missed half as many again.

† Almost all typical ♀ *paphia* from the New Forest are more green than brown, approaching *valezina*. In the Midland woods, where the butterfly swarms, the reverse is the case, and they seem a different race altogether—especially noticeable on the under-side.

locality actually outnumbered the type. They were poor and undersized specimens, however, when compared with the Lymingtonians, which are bred in a moist situation. *Limenitis sibylla* was uncommon in many woods (*e. g.* Queen's Bower), but I found it in extraordinary numbers in a damp and rather gloomy part of the forest a stone's throw from the Lymington river, where females, basking in the sun on the bracken fronds, attracted as many as a dozen males at a time, and as *D. paphia* and the exquisite var. *anceps* of *Calopteryx virgo* were in numbers all round, the combination of colours was extremely beautiful.

Up to the middle of July *Apatura iris* failed to put in an appearance, but on the 17th I captured a fine ♂ under very tame circumstances. I was after Odonata at the time, when my brother (a non-entomologist), who was with me, suddenly said, "That's the first White Admiral we've seen here," and pointed to a butterfly just about to settle on a willow bush overhanging the stream. I looked in the direction pointed out, and seeing at once what it was, made a swoop with the net and captured with ridiculous ease the first "Emperor" I had seen since 1911 (in Monk's Wood, Hunts.). No doubt *iris* when flying low is sometimes passed over in the New Forest in mistake for large ♀ *L. sibylla*, as collectors in search of the greater prize give most of their attention to the tree-tops. No further specimen of *iris* gladdened my eye, and it is undoubtedly scarce in the Forest, although, as I have hinted, it may sometimes be overlooked.

I was too late for larvæ-beating in the spring, and don't know if any were taken. Whilst on larvæ it may not be out of place to mention the paucity of "Hairstreaks" (both larvæ and imagines) in the Forest. Quite a small wood in Hunts. and Northants. will produce the caterpillars of four species in the course of a few hours' beating (and one can net *C. rubi* and *C. palæmon* in the intervals!). Here the only species that can be beaten regularly is *Z. quercus*, and even the imago is not very common. What a difference when compared with such a classic collecting-ground as Monk's Wood, when, having beaten your full complement of *pruni* larva in early spring, the butterfly later becomes quite a nuisance locally, following you about and getting in your way and distracting you from more serious business! For *pruni* is only a thing of beauty when bred; directly it leaves the pupa-case its only object in life—beyond love-making—seems to be to reduce its wings to rags in the quickest time possible, its baffling flight in and out of the sloe bushes seeming especially adapted for the purpose of scale denudation.

Nevertheless I should have been only too pleased to see this attractive little species flying about the *Prunus* in the Forest, and all being well next year shall turn out a few pairs in my favourite wood (private) and see how they get on. Should any stray collector there see them flying, I hope he will have read this!

“Mothing” in July and August was very unproductive; scarcely anything seemed flying. I kicked up the beautiful little *Hyria muricata* pretty commonly in places, and *Diacrisia sanio* was abundant enough, but these were exceptions, “sugaring” from July 1st to end of August producing literally nothing, after which time *A. pyramidea* became common, and a few *Catocala sponsa* and *C. promissa* put in a belated appearance, worn to shreds, and accompanied by a solitary *T. fimbria* (which I have never seen at sugar until September was well on).

Eugonia polychloros to the number of six were seen on August 1st, but apparently then went into hibernation or something as I saw them no more. The handsome dragonfly *Æschna cyanea* also became abundant from that date, and the extraordinary uninteresting immature form of *Sympetrum striolatum*. Red males were scarce even late in September. *Æshna grandis*, so common in the Midlands, I did not see here.

Several supposed fast-flying Diptera when caught turned out to be the beetle *Necrophorus mortuorum*. I have not noticed this species flying in bright sunshine before, but suppose it's the habit of the beast.

Hornets were very numerous in the autumn (♂ and ♀), and flew by night as well as day, as many as half a dozen at a time on the sugar patch, where they were a great nuisance. The following is a list of autumn Noctuæ taken at treacle from September 6th to October. Although the number of species is gratifying, the scarcity of quite common things will be noted. In ordinary years I should think my “pitch” would be ideal: *Asphalia diluta*, *Agrotis puta* (1), *A. ypsilon*, *A. saucia* (a very worn few), *Hadena protea* (the only really common thing, and very varied), *Amphipyra pyramidea* (getting over), *Calymnia trapezina* (2), *Cirrædia xerampelina* (one perfect and several worn; this pretty species would probably have been taken on ash trunks in August commonly had I gone for it), *Anchocelis lunosa* (2), *Amathes lota*, *A. macilenta*, *A. circellaris* (2!), *A. helvola* (1), *A. pistacina* (scarce), *A. litura* (scarce), *Ochria aurago* (only one, worse luck!), *Xanthia lutea* (*flavago*), *X. fulvago*, *Lithophane socia*, *Graptolitha ornithopus* (*rhizolitha*), and *Catocala sponsa* and *C. promissa* (much beyond their time, and from which I obtained a few eggs). I forgot to mention *Orrhodia raccinii*, *Scopelosoma satellitia* and *Scoliopteryx libatrix*, all of which were scarce. Moths are still coming to date of writing (October 10th), and I may add to above list.

Taken all round the season has been very disappointing for insects generally, although I have taken a good number of everything, the above notes being little more than a brief summary of the more popular orders.

Lymington district appears to be the least worked portion of the New Forest, and is exceedingly rich in insect life. Even in

the town *Lucanus cervus* alone gives work for the collector, and in June was a regular visitor to sugared trees in the garden!

Eastlands,
Lymington, Hants.

A NOTE ON DUTCH *CHRYSOPHANUS DISPAR*, HAW.

BY N. D. RILEY, F.E.S.

I HAVE recently had an opportunity of examining 3 ♂ and 4 ♀ specimens of the so-called Dutch *Chrysophanus dispar*, Haw., at one time thought to be identical with our extinct English race, and have found them most interesting. Although they cannot be called true *dispar*, they make the nearest approach to *dispar* I have seen in any Continental race.

In size and general coloration there is, to my mind, nothing to distinguish them from *dispar*. There are, however, the following small constant differences:

(1) In both sexes the marginal red band on hind wing underside is consistently narrower than in *dispar*; it is also consistently broader than in other continental races I have examined.

(2) The black spots on the underside, especially of hind wing, are consistently smaller than in *dispar*, and on the whole larger than is the rule on the Continent.

(3) In the ♂ the black marks in all and at cell-end on the upper side of fore wing are consistently smaller than in *dispar*; also on the whole larger than is the average of Continental specimens.

(4) The hind margins of fore wings below in both sexes are invariably greyer than in *dispar*, in which they are usually brownish.

(5) The tendency in the ♀ for the black spots in the band on the upperside of the fore wing to be produced towards the base of the wing in long rays is apparently very pronounced in Dutch specimens—much more so than in *dispar* or in any Continental race I know of.

(6) The ground-colour of fore wings below in both sexes is slightly paler than in *dispar*, but not so pale as in ordinary Continental forms.

From the above it will be seen that the Dutch race is clearly intermediate between *dispar* and *rutilus*, and to my mind is equally distinct from both these forms. It is only natural to expect to find in the Dutch specimens the race most nearly allied to our extinct race and most pleasing to find that this is actually the case.

Natural History Museum.

LEPIDOPTERA AT RANNOCH IN 1919.

BY F. G. WHITTLE.

THE desire to see *Brachionycha nubeculosa* at home among the birches at Finnart led me to journey into Perthshire in weather which was far from inviting. The huge drifts of snow, as seen from the railway between Glasgow and Rannoch, soon made me realise that between me and the much-wanted "Sprawler" there were difficulties which would somehow have to be mastered. I was therefore much cheered when, arrived at Rannoch, I found that my troubles were not likely to be half so serious as I had thought, that delightful district having escaped with a quite moderate snowfall. On the day of my arrival at Camghouran (March 21st) I got among the Finnart birches and was duly rewarded in getting my first *nubeculosa* ♂. A week of bad weather followed, and I did not again see the species until April 2nd, between which date and the 9th I was able to get as many as I required, the maximum number on any one afternoon being seven. I had at first a difficulty in getting the moths to pair, but the difficulty disappeared when the moths were exposed to the weather. I sleeved the young larvæ, apparently a very healthy lot, under the most favourable conditions, but many of them failed to pupate, the number of those that got through being about fifty. Carie is probably quite equal to Finnart as a locality for this local species. By sweeping or searching the *Vaccinium* in or near the Black Wood I obtained larvæ of *Asthenia ustomaculana* (commonly), *Lithocolletis vacciniella*, *Coleophora vitisella*, *Ortkotania mygindana* and *Lygris populata*. *Lophoderus ministrana* larvæ occurred on birch. A trip through the Pass of Killiecrankie to Blair Atholl produced an abundance of *Lycia hirtaria* (large form as figured in South's 'Moths of the British Isles,' ser. ii, pl. 1) on the elms and fences skirting the road, and one *Xenolechia humeralis*. The cocoons of *Cimbex sylvorum*, well known to all lepidopterists who have searched the Rannoch birches, were common at Finnart, as also were the variable imagines which commenced to emerge the first week in May. About the third week in May I obtained a number of *Eriopsela fractifasciana*, both sexes—a fine large form (wing expanse 20 mm.), compared with which our southern insect is a poor thing. Mr. Pierce has been good enough to examine the genitalia for me. I took three males of this species last year, which, misled by their large size and different appearance, I recorded ('Entomologist,' vol. lii, p. 54) as *ericetana* in error. *Callophrys rubi* was abundant among the *Vaccinium* near the Black Wood, and *Nemophora pilella* was occasionally put up in the late afternoon. As one would expect, in the extensive birchwoods at Rannoch *Phloeodes tetraquetra* is strongly represented and shows much variation. Two of these variable forms, one

greyish-white with much irroration, and the other—which for a time was a great puzzler—a dark red-brown, are noteworthy. When collecting near the Camghouran burn, on the afternoon of June 3rd, I netted a *Tortrix* unlike any known to me. It seemed to rise with a rather weak flight from some mixed growth, including *Erica* and *Vaccinium*, and has now been identified by Mr. J. Hartley Durrant as *Ancylis tineana*, Hb., new to the British list.

The following is an attempt to describe this insect based on this one specimen: Wing expanse 15 mm., costa well arched, fore wings brownish-olivaceous, costal strigulæ dark fuscous and silvery-whitish, a large grey tornal blotch with a mass of silvery scales at the anterior edge, cilia glossy, pale olivaceous; hind wings pale grey, glossy. Head with palpi and thorax brownish-olivaceous; anal tuft pale.

According to Hofmann the species occurs in Germany, Austria, Holland, Galicia, West Russia, Sweden, France and Piedmont



Magnified twice natural size.

and the larva is described as dirty brownish-grey, with darker tubercles; head yellow-brown, plate paler; lives June to September on *Populus tremula*, *Cratægus*, *Prunus domestica* and *spinosa*, *Pyrus malus*.

I am much indebted to Mr. W. G. Sheldon as well as to Mr. J. H. Durrant—to the latter for the identification, and to the former for allowing me to make extracts from the works of various Continental authorities who have dealt with this species.

Retinia posticana was netted June 4th. I feel sure that someone with more energy than I possess will some day get this insect in plenty at Camghouran; on the 6th *Abrostola tripartita* and a larva of *Diplodoma herminata*. It is rather singular that when I was, last year, collecting at Camghouran, I should have written the Rev. C. R. N. Burrows that it was quite useless to hunt for his special wants. This year, quite unsought, a *Solenobia* ? sp., *Acanthopsyche atra* and *Diplodoma herminiata* thrust themselves in my way. Larvæ of *Polia chi* and *Eupithecia sobrinata* occurred; *Argyresthia præcocella* was knocked out of juniper; *Lithocolletis spinolella* was not uncommon at the loch-side; *Argyresthia sorbiella* was found at Carie; *Acompsia subaquileæ* occurred under bracken at Camghouran. On July 1st a larva of *Entephria cesiata* was found, stretched out on a boulder

at the top of Grayvel, and on the 9th *Sesia scoliiformis* ♂ was found at Camghouran; on the 24th *Lithographia cinerana* emerged and was found sparingly on the few aspens growing near the Camghouran burn; a week later this species was abundant on the aspens near the Carie burn; on the 25th a larva of *Calocampa vetusta* was found in a bog; *Steganoptycha augustana* was flying among the small sallows at Camghouran; *Bombycia viminalis* emerged on the 29th. *Peronea maccana* commenced to emerge August 18th, and occurred more or less freely in the Black Wood up to the middle of September. I tried various ways of working for this insect until, favoured by an accident, I got it in plenty. Brushing the *Vaccinium vitis-idaea* with a net and the use of a switch seemed to be of little use, but a visit to some rising ground carpeted with *Vaccinium* and having a very limited growth of bracken—at a spot where the pines were not too many to obstruct light and air—produced the insect in plenty. September 17th was dull, particularly in the afternoon. I did not consider it favourable for *Maccana*, but resting, fully exposed, on my few square yards of bracken, I had no difficulty in securing thirty-two specimens, a good proportion of them being of the fine ashy-grey and silvery-grey forms. Other spots in and near the Black Wood which appeared to be almost as favourable failed to appeal to *Maccana* as did this one particular spot. *Depressaria ciliella* came to sugar September 11th; *Peronea rufana* emerged as late as November 2nd.

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DAPHNIS NERII AND OTHER SPHINGIDÆ IN THE ALPES-MARITIMES, 1919.

BY CHARLES E. MORRIS.

I was not surprised to read in the 'Entomologist' for October (vol. lii, p. 237) of the capture of *Daphnis nerii* in the south of England, for there has been the most extraordinary visitation of this magnificent Sphingid here this summer. We got back from St. Etienne-de-Tinné to Le Cannet about September 10th. As soon as we entered our garden we noticed frass from the "laurier-rose" feeders on the ground, but could not see any larvæ just then. After lunch my friend, Mr. Tucker, went over to the Public Square Garden in front of our villa, and almost immediately came back with a fine full-fed larva. Then we began to hunt diligently in our garden and three were found. Next day in the Square and other gardens, seven, and so on until we had obtained thirty-three. Eggs also were discovered, and one of these I brought right through, although I consider it a delicate larva—very in the young state. But what is more remarkable and more satisfactory, when I got downstairs after an indis-

position there were two noble moths, a male and female, just emerged drying their wings in spite of the cold spell which had set in—magnificent in colour, such a splendid green and rose with well-marked neuration and canary-yellow bands (inter-segmental on the abdomen). I find at the time of writing that several more are about to emerge, and this makes the second, or rather the third emergence, as I find upon inquiry from a resident collector that he first noticed the larvæ in the beginning of July. These he got out in August. At the end of that month and the beginning of September he had another brood of full-fed larvæ, imagines from which have been coming out all last month and still are. After the first frost at the beginning of November I found several young larvæ frozen on the shrubs; they never revived; the same fate had befallen the larvæ of *Pseudophia tirhaca*, Cr., several of which we found frozen on the *Lentiscus*. This was due to a sudden coup of icy wind-frost after a very warm week, and the rapid change was preceded by a very heavy cold rain-storm and snow on the hills, with apparently disastrous results to insect life.

The larvæ of *D. nerii* are marvellous, immense as are all SpHINGID larvæ, with those truncated anterior segments as in *E. elpenor*, etc., and of the most marvellous colours. I noted four forms, always with the same design except in the case of the clear green and white larvæ, which never had the dark, broad, wedge-shaped, coalescing patches up the sides. This belongs only to the olive-coloured and bright salmon-pink and nankeen-yellow forms. In the three latter forms the two immense eye-spots on the fourth segment are always shot with pale rose over the peacock-blue, giving an opal or iridescent lustre to them, whereas in the pale green and white form the eyes are an intense shaded antwerp blue shading to white in the centre, and so brilliantly luminous are these spots that it was difficult to believe that they have not the power of giving out light in the dark. But I found such was not the case, as I examined them frequently at night.

The pupa is also most beautiful, so transparent over the wing-cases with the curious median dark line straight down the centre between the wing-cases. I suppose it marks the median suture dividing the proboscidal sheath, and the large sepia-coloured spots on either side of the abdomen in the region of the spiracles make it very handsome.

Well, for fourteen years we have tried to get *D. nerii* at Cannes, so we are very delighted to find an abundance so suddenly. I know of about one hundred having been captured in the larval state this season. Our gardener brought me two pupæ alive that he raked out from under an oleander. Both showed a disposition to emerge, but the cold arrived when they were well coloured. One came out a hopeless cripple, the other died. These two I

brought indoors and had tried to force. Owing to fuel difficulties I could not keep the heat up all the time and they failed. The others were not coddled at all, but were just left as they spun up under leaves. I tore up quantities of dry plantain leaves, and I found that the larvæ went under them most freely, and some into dry peat fibre; for they do not go down into the earth, only under the surface, and I am sure they hate moisture. The web is very light and meshy, like a bit of lady's net veiling, but strong.

Altogether this has been a wonderful year for Sphingidæ. We found during October twelve larvæ in all stages of the large form of *Hyles euphorbiæ* (not *H. nicæa*, Prun.; I wish it were!). To these must be added three *Sphinx ligustri*, very uncommon here, on *Laurestinus*; five *Eumorpha elpenor*, also very rare, on *Epilobium*; and two *Smerinthus ocellata*.

Of the *Manduca atropos* larvæ taken, three are of the brown form from jasmine, two gorgeous yellow and blue striped from, strange to say, Japanese chrysanthemum, *C. sinensis*.* The two latter were remarkably fine specimens, and I still have one feeding found on the kind of *Solanum* which is commonly hawked about the London streets as the "winter cherry," but it does not seem to digest it well. When found it had eaten some of the scarlet berries; the frass was bright scarlet and it seemed out of sorts. No doubt it felt the cold, but since capture it never eats more than one small leaf twice a day.

Villa le Chatelet,
Le Cannet, Alpes-Maritimes;
November 13th, 1919.

NOTES AND OBSERVATIONS.

THE SYDNEY WEBB COLLECTION.—The second portion of this well-known collection, consisting of the remainder of the Butterflies and part of the Geometers, was sold at Stevens' Auction Rooms on Tuesday, December 9th, and although no lot touched the record prices obtained in the sale of the first portion, many sold at very high figures. An almost unicolorous dark brown variety of *Melitæa athalia*, lot 3, set the pace at 12 guineas, and three *Eos* forms of the same species made from £5 10s. to £6 10s. each. *M. aurinia* (*artemis*), forms with broad buff bands, brought £4 and £5 10s., and one almost all black £7, and the best *M. cinxia* £5. *Rumicia phlæas* forms appeared to be in request, a nearly unicolorous blackish one making £3, one with the forewings, except the margins, entirely coppery £7 10s., one with large confluent spots £12, one in which the usual black markings were replaced by golden brown £11, and a nearly unicolorous pale brown specimen £5, while *Schmidtii* forms offered in lots of two each realised £2 10s, £4 and £5 10s. per lot. An underside *Thecla w-album* with broad pale fascia brought £5. There were long series of Lycænids, and although several lots failed to find buyers

* Seems to be a favourite food-plant on the Riviera. Mr. H. Powell records it at Hyères (Tutt's 'Brit. Lepidoptera,' vol. iv, p. 433).—Ed.

and had to be coupled with others to effect a sale, others, described by the auctioneer as "choice forms," soon ran up to tall figures. *Agriades corydon*, "a very black male," made £10, three gynandromorphs £7, £7 and £5 10s., a dark leaden-blue male £4, and one with large white submarginal blotches £6. *A. bellargus*, lilac-blue males, brought £3, £2 15s. and £2, a gynandromorph, "right side male, left streaked male and female," £12 10s., a rich blue female £8, an underside "white with broad black streaks in fore wings" £11, and another streaked form £4. Well-marked undersides of *Polyommatus icarus* made £3, £4 and £6 10s., "hermaphrodites" in lots of three from 26s. to £4 10s. per lot, and a lot of twenty-seven specimens including two lilac-blue forms £4. A lot of five *Plebeius ægon* in which two "hermaphrodites" were included brought £9 10s., and a lot of two *Augiades comma*, one a cream-coloured male and the other an underside with only two white dots, £8 10s. Among the Geometers a suffused dark *Venilia macularia* made £7 10s., one with yellow spots on disc £7, a lot of three "blotched vars." £3 5s., one of three "near *quadrimaculata*" £2 10s., and another of two £3. A melanic *Selenia tetralunaria (illustraria)* sold for £4 10s., a lot of four *Crocalis elinguaris* including unicolorous, black and smokey-black forms for 50s., a lot of five *Thamnomoma wauaria (wavaria)* including a black form for £2 15s., a black *Cabera pusaria* 42s., and another similar 21s., a black *Xanthorhæ montanata* in a lot with two others 45s. the lot, a suffused streaked *Mesoleuca albicillata* £6, and one similar £3 5s. Two white specimens of *Abraxas grossulariata* ran up to £16 5s. 6d. and £18 7s. 6d. respectively, a white with faint yellow markings £7, and a white with black spots £10 10s., but the more ordinary forms in a long series failed to rise above a few shillings. Of the species coming under the category of rarities as distinct from varieties male *Chrysophanus dispar* made from £2 to £8 apiece and females from £2 5s. to £10, and *Nomiades semiargus (acis)* from 45s. for a lot of seven to £4 for two fine specimens with full data. *Cleora angularis (viduaria)* in lots of two went for 30s. to 65s. per lot, *Parascotia fuliginaria* from 5s. to 20s. each, *Acidalia perochraria* 28s. and 37s. 6d. per couple, *A. herbariata* 8s. to 20s. apiece, and *A. circellata* 6s. to £1 the half-dozen. The total produced by the day's sale was just over £700, to which the portion of the butterflies included in it contributed nearly £500. A further portion of the collection will be offered on Tuesday, February 10th, 1920.—R. A.

ANTHROCERA EXULANS NOT IN SHETLANDS.—In Mr. Rowland-Brown's interesting article on *A. achilleæ* in the October number reference is made to the North Shetlands as a locality for *A. exulans*. Through Mr. Sheldon some further information regarding the specimens supposed to have been taken in this locality has been obtained which indicates quite definitely that they have been incorrectly labelled. The specimens in question were obtained by me at a sale at Stevens', and amongst a few labelled Braemar or Aberdeenshire and various years were three specimens labelled in the same handwriting, "N. Shetlands, 1908. A. E. Cannon." Mr. Sheldon has, however, discussed this matter with Mr. A. Horne, of Aberdeen, who states that all the captures of A. E. Cannon at Unst

(which was the only island he visited) passed through his hands and there were no *exulans* amongst them. The only inference that can be drawn is that the specimens were incorrectly labelled by someone before I obtained them, and this would appear to finally dispose of the likelihood of N. Shetlands as a locality for *exulans*.—B. S. CURWEN; 9, Lebanon Park, Twickenham.

HIBERNATION OF AGLAIS URTICÆ.—Notes on this subject have already appeared in the last volume of the 'Entomologist,' from Mr. Rowland-Brown (pp. 68 and 137) and from the Rev. H. D. Ford and myself (pp. 89 and 90), dealing with the early hibernation of the species in 1918. I am tempted to raise the topic again, for the past year seems to have provided a similar phenomenon—at least, so far as I was able personally to ascertain. Foraging over a tract of country extending from Berkhamsted Common to Watford in the one direction, and from Chesham to St. Albans in the other, on September 27th, 28th and 29th, I did not see a single example of *urticæ*—a circumstance of considerable singularity, for all three days provided genial weather, and the species has always been common in Hertfordshire, and upon the Bucks. border extremely so. For years past I have seen the insect on the wing to well into October, and it is difficult to suggest an adequate reason for its early disappearance in 1918 and 1919. Is *urticæ* developing the tendency, so pronounced in *G. rhamni*, of seeking winter quarters immediately on its attaining the imago state, or are we to assume the clerk of the weather is the guiding spirit of its actions? *Urticæ* made a rather tardy emergence this summer in Hertfordshire, which is sufficiently remarkable considering the glorious weather of the first half of August, and further, its numerical strength did not seem to be up to the average. Isolated and perfectly fresh examples were met with in the latter half of August, but the cold snap which set in may have had something to do with the September absence. If, however, we admit the validity of the weather theory, how does it come about that it has taken until the present time to be made manifest? It would be absurd to suggest that *urticæ* has become constitutionally delicate while other butterflies are braving the perils of "Indian summer"—*Pieris rapæ* was out in profusion on September 27th, and at least two *Pyrameis atalanta* were seen on Michaelmas Day. Several *Pieris rapæ* and one *Rumicia phleas* were noticed on Sunday, October 19th, but again *A. urticæ* was an absentee.—ERNEST W. NIMMY, F.E.S.; 210, Whippendell Road, Watford, Herts.

AGLAIS URTICÆ.—With reference to Mr. Rowland-Brown's remarks on this species my experience was somewhat different to his. Hibernated specimens were plentiful in early spring, as he has observed, but though we enjoyed the April blizzard to its full extent I noted *urticæ* still in numbers after it, and have never seen a better crop of the larvæ than this summer produced. But, like Mr. Brown, I have seen no imagines wild this autumn, and thought it a little strange, as I bred a good many, every one emerging and none being ichneumonated, so the larvæ were all right. *P. atalanta* also was very scarce here. Has anyone noticed a scarcity of winter moths? In most years (except, of course, during the war) my window is visited by shoals of *Brumata* and plenty of *Aurantiaaria*, *Defoliaria*, *Pennaria*, and *P. populi*. This year I have seen perhaps half a dozen *Brumata*,

a single *Pennaria*, and four *Aurantiaria*, and that is all. There has not even been a *D. contaminata*—usually abundant.—W. CLAXTON; Navestock, Romford, December, 1919.

MELITÆA ATHALIA IN KENT AND SUSSEX.—Prior to 1914 I had repeatedly heard of the gradual disappearance of *M. athalia*. On my first hunt for this butterfly in woods near Whitstable I met a well-known professional who assured me that the species was undoubtedly gone for ever. Somewhat damped in spirit I renewed the hunt, but no luck that day nor on the next three, but on the fifth I found it in plenty. From Canterbury to Heathfield next, and on June 16th, 1918, I started for a hard day's work to find *M. athalia* in Abbott's Wood, near Hailsham. After about an hour's work I ran across two other collectors on the same hunt. We joined forces. In a swampy meadow in the wood we found a professional looking for what he called "Dark Greens." On inquiry about *M. athalia* brought the reply that it was quite extinct in Abbott's Wood, and that where we then were was the old spot for it. Feeling somewhat doubtful after my former experience, I wandered up one path and down another until my feet ached. No luck again, on the 23rd no luck, likewise on the 25th and 30th, but on July 21st a worn female. Last year (1919) I renewed the search, and I found sufficient to say that *M. athalia* is far from extinct in Abbott's Wood.—E. CRISP; Heathcote, Heathfield, Sussex.

PIERIS MANNI AND POLYGONIA EGÆA AT CANNES.—*Pieris manni* has been plentiful again this autumn at *Passerape lepidium*, but they were worn out. I took last week a few larvæ with *P. rapæ*. Both the spring and autumn emergences of *P. manni* are small, the large form *rossii*, Stefan., being of the generation between them in summer when we are away. The reversion in cool weather is curious, and is the same in *Pontia daplidice* and *P. daplidice bellidice* and in *Euchloë ausonia matutia* (*belia*, Auct.) and *E. ausonia turatii* (*ausonia*, Auct.), which is larger than the former. For the first time we have succeeded in finding pupæ of *Polygonia egæa j-album* on old walls, and have five out. I wanted both forms badly—all mine are old hibernated examples—but, alas, five other pupæ were killed by the cold wind and hot sun, and all died just when they should have emerged. I try to imitate natural conditions as much as possible, but the weather is so changeable here this season, with sudden bitter winds, that one must always be on the spot to regulate matters. The last pupæ were taken alive on Sunday last, November 9th, but two died in two days, although we pinned them up on warm sheets of peat, wet the back of them, and let the sun warm them through from behind.—C. E. MORRIS; Le Cannet, Alpes-Maritimes, November 13th, 1919.

NOVEMBER EMERGENCE OF NEMEOBIUS LUCINA.—I have to record the emergence from pupæ on November 1st last year of a female specimen of *N. lucina*, which I reared from larvæ.—ARTHUR JONES; 17, Sea View Road, Gillingham, Kent.

[The specimen recorded above was kindly sent to me, and as it was quite limp when received has been set for the cabinet. In reply to my letter of November 8th Mr. Jones writes: "A friend, knowing

nothing of entomology, sent me four wild larvæ of *N. lucina* from Hastings on June 20th, and I fed them on the leaves of primrose in a room of 50° to 55° and kept them in the same room, and they all pupated on July 29th. About a month ago I moved them to another place in the same room with other pupæ, and when I was putting a few *S. carpini* (*pavonia*) in the box I saw that the *lucina* was emerging. I am sending you one of the pupæ, also the case from which the insect emerged, so that you might see that it is nothing but an ordinary-sized one.”—R.S.]

FURTHER NOTES ON “PARTHENOGENESIS” IN *LYMANTRIA DISPAR*.—In continuation of my notes on a case of parthenogenesis in *Lymantria dispar* in ‘Entomologist’ for July, p. 166, I think the few notes I have may be of interest. The larvæ, about 100, were very healthy and grew rapidly. I gave away most, keeping about thirty-six for myself. These all pupated and eventually emerged, twenty-six males and twelve females. All were perfect specimens, quite up to size and coloration. I kept three or four females separate in a cage without a male, but all died without depositing any eggs. I allowed one to pair, and she at once commenced to lay her eggs and continued to do so for five days, covering them as usual with scales from her abdomen and then died. The pupæ were enclosed in a very flimsy net more than cocoon—in fact the net was so slight that two fell out of it. I do not know if the disparity in males and females is normal—that is 2 to 1.—R. H. RATTRAY (Col.); 68, Dry Hill Park Road, Tonbridge, November 10th, 1919.

NOTE ON *BRYOPHILA ALGÆ*, FABR.—This very interesting species is only recognised as British by two examples, both captured by a workman (name unknown), in July, 1859, at Lyme Park, Disley, Cheshire, who either presented or sold them to the late Mr. Robert S. Edleston of “The Firs,” Bowdon, Cheshire. Upon his authority the following announcement was made, in the pages of the ‘Entomologist’s Weekly Intelligencer’ for 1860, p. 11. “Two specimens of this pretty species (*B. algæ*) were taken in the Manchester district last July.” Disley is about fifteen miles from Manchester. I recollect seeing these in his collection in 1870. Two years later he died, and in 1872–73 his cabinets and their contents were disposed of privately. Mr. Joseph Sidebotham (d. 1885), a near neighbour and friend of Mr. Edleston, and whom I also knew intimately, was, I believe, one of his executors, and purchased a large portion of the Lepidoptera, including one of the two *B. algæ*. This I examined lately at the Manchester Museum, as the Sidebotham Collection—an exceedingly fine one—has been generously presented this year to that institution by his eldest son, Mr. J. Sidebotham, formerly M.P. for the Hyde Division of Cheshire. Though not in very perfect condition, it is quite recognisable, and is undoubtedly correctly determined. The label attached to it reads, “Lyme Park, 1859.” I have compared it with European specimens. It is dullish green in hue towards the basal half of the fore wings, and otherwise suffused with a broad blackish band, thus being intermediate between the typical form *spoliatricula*, Hübner, and the variety *degener*, Borkh. The species is figured in Duponchel, vi, pl. lxxxvi, figs. 5, 6; in W. F. Kirby, ‘Butterflies and Moths of Europe,’

pl. xxxiv, fig. 2 (1908), and A. Seitz, 'Macrolepidoptera Palearctica,' iii, pl. x, figs. 5 (typical), 6 (var. *degener*), also E. Newman, 'Brit. Moths,' p. 247 (1869), and F. O. Morris, 'Brit. Moths,' pl. xli, fig. 2 (1862). Of the whereabouts of the second specimen I have no precise information. At the sale of Dr. P. B. Mason's large stores in 1905 an example was sold as from "Prests' Collection" (lot 401 in the second day's sale, March 15th). It is possible these may be identical. I may add that the generic name *Metachrostis*, Hübner, 1816, antedates the better-known *Bryophila*, Treitschke, 1825, by nine years. Having been lately staying a good deal in the neighbourhood of Disley, though I have not had the good fortune to see any species of *Bryophila* settled on the numerous tree-trunks or stone walls in this locality, I have, notwithstanding, come to the conclusion that a more likely or suitable environment could not exist for this rare moth. The air, often laden with moisture, causes a confervoid growth to flourish on the grey limestone of the walls, and the dark-green wings of *B. algæ* would blend favourably with the general coloration. I have no reason to disbelieve the fact of the original captures being quite genuine. The known geographical distribution is entirely consonant with the probability of its being found in Great Britain. Staudinger and Rebel (1901) give "Europa centr. et mer: Asia minor, America, Ussuria, Japonia" as localities, and Guenée particularly mentions its being common around Paris. This note, therefore, is written mainly to urge entomologists to search this neighbourhood well, with the probability that the prize may be again secured, and the species once more confirmed and reinstated as a true native of these islands.—J. COSMO MELVILL; Meole-Brace Hall, Shrewsbury.

MELLINIA OCELLARIS AT TONBRIDGE.—On the night of September 30th this year I was lucky enough to take a fine specimen of *Mellinia ocellaris* (the Pale-lemon Sallow) at sugar in my garden. It was a female and in fine condition. There are a large number of poplar trees all round the garden, but I have never seen the moth here before.—R. H. RATTRAY (Col.); 68, Dry Hill Park Road, Tonbridge, November 10th, 1919.

ACOSMETIA CALIGINOSA IN THE ISLE OF WIGHT.—I see in 'Moths of the British Isles' that *A. caliginosa* was found formerly in the Isle of Wight. I had the good fortune to find the species again here in some quantity, but very local, being confined almost to one portion of a field near a wood. I must have netted about thirty on June 5th last, including some females, but only two were good specimens.—W. GODFREY (Lt.-Col.); Gadshett Park, Godshill, Isle of Wight.

AMPHIPYRA TRAGOPOGONIS IN DECEMBER.—I took a female specimen of *A. tragopogonis* on December 1st last year. I do not know whether this is unusual, but it appears to me to be a remarkably late date for the species, particularly as there was heavy rain all that day following a severe frost. Personally I have no specimens in my collection taken later than September. The moth (as might be expected) was much worn.—N. O. R. SERJEANT; Loyer Marney Rectory, Kelvedon, Essex.

BOARMIA REPANDATA, ETC., IN THE RANNOCH DISTRICT.—Perhaps the most interesting event that occurred to me amongst the Macro-

lepidoptera during several weeks spent in the Rannoch district last summer was a single example of *Boarmia repandata*, var. *nigricata*, which turned up at sugar. I mention this because the usual form is at present the grey one, var. *sodorensium*, and assuming the increase of the black form var. *nigricata*, it may be interesting to note the date of its genesis as Rannoch. The only good Noctuid at sugar was *Aplecta occulta*, which turned up in some numbers.—W. G. SHELDON.

PERIZOMA TÆNIATA IN SOUTH DEVON.—On August 1st last year I captured a specimen of *P. tæniata* on the coast of Torbay. It flew out of a thick hedge which was being beaten for Geometridæ. The insect is in good condition, but the left fore wing is slightly crumpled. The species has been previously recorded from Lynton in North Devon, but so far as I know not from South Devon.—F. C. WOODFORDE; 19, Friars' Entry, Oxford.

LEPIDOPTERA IN THE HIGHLANDS.—In the course of six weeks' holiday in August and September, 1919, in the neighbourhood of Aviemore and Nethybridge, I found Lepidoptera very scarce indeed; but I took one specimen of *Depressaria (Pinaris) hepatariella*, Zell., at Kingussie on August 28th. Mr. J. Hartley Durrant, who kindly determined it for me, informs me that only one or two other British captures of this species are recorded. The only common species were *Eupithecia sobrinata*, *Pædisca solandriana* and *Steganoptycha geminana*, all of which were to be seen in large numbers. Of *E. sobrinata* I took a number of striking grey and black varieties (the relative proportions and depth of the two colours showing the widest variation), as well as a few specimens of the browner southern form, which occurs not uncommonly in the Isle of Purbeck and elsewhere. *P. solandriana* also presented every variety, one of the commonest being var. *cespitana*. One specimen of *S. geminana*, light grey in ground-colour, showed no trace of a basal patch, but a bold, lozenge-shaped black marking in the centre of the wing.—A. W. PICKARD-CAMBRIDGE; Balliol College, Oxford.

SPHERECEA OBSCURANA, STEPH. = RAVULANA, H.S., AT TILGATE.—Tilgate Forest is an old locality for this rare species, but I am not aware that it has been taken there for many years, probably because it has not been systematically worked for. I gather that but few specimens were taken altogether, and that most of them fell to the net of that particularly energetic collector, E. G. Meek. I had long thought I would like to try my luck with this difficult to obtain species, and last June I did actually capture half-a-dozen examples there—one on my first attempt and five on my second.—W. G. SHELDON.

NOTES ON A HOLIDAY IN ESSEX.—On August 2nd myself and family went to spend a holiday at Burnham-on-Crouch, Essex, with the intention (my eldest boy and self) of making as much, entomologically, of the holiday as we could. The weather was all that could be desired, with brilliant sunshine, and whilst out on the rough heathland adjacent to the town we saw what at first sight appeared to be a large fritillary flashing past in the sunshine. Our first attempts at capture were hopeless failures, the insect possessing astonishing speed. A lucky stroke, however, at length stopped its flight, and we found our capture to be *Lasiocampa quercus* in fine

condition. Attention paid to this locality during the week gave us a very interesting insight into the habits of the "Oak Eggar." The atmospheric conditions were apparently quite the same from 12 o'clock to 3 p.m., but on no occasion did the insect put in an appearance before the latter hour. From our elevated position we could see for quite a distance in every direction, and it was most interesting to notice how he flew—always in a circle of about a quarter of a mile, his motions, strangely like those of a bat, being discernible for the whole length of his flight. Not only did they keep to the same route, even if driven from it temporarily by our nets, but they would use the same passage through a hedge, which enabled them to keep to open ground, our method of capturing being to station ourselves by the gap and swoop down at the psychological moment as they attempted to "force the pass," the net result being eight fine specimens. During the same period we took from a fence a fine full-fed larva of the same species, presumably one which had fed up from the ovum during the same year and which is now in pupa. In the evenings we went in search of the female, but were only successful in securing one specimen, but at the same time took several examples of *C. potatoaria*. Our other captures included eight larvæ of *S. pavonia* off bramble, as well as imagines of *Epinephele tithonus* (a beautiful series), *C. argiolus*, *P. atalanta*, *C. matura*, *T. ianthina*, *C. nupta*, *A. rumicis*, *P. megæra*, etc.—C. WAINWRIGHT; 8, Kingsdown Avenue, West Ealing, W. 13.

LEPIDOPTERA IN MESOPOTAMIA.—I have lately returned from Mesopotamia, and although I had little time to devote to collecting entomological specimens I managed to bring back a certain number, as the following list will show. The total species of Lepidoptera met with in this desert country was not great, but I was surprised at the vast number of species of Coleoptera which another officer collected—many of them new to science. The principal moths were: *Acherontia atropos*: One obtained at Beit Naama. *Deilephila livornica*: Found in vast numbers at dusk and also in broad daylight around nasturtiums and orange-blossoms at Beit Naama during April. A few were attracted by light in March. *Chærocampa celerio* was also obtained in vast numbers around the same blossoms during April. *C. nerii*: On March 27th I found numbers of specimens at orange-blossoms, and although I had no net I caught many each night up to April 1st, after which date none were seen. *C. alecto*: These were common during April at Beit Naama round nasturtiums and several were captured. *Macroglossa stellatarum*: Very common at Beit Naama during April. *Utetheisa pulchella*: A few obtained. *Plusia gamma* and *P. moneta* were both fairly common. *Leucanitis tenera*: Very common everywhere. *Eriogaster rimicola* was found commonly in Baghdad. With regard to butterflies there are many I am unable to record, as I have not yet identified them. But the following list is fairly complete: *Papilio machaon* was met with at Tehrit and north of that town. *Thais cerisyi*: One or two specimens only. *Pieris chloridice*: Very common in the Hamrin Mountains and elsewhere, and some good variations obtained. *P. brassicæ*: A few obtained at Busrah. *P. rapæ*: Met with sparingly throughout

Mesopotamia. *Colias edusa*: Fairly common throughout. *Pyrameis cardui* was vastly common everywhere. *P. atalanta*: Fairly common. *Vanessa io*: One or two met with. *A. urticae*: Also common. *Hipparchia semele* (?): One specimen obtained and several seen. In addition one or two Blues and two species of Skippers were very common. These seemed to be continuous broods of one Blue all the summer, the larvæ living on vine.—H. F. STONEHAM (Capt.), F.E.S., M.B.O.U., etc.; Stoneleigh, Reigate, September 1st, 1919.

MOTHS CAPTURED BY LIGHT-TRAP.—In August, September and November, 1914, Mr. Prideaux, on my behalf, published in the 'Entomologist' a description of a moth trap and the results obtained with it during that year. The house I then occupied was situated on the chalk hills to the north of the Brasted Valley, with a considerable view from the windows. This year (1919) I have again made use of the trap from my present house, on the outskirts of Sevenoaks, from which there is little or no view. Although the results have been nothing like as good as far as the number of moths that entered the trap are concerned, the number of species taken has not been far short of those taken in 1914, and it may possibly interest your readers to have the list of the species taken. May (trap run on 4 nights from 10 to 3): *A. mendica*, *C. unidentaria*, *L. marginata*, *H. jacobææ*, *P. curta*, *C. glaucata*, *S. menthastris*, *S. lubricipeda*, *P. bucephala*, *A. puta*, *D. coryli*, *D. pudibunda*, *P. tremula*, *L. camelina*, *D. vinula*, *D. falcataria*, *G. bidentata*, *Eupithecia vulgata*, *C. ferrugata*, *X. fluctuata*, *C. designata*, *O. luteolata*, *M. ocellata*, *E. silaceata*, *P. dictæoides*, *A. segetum*. June (trap run on 6 nights): *M. dentina*, *G. trigrammica*, *L. comma*, *N. rubi*, *A. basilinea*, *A. corticea*, *M. oleracea*, *N. primule*, *P. chrysitis*, *L. pallens*, *D. scabriuscula*, *C. taraxaci*, *R. tenebrosa*, *E. lucipara*, *A. gemini*, *X. monoglypha*, *X. montanata*, *T. bistortata*, *P. pulchrina*, *C. pusaria*, *C. corylata*, *P. albulata*, *L. associata*, *B. roboraria*, *H. syringaria*, *O. sambucaria*, *N. augur*, *S. populi*, *N. plecta*, *M. strigilis*. July (trap run on 7 nights): *A. nebulosa*, *N. brunnea*, *P. arcuosa*, *M. persicaria*, *N. triangulum*, *B. perla*, *P. similis*, *A. simulans*, *P. moneta*, *A. megacephala*, *B. viminalis*, *B. brassicæ*, *N. cucullatella*, *L. lurideola*, *N. neustria*, *L. lithargyria*, *C. matura*, *H. proboscidalis*, *M. bicolorata*, *Eupithecia pulchellata*, *A. immutata*, *P. alchemillata*, *B. gemmaria*, *S. bilunaria*, *H. furcata*, *G. papilionaria*, *A. virgularia*. August (trap run on 8 nights): *H. nictitans*, *M. miniata*, *B. lacertinaria*, *A. caia*, *P. gamma*, *C. graminis*, *H. micacea*, *E. meticulosa*, *O. sambucaria*, *Z. grisealis*, *E. fuscantaria*, *C. elinguarina*, *A. pyramidea*, *L. testacea*, *E. popularis*. September (trap run on 3 nights): *T. cespitis*, *X. flavago*, *O. cervinata*, *E. alniaria*, *C. spartiata*. October (trap run on 1 night): *A. lychnidis*.—FREDERICK GILLETT (Major); Cheriton, Sevenoaks.

OBITUARY.

THOMAS DE GREY, D.L., F.R.S., F.E.S., ETC., SIXTH BARON
WALSINGHAM, 1843—1919.

It is with deep regret that we have to announce the death of Lord Walsingham, a sportsman, naturalist of the foremost rank,

and a specialist in the Microlepidoptera without equal in the ranks of modern entomologists. From his earliest days of interest in science, after leaving Eton and Trinity College, Cambridge, of which University he was appointed High Steward in 1891, he never wearied in allegiance to the great family of Lepidoptera, with which his name will always be associated. His achievements therein are commemorated in many monographs and papers dealing with the subject, and finally enshrined in the magnificent Walsingham Collection and Library presented by him to the Natural History Museum on April 1st, 1910. The collection, besides thousands of specimens collected by himself, includes those of Zeller, Hofmann and Christoph, and is certainly one of the most complete—if not the most complete—in the world. Lord Walsingham, indeed, maintained his interest in the group down to the last days of his life. A member of all the most important entomological societies, he joined the Entomological Society of London in 1866, and was, with two exceptions, I think, the oldest elected Fellow on the list. In the years 1889–90 he was President, and Vice-President during several years, his last term of service on the Council being in 1896. During the present century he lived much abroad and was less often seen at the Society's meetings. But he maintained his interest in its work and proceedings, and especially in the men who concentrated upon the aspects of entomology which are rather those of the field than the museum. His own field-work in sport and science covered an immense area, commencing overseas with a visit to California and the Western States of America, later extended to North Africa, Andalusia, Corsica, and the South of France where he had a villa. To entomologists of all orders he was equally sympathetic, and the writer of this notice remembers him also as the most generous of men where assistance was needed for naturalists who had met bad fortune. In his time a foremost figure of society, a shot without rival, a writer on sporting subjects accurate and entertaining, his energies found useful outlet also in the multifarious public duties and trusts imposed upon him. Apart from his fellow- and membership of learned societies innumerable he was a trustee of the British Museum, the Hunterian Museum and the Lawes Agricultural Trust. It was in the performance of his duties as High Steward of Cambridge University that he caught the chill which terminated his long and useful career, and those who were privileged to know him in his private as well as in his public life may well ask when we shall "look upon his like again"? Though he belonged to the older generation of lepidopterists he moved with the times, and his loss will be as keenly felt by the younger generation of scientists as by the men who have been his contemporaries. Lord Walsingham was twice married, but he leaves no heir; the title, therefore, devolves on his half-brother, the Hon. John de Grey, until lately a London police magistrate.

H. R.-B.

With great regret we have to announce the death of Mr. T. R. Billups on December 10th last. A further notice will appear in our next issue.

CONTENTS.

Editorial, 1. A New Variety of *Plusia pulchrina*, Haw., *C. Granville Clutterbuck*, *F.E.S.* 1. Note on Copulation and Oviposition in the Dragonfly *Sycipetrum striolatum* (Charpentier), *W. D. Lang, Sc.D., F.Z.S.* 2. 1919 in the New Forest, *Hugh P. Jones*, 5. A Note on Dutch *Chrisophanus dispar*, Haw., *N. D. Riley, F.E.S.*, 10. Lepidoptera at Ramoeh in 1919, *F. G. Whittle*, 11. *Daphnis nerii* and other Sphingida in the Alps-Maritimes, 1919, *Charles E. Morris*, 13.

NOTES AND OBSERVATIONS.—The Sydney Webb Collection, *R. A.*, 15. *Anthrocerus* exulans not in Shetlands, *B. S. Curwen*, 16. Hibernation of *Aglais urticae*, *Ernest W. Nimmy*, 17. *Aglais urticae*, *W. Clarton*, 17. *Melitæa athalia* in Kent and Sussex, *E. Crisp*, 18. *Pieris manni* and *Polygonia egea* at Cannes, *C. E. Morris*, 18. November Emergence of *Nemeobius lucina*, *Arthur Jones*, 18. Further Notes on "Parthenogenesis" in *Lymantria dispar*, *R. H. Rattray (Col.)* 19. Note on *Bryophila alge*, *Fabr., J. Cosmo Melvill*, 19. *Mellinia ocellaris* at Tonbridge, *R. H. Rattray (Col.)*, 20. *Acosmetia caliginosa* in the Isle of Wight, *W. Godfrey (Lt.-Col.)*, 20. *Amphipyra tragopogonis* in December, *N. O. R. Serpant*, 20. *Boarmia repandata*, etc., in the Ramoeh District, *W. G. Sheldon*, 20. *Perizoma tæniata* in South Devon, *F. C. Woodforde*, 21. Lepidoptera in the Highlands, *A. W. Pickard-Cambridge*, 21. *Spharæca obscurana*, *Steph. = ravulana*, *H.S.*, at Tilgate, *W. G. Sheldon*, 21. Notes on a Holiday in Essex, *C. Wainwright*, 21. Lepidoptera in Mesopotamia, *H. F. Stoneham (Capt., F.E.S., M.B.O.U., etc.)*, 22. Moths Captured by Light-trap, *Frederick Gillett (Major)*, 23.

OBITUARY, 23.

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THE LIFE-CYCLE OF *LOBESIA PERMIXTANA*, HÜB.

By W. G. SHELDON, F.Z.S., F.E.S.

THERE has been a considerable amount of controversy and speculation respecting the earlier stages of this beautiful little Tortrix, which has not hitherto been entirely solved. So long ago as 1874 Barrett, 'Ent. Mo. Mag.,' xi, p. 62, discusses it and states that it seems partial to oak. In the same magazine, vol. xxiv, p. 58, Stainton writes on it, and after discussing nomenclature treats of life-history; he says: "Jourdeuille in the 'Ann. Ent. Soc. France,' 1870, p. 127, says of it larvæ on *Anchusa officinalis*"; he then goes on: "Brischke in 'Stett. Ent. Zeit.,' 1876, p. 68, says that he bred *L. permixtana* from a larva found August 21st, 1871, in the tips of the stems of *Solidago virgaurea*." Stainton follows with his own experience, and says that on June 10th, 1887, he "found *L. permixtana* at Pitlochry in a wood of mixed growth—oak, birch, mountain ash, etc.—and that it seemed partial to oak, although he thought *Solidago virgaurea* did occur." The next contribution is in 'Ent. Mo. Mag.,' xxv, p. 66, and is from the pen of that excellent observer Dr. J. H. Wood, who writes that "in July, 1887, he was beating sloe bushes on the outskirts of a wood and that there fell into his umbrella two small, dark, extremely active larvæ, quite unlike anything he had ever seen before." A moth of this species resulted from one of these larvæ on May 20th of the following year; then follows a description of this larva. In vol. xxxi, p. 159, Dr. Wood further announced that "birch (*Betula glutinosa*) was a food-plant also, he having on several occasions obtained it from that tree." One is uncertain what tree Wood actually means; the common birch is, of course, botanically *Betula alba*; and whilst there is no species of this genus which has a specific name *Glutinosa* the nearly allied genus *Alnus* has a species, the common alder, *A. glutinosa*. It is, of course, impossible to say which of these two species Wood meant. He further says "a suggestion thrown out that it may feed upon oak is therefore likely enough to come true."

There can be no doubt but that the imago has a strong penchant for oak. Barrett, 'Lep. of Brit. Isles,' xi, p. 249, writes of it: "The moth flies in a very lively manner over small oak and other trees, and oak bushes, in the late afternoon and early evening," and this is the common experience of everyone I have spoken to about it.

In early June, 1915, I became aware that *L. permixtana* was abundant in a portion of Limpsfield Chart, the undergrowth in which had been recently cut down. This growth consisted solely of oak and birch, the ground underneath being covered with bilberry and *Calluna vulgaris*. The moths seemed almost entirely to frequent the oak bushes, which were two to three feet high. It was not until 1917 that I thought of capturing females to see if I could get ova; in this year I did not have any success. The following summer, June 4th, from some further captured females I did succeed in obtaining a few ova, which were deposited on an oak leaf, chiefly on the upper side, but there were a few on the underside.

The ovum is very large for the size of the moth, being about .5 mm. by .4 mm., in shape oval, horizontal, of course. The colour is greyish-green, somewhat opalescent, surface glabrous but rough, and very thickly pitted over with very small sinkings of irregular shape. A nucleus is distinctly visible, which is somewhat darker in tint than the surrounding envelope; this nucleus represents about 80 per cent. of the area of the ovum. On June 12th the larva was distinctly visible, it was curled round in the ovum, and was light greyish-green in colour, with a black head.

The larva only emerged from one of the ova; this took place on June 13th. It was then about .2 mm. long, whitish-green in colour, the head was glabrous, and dark fuscous; the prothorax was whitish-green with a dark fuscous line at the rear, and in the centre of the dorsum; the larva was very spiny.

I supplied it with three oak leaves, and an oak bud, as I had an impression that it fed naturally in the bud; it also had a birch leaf to choose from. The oak leaves were placed one upon the other—an arrangement I find very much to the liking of leaf-eating Tortrix larvæ; it immediately commenced to feed upon them, spinning together a portion of two of the leaves which lay closely one upon the other.

On June 26th the second instar was reached. The larva was then 2.50 mm. long; the head and prothorax were amber-coloured; both were glabrous. The segments behind the prothorax were dark greyish-green in the dorsal, and light grey in the spiracular areas; the larva was very transparent. It lived between two leaves, feeding upon the lower cuticle of the upper one.

On July 7th the larva was in the third instar; it was now 5 mm. long, slender, the head was amber-coloured with dark brown shading around jaws, glabrous and transparent; at the

rear it had two very distinct lobes. The rear half of the prothorax was the same colour as the head; the front half was much paler. Next the mesothorax are two half-crescents, dark brown in colour, divided in the centre by a thin line of light colour. The segments at the rear of the prothorax are light honey-coloured and very transparent. There is an unusual arrangement of colour in the dorsal regions; this includes the whole of those from and including the rear portion of the prothorax, and all the segments at the rear of it with the exception of the last four. This colour is dark brown, and it is continued to its anal extremity of the same width.

The tubercles are slightly lighter than the surroundings, but are not prominent. The spiracles are slightly darker than the adjoining area; they are not conspicuous. The claspers and prolegs are dark fuscous. The alimentary canal shows as a distinct dark line through the brown dorsal area, but is hardly visible at the rear of it. The anal plate is not noticeable.

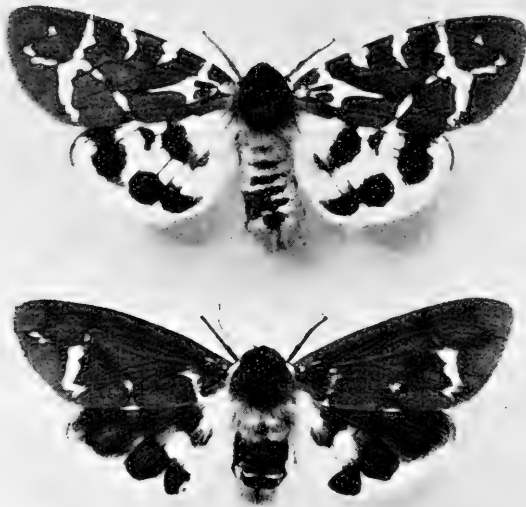
On July 13th the larva was 9 mm. long, apparently still in the third instar; it was now very similar to when last described, with the exception that the anterior segments were now almost as dark as those in front of them. On this day I put in the cage a dead beech leaf for it to pupate in. A few days afterwards I found that it had neatly folded over a small portion of this leaf, and spun a white silk cocoon in the pocket so formed. I fancy it changed to a pupa a few days afterwards, but as I had only one example, and until it actually emerged I was uncertain whether it was *L. permixtana* or some other species that had deposited its ova on the oak sprays over which I had confined the females, I did not care to take the risk of opening the cocoon and killing the inmate.

I did open this cocoon on the following 4th of April, and found in it a pale amber-coloured chrysalis. My doubts were set at rest by a fine male *L. permixtana* emerging on May 15th last.

The larva throughout was one of the most active I have ever seen amongst the Tortricidæ, jumping and wriggling about in a most remarkable manner.

In the last instar I introduced to it a leaf of Golden Rod; this leaf was spun to the only oak-leaf then in the tin in which I kept the larva, but it was not fed upon. It will thus be seen that I have no evidence to offer in support of its feeding upon either this plant, or upon birch, which Dr. Wood found the larvæ upon, but my experiments were hardly extensive enough to be conclusive.

Youlgreave, South Croydon;
December 9th, 1919.



ABERRANT FORMS OF *ARCTIA CAIA*.

BY LEONARD TATCHELL, F.E.S.

THE upper specimen shows great encroachment of the dark colour over the light on fore wings, with spots confluent, the usual red replaced by pinkish orange on hind wings.

THE lower specimen is melanic with almost all traces of the cream ground-colour obliterated on fore wings, with spots of smoky hue coalesced in the hind wings and showing only a very slight amount of the red. There is also a distinct darkening of the abdominal segments.

THESE specimens were bred from full-grown larvæ collected near Bedford.

[For figures of other aberrations of *A. caia*, see the 'Entomologist,' vol. xxi, p. 73; vol. xxv, p. 1; vol. xxix, p. 1; vol. xxxiii, pl. iii, fig. 9; vol. xlix, p. 264.—ED.]

A FEW NOTES ON CRIMEAN LEPIDOPTERA.

BY V. V. NABOKOFF.

Russia offers a wide and fruitful field of research to the entomologist. Just as in its north-western part the Scandinavian and Central European fauna mingle together, producing in the same place species of quite different haunts, such as *Brenthis freija* and *Apatura iris*, (*Eneis jutta* and *Pontia daplidice*, Crimea, from the zoological point of view, seems to be the connecting-link between the Balkan and Caucasian districts. The region of steppes in the north of Crimea (districts of Eupatoria, Perekop, and partly of Simferopol and Theodosia) forms geographically a continuation of the so-called Novorossian steppes and is distinguished by the very same peculiarities—lack of water, scanty vegetation, and, moreover, extreme heat and dryness in summer, snow-storms in winter. Only for a short time in spring these plains are covered with flowers, and the fresh grass delicately waves in the soft sunshine. The steppes, gradually ascending, form in the south a chain of mountains stretching from Theodosia to the Cape of Khersones. On the gentle northern slopes, facing the barren plain, begins the woodland (oak, beech, lime, elm, ash, mountain ash, poplar, willow, etc.). Southwards, on the steeper side, the commonest tree is a Crimean variety of *Pinus sylvestris*, while further on, in the narrow space between the mountains and the sea, cypress, pomegranates, laurel, olive and fig trees give a touch of Italy to the landscape. Few interesting insects occur, however, in the beautiful gardens and parks of the coast. My chief collecting-grounds were the rocky southern slopes of the mountain Ai Petri and the Yaila—hilly pastures on the northern side. Moreover, I made half-a-dozen excursions to the central part of Crimea. I give below a list of butterflies noted from November, 1917, to August, 1918.

HESPERIIDÆ.

Carcharodus alceæ: Very abundant everywhere, in two broods. *C. lavateræ*: A few specimens captured in May. *Hesperia carthami*: One female, May 20th, at the foot of Ai Petri. *H. alveus* (? *armoricanus*, Obthr.): Common in June on the Yaila. *H. malvæ*: Appeared April 10th. *Pyrgus proto*: One male, August 7th, near Bakchisarai. *P. orbifer*: Appeared April 19th. The most abundant of all. *P. sao*: Appeared May 20th. Scarce. *P. protheon*: A beautiful female, July 13th, in a pine-wood. *Nisoniades tages*: 1st gen. April 13th, 2nd gen. June 30th. *Agriades comma*: Abundant in August in Central Crimea. The females are very dark. *A. sylvanus*: Appeared May 31st. *Adopæa flava*: Appeared May 30th.

LYCENIDÆ.

Chrysophanus thersamon: I captured only two examples—a tattered one of the 1st gen., June 7th, and a fresh one July 3rd. Both are males. *C. phlæas*: Scarce.

Plebeius ægon: One male, June 18th. *Scolitantides orion*: First seen June 27th. Rare. *S. baton*, var. *clara*: Appeared April 13th. Very abundant in some places. *Aricia medon*, var. *sarmatis*: Appeared April 23rd. Common everywhere. *Polyommatus icarus*: Very abundant in several broods. *Agriades bellargus*: First seen May 27th. Common in fields at the foot of Ai Petri. Large specimens. Males tinged with purple—very different from the western ones. *A. melcager*: Appeared June 18th. Very abundant. In the southern part of Crimea the females are ab. *steeverni*; on the plains of the inland, typical. *A. corydon*: Appeared June 30th. *Cupido minimus*: One, June 3rd, at the top of Ai Petri. *Nomiades semiargus*: Appeared June 27th. *N. cyllarus*, var. *æuginosa*: Appeared June 30th. Common for a short time in parks. *Lycæna euphemus*: In woods of the inland. *Thecla w-album*: Plentiful in beech-woods. Once, on a sunny day, I found scores of specimens settled on some nettles. When disturbed they flew off, but immediately returned again to their resting-place. *T. acaciæ*: First seen, June 18th. Abundant here and there, on lawns, fluttering about like a small *Lycæna*. Some specimens seem to be var. *abdominalis*. *Callophrys rubi*: Appeared April 16th. Large specimens. Under-side pale green, with only one white dot—the lower one—on hind wings. *Celastrina argiolus*: 1st gen. March 27th, 2nd gen. June 9th. The commonest butterfly in spring.

PAPILIONIDÆ.

Iphiclides podalirius: Plentiful in gardens. First brood appeared at the end of March, the second at the end of June. Worn specimens of the first generation were on the wing as late as June 15th. *Papilio machaon*: I captured only one example (June 3rd). In this specimen the two upper lunules on the outer margin of hind wings are tinged with orange. This is an unusual aberration.

Parnassius apollo, var. ? : Said to occur near Simferopol. I have seen specimens in local collections.

Thais polyxena: Abundant on the plains of the inland in March. I have not noticed it in the south of Crimea. This also refers to the next species.

PIERIDÆ.

Aporia crategi: Two faded females, July 18th. *Pieris rapæ*: 1st gen. April 1st, 2nd gen. June 16th. *P. napi*: 1st gen. March 27th, 2nd gen. June 2nd. *Pontia daplidice*: 1st gen. March 23rd (ab. *bellidice*), 2nd gen. June 10th.

Euchlœe belia var. *uralensis*: In one gen. First appeared April 6th. This is a common butterfly in the parks and gardens of the coast. *E. cardamines*: Appeared March 3rd.

Leptidia sinapis: 1st gen. March 23rd. The males have pale grey tips and the space between the inner margin and vein vii on the underside of hind wings is suffused with greyish-green, which reminds me of *duponcheli*. That species, as much as I know, has never been observed in Crimea. 2nd gen. July 3rd. Black tips and very pale—nearly white—underside of hind wings, ab. *diniensis*?

Colias hyale: Single specimens throughout the summer. I have a couple of males in which the dark markings are nearly absent. *C. edusa*: Extremely abundant from March to late November, in several broods. Ab. *pallida* (*helice*) and intermediate forms are frequent.

Gonepteryx rhamni: Appeared June 20th, but was rarely seen. Much more abundant in the spring.

NYPHALIDÆ.

Dryas paphia: Not common. *D. pandora*: Appeared June 30th. Abundant for a week or so near Yalta. It was delightful to watch, as it sailed to and fro, over roadside thistles.

Argynnis aglaia: One specimen, July 13th, on a mountain road. *A. adippe*: One male (ab. *cleodoxa*), June 2nd.

Issoria lathonia: 1st gen. April 10th, 2nd gen. June 6th.

Brenthis dia: Appeared June 3rd. Scarce.

Melitœa cinxia: Appeared April 28th. *M. didyma*, var. *neæra*: 1st gen. June 7th, 2nd gen. August 1st. Abundant with *cinxia* on mountain slopes. A pretty, well-defined variety. *M. athalia*: In woods on the northern side of Ai-Petri. Small, dark specimens.

Pyrameis cardui: A great quantity of fresh specimens appeared April 26th, and then again June 6th. It is the most abundant butterfly in Crimea. In August on the plains of the inland it is to be met in thousands—the only butterfly for miles around. *P. atalanta*: Very common, too, chiefly in spring. On sunny days in winter I have noticed numerous examples sailing and fluttering among oak-trees. *Vanessa io*: Now and then in gardens. *Aglais urticæ*: Abundant on the Yaila. Fine, warm-coloured specimens. *Eugonia xanthomelas*: One male July 2nd. *E. polychloros*: Plentiful in parks.

Polygonia c-album: Rarely seen. *P. egea*: One female February 2nd, in a Tartarian village on the coast.

LYBYTHEIDÆ.

Libythea celtis: 1st gen. March 23rd, 2nd gen. June 9th. Abundant in gardens and on the outskirts of pine-woods at the

foot of Ai Petri. It flits and glides over bushes, somewhat resembling a *Melitæa maturna*, often settles with closed wings on twigs and stones, and has a habit of darting in unexpected directions when pursued. Examples of the second generation are of a deeper orange hue with darker and stronger markings, which give the butterfly when on the wing a bluish-black, glossy appearance.

SATYRIDÆ.

Pararge roxelana: I saw one male June 20th, in a park by the sea. *P. megera*: 1st gen. April 13th, 2nd gen. June 30th. *P. egeria* var. *intermedia*?: 1st gen. March 31st, 2nd gen. June 27th. Common in shady nooks. Much paler than the Mediterranean form, but not quite so pale as the northern variety.

Satyrus circe: Appeared June 18th. *S. anthe*: One specimen, a fresh but somewhat deformed female, in a mountain gorge July 13th. *S. statilius*: Very abundant everywhere in autumn.

Hipparchia semele: Appeared June 1st. Very common. The females are exceedingly large. *H. hippolyte*: July 13th, at the very summit of Ai-Petri. Gently flutters among rocks, often settling with closed wings on the ground. The examples I obtained are bigger and brighter than Andalusian specimens.

Enodia dryas: Common in central Crimea. I captured some fine specimens in August near Bakchisarai—the former residence of the Khans.

Epinephele jurina: Appeared May 16th. *E. lycaon*: Appeared June 23rd. Very common in the mountains. Small examples.

Cœnonympha pamphilus: Very scarce.

Erebia afra: I found this butterfly locally abundant on the Yaila June 3rd. There were no males about and most of the females were faded. They rise from out of the grass when disturbed, float for a short time in the wind, and languidly drop again with outspread wings on stones and blossoms. This butterfly, when flying, bears a striking resemblance to *E. janira* ♂.

Melanargia galatæa: Appeared June 9th. Very common in grassy places at the foot of Ai-Petri. Ground-colour of underside of hind wings ranges from pearly-white to ochre-yellow.

This makes 77 species in all. It is obvious that many others are found in Crimea, for I have included in this list only those that I have seen myself. The absence of *Pieris brassicæ* is strange, while on the other hand I was disappointed in not finding *H. euxinus*—a new species lately described by Kuznetzoff. My collection, which, unfortunately, I was compelled to leave in Yalta, includes also about a hundred different species of moths, many of which are unknown to me.

Sphinx convolvuli, *Daphnis nerii*, *Deilephila livornica* and *D. euphorbiæ* were all common at dusk on honeysuckle. *Pterogon gorgoniades* also occurs now and then near Yalta. On June 3rd I detected a fine female on a window-pane. When at rest with protruding hind wings it resembles a very small specimen of that handsome grey-marbled moth *Smerinthus tremulæ* (*amurensis*, Stdr.), which, in happier days, I used to find at the foot of aspens in the neighbourhood of Petrograd. Among other interesting things I may mention *Acronycta pontica*, *Gnophos stevenaria* and *Endagria salicicola*, a pearly-white, black-dotted little moth that is confined to the shores of the Black Sea.

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ENTOMOLOGICAL SEASON OF 1919 IN SOUTH HANTS AND SOUTH DEVON.

BY A. E. BURRAS, B.A.

THE following summary of the past season based on field work done in South Hants and South Devon may be of interest to other entomologists. The results of this work have led me to conclude that the season just ended has been, not exactly the worst, but the most peculiar for many years. According to my experience the outstanding feature of the season has been the remarkable scarcity of certain usually common species. This scarcity has manifested itself throughout the period, from spring "sallowing," through summer "sugaring," to autumn "ivy-hunting," and generally to larvæ-beating throughout the year. To this tale of scarcity, however, there are certain remarkable exceptions. In the spring, larvæ, which had hibernated, were quite up to the average in numbers.

In South Hants and the New Forest *Argynnis cydippe*, *Dryas paphia* and its variety *valezina*, *Aphantopus hyperanthus*, *Limenitis sibylla* and *Pararge egeria* were plentiful. Larvæ of *Zephyrus betulæ* were not scarce, whilst, on the other hand, those of *Zephyrus quercus* were quite remarkably so. Imagines of *Callophrys rubi* were abundant, whilst on the same ground those of *Nemeobius lucina*, usually the more plentiful species, were not even seen. At sugar in the New Forest *Grammesia trigrammica* was the only plentiful species; *Catocala sponsa*, *Catocala promissa* and even *Calymnia trapezina* were almost entirely absent. *Plebeius ægon* in the New Forest was scarce. Of our local "Blues," which are all to be taken on the same ground, the most plentiful was *Agriades bellargus*, usually the scarcest, the others, *Cupido minimus*, *Agriades corydon*, *Aricia medon* (*astrarche*),

Polyommatus icarus, much below the average. In south Devon *Pararge egeria* and *Pararge megæra* were plentiful, particularly the latter, whilst *Pyrameis atalanta*, *Pyrameis cardui*, *Aglais urticae* and the "Whites" were comparatively scarce. At sugar in South Hants all Noctuidæ were very scarce, in South Devon *Caradrina ambigua*, *Agrotis saucia*, *Agrotis suffusa*, *Noctua c-nigrum*, *Noctua rubi*, etc., were plentiful, whilst *Aporophyla nigra*, *Aporophyla lutulenta*, *Epunda lichenia*, *Polia flavicincta* were scarcely seen. In both counties, on the whole, Geometridæ were well up to the average, both as imagines and as larvæ. What were the causes of these somewhat remarkable discrepancies? Larvæ were not unusually scarce in the autumn of 1918 and the weather of last winter might be regarded as favourable to hibernating larvæ and pupæ. In my experience the percentage of imagines reared from wild dug pupæ differs very much in different years. Does not this point to some fatal influences apart from those prevailing whilst they are pupæ having affected the insect, say, whilst in the larval stage? On the whole, the results show that insects produced from hibernating larvæ were more numerous than those produced from hibernating pupæ. This result was not due to an over-wet season. Was it due to an over-dry one or to the ground being so hard at the time of emergence that a great many insects were unable to make their way out?

This is borne out, to some extent, by the greater scarcity of Noctuidæ as compared with Geometridæ, which, as a rule, pupate at no great depth in the soil. In our local woods *Hybernia defoliaria* was scarcely seen this season. On the other hand, *Apocheima hispidaria*, which also pupates at some depth, was remarkably abundant in the same woods. The ravages of *Tortrix viridana* might explain the local scarcity of certain oak-feeders. This cause can be greatly exaggerated, as I found larvæ swarming on the bushes below *Viridana*-infested trees and feeding heartily on hazel, etc.—*Trichiura cratægi*, for example. From this we may assume, incidentally, that larvæ are much more general feeders than we suppose.

An unusual preponderance of ichneumon might also account for a large number of larvæ. In certain years the proportion of stung larvæ is certainly much greater than in others. Are wild larvæ ever subject to parasitical plagues? I have found it difficult to account, otherwise, for the failure in certain seasons of large numbers of wild larvæ, notably those of *Boarmia abietaria*, *Macrothylacia rubi* and *Hylophila bicolorana*.

To say that unusual seasons have unusual results entomologically savours somewhat of an axiom. As a rule, we regard an unusually hot or dry summer as a favourable one entomologically. Last year we had an unusually dry winter followed by a more than average dry summer. The entomological result was not encouraging. It would be interesting

to have a tabular statement of the meteorological and entomological inter-dependence extending, say, over the last twenty years.

I now append a brief record of the season's captures as exemplifying the experiences detailed above.

In January I took a fair number of pupæ of *Smerinthus tilieæ* from under local elms. These gave me some very nice varied forms.

In February larvæ of *Sesia culiciformis* and *Sesia asiliformis* were found wherever timber had been lately cut. At the end of the month *Apocheima hispidaria*, *Polyphoca flavicornis*, *Hibernia leucophæaria* and *Phigalia pedaria* began to appear, the last two being unusually scarce.

On March 1st *Apocheima hispidaria* was out in remarkable abundance; five, six and seven were frequently found on a single trunk, the record giving 13 males and 7 females for the same oak trunk. They varied in a remarkable degree, both in size and markings, and included some nice melanic forms. On the 16th a few larvæ of *Sesia andreniformis* were found, and a few also of *Arctia villica* basking in the sun. *Brephos parthenias* was scarce and did not appear until the second week in April. April 7th-14th was spent in the New Forest and produced *Panolis piniperda* (scarce), *Tæniocampa gracilis*, *Lobophora carpinata*, *Eupithecia abbreviata*, *Pachnobia rubricosa*, *Tæniocampa miniosa*, *Anticlea nigrofasciaria*, *Boarmia cinctaria*, *Pachycnemia hippocastanaria*, *T. munda*, *T. cruda*, *T. stabilis*, a few hibernated *Cidaria siterata* and *Vanessa polychloros*; also the larvæ of *Ellopia prosapiaria* (scarce), *Boarmia roboraria*, *Hylophila bicolorana*, *Geometra papilionaria*, *Cleora lichenaria*, *Cleora jubata*, *Thera variata* and *Nola strigula*. On April 20th, *Parasemia plantaginis* larvæ were plentiful in the sun. On May 17th I took larvæ of *Lithosia deplana*, *Boarmia abietaria*, *Laspeyria flexula*, *Eupithecia sobrinata*, *Scotosia rhamnata* and *S. vetulata*.

On May 18th a visit to our local sand-hills showed the first emergence of *Mesotype virgata*. On the 19th a newly emerged female of *Stauropus fagi* was taken from an oak sapling. On May 25th the following imagines were taken: *Leucophasia sinapis*, *Perizoma affinitata*, *P. alchemillata*, *P. decolorata*. The first week in June produced *Bapta bimaculata*, *Epione adrenaria*, *Drepana falcula* and *Hemaris tityus*. Sugaring gave *Agrotis cinerea*, *Grammesia trigrammica*, *Hama sordida*, *Mamestra genistæ*, *Mamestra contigua*, and larvæ-beating produced *Calymnia affinis* and *Plastenis retusa*.

June 6th-10th was spent in the New Forest, where sugar produced some beautiful extreme forms of *Grammesia trigrammica*, also *Mamestra contigua*, *Eurois prasina*, *Mamestra genistæ* and *Lobophora sexalisata*. The following were also obtained at the same time: *Acidalia subsericeata*, *Eulype hastata*, *Scodiona*

fagaria, *Macrothylacia rubi* and *Zygæna trifolii*, with *Brenthis selene* and *B. euphrosyne* much below the average numbers.

On the 14th larvæ of *Zephyrus betulæ* and *Anticlea nigro-fasciaria* were taken full fed and some very fine vars. of *Zygæna trifolii*, including orange-tinted forms. Small larvæ of *Hemaris fuciformis* were found on the 15th, but the special object of that day, *Lithosia rubicollis*, did not put in an appearance then or later.

On June 21st-22nd the only attempts at sugaring on the local sand-hills proved a failure, only a few *Mamestra albicolon* being taken, *Agrotis ripe* and *Leucania littoralis* being practically absent. The last week in June I saw *Argynnis cydippe*, *Dryas paphia*, *Boarmia roboraria* well out and in numbers above the average. *Acronycta leporina* and *Noctua ditrapezium* were the only *notabilia* at sugar, which failed in its main purpose—the tempting of *Diptera orion*. Some fine vars. of *Lithosia deplana* were hatched out in the same week. The first week in July gave *Leucania favicolor* and *Acidalia remutaria* at sugar. In the New Forest *Dryas paphia*, with its var. *valezina*, and *Limnitis sibylla* were out in fair numbers, with some very nice varieties of all three. *Argynnis cydippe* was fairly plentiful and a beautiful *Lanceolata* was taken.

July 17th-23rd gave, at sugar, *Hama abjecta*, and at light *Petilampa arcuosa* and *Euchloris pustulata*. The season's additions to the local list were *Cnestis quadra*, *Noctua ditrapezium*, *Euchloris pustulata*, *Acidalia inornata*, *Eupithecia albipunctata*, *Pygæra pigra*, *Leucania turca* and *Nola albulalis*.

From August 2nd to September 12th was spent in south Devon with Mr. Woodforde. In the first week a few *Lithosia caniola* were taken at light. The insect is very fickle in its appearance, requiring very particular conditions of wind and temperature before it takes to wing. Mr. Woodforde had the best night among them on August 1st, when he also took *Eupithecia innotata* and *Perizoma teniata*. In the second week of August a day was devoted to *Callimorpha hera*. Of these about a score were taken, including the orange and yellow forms. *Pararge megæra* was beginning to be very plentiful; *Bryophila glandifera* and *Bryophila perla* were and remained scarce. During most of August imagines of *Acronycta rumicis*, *Polia chi*, *Gnophos obscurata*, *Acidalia promutata* were to be taken from the rocks by day. Pupæ of *Nonagria typhæ* and *Nonagria geminipuncta* were locally plentiful. At Torcross small larvæ of *Cucullia absinthii* were found, and pupæ of *Nonagria geminipuncta*. A few larvæ of *Anticlea cucullata* were beaten along with a few of *Macroglossa stellatarum*. Larvæ of *Phyrrhea umbra* were fairly plentiful but badly stung; three larvæ of *Heliothis peltigera* were also taken. A few *Colias edusa* were taken in the last week of August, including one *helice*, captured by finger and thumb whilst clinging to a flower-head in a gale of wind.

Larvæ of *Eupithecia* were found plentifully on Golden Rod, Valerian and Angelica.

Sugaring, on the whole, was disappointing. The best things taken were two *Leucania vitellina* on my own sugar and two on that of Mr. Milman. *Leucania putrescens*, *Calymnia affinis*, *C. diffinis* were scarce, *Caradrina ambigua* plentiful, *Agrotis saucia* and *Agrotis suffusa* in abundance. The only capture of note on my return was that of three larvæ of *Cucullia lychnitis* on September 15th. Locally autumn larvæ were practically non-existent, pupæ remarkably scarce, and the same might be said of imagines at ivy-bloom or on tree-trunks. After I left South Devon Mr. Woodforde stayed till October 23rd, and now tells me that, though ivy was abundant and the bloom profuse, hardly anything visited it except *Phlogophora meticulosa* and *Amathes pistacina*, both of which were abundant. Under half a dozen each of *Epunda nigra*, *Epunda lichenea* and *Polia flavicincta*, 2 *Lithophane socia*, 1 *Amathes lota*, 1 *Amathes circellaris*, 2 *Miselia oxyacanthæ*, 2 *Orrhodia vaccinii*, 1 *Noctua glauca* and 3 *Cidaria truncata* were his bag, although he visited many large clumps of ivy on every possible night. No insects were to be seen flying at dusk.

3, Connaught Road,
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A FEW NOTES FROM NORFOLK AND ELSEWHERE.

BY G. H. GURNEY, F.Z.S., F.E.S.

ALTHOUGH demobilized from the Army last April, I have not been able to do a very great deal of collecting during the past summer, but the following notes on the few days I had may be of interest. On May 24th *Papilio machaon* was well out in the Broad district; some fifteen were seen on one favourite bit of marshland. This is a very early date for them, but the 24th was an exceptionally warm, mild day. On the 26th, which was sunny, but with a cold east wind, I only saw four in the same locality. On the 28th of the same month I made an expedition to some woods near Peterborough, mainly with a view to seeing *Carterocephalus palemon*; this I found to be very plentiful, and generally quite fresh. *Nisoniades tages* and *Hesperia malvæ* were also common in the same locality. *Brenthis euphrosyne*, *Callophrys rubi*, *Pararge egerides*, *Gonepteryx rhamni*, *Nemobius lucina*, common and fresh, *Cænonympha pamphilus* and a single *P. megæra* were all noted, and a rather melancholy feature of the landscape were the acres of brown oak trees, completely denuded of their leaves by the depredations of the larvæ of *Tortrix viridana*, etc.

Returning home, an interesting discovery was made in the shape of some dozen larvæ of *Thecla w-album*, which were beaten from the lower boughs of a very large wych elm which grows in the park quite close to the garden. It is a somewhat remarkable fact that I should never have noticed *w-album* on this tree before. Having passed constantly close to it for the past thirty summers one would have thought that if the imagines were flying round the tree in June or July, one would have been bound to notice them; moreover, on previous occasions I have repeatedly beaten the tree in the spring for Noctuæ larvæ, and have never before, as far as I know, had *w-album* larvæ fall into the beating-tray. It is a very large, isolated tree, a most unlikely and unsuitable locality for the species, which I have never before seen in this district at all, where wych elms are scarce—in fact, *w-album* is a rare butterfly in Norfolk, though possibly overlooked. However, it only shows one may live close to a certain thing without being aware of its proximity, as I cannot believe these larvæ were stray individuals hatched from ova laid the previous summer by some wandering female. Unluckily I was away from home during the first weeks of July, and so was unable to note whether the butterflies were haunting the tree then. My larvæ all emerged successfully into fine specimens. Larvæ of *Zephyrus quercus* were very abundant locally during June. On July 11th, on Felthorpe Heath, some eight miles from Norwich, *Platycodon ægon* was very plentiful, males abundant, females just emerging. I was glad to see *Argynnis cydippe* also quite common in restricted areas; this is an insect which has become much more plentiful in Norfolk during the last six or seven years; previous to that it had almost died out in many localities in the district. *Dryas paphia*, on the contrary, has become practically extinct in several spots in North Norfolk where it was formerly found. I can give no explanation for this. Some of its most favoured haunts were on private property, where it was never collected and where the ground remains in apparently exactly the same condition as it always has been. Other insects noted on the 11th were plenty of fresh *Epinephile jurtina*, a few *C. pamphilus* and a single fresh *Augiades sylvanus*.

From July 18th I spent a few days at Lyndhurst. The weather was very bad all the time, and I did not do much. During the few sunny periods *D. paphia* appeared in great profusion with var. *valezina*, and the usual swarms of *Limenitis sibylla*, mostly rather worn. I met two entomologists, who showed me beautiful varieties of this species they had taken, and, though I did not meet with any myself, a large number were captured this year in the Forest.

Eugonia polychloros was not out at this date; neither did I see any sign of *Apatura iris*. With regard to the latter species in Norfolk, it is melancholy to record that its last known locality

in the county is now no more. Till three years ago *A. iris* managed to maintain itself in Foxley Wood in West Norfolk, but in 1915 the whole wood was sold to the Government, and the greater part of the trees were immediately cut down, and one more of our most interesting entomological localities, where several very local species just managed to exist, was ruthlessly swept away. Other insects noted in the New Forest in the various enclosures were *Apantopus hyperanthus* and *E. jurтина* everywhere, the former quite fresh, a few *Epinephile tithonus* and some beautifully fresh *A. cydippe*; fresh *Celastrina argiolus* were seen two or three times, and odd specimens of *A. sylvanus*, *A. flava*, *Pieris napi* and *P. rapæ*.

On July 22nd I was back again in Norfolk, and spent a few hours on the 30th at Felthorpe. Here I saw much the same insects I had noted on July 11th. *P. ægon*, still quite fresh, with a fine show of females now. Large patches of *Gentiana pneumonanthe* in full flower were a beautiful sight, as also the great abundance of the Common Meadow Orchis.

Ten days later I found *A. hyperanthus* quite common, though naturally worn at this date, in a small wood near here where I had never noticed it before, and a very few specimens actually appeared in this garden. A rough field was full of butterflies—*A. hyperanthus*, *E. jurтина*, *Polyommatus icarus*, *P. megæra*, *E. tithonus*, *A. flava*, *Vanessa io*, *Aglais urticae*, and the three common Pierids. With regard to *P. megæra*, this is a butterfly which has become commoner in this district during the past five or six years. Fifteen years ago it was abundant in our sandy lanes and in all suitable places, but it practically disappeared, and, anyhow round about here, became quite a rare insect; now it is getting up its numbers again, and this year was common everywhere. *E. tithonus* is always a very common butterfly here, the females large and richly coloured, the males small and dark. On August 12th I visited some very good ground twelve miles west of Norwich. In a large clearing in the middle of a private wood I found *Hipparchia semele* in the very greatest profusion. The trees had been cut down, and grass and heather had sprung up with bright patches of *Lotus corniculatus*. I don't think I had ever seen this species in such extraordinary numbers anywhere; four or five would dart up at one's feet, or rise fighting from the ground, or several males would wildly pursue a female until they got lost in the wood amongst the trees which had not been felled. Some fine fresh *C. phleas* shared the lotus plants with *P. icarus* and an occasional *C. pamphilus*, while some *P. ægon* fluttered over the heather. Proceeding to a marshy common a mile further on, the most interesting insects noted were three or four specimens of *Zygæna trifolii*, which were confined to one small corner of the bog; many fresh female *P. napi* were busy ovipositing on various Conifers, and a few worn *A. cydippe*

sunned themselves on the bramble flowers. Many bog-loving plants grow here—Butterwort, the Long-leaved Sundew, Bladderwort, Housewort, Pettywhin, Cotton Grass, Spotted and Marsh Orchis, Bogbean, Meadow Thistle, and the lovely Grass of Parnassus.

On August 17th I visited a locality in North-West Norfolk for *Agriades corydon*. The special locality for this species in this district is a long, winding, narrow valley, the steeply rising sides covered with short turf; along the top woods of beech and oak stretch for a considerable distance. On the south side (only) of this valley, covering a strip of ground perhaps a mile long, *A. corydon* was very abundant; both sexes were in good condition, but amongst a very large number examined no sign of any variation was observed. Rather further along a small colony of *Aricia astrarche* was noted, but *Agriades comma*, which I had hoped to have seen, failed to put in an appearance.

During the last days of the month we had our usual visitation of Vanessids in the garden, though all of them were scarcer than usual. *Pyrameis atalanta* was perhaps the commonest, but both *V. io* and *A. urticae* were only represented by some half-a-dozen examples of each species. A large fresh brood of *P. brassicae* flooded the garden about now too. Some of the females were very big and fine.

This practically ended my collecting for the summer, as I very soon left Norfolk for the north of Scotland.

Keswick Hall,
Norwich.

BUTTERFLIES IN MACEDONIA.

BY HERBERT MACE.

ALTHOUGH the non-entomological officers and men who spent two or three years in the Balkans were greatly impressed by the beauty of the numerous butterflies seen there throughout the summer, my own feeling, as a lifelong collector of butterflies, was one of considerable disappointment with the number of species. As a matter of fact five species which abounded in individuals were entirely responsible for the display which attracted the lay attention to them. These were *Pyrameis cardui*, *Colias edusa*, *Pontia daplidice*, *Papilio machaon* and *I. podalirius*. All these species, so strikingly beautiful, were so numerous all through the fine season that it was easy enough to get the impression that Macedonia is a butterfly land.

Had I been a collector of butterflies doing a little military duty instead of a soldier doing a little butterfly hunting it is probable I should have had a larger list of species in my note-

book, for I never visited a district where it would be so easy to overlook a species which is local in its habits, and most butterflies, as every experienced collector knows, are local to a surprising degree.

On the surface Macedonia appears to be a wide, half-desolate plain broken up by rough hills, but a closer acquaintance reveals the fact that the country is scored and seamed with innumerable ravines, sometimes wide and shallow, at others deep and confined, and in each of these ravines one finds certain species of plants and animals which often are not found in the others. Where a ravine contains a stream which is perennial, the vegetation and animal life is very diverse and affords a rich harvest to the naturalist, but most of them are dry and barren as the plains during the later part of summer.

My more or less restricted rambles were confined to the district between Sariguel on the south, Lake Ardjan on the west, Lake Doiran on the north and the Galiko River on the east, the only exceptions being a month in the winter spent at Karasuli on the Vardar and a few weeks in the passes north of Doiran after the advance. In May and June, 1917, I was exceptionally well favoured with time and opportunity for studying the local fauna, and I look on those weeks spent in the innumerable and tortuous ravines which debouch into the Galiko River as a feast of nature study such as comes to the average individual but rarely. Looking back on the extraordinary richness of the field, I wonder sometimes whether I made the most of my opportunities. The very richness made it difficult to keep in touch with any one species, each day revealing new and interesting forms to attract the attention. In particular I had very little opportunity of searching for larvæ, and only a few of the more obvious species came to my notice. It was impossible to do any night work, and even when a few larvæ were discovered it was difficult to keep them alive for lack of suitable receptacles, and a sad fate often befell some cherished broods when a sudden move meant the abandonment of all but essential kit.

Macedonia being at the diametrically opposite end of Europe a comparison between the species of the two countries is bound to have some interest, and while the records of a single observer over only two seasons are insufficient to enable an exhaustive comparison to be made so far as the common species are concerned, it is fairly reliable.

Of a combined total of eighty-three species, twenty-eight are common to both countries. Of thirty-six species which are common in Britain only fourteen are abundant in Macedonia, and of thirty-four which I found common in Macedonia twenty-one are absent or very rare in Britain.

In the *Pieridæ* there is the closest agreement in species, for of the five common British ones I found only one absent in

Macedonia, while of eight species which were very common in Macedonia four are rare and one absent from Britain.

British preponderance in *Nymphalidæ* is largely accounted for by the scarcity of the common stinging-nettle, as the absence of *A. urticae* proves, while in the genus *Argynnis*—notoriously local insects—there appears to be a total difference in the species of those I found in Macedonia, not one being known (except *lathonia* very rarely) in Britain.

In the *Satyridæ* again there is a great disparity, as out of eleven British species I only found three in Macedonia, while three species found there are not known in Britain.

The *Lycænidæ* are such local insects that it is not feasible to draw a comparison, though I found all the universally distributed species common enough in Macedonia. In the *Hesperiidæ* there is wide disparity, only two species being common in both countries, the most abundant in each being absent in the other.

With regard to varieties, four of our British species appear to differ markedly in Macedonia, these being *P. megæra*, *C. pamphilus*, *C. phleas*, *A. medon* (*astrarche*) and *A. flava* (*thauimas*).

Another feature I noticed was the occurrence of extremely dwarf forms of several species, similar to those produced among bred specimens from time to time, which is, I believe, generally attributed to malnutrition of the larvæ by unsuitable or inadequate food, and it is possibly the case that in such a dry climate a certain number of larvæ may be obliged to subsist on food of less succulence than ordinary.

Iphiclides podalirius.—Although never what one would call abundant, this fine butterfly was generally distributed, and I could usually count on seeing one or more individuals in certain suitable places. Unlike *machaon*, which often haunted the driest hillsides, it was seldom found far from water, and was usually confined to wooded ravines where the stream never dried entirely. Its flight is decidedly more lofty and sailing than that of *machaon* and it is more difficult to capture. One day I was sitting among the ruins of a house overgrown with weeds watching a pair of these insects sailing round and I happened to toss away a little ball of paper. One of the butterflies immediately swooped down after it. I repeated the action, not only then but on several subsequent occasions, and almost invariably *podalirius* would dash after the falling object.

I several times saw the females depositing on pear trees, but too high up to enable me to secure the ova. My specimens conform fairly closely to type, except one, which has the pale line that breaks the basal stripe exceptionally wide and the inner margin of the hind wings is not dusted with black.

(To be continued.)

NOTES AND OBSERVATIONS.

CROCALLIS ELINGUARIA F. *SIGNATIPENNIS*.—Before seeing Mr. Porritt's note (*antea*, p. 258) and Mr. Smart's note (*antea*, p. 278) I should have said that this form was decidedly scarce. During about twenty-five years' collecting in Lancashire and Yorkshire I have not met with this form, neither has it been brought to the meetings of the Lancashire and Cheshire Entomological Society until Mr. Smith showed us his example. My own series of *C. elinguaris* comprises specimens from Leeds, Huddersfield, S. Lancashire, Delamere and Penmaenmawr; it has been selected from large numbers bred from wild larvæ at different times, yet nothing like *signatipennis* has occurred to me. The notes alluded to above indicate that in the Huddersfield district the newly-named form may exist as a local race, and it would be interesting if the resident collectors could give us some definite idea as to the relative proportions that *signatipennis* bears to the form with normal shaped band. Mosley's fig. 5, pl. i, shows a more extreme form than Mr. Smith's (vol. lii, p. 226, fig. 2), in that the lines are joined considerably before they reach the inner margin, and in Barrett's fig. 1g, pl. 293, they approach but do not meet, whereas in the type of *signatipennis* they just coalesce and the band terminates in a point.—WM. MANSBRIDGE; Dunraven, Church Road, Wavertree, Liverpool.

VARIATION IN THE PLUSIDÆ.—Mr. C. G. Clutterbuck is to be congratulated in discovering such a beautiful and extreme variety of *Plusia pulchrina*. The form mentioned by the late Mr. Barrett as from Omagh, Co. Tyrone, with a large orange spot in the middle of the fore wings, no doubt refers to a variety not infrequent locally, with an orange-coloured, wedge-shaped blotch, just below the Y mark, and in extreme specimens extending to the inner margin. It may be of interest to note here a rare variation in the allied *P. festuca*, in which the two metallic blotches are joined together, forming a wedge-shaped mark across centre of fore wings. The name *juncta* may well indicate this form.—THOMAS GREER; Carglasson, Stewartstown, Co. Tyrone.

ABNORMAL SPECIMENS OF ABRAXAS GROSSULARIATA.—A rather curious specimen of *Abraxas grossulariata* emerged from a pupa I had last summer. I was careless enough to let the pupa get very wet while I was keeping it, and I had no expectation at all that the imago would emerge. However, it did, and the abdomen of the moth was very wrinkled and colourless, as one might expect. The wings were, however, quite perfect, and the left wings and the hind right wing were all reasonably normal in marking. The right fore wing, however, had the black spots on the inside of the yellow band merged together in a very peculiar manner as though the colours had run. The effect is an irregular-looking smear in the centre of the wing. Could such an occurrence be the result of the damp, or is it a natural variety of this extremely variable species?—ARTHUR SOPWITH; Chasetown, nr. Walsall.

BOMBUS AND VESPA SPECIES IN THE RANNOCH DISTRICT.—I was interested during my stay at Rannoch in investigating the species of

these genera which occurred. Of the former, *Bombus lucorum*, *B. laterellus*, *B. jonillus* and *B. lapponicus* were the only species seen. One female of *Psithyrus quadricolor* was taken. *B. lapponicus* was disappointingly rare, only one female being seen during the whole of my stay. *Vespa rufa* and its supposed parasite *V. austriaca* were not uncommon in the Black Wood and around the farm at which I stayed. Several examples of the latter could be noted each day without any searching; they were all females.—W. G. SHELDON.

'SEITZ' MACROLEPIDOPTERA OF THE WORLD.' VOL. IV: "PALÆ-ARCTIC GEOMETRIDÆ."—We understand that the English and French editions of this volume are now complete and can be had of the publishers.

SCARCITY OF AGLAIS URTICÆ.—Referring to Mr. Rowland Brown's note under this heading ('Entom.,' lii, p. 277). I made a special attempt to obtain larvæ of this butterfly at the end of July and the beginning of August in the hope of obtaining some aberrations and visited many places in Surrey and Sussex, but met with very little success. On August 3rd last, at Worthing, I took two webs containing in all about sixty larvæ which were then little more than a quarter of an inch in length. The larvæ were exceedingly voracious and fed up with great rapidity, having all gone up to the top of the breeding-cage within eight days, and eventually I had fifty-four pupæ. Towards the end of the month, finding no emergence, I carefully examined the pupæ, and was very surprised in view of the size of the larvæ when taken and disgusted to find that the cage was alive with very small "Ichneumons" which were still emerging from holes in the sides of the pupæ, with the result that not a single butterfly emerged and four only of the pupæ had not been holed. During the autumn I took one specimen of this butterfly only, and that was in my garden here. During the season (1919) I had more larvæ and pupæ in my breeding-cages than usual and the percentage of "ichneumonated" larvæ and pupæ has been very much higher. Out of twenty-one larvæ of *Abraxas grossulariata* only three had escaped parasitic attention. I should be interested to hear if other collectors have noticed an increase of parasites this season, and if so this may to a certain extent account for the scarcity of such a usually common butterfly as *A. urtica*.—A. M. LONGHURST; "Artro," St. James's Avenue, Hampton Hill, Middlesex.

COLIAS EDUSA IN BRITAIN, 1919.—As *Colias edusa* has been reported from only a few localities in 1919, and none between Leicester and Aberdeen, the following observations by reliable friends may be worth recording. (1) *Westmorland*.—One *C. edusa* seen about three miles south of Kenday, on September 6th, by Mr. Arthur Thoms. (2) *Isle-of-Man*.—One *C. edusa* seen on Bradda Head, September 15th, by Mr. John Booth. In both cases a near and clear view of the insect was obtained. Mr. Mansbridge informs me that he has heard of no record for Lancashire or Cheshire this year, but I may mention a capture at Hest Bank, near Lancaster, by Mr. Mawson. Evidently there has been a greater number of *C. edusa* this year in Britain than records up to the present indicate.—J. D. WARD; Limehurst, Grange-over-Sands.

SOME NOTES ON THE SEASON 1919.—The last season has in my experience been on the whole unsatisfactory. Some species, especially among butterflies, appeared in abundance, while others seemed to be entirely absent. In the spring I was struck by the great profusion of *Pieris napi*, while the allied species *P. rapæ* was scarcely seen. I wondered whether that would be repeated in the summer brood. Here, however, I found that while the first small "Whites" to appear were *P. napi*, their place was soon taken by *P. rapæ*, and after that I did not see another specimen of the former species. *Celastrina argiolus*, which usually occurs plentifully in my own garden, was very scarce in the spring, while only an occasional specimen was seen of the second brood. In July in the New Forest all butterflies were exceedingly abundant. I don't think I have ever seen more *Dryas paphia*, *Argynnis cydippe* or *Limenitis sibylla*. The var. *valezina* of *D. paphia* occurred freely. I saw two very fine varieties of the ordinary form, one a magnificent suffused specimen, just taken by other collectors, while a large number of black forms of *L. sibylla* were also taken. All the other July species of butterflies were equally abundant. A little later in the month I was in Lincolnshire, where the only butterfly that occurred in any numbers was *Aphantopus hyperanthus*. In a particular wood I worked there was a great tendency towards reduction in the size of the wing-spots. I took no less than six specimens of var. *arete*. In the New Forest, though I examined large numbers, there was no tendency to variation. I found that earlier in the season *Cyclopides palemon* had occurred in profusion. So far as my experience went the autumn butterflies failed to put in an appearance. Though at the beginning of August in Lincolnshire *Aglais urticae* appeared fairly freely, I did not see a single specimen after my return home, thereby bearing out the experience of Mr. Rowland-Brown, as recorded in the December 'Entomologist.' It was the same with *Pyrameis atalanta* and *Vanessa io*. In this locality they were entirely absent. Another common butterfly which I did not come across till October was *Chrysophanus phleas*, though I had been specially on the look-out for it. I wonder whether my experience of the scarcity of some of our common butterflies has been that of others. With regard to night work the results were most disappointing. While most day-flying moths were in their usual numbers, sugar absolutely failed to attract Noctuae. On the downs here a few common species were taken early in the summer, but in the New Forest night after night in July did not produce a single moth, nor were Noctuae found by any other means. A little later, in Lincolnshire, things improved slightly, but some nights there was scarcely a moth to be seen. The best things in a fortnight's sugaring were one *Apamea connexa* and two *Cosmia paleacea*. I had another turn at sugar in September, in the New Forest, when I hoped the tide of failure would have turned. But no! the situation was the same—only one *Amphipyra pyramidea* and one *Catocala sponsa*. September 16th was surely a very late date for this species. Considering the date it was in very fair condition. The only really good night I had at sugar, so far as numbers are concerned, was on the downs here at the end of August, but only common species were represented. But it was not only sugar that was so remunerative;

dusking paid very little better. Night after night I spent in the New Forest waiting in vain for something to turn up. It was very much the same here. It was not till I got to Lincolnshire, in the latter part of July, that things began to appear on the wing at dusk, but then not in any abundance, with the exception of *Acidalia bisetata*, which really swarmed. I had never previously seen this species in anything approaching the numbers which occurred. *Porthesia similis* also flew freely. I only went out once in the late autumn to look at the ivy, but though it appeared an ideal night not a single moth could be seen. Altogether the past season has been in the main distinctly disappointing.—J. E. TARBAT (Rev.); Fareham, Hants.

ADDITIONAL NOTES ON THE RHOPALOCERA OF THE PAS-DE-CALAIS AND THE SOMME.—As Mr. N. C. E. Miller surmised in his article in the July 'Entomologist,' his observations were of great interest to at least one other collector, whose duties for certain periods were in the same localities. Where his notes agree with mine I have not thought it worth while to record mine. With these exceptions the following is a list of my observations for 1917 and up to May, 1918: *Papilio machaon*: The first brood worn in June, the second brood common in August, 1917, at Albert. Some of the ♂s were very dark. *Colias hyale*: Very common, both yellow and white forms. *Colias edusa*: From July 3rd to September 24th, 1917, at Albert, never common. *Polygonia c-album*: One hibernated specimen, Avesnes-le-Comte, May 9th, 1917. *Eugonia polychloros*: St. Pol, 1917; Abbeville, 1918. *Euvanessa antiopa*: One specimen, Albert, August 14th, 1917. *Araschnia levana*: Locally common, Flixecourt, 1918; ab. *prorsa*, Albert, 1917. *Argynnis lathonia*: One example, Albert, August 10th, 1917. *Brenthis euphrosyne*: Flixecourt, 1918. *Melitæa cinxia*: Locally common, Flixecourt, 1918; *M. aurinia*: Locally common, Flixecourt, 1918. *Aphantopus hyperanthus*: Albert, 1917. *Zephyrus betulæ*: One freshly emerged ♀ in a garden in Albert, July 31st, 1917. *Zephyrus quercus*: One larva, Avesnes-le-Comte, May, 1917, emerged June, 1917. *Cyaniris argiolus*: St. Pol, 1917; Abbeville, 1918. *Thanaos tages*: Avesnes-le-Comte, 1917; Abbeville, 1918. *Adopæa thaumas*: Albert, 1917. To recapitulate Mr. Miller noted the following six species which I did not see; *A. iris*, *L. sibylla*, *D. paphia*, *A. aglaia*, *C. arcania* and *C. rubi*. My list adds the following ten species: *C. edusa*, *E. antiopa*, *A. lathonia*, *E. euphrosyne*, *M. aurinia*, *Z. betulæ* and *quercus*, *C. argiolus*, *T. tages* and *A. thaumas*. *P. napi* were all over the Somme area in 1917 in countless myriads, rising in clouds from mud-patches. *C. hyale* and *P. cardui* were abundant, and there appeared to be a succession of emergences. On June 28th, 1917, I saw a small dark fritillary like *Argynnis dia* near Albert, but I could not identify it. I searched in vain for *L. sinapis*, *A. selene*, *C. rubi*, *L. corydon* and *bellargus* in what appeared to be suitable localities near Avesnes-le-Comte and Albert.—F. W. J. JACKSON; Woodcote End House, Epsom.

CORRECTION.—On p. 1, line 26, for "Mr. E. W. Lipton" read "Mr. E. W. Lifton."

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—October 9th, 1919.—Mr. Stanley Edwards, F.L.S., President, in the Chair.—Mr. J. R. Leeson, M.D., J.P., F.L.S., of Twickenham, was elected a member.—Mr. Curwen exhibited Zygænidæ from South Italy, *Z. rubicundus*, *Z. erythrus*, *Z. stæchadis* and ab. *dubia*, and *Z. oxytropis*; aberrations of *Z. jilipendulæ* from Deal; and *Z. trifolii* ab. *minoides* from Swinley Woods.—Mr. Moore, *Monohamus titilata* (Col.) from Rotherhithe.—Mr. Barnett, series of the two broods of female *Polyommatus icarus*, Surrey.—Mr. Hy. J. Turner, *Dione vanillæ* var. *maculosa*, *Calthodes ethlius* and *Basilona imperialis*, all from Cordoba, Argentina.

October 23rd, 1919.—The President in the Chair.—Exhibition of and discussion on the "Variation in *Aglais urticae*." The President introduced the subject by referring to the establishment of the genus *Aglais* by Dolman in 1816. Mr. Hy. J. Turner read a series of notes dealing with (1) the features available for variation, (2) the lines of actual variation, (3) the various named forms which fall into these groups, (4) less frequently occurring forms, (5) extremely rare aberrations, (6) a reference list of the named forms, and (7) short diagnoses of these forms.—Mr. Sperring read a series of notes dealing with (1) racial series from S.E. London, Essex, Cambridge, Lincoln, Tyrone, Inverness, Kincardine, Paisley and Arran, (2) aberrational and racial variation, (3) characteristics of various named forms which he exhibited, and (4) colour aberration caused by applied chemical action. Messrs. A. W. Mera, B. S. Curwen, A. E. Tonge, C. H. Williams, T. L. Barnett, C. Nicholson, R. Adkin, H. B. Williams, W. J. Kaye, J. Riches and E. J. Bunnet took part in the discussion and exhibited series or special forms.—Mr. Curwen exhibited *Sirex gigas* from Twickenham.—Mr. B. S. Williams, a series of *Charceas graminis* with variable ground-colour and a specimen with coalesced marking.—Mr. Tonge, a series of *Oporabia autumnaria* from Preston and Langridge Fell, including a strongly melanic form.—Mr. Frohawk, a small living larva of *Nonagria typhæ*, already fourteen months old; a series of *Limenitis sibylla*, showing gradation from type form to ab. *nigrina*; *Dryas paphia* with somewhat radiated hind wings and others showing coalescence and suffusion of spots; and *Argynnis cydippe*, a series showing gradation in extension of the spotting, and one with only three spots in the row on the hind wing.—Hy. J. TURNER, *Hon. Editor of Proceedings*.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—October 20th, 1919 (at the Royal Institution, Colquitt Street, Liverpool).—Mr. R. Wilding, President, in the Chair.—Exhibits were numerous and varied as is usual at the opening meeting of the session.—Mr. R. Wilding had a large number of Lepidoptera from Cartmel, including a long series of *Argynnis aglaia* and *Brenthis selene*; among the latter was a very fine underside variety. He also showed *Plusia festucae* from the same locality.—Mr. W. A. Tyerman exhibited, on behalf of Mr. H. M. Hallett of Penarth, a varied series of *Bryophila muralis*

from Cardiff, also *Polia flavicincta*, and contributed notes.—Mr. S. P. Doudney showed a series of *Erebia æthiops* with a xanthic aberration, *Argynnis cydippe*, very strongly marked underside, *Zephyrus quercus* and *Anaitis plagiata* from Arnside; *Plebeius ægon*, var. *masseyi*, *Hydrelia unca*, *Carsia paludata* from Holker; *Epinephile jurina*, xanthic aberration, *Agriades corydon*, *Bryophila muralis* and *Gnophos obscurata* from Folkestone.—Mr. R. Tait brought *Celastrina argiolus* from Penmaenmawr and reported the presence of larvæ of *Plusia moneta* in the same locality; *Thecla pruni* and *Aplecta advena* from Monks Wood; he remarked on the great scarcity of Lepidoptera in South Devon and at Wicken in July.—Mr. J. W. Griffin: *Tephrosia biundularia*, *Ellopiæ prosapiaria*, *Eupithecia coronata*, *Aplecta nebulosa* and *Brephos parthenias* from Delamere; *Notodonta camelina*, *N. dromedarius*, *N. ziczac*, *Hylophila prasinana* and *Euclidia mi* from Simonswood; *Trochilium crabroniformis* and *Agrotis nigricans* from Wallasey.—Mr. S. Gordon Smith exhibited a large number of Lepidoptera, including the type-specimens of *Crocallis elinguaris* var. *signatipennis*, Newst. & Smith, *Nyssia zonaria* var. *ochracea*, N. & S., *Amphidasys strataria* var. *ochrearia*, N. & S., and *Tephrosia biundularia* var. *venosa*, N. & S. From Chester, chiefly taken at light, *Cænobia rufa*, *Cirrhædia xerampelina* and *Çalamia lutosæ*; from Delamere, *Nonagria geminipuncta*, captured by Prof. Newstead and new to the Lancashire and Cheshire List. A series of *Callimorpha dominula* from Aberhosan, N. Wales. From Prestatyn a series of *Cosmotriche potatoria*, including two dark females and one male with three of the wings dark, the other, right fore wing, being yellow.—Mr. W. Mansbridge brought a long series of *Sarrothrips revayana* from the New Forest, which included vars. *variegata*, *adusta*, *afzeliana*, *fasciata*, *fusculina*, *melanosticta*, *ramosana*, and *stoninus*; *Plebeius ægon* var. *masseyi* from Holker and Witherslack, *Hydrelia unca* from Holker, *Cidaria truncata* and *Zonosoma pendularia* var. *subroseata* from N. Staffs. A fine radiate aberration of *Chrysophanus phlæas* from Ainsdale.—Mr. Prince had a very fine lot of *Agriades corydon*, including vars. *semisyngrapha*, *striata* and other forms.—WM. MANSBRIDGE, *Hon. Sec.*


RECENT LITERATURE.

A Compendium of Named Varieties of Abraxas grossulariata.

THIS most useful pamphlet, by the Rev. G. H. Raynor, M.A., contains a great deal of compressed knowledge, the result of twenty years' study by this well-known specialist. The fifty-five named forms are arranged in three groups under the headings of GROSSULARIATA, LACTICOLOR and VARLEYATA, and comprise respectively twenty-eight, twelve, and fifteen named aberrations. The work is exceedingly well done, and should prove of value to all who are interested in this protean species.

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RICHARD SOUTH, 4, MAPESBURY COURT, SHOOT-UP HILL, BRONDES-BURY, N.W. 2.

MEETINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON, 11, CHARLES STREET, CAVENDISH SQUARE, W. 1. *February 4th.*

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibemia Chambers, London Bridge, S.E. 1. *Ordinary Meetings, Thursday, February 12th, at 7 p.m., Discussion, "The Genus Hybernia"; Thursday, February 26th, at 7 p.m., "Lancashire Evening." Hon. Sec., STANLEY EDWARDS, F.T.S., 15, St. Germain's Place, Blackheath, S.E. 3.*

LONDON NATURAL HISTORY SOCIETY (Hall 20, Salisbury House, Finsbury Circus, E.C. 2). The first and third *Tuesday* in the month, at 7 p.m. *J. Ross, 18, Queen's Grove, Chingford, N.E., Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY. Meetings at the Royal Institution, Colquitt Street, Liverpool, the 3rd *Monday* in each month, *October* to *April.*—*Hon. Sec., Wm. Mansbridge, "Dunraven," Church Road, Wavertree, Liverpool.*

CONTENTS.

The Life-cycle of *Lobesia pernix*ana, Hub., W. G. Sheldon, *F.Z.S., F.E.S.*, 25.
Aberrant Forms of *Aictia caia*, Leonard Tatchell, *F.E.S.*, 28. A Few Notes
on Crimean Lepidoptera, V. V. Nabokoff, 29. Entomological Season of 1919
in South Hants and South Devon, A. E. Burras, *B.A.*, 33. A Few Notes from
Norfolk and Elsewhere, G. H. Gurney, *F.Z.S., F.E.S.*, 37. Butterflies in
Macedonia, Herbert Mace, 40.

NOTES AND OBSERVATIONS.—*Crocalis elinguaria* f. *signatipennis*, Wm. Mansbridge,
45. Variation in the *Pisida*, Thomas Greer, 43. Abnormal Specimens of
Abraxas grossularata, Arthur Soperth, 43. *Bombus* and *Vespa* Species in
the Ramoth District, W. G. Sheldon, 43. "Sent." Macrolepidoptera of the
World, Vol. IV: "Palearctic Geometridae," 44. Scarcity of *Aglais urticae*,
A. M. Bonghurst, 44. *Cochlias edusa* in Britain, 1919, J. D. Ward, 44. Some
Notes on the Season 1919, J. E. Tarbat (*Rev.*), 45. Additional Notes on the
Rhopalocera of the Pas-de-Calais and the Somme, F. W. J. Jackson, 46.

SOCIETIES. The South London Entomological and Natural History Society, 47.
Lancashire and Cheshire Entomological Society, 47.

RECENT LITERATURE.—A Compendium of Named Varieties of *Abraxas grossu-*
larata, 48.

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MARCH, 1920.

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THE LIFE-CYCLE OF *CACÆCIA UNIFASCIANA*, DUPONCHEL.

By W. G. SHELDON, F.Z.S., F.E.S.

SOMETHING is already known of the life-story of this common and widely distributed Tortrix, but what is known does not amount to much, and the supposed facts are not by any means all correct.

Barrett in 'Lepidoptera of the British Isles,' vol. x, p. 181, summarises what was known in 1905—the date on which the volume was published—thus:

"Larva apparently undescribed. It is stated—I think by every author who has written on the subject—to feed in the spring upon privet (*Ligustrum vulgare*), but no details seem to have been given, and I have searched closely on privet, where the moth occurs plentifully, without result. Yet I am assured that it feeds in the young shoots and spins up between the leaves.

"Pupa glossy blackish-brown; wing covers showing the lines of the nervures; segments smooth but swollen into smooth ridges or rounded hoops; cremaster rather long, beak-like, hooked behind. Between the leaves when the larva has fed; its cocoon made with very little silk."

One wonders at first glance where Barrett could have obtained such a detailed description of a pupa the larva of which he says was apparently undescribed; I cannot find any authority for it, and in its absence I can only suspect that he found a Tortrix pupa upon privet, and assumed—I do not know on what evidence—that it referred to the species I am discussing.

It does not agree with the actual pupa of *C. unifasciana*, and presumably therefore must refer to some other species.

Spuler, in the third edition of Hoffmann's 'Schmetterlinge Europas' in 1908, ii, p. 248, writes: "The larva is reddish-grey with black raised spots, the head yellowish, the prothoracic plate dark brown, divided by a thin longitudinal line; the anal plate is light brown; it lives in April and May on *Ligustrum*, partly on withered leaves."

So far as it goes this description appears to be correct, but both Barrett and Spuler entirely overlook—or ignore—the fact

that this species, in common with so many of the Tortrices, goes through the greater portion of its larval existence in the autumn.

A suburban garden does not at first sight seem a promising scene of action in which to work out the life-history of a species of which so little is known as is the case of *C. unifasciana*, but I have known for some years that mine contained a fairly numerous colony of this moth, and was therefore a favourable ground for the purpose. This colony seemed centred amongst the fruit trees of the kitchen garden, adjacent to which, however, were a number of forest trees, and not having looked up what was known of the larval habits, I at first assumed that the chosen pabulum was the leaves of one or another of my fruit trees, and females were netted and confined each year over sprays of all those growing near when the individuals of the colony flew, with an entirely negative result so far as the obtaining of ova was concerned. In the year 1918, however, I found the moths flying at dusk abundantly over a short privet hedge in one corner of the kitchen garden, and this year the females obtained were confined over sprays of this shrub.

The result was that ova were deposited freely, and the resultant larvæ were reared without difficulty on its leaves.

In my first attempts to obtain ova I confined the females over apple, pear, plum, hornbeam, elm, oak, birch and *Clematis vitalba*. The successful attempt included, as well as privet, golden rod and loganberry, both of which grew near by. This was on July 28th, 1918. On August 1st, on examining the plants, I found six clusters of ova, all deposited upon privet leaves; these clusters each contained from six to twelve ova. They were all fixed to the upper side of the leaves on the midrib; each ovum in a cluster overlapped the others, or was overlapped, as is usual in this group.

The ovum is a very beautiful object; it is silver-grey in colour, not opalescent, but slightly glabrous. The surface consists of a large number of figures divided by fine raised margins, as is usual amongst the Tortricidæ, but the hind margins are bolder and the figures are more uniform in size and shape than any other Tortrix ovum with which I am acquainted. It is circular in outline, about $\cdot 83$ mm. in diameter, and is evidently very fluid when deposited, for there is a platform of the envelopes around the clusters. This platform is about $\cdot 17$ mm. in width. The ova themselves stand well up above the leaf to which they are affixed—about $\cdot 2$ mm. above it.

On August 4th the ova had a distinct nucleus, ochreous yellow in colour, circular in outline, and for size about half the extreme diameter of the ovum. Six days later the whole ovum was reddish-brown in colour.

On August 12th the larvæ—or most of them—emerged. They were $1\cdot 65$ mm. in length. The head and prothoracic plate was

light brown, very transparent and glabrous, sprinkled with dark brown dots; behind the prothorax the larva was in colour dull brownish-green, very transparent, the alimentary canal and contents of intestines showing plainly, especially in the mesothorax and metathorax. Within the twelfth segment a nodule of frass was noticeable as a dark olive-green patch.

In the first instar the larva fed between two privet leaves, making small round holes in the lower cuticle of the upper and the upper cuticle of the lower leaf, spinning a slight web and living therein. When ejected it was exceedingly active, crawling at a great rate over and off the leaf; so active in fact was it that it was impossible to keep it in the field of the microscope whilst the description was made, and I had to confine it in a glass cell during that process.

On August 25th the larva was in the second instar; the head was very pale brown, transparent and glabrous; there was a black spot on each side of the mouth. The prothorax was dark brown; the segments behind the prothorax were light brownish-green. The length then was 3.33 mm. It was still exceedingly active; it fed only on the lower cuticle of the leaf alongside the midrib, dwelling within a web; there was no attempt to roll or spin together the leaf.

On September 5th the larva had attained the third instar; it was then 4 mm. long, the head was very transparent and glabrous, very pale brown, darker round the mouth, and there was a dark spot on each side of it. The prothoracic plate was on the dorsum, of the same colour as the head, but at the sides dark brown, almost black, equally glabrous as the head. Behind the prothorax the segments were dull pale brownish-green, very transparent, the alimentary canal being visible. Within the anal segment a pellet of excrement showing plainly as a dark blotch. The tubercles were black and rather prominent.

By September 21st the larva had spun together a portion of a *dried* privet leaf and prepared for hibernation inside it. On October 6th my stock of larvæ were put out on growing privet enclosed in a muslin sleeve. On this day I found wild larvæ hibernating on privet in a web spun on a withered leaf which was still adhering to the stem on which it grew.

On April 5th, 1919, I took the larvæ out of the sleeve and started them feeding upon privet leaves in a cold room. On this day I searched for wild larvæ on the privet bushes but could not find any. Five days later my larvæ had commenced to feed upon young leaves, apparently only at night, sheltering during the day amongst the dead leaves amongst which they had hibernated. They had greatly increased in size, were about 10 mm. long and apparently almost full grown. The head was transparent and highly glabrous, light brown in colour; the prothorax was in front the same colour as the head, but with a darker collar at the rear;

it also was glabrous. The segments at the rear of the prothorax were dull brown in colour, still very transparent, the alimentary canal showing prominently; the spiracular area and ventral surface was much paler brown. The tubercles were not very prominent.

On May 15th the larva under observation had changed to a pupa. It had fed very slowly, without any change of instar, since hibernation, remaining in spun-together dead portions of a privet leaf during the day and feeding at night; it was when full grown 12 mm. long.

Pupa 8 mm. long, of average stoutness, when first changed light reddish-brown in colour, darker at the junction of the abdominal segments; the wing-cases were rather lighter in tint than the thorax and abdomen; the abdominal segments taper gradually to the anal segment when viewed dorsally; the anal segment has a square termination with a slight rounded protuberance in the centre; it is armed with a number (ten or twelve) of slender hooks. Each abdominal segment has a transverse row of rather prominent spikelets which point rearwards; on both sides of each abdominal segment is a curved spine, about 2 mm. long, which points to the rear, and which is emitted from a bulb immediately in front of the row of spikelets. The segmental divisions are clearly defined and the surface is roughened. The head is blunt in front and is without a cremaster, but has a slight bulb in the centre. The whole surface of the pupa is rather glabrous, but has a roughened surface.

Amongst my larvæ there was no evidence of a desire to wander at pupation, and they spun silken cocoons within withered portions of the privet leaves. The imagines commenced to emerge on May 18th; reared out of doors they would no doubt have been several weeks longer in undergoing these transformations.

Youlgreave, South Croydon;
January 17th, 1920.

COSYMBIA PENDULARIA AB. *DECORARIA*, NEWM.

BY LOUIS B. PROUT, F.E.S.

As readers of Seitz's 'Macrolepidoptera of the World' may have noticed, I have (iv, p. 142) resuscitated the above long-neglected name of Newman's for the now well-known dark forms of *C. pendularia*, Cl., and discussed, so far as space allowed, the history of the names assigned to these and the parallel dark form of *C. orbicularia*, Hb. But my notes in that work may not have reached the eyes of all British lepidopterists who would be interested in them, and there are moreover, other reasons for following up the matter a little further.

In the first place, the re-discovery of a dark form in the south of England, and its differentiation from the similar Staffordshire form which is generally called ab. *subroseata*, Woodforde, has reopened the question whether we require two varietal names for these or not. Then, as Mr. Joicey has just recently purchased Newman's type out of the Sydney Webb Collection (Stevens' Sale Catalogue, December 9th, 1919, lot ?), I have had my interest reawakened in the details, have been able to put the historic specimen side-by-side with beautiful Surrey examples bred by Mr. R. T. Bowman, and am therefore anxious to give to a wider public what I have already, some months ago, communicated to two or three correspondents in the nature of a "correction"—if so it may be considered—of my earlier work in "Seitz."

Newman in 1861 ('Zoologist,' xix, p. 7798) erected *Ephyra* (?) *decoraria* as a distinct species—"a Geometer probably hitherto uncharacterised," to quote exactly his heading. He describes it as of "about the size of *Ephyra porata*. Fore wings with the costal and hind margins bluish lead-colour; disc of the wing tinged with delicate red, inclining to rosy; two very distinct pale grey transverse waved lines. . . . Exactly intermediate between the two lines is a conspicuous white spot transversely elongate" (etc.; the rest of the description is immaterial for our purpose). The type was lent by Mr. Shroobree, who was said to have bred it in June, from a larva which he found in May, "feeding on the bedeguar of a wild rose." A few pages later (*tom. cit.*, p. 7807), Miller suggests, though with a query, that the specimen is an "*Ephyra pendularia*, var." After a further reference by Newman in vol. xx, of the same publication, p. 7874, the specimen apparently passes out of sight until the year 1876, when Mr. Bond, having acquired it, gives a note on its history accompanied by a good woodcut ('Entomologist,' ix, p. 217). He says he "understood at the time"—(when the specimen was first exhibited before the Entomological Society)—"that the larva was never actually seen feeding on the bedeguar," and surmises that it had fallen from a birch tree. Neither he nor Barrett (who gives, in 'The Lepidoptera of the British Islands,' vii, p. 325, pl. 328, fig. 2*d*, a brief notice and a rather crude figure of the specimen) mentions Newman's name, and as its author himself had neglected to affix any type-label, it is not altogether surprising that it has been long overlooked. The locality, published as "near London," was, according to the label on the type, Birch Wood.

Newman's type, as description and figures show, is the smooth, uniformly darkened form which has recently been named ab. *nigro-roseata*, H. W. Wood ('Entom.,' xlix, p. 80), and which, indeed, is the only melanic form as yet known from the southern counties (Surrey and Kent). It is rather small, which may be because it was a precocious second-brood example, or because it had pupated

somewhat prematurely through having lost its food-plant, but is otherwise perfect, though not unnaturally looking a trifle faded when placed beside freshly-bred Surrey specimens. I believe individual examples of the North Staffordshire form *subroseata* virtually match this form, and that the synonymy which I gave in Seitz (*decoraria*, Newm. = *subroseata*, Woodforde = *ianthinarium*, Stichel) was by no means wide of the mark; but as by far the greater number are paler, more irrorated or more mottled and the distinction appears geographical, I propose the following synonymy for those who desire absolute precision:

(1) ab. *decoraria*, Newm., 'Zool.' xix, p. 7798 (1861) = *nigro-roseata*, H. W. Wood, 'Entom.', xlix, p. 80 (1916). Kent, Surrey.

(2) ab. *subroseata*, Woodforde, 'Entom.', xxxv, p. 276 (1902) = *decoraria*, Prout in Seitz, 'Macrolep.', iv, p. 142, pl. 5 c (1913) (*nec* Newm.). North Staffordshire.

(3) ab. *ianthinarium*, Stichel, 'Berl. Ent. Zeit.', 1901, S.B., p. 20 (veins in distal area streaked with white). Arneburg.

LEPIDOPTERA IN NORTH STAFFORDSHIRE IN 1919.

BY F. C. WOODFORDE, B.A.

On April 24th I went to North Staffordshire, proposing to myself a three months' stay in pursuit of entomology in that part of the world.

For the first few days very few insects were to be seen, but during the first and second weeks of May *Lobophora carpinata* was to be found sitting on tree-trunks fairly commonly, and among them were some nice banded examples. Searching for larvæ at night was very unprofitable, larvæ of *T. fimbria*, *N. baia*, *N. brunnea*, *A. tincte* and *B. repandata*, common in most years, being all extremely scarce.

In the middle of the month *Callophrys rubi* was flying in abundance, *Celastrina argiolus* was not uncommon, and *Brenthis euphrosyne* was to be seen, as also an occasional *Gonepteryx rhamni*; a fair number of *Lobophora viretata* sat on holly-trunks, and a semi-melanic form of *Tephrosia biundularia* was common. About this time *Nola confusalis* appeared and was to be seen on tree-trunks, but not nearly so commonly as in the previous year. *M. hastata*, too, began to appear and was much more common than usual, but *Macaria notata* and *B. fontis*, both usually abundant, were scarce, and larvæ of *Chloroclystis debiliata* were hardly to be found at all.

Males of *Macrothylacia rubi* and *Saturnia carpini* assembled freely to bred females, but all were typical.

On the 26th I picked up on a tuft of heather near a poplar tree a freshly emerged female of *Dicranura vinula*. I put her

in an assembling box in the garden and sat up that night till 2 a.m. (summer time), but nothing came. I therefore left her and went in. Next morning, to my surprise, I found three males sitting on the box, so I sat up again, and found the males began to assemble at about 2.15, and they kept on coming to the number of twenty-nine till 3.30, when the flight appeared to cease.

On the 29th I was joined by Mr. Peed and Mr. P. C. Reid. One day we were lucky enough to get a freshly emerged female, *Cerura bicuspis*, and we went out together that evening to try to assemble males, with the special object of getting a pairing. Some males came, but though free access to the female was given they absolutely refused to pair; they buzzed all around, alighted and crawled round the female, and then one after another flew off. This continued for two or three nights and we began to get hopeless. The evening of June 9th was cold and I did not go out, but left the now long-emerged female in a pairing-trap in the garden, with a female each of *Notodonta trepida*, *N. dromedarius* and *Pachys betularia*. To my great surprise next morning when I inspected the trap I found all four females paired. All the females in due course deposited ova, but unfortunately the *bicuspis* ova proved unfertile.

During the day searching tree-trunks was not very productive. *Acronycta leporina* was very scarce, only one or two being seen, and *E. pendularia* ab. *subroseata* equally so. (By the by, Mr. Prout now tells me that ab. *decoraria* of E. Newman is a different form, and that the name *subroseata* may be retained for the North Staffordshire form.) *Tephrosia extensaria*, however, was not uncommon. A good many *E. plumbeolata* were taken by stirring them up from patches of *Melampyrum*, and on sunny days some *Sesia culiciformis* and *S. sphegiformis* were taken flying and a few *Hemaris bombyliiformis* were seen, but not caught. Some *Diacrisia sanio* (*russula*), both male and female, were taken at an unusually early date, and *Brenthis selene* was abundant all through the month.

During the month we tried sugar, but with not very much success, insects visiting it only in small numbers, but amongst those taken were three *Acronycta alni*. Larvæ of this species had been unusually numerous in the previous August, but a large proportion were victims of parasites. My chief business was with Macro-lepidoptera, but when I saw insects of other groups that I thought might be of use to the Oxford University Museum I took them.

Among these were the very handsome dragonfly, *Libellula quadrimaculata*, L., whose habits are similar to those of *L. depressa*, which it very much resembles, save that it is infinitely shyer, and both Mr. Peed and myself found it impossible to catch by stalking, and only one was netted by chance as it passed close by in a high wind. Another was a "daddy,"

Xiphura atrata, L., of which two or three of each sex were taken, but it was far from common. *Trichiosoma*, sp. ?, was very common flying over birches, and *Cimbex*, sp. ?, was not common. Single specimens of two not very common beetles, *Cosymbotis pectinicornis* and *Melandrya caraboides*, also were taken. I had some cocoons of *L. callunæ* from larvæ got in the previous autumn, and from them emerged two specimens of the huge ichneumon, *Ophion undulatus*, a male and a female. In 1918 I obtained six in the same manner. I never saw it wild.

Towards the end of the month the weather became very cold, and this was accompanied by an almost entire disappearance of insects, and for more than a month hardly a moth was to be seen in the woods, sitting on tree-trunks or flying, nor did the beating-stick rouse any, and none were to be seen flying at dusk or coming to a light at night. And yet, though thus keeping themselves invisible, there were insects about, as shown by the pairing-trap. When females emerged in my breeding-cage, which was kept in a warm room, I put them out in the garden at night in the trap. In this way I got pairings of *S. populi*, *N. dromedarius* and *N. camelina* between June 30th and July 15th, —not always on the first night of exposure, but often after two or three days.

On July 23rd I gladly left the district for South Devon, where I should have gone much sooner but for the impossibility of getting rooms at an earlier date in the place in which I wished to stay. There I came into summer again, which, I was told, had been unbroken by any cold spell such as had troubled the Midlands.

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CONTRIBUTIONS TO OUR KNOWLEDGE OF THE BRITISH BRACONIDÆ.

No. 5.—SIGALPHIDÆ.

By G. T. LYLE, F.E.S.

(Continued from Vol. LII, p. 181.)

THIS is a group of small obscure insects constituting, in Ashmead's classification, a separate sub-family, and placed next to his sub-family *Cheloninæ*, immediately after the tribe *Calyptini* —a division of his sub-family *Blacini*. Other authors have been inclined to link the group more closely with the *Chelonidæ*, but to me this seems somewhat arbitrary, for though both have the abdomen connate above and forming a carapace, in the *Chelonidæ* the character is the much more pronounced. In other characters

the two differ widely; indeed, the *Sigalphidæ* in some respects more nearly approach the *Calyptidæ*.

These insects have two cubital cells on the fore wings, radial cell ovate, not reaching the apex of the wing and rather larger than the stigma; abdomen sessile, subovate, usually with the sutures fairly well marked, and terebra exerted, in some cases equalling the body in length. Our British species may be divided into two genera as follows:

Five abdominal segments visible from above, second longer than third, and cell divided by an indistinct transverse nervure..... *Allodorus*.

Three segments only visible from above, second shorter than third, anal cell undivided..... *Sigalphus*.

Allodorus, Forster.*

Although separated from *Sigalphus* by Forster, the genus was first described by Marshall† from a single male, presumably of *A. lepidus*.

Forster made a type of the Neesian species *semirugosus*, which insect Marshall doubtfully recorded in his catalogue, though afterwards he considered it "too dubious to be retained as a British insect." Writing in 1888,‡ however, he tells us he has discovered several previously misnamed specimens in his own collection, some taken in Mar Forest by himself and others by G. C. Champion in the Highlands.

Our only other British species is *A. (Triaspis) lepidus*, Hal,§ which seems to be rare.

I am unacquainted with both, and nothing whatever appears to be known of their life-histories; it is probable, however, that they have habits similar to those of the members of the next genus.

Sigalphus, Lat.||

Contains the great majority of our species, several of which are known to be parasites of the larvæ of *Coleoptera* (*Curculionidæ*), and it is quite probable that all have the same habit. I am aware that the breeding of one species from a leaf rolled by a larva of the lepidopteron, *Halias quercana*, has been recorded, but in this case it is probable that the leaf had also been tenanted by a larva of an *Orchestes*, and the same may apply to Van Vollenhoven's record of the rearing of *S. caudatus* from *Tortrix hypericana*. One cannot so easily dispose of Curtis's observation

* 'Verh. pr. Rhein.,' 1862, p. 242.

† 'Trans. Entom. Soc.,' 1885, p. 103.

‡ *Ibid.*, 1889, p. 160.

§ 'Ent. Mag.,' iii, p. 125.

|| 'H. N.,' iii, p. 327.

of the destructive dipteron *Oscinus vestata* as a host of *S. caudatus*, though it will be noticed he does not actually say that the parasites emerged from the larvæ or puparia of the Frit Fly, but merely from stems of barley containing larvæ. There seems, therefore, a possibility that the sigalphid preyed upon some coleopteron infesting barley, which hypothesis is perhaps strengthened by the fact that recently large numbers of the Frit Fly have been reared at various schools of agriculture, but so far as I can learn no examples of *S. caudatus* have been obtained from them, although other parasites, notably *Chasmodon apterus* and a cynipid (species ?), have appeared in numbers.

Eight species only are known from Britain, but no doubt others will be discovered. *S. thoracicus*, Curt., an insect with the thorax red and all the legs ochreous, has been added to our fauna on the strength of a single female (the type) bred by Curtis from Sicilian beans. As the species is said to be common near Palermo and its solitary occurrence here was probably accidental, it is doubtful if the name should be retained on the British list.

Of three of our species, *ambiguus*, Nees, *luteipes*, Thom., and *striolatus*, Nees, I know nothing. On the continent *luteipes* has been reared from *Ochina hederæ* and *Anobium rufipes*, while *striolatus* is recorded from *Pissodes notata*.

Pallidipes, Nees.*

This is the *Triaspis fulvipes* of Haliday,† a small stout species with testaceous legs, the terebra as long as thorax and abdomen combined, and the antennæ with 22–23 joints. Marshall, Bignell and Morley appear to have had no personal knowledge of the insect, which seems somewhat strange, as I have found it to be far from uncommon. In the New Forest it is a very frequent parasite of the larvæ of *Orchestes fagi*, the imagines emerging in June from their brown cocoons, which are formed within the blisters made in beech leaves by the hosts. These cocoons much resemble the puparia of certain *Tachinidæ* minus the spiracles—a fact which Marshall mentioned, noticeably those of *Actia reducta*, Villen, which are often found within leaves rolled by larvæ of Tortrices. I have also reared it from the same host taken in the beech plantations on the Gog Magog Hills, Cambridge, as well as from the larvæ of an *Orchestes* on elms at Coton, Cambs. *Orchestes quercus* is another host from which I have several New Forest records.

A hyperparasite, a species of *Habrocytus*, is frequently reared from cocoons of *S. pallidipes* taken in the New Forest; this must not be confused with another insect, *Tetrastichus ecus*, Wlk.,

* 'Mon.', i, p. 270.

† 'Ent. Mag.', iii, p. 127.

which is a common primary parasite of *Orchestes fagi*. I am greatly indebted to the Rev. James Waterston, of the British Museum, for naming these two Chalcids.

Caledonicus, Marsh.*

The largest species we have, measuring 4 mm. in length. Described from a specimen taken on the Grampian Hills. A single female of this very distinct species, presumably the type, is in Marshall's collection, now in the British Museum.

Caudatus, Nees. †

A small species with the third abdominal segment shining and not obtuse and the terebra of female as long as head, thorax and abdomen combined; very similar to *floricola* and *pallidipes*, though in the female the longer terebra easily distinguishes it from both. Were it not that the legs of *pallidipes* are lighter in colour (not, however, always clear rufous), the males would be extremely difficult to separate from that species, while males of *caudatus* and *floricola* appear almost identical; in the latter the third abdominal segment is somewhat more shining and possibly the hind tibiæ are rather more clearly rufescent banded, also *caudatus* is slightly the larger.

In my specimens the stigma is nigrofuscous, as described by Nees, and not black, as mentioned by Marshall; also in one female the first abdominal suture is obscurely rufous and there are traces of two rufous bands on the disc of the first segment. Antennæ of all males 21-jointed and of all females 20-jointed, with one exception, where the number is 19.

Nees says, "*Habitat in floribus umbellatis hortorum*"; and in my garden at Brockenhurst this was a particularly plentiful insect, numbers being attracted by the flowers of *Daucus carota*, females predominating. I did not take it, however, before the middle of July or after the first week in August. On August 25th, 1918, a single female was taken at the Fleam Dyke, near Cambridge, and on September 22nd, 1919, I discovered another crawling on the mudguard of a motor-car at Willingham, Cambs. It would appear from this that the insect is double-brooded. Marshall apparently had no personal knowledge of the species, but mentions that Ratzeburg and Nardlinger bred it from *Orchestes quercus*. Although I have reared numbers of *pallidipes* from the curculio, *caudatus* has never occurred.

Floricola, Wesm. ‡

Very similar to *caudatus*, but rather smaller, and in the female the antennæ are distinctly shorter and more thickened,

* 'Sp. Hymen. (Braconidæ),' i, p. 317.

† 'Mon.,' i, p. 268.

‡ 'Norw. Mem. Ac. Brux.,' 1835, p. 208.

while the terebra is shorter than the abdomen. Also resembles *obscrellus*, though, of course, considerably smaller and having the third abdominal segment more shining.

I have come across very few examples; one female from the Gog Magog Hills, Cambridge, May 20th, 1917, another from a shady lane at Hunstanton, June 4th, 1918, and a third taken on young beeches growing on a heath at Snettisham, Norfolk, July 15th, 1919, are the only specimens I possess.

Obscrellus, Nees.*

This is not the *obscrellus* of Haliday,† which is proved by Marshall to be a synonym of *floricola*, Wesm. (see 'Trans. Entom. Soc.,' 1885, p. 108).

A robust species measuring 5-6 mm. in length, with the third abdominal segment entirely and noticeably simulose and terebra equal in length to the abdomen. Bignell reared it from larvæ of *Gymnetron noctis*, and in September, 1918, Dr. E. A. Cockayne sent me twenty-two bred from the same host, which he found commonly at Limber, North Lines., feeding on toadflax.

BUTTERFLIES IN MACEDONIA.

BY HERBERT MACE.

(Continued from p. 42.)

P. machaon.—A very common butterfly wherever I happened to go during the summer months. In September, 1917, it simply swarmed on a dry hillside near Janes. It appeared to be attracted by a very tough species of umbelliferous plant which is notable for remaining brilliantly green while all the surrounding herbage is dried up; and on this plant the larvæ were present in all stages. *Machaon* is more subject to variation than is commonly noted, and my Macedonian specimens differ from those found in our fens. The ground-colour is paler and clearer yellow, and the scales on the nervures of the fore wings are much less thickly placed, the nervures, in fact, being almost thin clean lines. The black markings in general are much paler, and the submarginal band is noticeably narrower throughout. In several specimens the blue lunules are larger and brighter than in British specimens, and one or two have the first and second yellow lunules on the hind wings filled in with deep orange. I took one female of exceptional size, being 4½ in. across the wings, and the general appearance is much more bold than the usual type. It was on the wing from the beginning of April to the end of

* 'Mag. Ges. Berl.,' 1816, p. 252.

† 'Ent. Mag.,' iii, p. 126.

September. Its flight is different from *podalirius*, for, although swift, it rarely rises more than a few feet from the ground.

Thais polyxena.—An early species which always attracted notice where it was found, but rather local, preferring, as a rule, ravines in somewhat elevated places and I only found it where there was a perennial stream handy. Its flight is short and jerky, and it frequently settles with expanded wings on flowers or the ground. The half dozen specimens I brought home are all variable and neither agrees entirely with Kirby's figure, which shows no red spots on the upper side of the fore wings. In each of mine one is present on the costa just beyond the middle, one specimen has another near the base, and a third has a rather large one in the middle of the inner margin. The hollowed shape of the hind wings is particularly noticeable beneath and the underside of the wings is really very remarkable in appearance, the red costal spots and orange-bordered nervures being very striking. I found it on the wing from the middle of March till the end of May.

Aporia crataegi is an insect which does not vary much from the typical form, but the specimens I brought back differ from my British ones in having the triangular patches at the ends of the nervures very slight or non-existent. One exceptionally pale brown female has the disco-cellular nervules entirely without scales. It was a common insect in the month of May, and in certain places it simply swarmed and was far and away the commonest white while it lasted. It was very pretty to watch the males courting a female, who used to sit on a flower head, fluttering in most perturbed-looking fashion, while two or three males hovered round, jostling each other and making the most strenuous efforts to secure the lady's favour. One frequently saw them on dull days resting on clover flowers, of which they seem inordinately fond, and they were more readily recognisable by their curious hanging attitude than when in flight. On one occasion I saw twenty-five of these insects congregated on a patch of damp sand imbibing the moisture and one or two of them were spotted with pink, presumably from some fluid which had been splashed over them. Ova, laid on the upper side of the leaf, larvæ and pupæ were to be found on the sloe, which, in the form of tiny shrubs, is abundant all over the country.

Pieris brassicae.—Not nearly so common in Macedonia as in Britain, where the enormous amount of cabbage and allied plants cultivated encourages it, as well as the following species. The earliest note I have of its appearance in Macedonia is February 4th, 1918. I took two varieties of unusual form, one with the apical spot very grey and faint, the other a male with the discal spot beneath larger than in the type and united by a narrow band; the lower spot extends to the hind margin and near the costa is a small double spot, the whole arrangement suggesting a broken band across the wing.

P. rapæ.—Moderately common, but never so abundant as in England. Unlike many other species, I found this frequently very much smaller than British specimens, and much less heavily marked. One female has an additional spot adjoining the apical blotch and in line with the normal central spots, and I have some doubt whether this may not be a specimen of *P. napi*, totally lacking the thickened nervures. I never saw this species earlier than the second week in March.

P. napi.—I seldom saw this insect and have only one specimen amongst the collection I sent home. This is a male which has only faintly indicated nervures on the upper side and the bases of the wings not black. Beneath, the veining is faint, but the spots, notably the one near the apex, are very distinct.

Pontia daplidice.—Was quite the commonest white throughout the season. Whether in the plains, cornfields, ravines or on the broken hillsides it could be found all through the summer. The later brood, appearing about the middle of July, was particularly abundant, and swarmed in the Janes plain all through that month and August. The extent of marking is variable. I have but one specimen which is specially different—a female only 35 mm. in expanse and heavily marked above and below. This butterfly deposits its eggs on several different crucifers, selecting small specimens and laying on both flower and leaves.

Euchlœa ausonia.—The resemblance of the "orange-tips," which have no orange patch, to the extremely common *P. daplidice* is so close that it is quite probable I overlooked some of these. In any case I did not once see an orange-tipped species, and although I occasionally saw what looked like females of *E. cardamines*, the specimens I sent home are all of this species. They vary from 44–53 mm. in expanse. Three agree with Kirby's description of var. *esperii*; a fourth would appear to be var. *crameri*. In this specimen the hind wings do not extend beyond the abdomen, but in the larger form they are fully half-an-inch below it. These were taken near Kukus in the months of April and May.

Colias hyale.—Very abundant throughout the season, though I do not remember having seen it before April. On the other hand, it was on the wing until well into November. Unlike *edusa*, it seems to prefer the plains and is less strong on the wing than the more common species.

C. edusa.—A most abundant insect wherever I went, its chief haunts being the sides of the stoniest hills, the plains and ravines being only sparingly visited. The second week in March is the earliest date on which I saw it, and it continued more or less common till the end of November, fresh specimens appearing about the end of June. The var. *pallida* (*helice*) was moderately frequent, and general variation from the typical form followed on the same lines as usual with this species.

Gonepteryx rhamni was moderately common over the whole period, but never specially abundant. I saw more than anywhere else at Karasuli in November, 1916, and at Sarigueul in the following spring there were a few specimens in the ravines. None of those I saw differed from the normal.

Dryas pandora is the largest and handsomest of the fritillaries met with in Macedonia. It ranges from $2\frac{3}{4}$ to $3\frac{1}{4}$ in. in expanse, the females distinctly larger than the males. The markings on the upper side are almost precisely similar to those of *paphia*, the males having the familiar bars on the nervures, but the ground-colour in both sexes is much more greenish. The males are almost the exact colour of var. *valesina* and the females even darker and greener. The latter have a distinctly yellow patch below the costa of the fore wings, wider towards the tip. In the months of May and June, 1917, I saw solitary specimens in some of the ravines near Kukus, but in the autumn it was in great profusion in a ravine a mile or so to the south of Janes, and in the following spring it was even more abundant at the same place. Unlike *paphia* it is not at all strong on the wing, the flight being heavy, and it rests frequently, either on the ground, or plants. On a certain clump of acacias I found numbers resting with closed wings on the underside of the leaves, where the soft green of the underside proved strikingly protective. It is more gregarious than any other fritillary I have met, and, indeed, its habits are quite different from those one associates with the British fritillaries.

According to Kirby, the larva feeds on the wild heartsease, but there was very little of this to be seen in the neighbourhood in question. I only paid one or two flying visits to the place and did not see any females ovipositing.

Issoria lathonia, regarded as such a prize in England, was, next to *M. phæbe*, the commonest fritillary in Macedonia. The earliest note I have of its appearance is the middle of March, and it was abundant down to the end of June. Although frequent enough in the ravines, I found it more addicted to tracks and roadsides than most fritillaries, and in this respect it resembles the "Wall," which it is not unlike in appearance on the wing. I took several fine examples. None vary from type, and the size ranges from 44 mm. in the males to 54 mm. in the females.

Melitæa didyma I first met on a rounded hill close to the destroyed vineyards of the monastery near Kukus, about the middle of May, 1917, and it was very abundant there for about three weeks. I did not see it again till the following year, when it was very frequent in the cornfields around Armutci village. It is a bold insect, flaunting itself freely before one as it sails gracefully from flower to flower. I greatly admired the rich reddish colour of the male, which does not vary much, either above or below. The sexual difference is striking, the

female being paler, but heavily suffused with greenish-black on the fore wings and the inner margin of the hind wings. They vary much more than the males, some being very much darker than others. Beneath, one of my females has the black dashes reduced to thin lines and the marginal spots much smaller. The average size is about 50 mm. I have one abnormally small specimen which does not exceed 33 mm., is very pale and faintly marked, and the spots are greatly reduced in size and number.

M. trivia.—I took one specimen only of this species, flying in company with *didyma* at the monastery.

M. phœbe.—An abundant species from the end of April to June in the ravines near Kukus and near Janes and Armutci. Habits somewhat like *didyma*, but disposed to fly higher and further. I have one specimen in which the dark markings of the upper side are much reduced. Beneath there is considerable variation, the ground-colour ranging from faint greenish-white to deep yellow and the size and shape of the markings also varies greatly.

Polygonia c-album.—I saw one specimen of this insect on the top of a windy hill near Janes in March, 1918.

Eugonia polychloros.—One specimen of this fine butterfly haunted some elm trees in the churchyard of the village of Armutci for some days in April. I never saw another at any time, but the elm is so abundant in the country it should certainly be more common.

Vanessa io.—Two specimens seen, one in June in a ravine near Kurkut and one in March at Armutci.

(To be continued.)

NOTES AND OBSERVATIONS.

THE SYDNEY WEBB COLLECTION.—A third portion of this collection was sold at Stevens' Auction Rooms on Tuesday, February 10th, and again attracted a large attendance of buyers. The portion of the collection offered included the remainder of the Geometers, the Sphinges, Bombyces, etc., the feature of the day's sale being the "Tigers," of which between thirty and forty more or less remarkable varieties were considered worthy of being offered singly. An *Arctia caja*, a full-sized cream-coloured specimen figured by Barrett, pl. lxxi, fig. 1b, established a fresh record for a single insect at £26; a smaller light-coloured example, Barrett, pl. lxxii, fig. 1b, made £20, and a lightly marked pale variety £15, while the others went from £9 down to 20s. each. The best *A. villica*, a very remarkable yellow insect with hardly any markings, Barrett, pl. lxxiii, fig. 1e, perhaps the best variety in the sale, made £21; one with hind wings deeply suffused with black, Barrett, pl. lxxiii, fig. 1f, £8 10s.; and the others, although some of them "figured" specimens, from 45s. to 10s. each, the total realised for the whole of the series of these two species

being just over £220. The other more important lots among varieties included one of five *Strenia clathrata*, of which two were very dark, and one rayed, which made £3 10s.; three *Ematurga atomaria*, of which one was an almost unicolorous pale form £5; and three *Loma-spilis marginata*, one white with black central band 50s. A deep pink *Deilephila euphorbiæ* made £5 15s.; a long lot of *Zygæna lonicere*, in which were included a specimen all pink except margins and one pale with hind-wing margins golden, Barrett, pl. lix, figs. 3b and 3c, £7; a *Senta irrorrella* with outer third of fore wings black and with three basal streaks £3; a lot of two *Hypocrita jacobææ*, one yellow and the other dusky, 45s.; two black *Callimorpha dominula*, one a bit of a rag but the other a good specimen taken by the late Mr. S. Smith, of Walmer, Barrett, pl. lxx, fig. 1e, 5 guineas; a "hermaphrodite" *Lasio-campa quercus* £6 10s.; a similar *Ocneria dispar* 25s.; a black *Spilosoma menthastri* and another dark with a streaked *S. mendica* £4 the lot; a male *Saturnia pavonia (carpini)* without ocelli £12, and a "hermaphrodite" £7 10s.; and a black *Acronycta strigosa* 5 guineas. But there were plenty of cheap lots also even among the varieties; two *Zygæna meliloti* with red forewings, figured by Barrett, pl. lix, fig. 1b, in a lot of 105 specimens including several good confluent *Z. trifolii* and others failed to go above 26s., and for a lot of thirty-three insects in which was included a confluent spotted *Zeuzera æsculi*, a by no means common form, only 6s. was obtained. Among the "rarities" nineteen *Sterrha sacraria* made just over 4s. apiece; a lot including a dozen *Madopa salicalis* and one *Pyralis lienigialis* £2 2s.; lots of 3 *Deilephila euphorbiæ* and 4 *D. galii* 50s.; 3 *D. euphorbiæ*, 3 *D. galii* and 3 *Phryxus livornica (lineata)*, 80s.; 2 *D. livornica* and 6 *D. galii* 12s.; 3 *P. livornica* and 2 *Hippotion celerio*, one bred, £9; 3 *P. livornica* and 3 *H. celerio*, also one bred, £4 10s.; 3 *H. celerio* and 2 *Daphnis nerii* 16s., and so on, the range in price possibly depending upon the condition of the insects to some extent, but also upon the would-be purchaser's faith in the accompanying data. *Deiopeia pulchella* made round about 10s. each on the average; *Epicnaptera ilicifolia* sold singly from £3 10s. to 40s.; the solitary *Glyphisia crenata* of the collection, "Isle of Man, bred 1870," £3 10s.; *Lælia cænosa* from 10s. to 5s. each according to condition; *Drepana harpagula (sicula)* just over 7s. each on the average; and the three *Notodonta bicolor* £3 15s., £4 10s. and £6 10s. each. The total of the day's sale just exceeded £550. The fourth portion of the collection will be offered on Tuesday, March 9th.—R. A.

NOTES ON EUCHLOË BELEMIA, ETC.—On p. 163 of the 'Entomologist,' lii, Basra was by a mistake quoted as the locality for *Euchloë belemia* and *Zegris eupheme*. It was on and near the Jebel Qizil Robat, a low range of hills about 600 ft. elevation by the R. Dyala, and some twenty miles from the Persian border of Mesopotamia, where these two species were common last spring. Of *E. belemia* there were two very distinct broods: (1) January and February or "wet season" form: Upperside—black markings dense and bases of wings black; underside—broad green bands and narrow white ones. (2) March and April or "dry season" form: Upperside—black markings less pronounced, bases of wings

white; underside—narrow broken yellowish-green bands and broad white ones. The sexes are similar in colouring and markings, though the female is slightly the larger on the average. I bred out an example of the second brood from one of three larvæ found on seed-stems of a yellow-flowered crucifer like mustard, which served as food-plant also of *Pontia daphidice* and *Zegris eupheme*. As with *Euchloë lucilla* on the North-west Frontier of India I found *E. belemia* hurrying about the crests of stony ridges, where *Melitæa didyma* and *P. machaon* occurred. I took a good series of *belemia* and three dark aberrations. The misquotation "the Doll butterfly" and "? Hytha (Nytha) species" refers to *Satyrus telephassa*, common on Jebel Qizil Robat, and abundant at Khanihin (October) and in North Persia (July to September). At Qizil Robat I took also *Satyrus anthe* var. *enervata*, a glorified "grayling," which settled on conglomerate rock. I also there bred out some forty examples of *P. machaon* from larvæ fed on *Ruta tuberculata*, and found three more of its food-plants, all belonging to the Umbellifera. In the first week of December I found on a thorny bush on the Piris Dagh Pass in Kurdistan two cocoons containing fragments of the pupa-cases of a moth related to the Moon-moth. The only butterflies that I saw near there were one *Pieris rapæ*, two *Teracolus fausta*, and several *Colias edusa* and *Pyrameis cardui*. Of birds Magpies were remarkably common, and I saw the English Robin and heard his cheery little song again. The Indian Robin seems to have got up late and left its chest behind, and so cannot claim the name of Redbreast.—H. D. PEILE, Lieut.-Col. I.M.S.; Mosul, December 15th, 1919.

RETARDED DEVELOPMENT OF CÆNONYMPHA TIPHON LARVÆ.—At the end of July, 1918, I obtained a few eggs from a female *Cænonympha tiphon* captured in Perthshire, and these hatched about the middle of August. The larvæ were confined on potted plants of grasses, chiefly fescue-grass, covered with gauze and kept out of doors under natural conditions as far as possible. Since the time of hatching they have been now and again examined, the last time being at the end of last October, when I found five apparently quite healthy and preparing for hibernation, and they were then only about one-third grown and *sixty-two weeks* old. Should they survive their second winter and finally attain full growth it will prove an interesting record, as I am not aware of another instance of this species passing through two years before completing the metamorphosis, but possibly it may not be unusual for a certain number of *tiphon* larvæ to do so in a state of nature in their northern habitat, being subjected to such severe climatic conditions.—F. W. FROHAWK; January, 1920.

HIbernation of AGLAIS URTICÆ.—I should like to confirm the observations of south country entomologists with regard to the appearances of this butterfly last year. In my district we had an unusually large number of hibernated specimens in the spring; in fact, it and *Euchloë cardamines* were by far our commonest spring butterflies, the latter being remarkable to me for showing an unusually large proportion of extremely fine females. There were plenty of the larvæ of *Aglais urticæ* to be seen, but the summer brood was almost

non-existent, and I have only seen one insect in hibernation this winter.—HAROLD D. FORD; Thursby Vicarage, Carlisle.

WINTER MOTHS.—Mr. Claxton asks (*antea*, p. 17) a question as to the scarcity of winter moths. I do not think such scarcity has been apparent this winter in this district. Ivy blossom was disappointing, but from November onwards the ordinary winter moths were in full evidence here. *Cheimatobia brunata* and *C. boreata* were in full numbers; *Hybernia defoliaria* above the average. *P. populi* has visited me at light for the first time, as did *Ennomos alniaria* for the first time since 1912. On the other hand *Himera pennaria* was exceedingly scarce, while with *Hybernia awantiaria* I had a curious experience. Wishing to obtain some females, I dug about fifteen pupæ; from these two males and eleven females emerged. From similar observations with regard to *H. defoliaria* and *Phigalia pedaria* I am beginning to believe that the females of some of these wingless species exceed the males in numbers. Can any other collector confirm this observation?—HAROLD D. FORD; Thursby Vicarage, Carlisle.

PARARGE MEGERA IN HERTS. AND NORTH-WEST MIDDLESEX.—Mr. H. Rowland-Brown made some interesting remarks on this species ('Entom.,' vol. li, p. 233) and its occurrence in 1918 in Herts and Middlesex, and it has been a great pleasure to me to note in 1919 that this species is making steady progress in Herts. My friend, Mr. Chas. Oldham, of Berkhamsted, reports the insect in his district for the first time during twelve years' acquaintance with that locality. In August I saw *P. megera* in several places between Watford and St. Albans, and also in the neighbourhood of Radlett.—ERNEST W. NIMMY; 210, Whippendell Road, Watford, Herts.

BUTTERFLIES OBSERVED IN THE ISLE OF SHEPPEY, KENT, 1919.—These observations were made while I was stationed at the R.A.F. Station, Eastchurch, and I believe I can state that they are fairly comprehensive, all my available spare time having been spent thereon. I found the island very poorly represented in Lepidoptera of all kinds. Many species found on the mainland near by were not represented at all, notably *G. rhamni*, *A. thaumas*, *P. egeria*, *P. megera*, while others were only represented by single specimens. *Pieris brassicæ*; *P. rapæ*; *P. napi* (not very common); *Euchloë cardamines* (one specimen only—a male); *Colias edusa* (one specimen only; flew over the top of a hangar and evaded capture); *Vanessa urticæ*; *V. io* (one specimen only); *Pyrameis atalanta*; *Epinephele ianira* (extraordinarily plentiful; one newly-emerged female was taken on the wing having all the orange replaced by greyish-white and the apical spots barely decipherable); *E. tithonus* (very plentiful); *Canonympha pamphilus*; *Callophrys rubi* (one specimen only); *Chrysophanus phleas*; *Lycena astrarache*; *L. icarus*; *Cyaniris argiolus* (two specimens only; both observed in the spring); *Hesperia malvæ* (one specimen only); *Adopæa lincolna* (very plentiful on the aerodrome towards the marshes to the total exclusion of *A. thaumas*); *Augiades sylvanus* (plentiful).—E. B. BETTS; H.M.S. "Pegasus," Rosyth, Scotland.

GRAPTOLITHA ORNITHOPUS.—On New Year's Day I took a specimen of *Graptolitha ornithopus* at rest on the trunk of a pine tree at Rockbourne (Hants). It was quite lively, and I had some difficulty in boxing it without injury.—A. STEVEN CORBET; Sidmouth Street, Reading.

LOBESIA PERMIXTANA, HÜB.—As far back as August, 1902, in speaking of the food-plants of this pretty little Tortrix ('Entom.,' vol. xxxv, p. 209) I remarked that the larva "is almost sure to be found on oak as well some day." Fourteen years after, early in July, I was collecting near Brentwood, and from a shrubby oak I beat out two little dark-coloured, extremely active larvæ that were quite strangers to me. Upon examining them carefully at home I came to the conclusion that they must be larvæ of *L. permixtana*, the moth being common there. Both were full fed and spun up the next day, turning a lobe of an oak leaf over something like an *Ornix* but not so flat. On May 31st, 1917, a male appeared, and upon examining the other one I found it had pupated but was dead. I think oak must be its favourite pabulum in this part of the country, but I have certainly beaten the imago from birch as well. It is a curious little species, and I never could quite make up my mind as to its proper position in the cabinet. Like *Anisotaenia ulmana* and *Hysterosia inopiana* its position in our list seems somewhat dubious. By *Betula "glutinosa"* Dr. Wood means our common birch. This name is used by many authors of botanical works. Babington and Gibson in their floras of Cambridgeshire and Essex respectively use this specific name, treating *alba*, Linn., as distinct; Brewer ('Flora of Surrey') on H. C. Watson's authority, makes *glutinosa* a variety of *alba*. To me the "common birch" has always been known as "*glutinosa*."—A. THURNALL; Wanstead, Essex, February 2nd, 1920.

ICHNEUMONS PARASITIC ON SPIDERS.—Among a lot of other parasitic Hymenoptera recently received for determination from Mr. Lance A. Carr, of Lichfield, I found a specimen of the Pimplid, *Acrodactyla degener*, Hal. This is a well-known parasite of the smaller spiders, but it has not hitherto been bred from the present host. Mr. Carr tells me that on May 19th, 1919, he took *Theridion denticulatum*, Walck., with an ichneumon larva upon its abdomen; the latter was lying right across the base upon the upper side. The next day the spider was certainly alive in the early morning, and perhaps also at night. On the 21st the spider was dead; the larva had completely emptied its host's skin, and now hung from the lid of the box in the shape of a pot-hook, with the head upwards. On the 22nd it had spun a long, slim, very thin white-silk cocoon. On the 28th the larva had changed in shape to that of the perfect insect, but was still dead-white in colour. On the 31st the imago was nearly complete, and the pupa was turning black from the head downwards. But not till June 4th did the imago become perfect. The host was found at Maple Hayes, Lichfield. From the same host, taken about Lichfield in 1917, Mr. Carr has bred a female of another Ichneumonid, the Cryptid *Hemiteles tristator*, Grav. This

species does not seem to have been reared from Arachnida since Brischke first bred it from *Epeira diademata* in Germany about 1870.—CLAUDE MORLEY; Monks Soham, Suffolk.

'ANNALS OF TROPICAL MEDICINE AND PARASITOLOGY.' Liverpool. Vol. xiii, Nos. 1 and 2, May 12th, 1919, and July 31st, 1919.—The former contains one paper of direct interest to entomologists—"On the Genital Armature of the Female Tsetse-flies (*Glossina*)," by A. M. Evans, M.Sc. In all seventeen species are referred to, and the paper is illustrated by eighteen excellent figures.—W. J. L.

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—November 13th, 1919.—Mr. Stanley Edwards, F.L.S., President, in the Chair.—The decease of Mr. W. J. Ashdown (1895) was announced.—On behalf of the Rev. C. R. N. Burrows, a series of larval cases of various species of British Psychides were presented to the Society's collections.—Series of *Noctua xanthographa* were exhibited by Messrs. R. Adkin, A. E. Tonge, B. S. Williams, Hy. J. Turner, etc., and a discussion took place.—Mr. H. J. Turner gave a list of the named forms with short descriptions, and mentioned the characters which were available for variation as the ground, the stigmata, the transverse markings and the scale textures. Several members remarked on the extremely large numbers of this species which came to sugar.—Mr. Newman, a very dark-banded large form of *Cirrhædia xerampelina* from Sligo and males of *Ennomos angularia* from Regent's Park, with considerable contrast between the light central band and the dark outer-marginal area.

November 27th, 1919.—The President in the Chair.—Annual Exhibition.—Mr. S. G. Castle-Russell exhibited aberrations of the following British Lepidoptera: *Dryas puphia*, rayed and suffused, varied *valesina* forms, intermediate, bleached, blue shade below, etc.; *Limenitis sibilla* ab. *nigrina* underside; yellow-tipped *Euchloë cardamines*; *Brenthis euphrosyne* rayed, cream-coloured, etc.; *Cænonympha pamphilus*, a very pale series; *Aphantopus hyperanthus*, a long series of bred ab. *lanceolata*; *C. tiphon*, long series of aberrations, pale, ab. *lanceolata*; *Celastrina argiolus*, a perfect gynandromorph and colour forms; *Agriades coridon*, a perfect gynandromorph, ab. *syngrapha*, *striata*, ab. *obsoleta*, etc.; *Plebeius ægon*, eighty aberrations, ab. *striata*, ab. *obsoleta*, etc., and forty females with one wing shot with male blue coloration and the smaller; all taken or bred in the last two or three seasons.—Mr. T. H. Grosvenor, a pair of *Attacus edwardsi* from the Khasia Hills and a large number of Scorpions taken in the Punjab, N.W. Provinces, etc.—Mr. B. S. Williams, a series of *Lomasipilis marginata* from Finchley showing an extreme range of variations.—Mr. E. E. Green, (1) *Papilio bianor*, taken at Camberley; (2) a series of *Parascotia fuliginaria*, taken at light at

Camberley; (3) two *Agrotis saucia* ab. *margaritosa*, taken at sugar; (4) aberrations of *Luperina testacea* and *Himera pennaria*; (5) *Stephanitis rhododendri*, an introduced pest of rhododendrons; (6) the rare Hemipteron *Corizus maculatus* from birch; (7) a contrivance of an iron ring and muslin for covering cylinders, jars, etc., for breeding.—Mr. A. E. Tonge, an *Amorpha populi* entirely devoid of marking, and the very rare Noctuid *Cloantha polyodon* (*perspicillaris*) from Worthing.—Mr. Leonard Tatchell, two very dark *Aretia caya*, one having scarcely any traces of cream on the fore wings.—Mr. R. Adkin, series of the British species of *Nolidae* and *Nycteolidae*, illustrating their range of variation.—Mr. L. A. Box, examples of the more common species of the parasitic Chalcids.—Mr. C. W. Sperring, a selection of aberrations of *Mimas tilice*, *Brenthis euphrosyne*, *Agriades coridon* and *Plebeius ægon*.—Mr. Percy Bright, very long series of aberrations of *Brenthis euphrosyne*, *B. selene*, *Chrysophanus dispar* and *Rumicia phlæas*, with the rare ab. *alba*.—Mr. K. G. Blair, the black form ab. *nigra* of *Cetonia aurata* from St. Mary's, Scilly, 1919.—Mr. Johnston, a series of aberrations of *D. paphia* and *L. sibilla* from the New Forest, July, 1919.—Mr. H. A. Leeds, a large number of aberrations of *P. icarus*, *A. medon* and *A. coridon*, named by Tutt's 'Brit. Lepid.,' no less than eighteen being of the last species, and of *A. hyperanthus*, *H. malvæ*, *E. jurtina*, *S. pruni*, etc.—Mr. R. South, aberrations of *B. selene*, confluent and suffused; *C. pamphilus*, pale splashed and dark; silvery-grey *Tortria cratægana* and dark suffused *T. xylosteana*.—Mr. Curwen a very fine selection of *Zygænidae* from Italy, including many striking races and aberrations of *Z. transalpina* from Central Italy; races of *Z. stæchadis*, *Z. achilleæ*, *Z. oxytropis*, *Z. carniolica*, *Z. punctum*, *Z. erythrus*, etc.—Mr. Clifford Craufurd, aberrations of *D. paphia* and *L. sibilla*.—Prof. Bateson, drawings of flowers produced by plants propagated as root cuttings to compare with flowers produced by normal plants grown from seeds.—Mr. H. Moore, various forms of *Danarda chrysippus* and *Hypolimnas misippus*, and read notes on the association of the two species.—Mr. A. W. Mera, bred series of *Tephrosia crepuscularia* and *T. biundularia*, with melanic and hybrid races.—Mr. A. A. W. Buckstone, aberrations of *Colias edusa*, dark and pale ground; *Callophrys rubi*, pale blotched; *Pieris brassicæ*, green lined; *Triphæna fimbria*; *T. comes*; ab. *nigrofulvata* of *Semiothisa liturata*, etc.—Mr. C. W. Colthrup, aberrations of many British butterflies taken in 1918-19, including *C. edusa*, *B. euphrosyne*, *E. tithonus*, extra spots, *H. semele*, *A. urticæ*, *R. phlæas*, *E. jurtina*, *A. coridon*, etc.—Mr. Newman, bred ab. *walkeri* of *Spilosoma menthastri*; yellow and salmon-coloured *Zygena filipendulæ*; *Z. achilleæ* from North Britain, etc.—Mr. C. H. Williams, aberrations of *Agriades coridon* and a series of named forms of *A. grossulariata*, including ab. *radiata*, ab. *iocalcea*, ab. *lacticolor*, ab. *fulvopicata*, ab. *nigrisparsata*, ab. *semilutea*, etc.—Mr. H. O. Wells, two perfect gynandromorphs of *Plebeius ægon* from Berkshire.—Mr. Edwards, exotic Papilios.—Mr. Garrett, *E. jurtina*, with one wing suffused black, and *Ochyria designata* with curiously irregular markings.—Mr. H. J. Turner, a collection of Lepidoptera sent to him from South America, including the Ceratocampid, *Cithe-*

ronia vogleri, with a photograph of its hitherto unknown larva, an unnamed local form of *Propona chromus*, the rare *Protoparce bergi*, several other *Protoparce*, *Attacus maurus*, several species of *Hesperidae*, *Libythea carinenta*, etc.—Mr. F. W. Frohawk, aberrations of *Vanessa io*; *L. sibylla*, gradation to complete dark suffusion; *D. paphia*, various forms of confluence of spots upper and under sides; *A. cydippe (adippe)*, partially albinistic, leaden-coloured markings, etc.—Mr. W. J. Kaye, long varied series of *Melitæa cinxia* and *M. athalia*, great reduction of dark markings to heavy extension of markings on both upper and under sides.—HY. J. TURNER, *Hon. Editor of Proceedings*.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—Meeting held at the Royal Institution, Colquitt St., Liverpool, November 17th, 1919, the President, Mr. R. Wilding, in the Chair.—Mr. H. M. Hallett, F.E.S., of 64, Westbourne Road, Penarth, Glamorgan, was elected a Member of the Society.—Mr. William Mansbridge read a short paper on *Peronea cristana* and *Sarothripus revayana* in the New Forest. The paper was a description of a few days' holiday at Brockenhurst in pursuit of these variable moths, and was illustrated by the insects captured. Some twenty varieties of *P. cristana* and fifteen of *S. revayana* were exhibited. Mr. Mansbridge also showed a long series of *Bryophila perla* from Wavertree, taken from about 300 yards of red sandstone wall which was only sparsely covered with light grey lichen. The moth was in unusual plenty in August, 1919, and was exceptionally variable. The exhibit comprised bright yellow, orange-mottled forms with the black markings reduced; bright green mottled with darker, the black markings normal; specimens with the usual ochreous ground-colour of a greenish-grey; also some with all the markings very much intensified; and finally, a few almost unicolorous, pale ochreous examples. There was no orange-coloured lichen on the wall, neither has any been seen elsewhere in the district. Several members brought their series of *B. perla* for exhibition.—Mr. A. W. Hughes brought an exhibit of Lepidoptera from Palestine and Egypt, and described the difficulty of collecting under service conditions and also of getting the insects safely home.—Mr. S. Gordon Smith showed a fine brick-red variety of *Himera pennaria* from Chester, an apparently wingless female of the same from Delamere and uncommon forms of *Hybernia defoliaria* also from Delamere.—Mr. W. A. Tyerman exhibited bred *Melanthia albicillata* from near Prescott; *Odontopera bidentata* var. *nigra* and typical *Amphidasys betularia* from Simonswood; *Cidaria immanata* from Prenton and *Eupithecia abbreviata* from Llangollen.—Mr. H. B. Prince exhibited a large number of *Agriades bellargus*, which included abs. *striata*, *arcua* and other forms; also a collection of exotic Sphingidæ bred by the Rev. A. Miles Moss in Colombia, S. America.

December 15th, 1919.—Annual Meeting.—Mr. R. Wilding, President, in the Chair. The usual reports were presented and the following were elected as Officers and Council of the Society for the ensuing year, viz.: President: Mr. S. P. Doudney. Vice-Presidents: Messrs. R. Tait, F.E.S., R. Wilding and Dr. G. B. Longstaff, M.A., F.E.S. Hon. Treasurer: Dr. John Cotton. Hon. Librarian: Mr. A. W.

Hughes. Hon. Secretary: William Mansbridge, F.E.S. Council: Messrs. W. A. Tyerman, W. Buckley, Prof. R. Newstead, M.Sc., F.R.S., G. F. Mathew, F.L.S., L. West, M.I.M.E., A. W. Boyd, M.C., M.A., Dr. A. R. Jackson, W. J. Lucas, B.Sc., F.E.S., S. Gordon Smith, Alfred Newstead, F.E.S., Rev. F. M. B. Carr, and E. F. Studd, M.A., F.E.S.—Mr. F. N. Pierce, of Warmington, Oundle, Northants, was elected an Honorary Member of the Society.—The President read an address entitled "Notes from Cartmel Fell."—WILLIAM MANSBRIDGE, Hon. Secretary.

OBITUARY.

THOMAS RICHARD BILLUPS.

MR. THOMAS RICHARD BILLUPS, whose death was announced in our January issue, was a salesman of garden produce in the Borough Market. Just when he took up the study of entomology we have no precise knowledge, but we find him enrolled as a member of the South London Entomological and Natural History Society in 1877 and his name occurs very frequently in the Proceedings of that Society. He was President for the years 1881, 1888 and 1889. In 1908 his name is absent from the Roll of Membership.

Mr. Billups was elected a Fellow of the Entomological Society in 1879, but retired therefrom in 1901. Under the editorship of the late Mr. John T. Carrington he joined the Reference Committee of the 'Entomologist' in 1887 and was a contributor to its pages until 1895, finally resigning in 1900.

As an entomologist he was especially interested in the Coleoptera, but in collaboration with the late Mr. Alfred Beaumont, Hymenoptera, Diptera, Orthoptera and Hemiptera received a large share of his attention, the Hymenoptera chiefly perhaps.

Owing to an enfeebled constitution he was disinclined to follow his entomological pursuits in the early years of the present century, and in 1910 paralysis caused his retirement from active life entirely.

To all who knew him he will be remembered for his kindly disposition, for he was one of those lovers of insects who had no secrets to hide from his fellow-workers. He was ever ready to impart to others any knowledge he himself had patiently acquired.

He leaves a widow, who is an invalid, and a daughter. We understand that his collections and books are to be sent to the Auction Rooms at King Street, Covent Garden, for sale.

WE greatly regret to hear of the death of Major R. Bowen Robertson. We hope to give a further notice in the April number.

EXCHANGE.

The publication of Notices of Exchange, or of Advertisements, in the 'Entomologist' is in no way a guarantee for the British nationality, authenticity, or good condition of the Species. This Notice is not given to throw doubt on the bona fides of Exchangers or Advertisers, but to absolve the Editor from responsibility, in case the liberty allowed should be abused. *Marked * are bred.*

NOTICES OF EXCHANGE should be received by the 21st of EACH MONTH to insure insertion. Not more than SIX LINES can be allowed for each.

Duplicates.—Io, Egeria, Maivo, Comma, Trifolii, Verbasci, Duplaris, Consortaria, Ova of Hispidaria. *Desiderata*. British Macrolepidoptera.—A. W. Buckstone, 307A, Kingston Road, Merton Park, S.W. 19.

Duplicates.—Valesina, Polychloros, Pruni (flor), Globularia, Exulans, Camiola, Fuliginosa, Fagi (fl), Coryli, Menyanthidis, Flammea, Geminipuncta, Ophiogramma, Daidm, Sobrina, Piniperda, Suspecta, Gilvago, Empyrea (ex Hall coll.), Occulta, Herbida, Pineta, * Advena, Rectilinea, Novita, Exoleta, Solidaginis, Rhizolita, Petricata, Festuca, Interrogationis, Hispidaria, Roboraria, Obscuraria, Promutata, Hippocastanaria, Silaccata, Hastata, etc. *Desiderata*.—Early stages and local forms, only accepted offers answered.—A. E. Burras, 3, Connaught Row, North End, Portsmouth.

Duplicates.—Blandina, Egon, Hyale, Velleda, Duplaris, Dieta, Camelia, Zezac, Chaonia, Vespertaria, Adverria, Pilosaria (black), Erosaria, Atonaria (black), Cambria, Filligrammaria, Autumnata, Implaviata, Obfusca, Menyanthidis, Megacephala, Fimbria* vars., Chamomille, Absinthii, Gracile. *Desiderata*.—Numerous.—W. G. Clifton, 132, C. d Clough Lane, Burnley, Lancs.

Duplicates.—Athalia (Kent and Sussex). *Desiderata*.—Very numerous. Ova, larva and pupa especially.—E. Crisp, Heathcote, Heathfield, Sussex.

Duplicates.—Numerous. *Desiderata*.—Larva of Aurina and Cinxia.—H. W. Head, Burniston, N., Scarborough.

Duplicates.—Camiola, Exulans, Caja, B. quercus, * Stellatarum, Monacha, Muralis, Perla, Rumicis, Straminea, Exigua (fl), Capsicola, Conspersa, Ambigua, Stucia, Valligera, Nigra, Flavipuncta, Ligula, Macilenta, Pyramidea, Oxacantha, Umbra, Chrysis, Abstrigalis, Fluviana, * Pulveraria, etc. Pupae of Vitalba. *Desiderata*.—B. trifolii, Simulans, Stigmatica, Brevilinea, Lufosa, Leucophaea, Caliginosa, Flexula, Turfosalis, Degeneraria, Fraxinata, Irriguata, many renewals, pupa, or Bignell beating tray.—P. P. Milman, Cypripia, Lower Conway Road, Paignton.

Duplicates.—Polychloros, bred, and several species of Heterogera. *Desiderata*.—Pupa of Cardamines, Argiolor and Lucina.—H. W. Nave, Inghurst, 95, Queen's Road, Brownswood Park, London, N. 4.

Desiderata.—Foreign examples, local races, vars. and abs. from all parts of the world of any butterflies included in the British list. Setting immaterial; exact data indispensable. Liberal return made.—W. G. Fisher, The Elm, 4, Willow Bridge Road, London, N. 1.

Duplicates.—Fine, well-set Cinxia, Villica, Tilia, Globularia, Lonicera, E. autumnaria (dark), Monacha (very dark), Pendularia, var. subroseata, Fluviana, N. despecta (Rufa), Geminipuncta, Argentula, Unca, Derivialis, Straminealis, Hyalimalis. Ova of dark E. autumnaria. *Desiderata*.—Larva, pupa, ova of many species, especially Irish and Scotch.—Thos. Savage, The Plaquet, Arlington, Sussex.

Duplicates.—Ova: Graminis, Defoliaria (varied). Larvae: Meticulosa. Imagines: P. populi, Chi, Selene, Rupicaprararia, Leucophaearia (vars.), Pedaria (Melanie, etc.), and many others. *Wanted*.—Many species in all stages.—Thomas Smith, Whiston Eaves, Froghall, Stoke-on-Trent.

To CORRESPONDENTS.—All notes, papers, books for review, &c., and notices of Exchange should be sent to the Editor—

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CONTENTS.

The Life-cycle of *Cacocia unifasciana*, Duponchel, W. G. Sheldon, F.Z.S., F.E.S., 49. *Cosymbia pendularia* ab. *decoraria*, Newm., Louis B. Prout, F.E.S., 52. Lepidoptera in North Staffordshire in 1919, F. C. Woodforde, B.A., 54. Contributions to our Knowledge of the British Braconidae. No. 5. Sigalphidae, G. T. Lyle, F.E.S. (continued), 56. Butterflies in Macedonia, Herbert Mace (continued), 60.

NOTES AND OBSERVATIONS.—The Sydney Webb Collection, R.A., 64. Notes on *Euchloe belemia*, etc., H. D. Peile (Lieut.-Col., I.M.S.), 65. Retarded development of *Ceronympha typhon* larva, F. W. Frohawk, 66. Hibernation of *Aglais urticae*, Harold D. Ford, 66. Winter moths, Harold D. Ford, 67. *Pararge megera* in Herts and North West Middlesex, Ernest W. Nimmy, 67. Butterflies observed in the Isle of Sheppey, Kent, 1919, E. B. Betts, 67. *Graptolitha ornithopus*, A. Steven Corbet, 68. *Lobesia permixtana*, Hub., A. Thurnall, 68. Ichneumonids parasitic on Spiders, Claude Morley, 68. Annals of Tropical Medicine and Parasitology, W. J. L., 69.

SOCIETIES.—The South London Entomological and Natural History Society, 69. Lancashire and Cheshire Entomological Society, 71.

OBITUARY, 72.

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VOL. LIII.]

APRIL, 1920.

[No. 683

A NOTE ON SOME AFRICAN RHOPALOCERA.

BY N. D. RILEY.

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THE following has resulted from the incorporation in the General Collection of the Museum of a selection of specimens from the collection of the late F. C. Selous. The bulk of these were taken during the East African Campaign, but a few appear to belong to collections made during 1911 and 1912 in the Bahr-el-Ghazel and northern British East Africa. The forms here mentioned were almost certainly obtained from the last-mentioned locality.

PIERINÆ.

Teracolus phisadia, Godt., f. *vagus* nov.

♂. Size and markings as in typical *T. phisadia*, except that both wings are almost devoid of basal grey scaling; the black spot at cell-end on fore wing has no pupil; the basal area of hind wing is uniformly pink and is bordered by a wide black marginal band, the inner edge of which curves evenly and parallel to hind and inner margins.

Most closely allied to the f. *ocellatus*, Butler ('P. Z. S.' 1885, p. 767), with the type of which it has been compared, but readily distinguished by the evenly curved inner edge of hind wing marginal band and the uniformly pink basal area of hind wing.

B.M. Type No. Rh. 046, ♂, labelled "New Moschi, East Africa, March, 1916, F. C. Selous," but probably taken somewhere between L. Baringo and the Lorian Swamp in March, 1912.

ACREINÆ.

On examining a short series of an *Acrea* thought to be a form of *A. mirabilis*, Butler, it has been found that under this name Butler confused two species.

1. *Acræa mirabilis*, Butler.

'P. Z. S. Lond.,' 1885, p. 760. ♂.

Butler's description of this, which I have slightly revised from comparison with the type in the British Museum, runs as follows. I give only the male characters:

"Wings above bright tawny with rose-coloured shot (probably rose-red in life); primaries with extremities of veins black; with a black spot at end of cell; an oblique sub-apical lighter patch on a black ground; secondaries, owing to their transparency, showing a band just before the middle; outer border with rather narrow, internally wavy black border with a paler central stripe; head and thorax tawny, the latter sprinkled with whitish scales; abdomen white. Primaries below soft tawny, with two black discoidal spots; an oblique oval sub-apical creamy patch edged internally with black; beyond it and towards the outer margin throughout the veins are black broadly bordered with ash-grey; secondaries pale yellowish; basal area spotted with rose-colour; a black sub-basal transverse dash from costal margin to the cell, and two or three sub-basal black spots; a narrow whitish suffusion from costa extending into cell followed by an ash-grey subangulated central band, spotted with tawny and rose-red, margined on both sides with black and enclosing a black dash across base of interspace 5; veins upon external area black; the latter has no decided inner edge, but is of a pale buff tint (the ground colour), shading into white internally against the central band; this area encloses a series of internervular pyramidal orange dashes, and is bounded externally by two thin even parallel black lines enclosing a narrow silver-grey marginal band. Fringes white. Body below white, palpi and legs in front buff, sides of pectus spotted with rose-red.

Length of fore wing 1.85 cm.

B.M. Type No. Kh. 047, ♂. Bunder Maria, Somaliland, 27:iv:'84, Yerbury.

As far as I can ascertain this locality is the Banda Maraya of most modern atlases, situate slightly west of C. Guardafui in Italian Somaliland. Butler expressly states (*l.c.*, p. 756) that the collection came from the Somali coast, *i.e.* from the hot, arid coastal plains, to which true *A. mirabilis* would appear to be confined. No other specimens have reached the Museum since the four males contained in this collection. I have not seen a female of this species.

2. *Acræa miranda*, n. nov.

A. mirabilis, Butler, 'P. Z. S.,' 1885, p. 760, pl. xlvii, fig. 1. ♀.

A. mirabilis, Dixey, 'P. Z. S.,' 1900, p. 11, pl. i, fig. 4. ♂.

A. mirabilis, Eltringham, 'Trans. Ent. Soc. Lond.,' 1912, p. 216 (part).

This, the commoner species by far, hardly needs description. The male is excellently figured by Dixey (*l. c.*), the female by Butler (*l. c.*), whilst Eltringham very accurately describes both sexes and figures the genitalia of the male.

The species may be separated at a glance by the undersides of the hind wings. In *A. miranda* there is a broad, sharply defined whitish band beyond the central band; this is absent in *A. mirabilis*, the buffy marginal area only being separated from the central band, by a diffuse, clear white area broadest in inter-spaces 4 and 5.

There are numerous other differences. The blackening of the extremities of the veins is much heavier in *A. miranda*; the hind marginal borders of both wings broader; the inner line of border of hind wing underside is formed of a series of crescents in *A. miranda*, whilst it is an even, continuous line in *A. mirabilis*; the black shade beyond the pale sub-apical patch of fore wing is obsolescent in *A. miranda*, and the general coloration richer and darker.

The genitalia of the males are quite distinct. *A. mirabilis* has a long, straight penis and ventral "keel" and a simple uncus; *A. miranda* a sickle-shaped penis, a short ventral "keel" or vinculum and a bifid uncus.

Length of fore wing 2.25 cm.

B.M. Type No. Rh. 048, ♀. "More than 80 miles south of Berbera, Somaliland, Thrupp."

This is Butler's type of *A. mirabilis*, ♀.

The species would appear to belong to the interior plateau and the highlands of Somaliland, whence came Butler's female type and the specimens mentioned by Dixey (*l. c.*). Further south Selous obtained another form of the female.

A. miranda, ♀ - f. *selousi*, nov.

♀. Differs from typical *A. miranda*, female, by being of a general dirty, translucent, pale grey-brown coloration; dark markings as in typical form, but grey, not black. Below, the central transverse band of hind wing broader, and the light band succeeding it pale yellow.

Length of fore wing 2.6 cm.

B.M. Type No. Rh. 049, ♀, labelled "E. Africa, Namanga, 12:ii:'16, F. C. Selous," but most probably obtained during February, 1912, between Lake Baringo and Lorian Swamp, British East Africa.

There are three females in the Museum of this form, and three males from same locality, which, however, do not appear to be separable from typical males of *A. miranda*.

RHOPALOCERA FROM EAST TYRONE IN 1919, WITH
NOTES ON VARIATION.

BY THOMAS GREER.

IN reading over the recent volumes of the 'Entomologist' I notice that few notes from Ireland have appeared, the latest being an interesting account of the butterflies of the Curragh district by the late Col. N. Manders ('Entom.,' vol. xlv (1913), p. 292), so perhaps the following random notes from the north of Ireland will be of interest.

The first butterfly of the year, *Pieris rapæ*, was observed on April 18th, followed on the 20th by *Euchloë cardamines* and *Aglais urticae*.

Pieris brassicæ, first seen July 14th, was not very common, and only a single emergence was noticed; a large female captured on the heather at Loch Fea, August 3rd, has the apical blotch and the discal spots united by a suffusion of dark scales. Several of the males of *P. rapæ*, 1st gen., were spotless, and many of the females in both broods were of a pale yellow; two of these have the fore-wing spots fused together by dark scales. The spring emergence of *P. napi* was abundant in our damp meadows and swamps, the males varying from a spotless form to well-marked examples with large spot and apical blotch and dashes. Of the females, several nice banded forms occurred, with marginal streak, spots and apical blotch united; two of these are pale primrose yellow; another fine example is entirely suffused with dark scales, except for a small portion of the discal area.

Of the summer emergence many of the males have two spots on the forewings, and in an extreme example the two spots are fused together. The females are even more remarkable than the spring form, the spots and marginal dashes varying through grey, brown, to a deep black, the hind wings on upper side strongly marked with brown or black. I may note here that these extreme forms are to be found more frequently in swamps and damp localities, where the over-wintering pupæ have been submerged off and on during that season.

During May *Euchloë cardamines* was flying in hundreds and several interesting aberrations occurred. Among the males the best was perhaps a beautiful pale yellow example, the lower wings strongly marked with sulphur colour; another with twin discoidal spots on the fore wings; several specimens, with marginal dots on upper wings united to each other and to the apical blotch, give the effect of a dark border to the outer edge of the wings.

A great proportion of the females are of the var. *ochrea*, Tutt,

and the ab. *caulotosticta*, Williams, also was not rare.* On May 22nd my wife found at rest on *Cardamine pratensis* an extreme suffused example of the ab. *radiata*, Williams, and two days later I found, also at rest, a large specimen streaked with orange on both upper and under side of fore wings, the streaks extending from the discoidal spot to the margin.

In working for aberrations one soon gets to know their favourite roosting-places—a sheltered corner in a meadow—a certain clump of *Cardamine* growing in a deep ditch; in such spots, those receiving the rays of the evening sun being the best, numbers of this species are often to be found at rest at sunset, also during dull weather, the food-plants of the species in this locality being *C. pratensis* and *Sisymbrium alliaria*, and I once found ova on *C. amara*, which is a locally common plant in the district. During August *Dryas paphia* was flying in numbers in several mountain glens and I saw a single female on August 23rd in a small wood on the Lough Neagh shore.

Melitæa aurinia was flying in swarms on a heather-clad hillside on May 21st; it was also common in a damp meadow below where I was on the look-out for *Macroglossa tityus*. The following aberrations have occurred here: *præclara*, *scotica* and *artemis*. Curiously enough the first specimen I ever found in this district was observed at rest on a flower of *Menyanthes trifoliata*, in the middle of an extensive swamp.

On August 23rd, a fine sunny day, I found *Aglais urticae* very numerous at mint flowers on the shores of Lough Neagh; a few *Vanessa io* were also seen. Of five of the latter netted, three were the ab. *cyanosticta*, Raynor. At the end of the month another visit was paid to the lough, when very few *A. urticae* were about, but *Pyrameis atalanta* was observed in some numbers.

Pararge egerides and *P. megæra* were generally abundant; a nice straw-coloured female (2nd gen.) of the latter was captured in August on an old coal-mine dump, as well as several males with additional ocelli.

Aphantopus hyperanthus was very common on grassy banks and in rough meadows.

Owing to the dry season *Epinephèle jurtina* was not as plentiful as usual. A fine form occurs locally. In the males the usually slight fulvous area on the fore wings is considerably extended, the females with the fulvous colour occupying the central area of fore wings, and a bright band of the same colour on outer margin of the lower wings, the apical spot often double.

In a locality here the ab. *addenda*, Mousley, was fairly abundant; this as originally described is a female form, but this season I found a number of the male sex, having spots in the fulvous patch, underside. The finest examples of the female

* These are similar to the "aggressive" looking specimen captured by Mr. H. P. Jones near Cambridge ('Entomologist,' vol. li, p. 249).

aberration have eight extra spots on the fore wings, two above and two on the underside on each wing.

Cænonympha tiphon was not scarce in its localities near Lough Fea at 800 ft.; *C. pamphilus* was present on the same ground, frequenting the dryer edges of the bogs. *C. tiphon* was also observed in small numbers in the Lough Neagh district, where it is rapidly being exterminated through drainage and turf-cutting; another local insect likely to share the same fate is *Callophrys rubi* which used to abound on the birch trees growing among the heather; this season I only got two specimens.

Chrysophanus phlaeas fresh on the wing May 20th, the spring emergence being in no way remarkable; on August 20th a field of flax was alive with the summer brood; here I captured some nice aberrations, including a male, left fore wing partly ab. *schmidtii*, right ab. *intermedia*, Tutt, the marginal band on left hind wing ab. *schmidtii*, that on the right *intermedia*; one male ab. *intermedia*; two examples with pear-shaped spots on anterior wings; here also the ab. *cæruleopuncta*, Gerh., was almost as frequent as the type, some of the females especially being very fine.

Our only local blue, *Lycæna icarus*, was not abundant, its haunts having been closely grazed for the last few years, and in some of its localities I am afraid it has been exterminated. Amongst a small series captured for a correspondent I was lucky to find a specimen with red marginal spots on upper side of the lower wings; ab. *rufopunctatus*, Neub., another example in bad condition, was netted near Portglenone, Co. Antrim. Here there is only a single emergence extending from the middle of June till September. On the whole the past season was a good one, and although there were a great number of dull, cloudy and windy days, the rainfall was much below the average, and perhaps on this account certain species were more abundant than usual.

Curglasson,

Stewartstown, Co. Tyrone.

RANDOM RECOLLECTIONS OF THE SEASON OF 1919 AT EASTBOURNE.

BY ROBERT ADKIN, F.E.S.

SELDOM have the wet and dry seasons of a year been so sharply defined as they were in this immediate neighbourhood in 1919. The rainfall of the first four months of the year was considerably in excess of the average; on April 28th heavy snow fell, on May 9th a thunder-storm passed along the coast but gave us little more rain than a passing shower, and from that time the weather became distinctly dry and continued so until the end of October, the rainfall for the six weeks from the middle

of May to the end of June being well under half an inch, for the month of July just an inch and a-half, for August an inch and three-quarters, September practically one inch, and October somewhat less, and for the whole period the record of sunshine slightly exceeded the average.

Such conditions one would have expected to be particularly favourable for our butterflies, especially the Vanessids that haunt our gardens in the autumn, yet with some few notable exceptions quite the reverse appears to have been the case. The spring emergence of the "Whites" was well up to the average, but in the autumn, although *Pieris rapæ* was met with in much its usual numbers, and *P. napi*, as will be seen later, was even abundant, *P. brassicæ* was just hereabout exceedingly scarce. This seems to be the more remarkable in view of the reports from Norfolk of its abundance there at the end of August ('Entom.,' vol. liii, p. 40), and at Dovercourt, Essex, earlier in the month ('Entom.,' vol. lii, p. 227).

Cyaniris argiolus is with us a common garden species and occurs all along the sea front, the spring emergence usually far outnumbering that of the autumn. In 1919 this order of things was reversed, the autumn emergence apparently being much the greater and indeed more numerous than usual.

Agriades bellargus and *A. corydon*, both abundant species in their special haunts along the cliffs, were less so than usual, and in one isolated spot, where the first-named species may usually be seen by the score, it was hard to find more than two or three individuals even on the most suitable of mornings. The autumn Vanessids, too, were quite scarce. Often *Pyrameis atalanta* may be seen jostling one another for a seat on their favourite Michaelmas daisies, but not so last autumn; the flower-heads of *Sedum spectabile*, beloved of *Aglais urticae*, were seldom tenanted by that species, and the great patches of "red valerian" on the banks of the parade seemed to have lost their charm, so seldom were either of these species, or that ubiquitous creature *Pyrameis cardui* seen at them; all three species were met with, but in far smaller numbers than for many seasons past. One *Vanessa io* was seen.

But if some species have been unduly scarce some others have by their abundance quite made up for them, as will be seen from the following incidents, and in passing I may mention that *Argynnis aglaia* was met with much more commonly in its headlong flight along the hollows on the Downs than for many years, and that *Macroglossa stellatarum* has been exceptionally frequent, cropping up in all sorts of places and at all hours of the day from early morning till late evening, from mid June till late September, and on two separate occasions during the last-named month single specimens of *Colias edusa* were seen flying over the parades.

On July 16th I had occasion to visit the woods around Hailsham. It was an exceptionally fine afternoon, and on entering a ride in the woods, right down which the sun was shining with its full force, I found *Dryas paphia* and *Limenitis sibylla* flying in profusion; the ground was very slightly damp from a light shower that had fallen the day before, and both species were dividing their attentions between the bramble blossoms and the damp ground, *L. sibylla* resting on the path so thickly in some places that it was difficult to walk there without treading on them. I had no net, but it was easy work to fill what few pill-boxes I had in my pocket with a sample of the two species picked up from the path with my fingers; unfortunately they were all more or less chipped. Here, too, *Pieris napi* was very common, but they seemed to confine their attentions to the bramble blossoms; many *Aphantopus hyperanthus* were seen and *Epinephele ianira* was abundant.

September 18th was a brilliant morning, and on a walk along the parade about 9 a.m. (G.M.T.) I noticed several specimens of *Tortrix pronubana* flitting about, sometimes singly, at others two or three or half-a-dozen in a bunch, but on reaching a particularly well-sheltered spot backed by an ivy-covered bit of wall perhaps a hundred yards in length, and receiving the direct rays of the morning sun, they were flying in the utmost profusion. There were certainly hundreds of them on the wing at the time, and the bright sunlight on their brilliant orange-coloured hind wings as they pursued their curious zig-zag flight was a sight not easily to be forgotten. They appeared to be all males, the females having a much heavier and less jumpy flight. On passing the same spot later in the morning not one was on the wing; their flight for the day was over.

Eastbourne;

February, 1920.

FIVE NEW STEPHANIDÆ IN THE BRITISH MUSEUM.

By E. A. ELLIOTT, F.Z.S., F.E.S.

Diastephanus sulcatus, sp. nov.

♀. Face irregularly rugose, vertex and occiput trans-striate, with very distinct longitudinal sulcus, three stout curved carinæ between the posterior ocelli, temples smooth, posterior margin of head bordered. Scape longer than cheeks, second flagellar joint twice as long as first, third as long as first and second together. Neck of pronotum finely trans-striate, semiannular smooth in front, basally arcuately striate; mesonotum rugose, scutellum laterally strongly punctate; metanotum longitudinally carinate; propleuræ smooth, mesopleuræ finely trans-striate, apically punctate; median

segment and metapleuræ cribrate punctate, the former with an elongate triangular central basal space, punctate and extremely finely trans-striate and dull, bounded by large punctures. Petiole trans-striate, shorter than the remaining smooth segments. Terebra shorter than body, black, spicula pale red. Hind coxæ trans-striate, their femora glabrous, bidentate, tibiæ compressed to middle. Wings hyaline.

Black; head red, apices of tubercles and the carinæ on vertex black, scape and first flagellar joint rufo-testaceous, second joint darker red, apically black; anterior tibiæ and all tarsi rufescent. Femoral teeth white.

Length 13 mm.; abdomen $7\frac{1}{2}$ mm.; petiole $3\frac{1}{2}$ mm.; terebra 11 mm.

Hab.—Luang Prabang, Indo-China, September 29th, 1917 (R. V. de Salvaza).

The sculpture of the median segment resembles that of *leucodontus*, Schlett., which the author describes as "basally and centrally smooth," and agrees also in the colour of the head and the femoral teeth. It differs in the sculpture of the head and prothorax and in the entirely black terebral sheaths.

Diastephanus quadridens, sp. nov.

♀. Frons strongly arcuate rugose, vertex and occiput strongly trans-striate and sulcate, three straight carinæ between the posterior ocelli, temples smooth, ocellar space rugose, posterior margin of head bordered. Scape about as long as cheeks, second flagellar joint one and a half times as long as first, third as long as first and second together. Prothorax coarsely trans-striate, basally more finely and the extreme base smooth; mesonotum trans-rugose, marginal punctures of scutellum deep; propleuræ finely striate, mesopleuræ punctate above, smooth beneath; median segment and metapleuræ cribrate punctate. Petiole finely trans-striate, as long as the remaining smooth segments. Terebra longer than body, black. Hind coxæ and femora densely and finely trans-striate, the latter bidentate, but the two prominences on the basal half are so unusually developed as almost to be called teeth, tibiæ compressed to middle. Wings hyaline.

Black; head and two basal joints of antennæ rufo-testaceous, vertex nigrescent.

Length 15 mm.; abdomen 10 mm.; petiole 5 mm.; terebra 17 mm.

Hab.—Luang Prabang, Indo-China, October 5th, 1917 (R. V. de Salvaza).

This species is characterised by the unusual development of the femoral teeth and by the sculpture of the mesopleuræ, hind coxæ and femora.

Diastephanus trilineatus, n. sp.

♀. Frons and vertex very finely arcuate striate, occiput trans-striate, posterior margin of head bordered, carinæ between the

posterior ocelli subobsolete. Scape as long as cheeks, second flagellar joint half as long again as first, third as long as first and second together. Pronotum trans-striate, mesonotum diffusely punctate, scutellum smooth, propleuræ smooth, mesopleuræ finely striate and punctate; median segment and metapleuræ cribrate punctate. Petiole trans-striate, apically smooth, as long as remainder of abdomen, which is smooth. Terebra shorter than body, with subapical white band. Hind coxæ trans-striate, their femora smooth and bidentate, tibiæ compressed to slightly beyond middle.

Black; mouth parts, inner and lower orbits, frons centrally and two basal joints of antennæ flavous; vertex and occiput nigro-rufescent; legs more or less rufescent.

Length 9–13 mm.; abdomen 5–8 mm.; petiole $2\frac{1}{3}$ –4 mm.; terebra $8\frac{1}{2}$ –12 mm.

Hab.—Hoabinh, Tonkin, August, 1918 (R. V. de Salvaza).

The dimensions are those of two specimens in the British Museum, differing in size only. The colouring of this species is exactly as in *D. bilineatus*, Elliott, from which it differs in the bidentate femora with unicolorous teeth.

Diastephanus simillimus, sp. nov.

♀. Head extremely finely trans-striate, second flagellar joint fully twice as long as first, third about as long as first and second together. Neck of prothorax rather finely trans-striate, semiannular smooth; mesonotum punctate, mesopleuræ smooth above, punctate beneath; median segment and metapleuræ cribrate punctate. Petiole very finely trans-striate, slightly longer than the remaining smooth segments. Terebra much shorter than body, black. Hind coxæ trans-striate, femora smooth, bidentate, tibiæ compressed to middle. Wings hyaline.

Black; the front of the head is coloured exactly as in *trilineatus*, Elliott; anterior tarsi pale.

Length $12\frac{1}{2}$ mm.; abdomen $7\frac{1}{2}$ mm.; petiole 4 mm.; terebra 9 mm.

Hab.—Hoabinh, Tonkin, August, 1918 (R. V. de Salvaza).

This species bears a strong resemblance to *trilineatus*, but is easily distinguished by the longer second flagellar joint and by the entirely black terebral sheaths.

Diastephanus trilobatus, sp. nov.

♀. Frons and vertex extremely finely, occiput more coarsely trans-striate, posterior margin of head very finely bordered. Scape slightly longer than cheeks, first and second joints of flagellum of equal length, third about as long as first and second together. Pronotum transrugose, apically coarsely, basally more finely, the extreme base smooth; mesonotum and scutellum smooth with a few coarse punctures, mesopleuræ smooth above, punctate beneath; median segment coarsely and irregularly, metapleuræ cribrate punctate. Petiole shorter than rest of abdomen, finely trans-striate remaining segments smooth. Terebra very slightly longer than

body, its sheaths black. Hind coxæ basally punctate, the remainder, trans-striate, femora bidentate, tibiæ compressed to beyond middle. Wings hyaline.

Black; head beneath, inner orbits and frons flavous; the upper margin of the colour is trilobed, the central narrow streak extending to the top of the lower tubercle, the outer lobes triangular; antennæ basally rufo-testaceous, posterior metatarsi white.

Length 11 mm.; abdomen 7 mm.; petiole 3 mm.; terebra $11\frac{1}{2}$ mm.

Hab.—Hoabinh, Tonkin, August, 1918 (R. V. de Salvaza).

Differs from *D. trilineatus*, Elliott, in the shorter second flagellar joint, the sculpture of the mesonotum and mesopleuræ, the absence of the white band on the terebra and the colour of the face. In *D. trilineatus* and *simillimus* two descending rufescent streaks divide the space between the eyes into five strips of colour of about equal breadth, and the lower tubercle is entirely black; in the present species the outer streaks are broadly triangular and the flavous colour extends to the top of the lower tubercle. The three species are undoubtedly very closely related.

41, Chapel Park Road,
St. Leonard's-on-Sea;
December 29th, 1919.

COLLECTING FUNGUS-GNATS.

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

THE best means of gauging the progress made in British entomology is a comparison of the present status of any given group with that it occupied at some definite former period. As a very small chap I had a great ambition, as most kiddies have, to know the name of everything I saw, and was most annoyed with my nursery governess because she would persist in calling a tiny thing one could hardly see but was most obviously circular "a beetle," and great fat things half the size of one's finger and of the same shape, "a beetle." They could not both be beetles, I maintained, because she herself had to admit they were different! But I had no knowledge in those pristine days of how little the greybeards themselves knew of such matters, or what the hiatus *valde deflendus* would be ere one came to discover the name of each of these and other insects. This was 'way back in the seventies, in the days of woolly-bears and wood-lice, and now, forty years later, some progress really is apparent. It is slow, disappointingly slow, which we must lay at the door of spasmodicity. All, or nearly all progress is owing to individual effort, which is to say that a man becomes obsessed by an enthusiasm for a certain group, and works like a Trojan,

with the result that that group emerges from his hands in a new and scintillating garb of comparative finality. He has collected all its specimens in his vicinity and perhaps elsewhere, worked them systematically and published a monograph; the result will be of infinite value, and the infinity of the value will be in direct ratio to the man's ability. Forty years ago not a dozen people in England knew a Mycetophilid when they saw it; now there are a fair number of Dipterists, and they all know it; there are quite a lot of general entomologists, and they, for the most part, know it in a vague way; I myself know it much in the way that I know a glacial man's skull from that of a cave tiger.

Nothing more exact is claimed for me, and I owe the names of all my recent captures in this delightful family of fungus-gnats to Mr. F. W. Edwards, who has been so good as to look them through and tell me what they are. Without names, natural objects appeal to nothing but our æsthetic taste; with them, the world of their habits, economy, differentiation and utility is at once thrown wide. This door Mr. Edwards has opened and I propose to see what is beyond it, and thence, all ignorant of literature upon the subject, to bring something new in the way of distribution and methods of collecting these beautiful little flies. That they do feed in fungi I suppose one must take for granted as known since De Geer's time; yet it seems curious that I, who may claim a pretty messy experience with Boleti and Agarics through a decade of beetle-collecting, have never had the least experience of the fact. Nor have I yet succeeded in discovering the imagines' *modus vivendi*: the most prolific hunting-ground seems to be the windows of one's own house, if it be a country one; and the second best to be the luscious flower-tables of umbelliferous plants near woods.

The most satisfactory point about the Mycetophilid study is the limited number of British species: no more than 150 were known to occur here with any degree of certainty in 1900, and during the last score of years this number, though naturally augmented by later investigation, has not increased to an alarming extent. This is doubtless due to the fact that most of the species are of such size and so brightly coloured that they attracted the attention of Curtis and our early entomologists, who duly placed upon record those that were then described.

Of the first subfamily, the Sciarinæ, little can be said here because its members are the smallest, dullest and most inconspicuous of the whole group. *Sciara Thomas*, a black gnat with black wings, is very common upon all kinds of flowers; it is an autumn species, and I have found it from July 7th, 1897, to September 25th all over Suffolk and throughout the New Forest; it seems ubiquitous and frequently occurs in

cop. On the contrary, *S. carbonaria* appears in the early spring; I found it flying in an Ipswich garden on April 29th, 1895. Another kind, probably *S. flavipes*, Pz., was taken in Wangford Wood near Southwold on September 18th, 1913; but the remainder must be omitted for lack of names: they are often common among *Caltha palustris* about May 10th, on bracken in woods during September, on *Heracleum* flowers in July, and on house windows in June; on May 21st, 1910, there were quantities among the aphid, *Drepanosiphum phalanoides*, whose sweet secretion they licked up with avidity on maple in my garden here; and the same year I found species at Louisburg in Co. Mayo. I do not think that the majority feed in fungi, but simply in decaying wood. On January 22nd, 1898, several larvæ were found in rotten poplar at Bentley (all localities are in Suffolk unless noted), from whose puparia both sexes emerged on May 10th following, and the male is in the British Museum, from a willow-stump, brought into my study on April 10th, 1907, one *Sciara* emerged on the 13th of the following month, and on 20th three more were out and a pair of them at once copulated; on February 14th, 1904, a foot-long rotten oak branch was brought home from a Wherstead fir wood, from which there emerged on June 9th next hundreds of *Sciara* in both sexes.

The majority of the Mycetophilinæ are common insects, but of the genus *Cordyla* I have met with only two species, by sweeping at Letheringham Wood on August 15th, 1918, and on windows of this house on August 11th, 1919. *Dynatosoma fuscicorne* is a lovely black-and-white gnat, which occurred on the windows of this house on August 26th, 1917. *Mycetophila punctata*, Mg., now called *M. fungorum*, De G., certainly hibernates, since I have discovered it in a bag of ground-refuse brought home on February 14th, 1904, from Wherstead; it seems to first come abroad on April 16th, when I beat it from *Pinus sylvestris* in 1897; it seems to disappear after May 17th until the middle of July, and is then abroad till September 18th, when I took it in 1912 on Southwold pier. *M. lineola* is even more a winter species, probably more familiar to Coleopterists than Dipterists; on December 13th, 1899, it was gaily flitting about my bedroom window in Ipswich, though snow covered the ground; it occurred in the Wherstead bag with the last species in February; in Bentley Woods on February 4th, 1900, it was not rare, while exactly a month later I found it in the utmost profusion there by beating *Picea excelsa*; singly at Bramford in April and Westleton in July. *M. bimaculata* has only occurred to me in March—on 3rd by beating fir at Bentley in 1899, on 4th by beating *Picea* there the next year, and on 16th there five years earlier. *M. cingulum* is found on these house-windows towards the end of October till November 30th,

and again in the middle of April at Bentley. In a peculiarly marshy wood near the Suffolk coast at Blythburgh a great variety of Mycetophilidæ were found on birch bushes September 14th, 1912; and among them a couple of *M. guttata*, Dz., which was on a Southwold window on September 10th, 1919; *M. dimidiata* appears on the Monks Soham windows about May 22nd, and at Setley in the New Forest was another species on July 12th, 1909.

Close to the sea at Southwold a fair number of *Trichonta submaculata*, Staeg., were on the panes of a beach-shelter at 6.15 p.m. on September 19th, 1913; and I took one that Mr. Edwards considers a new species at Monks Soham on August 18th, 1917, now in the British Museum. *Rhymosia fasciata* is among the most abundant kinds on the windows here from the end of October to that of November (I have just taken it sitting quiescently on an outhouse wall, November 24th, 1919); but *R. domestica* has only occurred to me in a peculiarly sylvan spot on Crow Wood Hill near Nottingham on August 9th, 1914. *Erechia festiva*, Winn., and *E. crucigera*, Lun., also appear on these windows in the late autumn; both *E. trivittata*, Staeg., and *E. fungorum* occurred in the above damp wood at Blythburgh; *E. parva*, Lun., I beat from birch bushes on September 9th, 1915, in Tuddenham Fen; and somewhat doubtful *E. guttiventris* were captured at Cromer in Norfolk during August, 1903, and at Washbrook on March 27th, 1897. *Allodia lugens*, Wied., was swept at Westleton on September 19th, 1912. Two rather doubtful *A. caudata*, Winn., were in a beach-shelter at Southwold on 25th of the following September; the pretty little *A. amœna*, Winn., beaten from *Pinus sylvestris* at Potters Bridge there five days earlier; and another species occurs on Monks Soham windows during mid-May.

The species of Mycothera and Brachycampta have hitherto eluded me, though Verrall found several in this county. *Docosia valida*, on the contrary, is abundant, quietly sitting on the trunks of large oak trees in Bentley Woods early in May, and also on those of Palmer's Heath at Brandon late in the month. *D. sciarina* was swept from *Mercurialis perennis* on May 4th, 1901, at Coddendam. My only *D. (Megophthalmidia) crassicornis* was sucking the stylopods of *Angelica sylvestris* on September 1st, 1903, at Harkstead, near King Harold Godwinsson's hunting estate. *Zygomyia valida* is abundant on Monks Soham windows from August to November, and I took it at Cromer in Norfolk in 1903 during the former month; *Z. notata* also was at the windows here on August 21st, 1919. The handsome orange *Glaphyroptera*, now called *Leiomyia*, species are always abundant on *Heracleum sphondylium* flowers in the summer. *G. fasciipennis* thus occurred at Peterborough in Northants on June 14th, 1908, at Foxhall on September 10th, 1903, on thistle flowers in the Orford salt-

marshes on July 7th, 1919, and on *Chærophyllum sylvestre* at Claydon on June 16th, 1903; and a species, probably *G. cylindrica*, Winn., abounded at Staverton Thicks a few miles away during the preceding August; *G. subfasciatus*, the very distinct *G. winthemi* and a fifth species, frequent the windows at Monks Soham during June, August and September.

Anaclinia nemoralis I have only beaten from mountain-ash in Bentley Woods on May 29th, 1902, and swept at Market Rizen in Lincolnshire on 11th of that month in 1912. *Boletina basalis* was also swept at Bentley on May 13th, 1900; and on June 17th, 1907, I was so fortunate as to take *B. dispecta*, Dz., on bracken in the New Forest, Wilverley Inclosure, which specimen alone represents the species in the British Museum. The large and handsome *Leptomorphus Walkeri* is surely rare, for it has occurred to me only on July 22nd, 1904, at Cutler's Wood in Freston. *Lasiosoma hirtum* occurs on the windows here in July and August, as well as in May; *Sciophila (Mycomyia) marginata* appears there in June, and in the Bentley Woods from April 11th to May 20th sometimes on fir branches. *S. fasciata* was on "The Elms" windows at Ryde in the Isle of Wight on March 16th, 1898; *S. incisurata* in the above Blythburgh Wood; *M. lucorum* in Staverton Thicks on September 7th, 1916; and other species occur on these windows in August and early October.

The Ceroplatinæ are doubtless the most abundant group as regards specimens; and *Asindulum rostratum*, Ztt., abounds on tables of *Sphondylium* in my orchard here throughout July, frequently *in cop.* or hovering in little clouds close to the flowers. The large black *A. nigrum*, Latr., was long mistaken for *Platyura atrata* by Dr. Meade; and Piffard thought it *P. inticta* of Schiner; I met with a good many examples on July 12th, 1900, only, on both *Angelica* and *Heracleum* flowers in marshes at Henstead and Kessingland. Of the genus *Platyura*, the large *P. marginata* was found at Setley and Burley in the New Forest on *Erica tetralix* during June and July, as well as on reeds by the Orwell at Ipswich on June 1st, 1897. *P. atrata* was sitting on the road at Bildeston on July 30th, 1898, but *P. semirufa* is not rare in August and September on unbelliferous flowers at Lyndhurst and Matley in New Forest, at Crow Wood Hill near Notts., at Chippenham Fen in Cambs., and in Suffolk at Easton Broad, Monks Soham, Tuddenham Fen, Staverton and South Cove. *P. flava* occurred at Grovely Wood near Salisbury on June 27th, 1911, with a doubtful specimen beaten from oak at Staverton on June 14th, 1904; *P. fasciata* was found at Crouch Hill near London on June 11th, 1907, and on August 15th, 1913, I took one flying in a garden hut at Monks Soham, exactly like *Culex pipiens*. *P. nemoralis* is common on windows here from the end of May to July 23rd; also I have found it among plantains in the lawns and at Tannington sitting on the sawn end of timber.

P. atricauda is rare among the *A. rostratum* at *Heracleum*; *P. zonata*, Ztt., is on these windows early in July, but is much rarer than *P. unicolor*, which delights in the hottest weather, and of another species (? nov.) I took a specimen on July 6th, 1919. *Odontomyx flavipes*, Pz., seems quite a late thing, whereof I swept one from nettles and saw others close by on dilapidated *Heracleum* flowers on October 27th, 1903, only, at Wherstead.

Both species of *Ceroplastus* have fallen to my net; *C. lineatus* was considered doubtfully British till eight or ten flew about a dead willow trunk, full of *Stigmus Solskyi*, in my garden on June 6th, 1911; one had been taken here on 16th of the preceding August ('Ent. Mo. Mag.,' 1912, p. 264). *C. tipuloides* was first beaten from oak in Staverton Thicks—all really ancient forest—on June 24th, 1903, and subsequently was taken sitting on the wall of a Monks Soham outhouse on August 16th, 1910.

The distinctively long-horned Macrocerinæ are well represented in Suffolk, where *Macrocera lutea* have been captured at Barton Mills, Mildenhall and Tuddenham by beating birch and *Pinus sylvestris* from June 3rd to 21st only. The pretty little *M. phalerata* is not uncommon at Gosfield in Essex (how Piffard and I hunted for its name twenty years ago!), and Tuddenham in marshes, at Staverton on oak, and at Monks Soham on cypress and windows; my dates are from June 14th to August 27th. *M. centralis* is from Perry Wood in the New Forest on June 14th, 1911; and there at Matley Bog on July 7th, 1909, I took another species, probably new and now in the British Museum. *M. fasciata* is not rare on the windows here and very handsome when alive, from May 29th to October 17th, from 8 a.m. to dusk at 7.30 p.m.; also I found both sexes at Killarney in June, 1913, but *M. stigma* is the commonest of the genus on my windows and in a glass fly-trap in the paddock; here it has occurred annually for the past ten years between May 27th and July 9th only, sometimes as early as 8 a.m., though it can hardly be generally a common species, since elsewhere it has turned up only at Killaloe in Tipperary, where I took a female on June 16th, 1913, in a shady lane at Wherstead on the same day in 1904, and on oak at Staverton two days earlier.

In the same Blythburgh Wood, *Bolitophila glabrata*, Lw., was found on September 14th, 1912, and my only *Diadocidia ferruginosa* was taken on the dining-room window at Monks Soham on September 14th, 1917. I was a day or two too late to secure a good series of *Mycetobia pallidipes* on June 9th, 1900; then but a single specimen was left yet sitting at the base of a very large white poplar (felled the next year), by the side of a lot of its empty puparia, which were protruding from exuding sap, at Town Street in Brandon. This circumstance seemed to me conclusive evidence that the larvæ had fed upon the moist wood fibre; and I am of the opinion that it will be found the majority of

Mycetophilidæ have similar habits: that their larvæ live mainly in the cambian layer, between the bark and timber of rotting trees and their fallen limbs.

In my "Diptera of Suffolk" ('Trans. Norf. Nat. Soc.,' 1915, Suppl., p. 180), 213 species of *Mycetophilidæ* are ascribed to Britain, whereof 59 are recorded from Norfolk, 95 from Suffolk, and 119 from the two counties combined; this paper adds 15 species to the Suffolk list, bringing its total to 110 different kinds, and *Exechia guttiventris* to the Norfolk list, making its total 60.

Monks Sahom House,
Suffolk.

NOTES AND OBSERVATIONS.

THE SYDNEY WEBB COLLECTION.—What's in a name? Shakespeare tells us that a rose by any other name would smell as sweet. Yet we doubt whether the large number of historic specimens that were sold at Stevens' Auction Rooms on March 9th, when the fourth and concluding portion of the Sydney Webb Collection was disposed of, would have fetched anything like the prices that they did had they not had that name behind them. It is an interesting scientific fact that an insect not usually occurring in this country should occasionally find its way here, and one that is worthy of being duly put on record when it happens; yet it is open to doubt whether the value of such specimens is thereby so greatly increased. But the prices paid seemed to indicate that more than one would-be possessor of them considered that it is so. Thus, *Leucania extranea* made £8; *Luperina dumerilii* £7 10s.; *Agrotis flammatra* £10 10s.; *Harmodia (Dianthæcia) compta* £6 10s.; *Miselia bimaculosa* £4 5s.; *Polia zincenii (lambda)* £10 and £5 10s.; two *Hadena peregrina*, included in a lot of sundries, £6; *Catephia alchymista* £9 9s.; and *Pseudophia (Ophiodes) lunaris* £5 10s. and £10 10s. Nor were the other rarities and "extinct" species, when in good order and well authenticated, less eagerly sought after, but not otherwise. Two *Synia musculosa* brought 25s. and 27s. 6d. each, while others sold in lots with sundry other species made only from 5s. to 10s. per lot. *Crymodes exulis* of the Scottish mainland form in lots of two realised £6, £3, and £3 per lot, but for similar lots of the Shetland form 20s. and 12s. per lot was paid. Males of *Hydrilla palustris* sold singly made from 25s. to 32s. 6d., and females 30s. to 52s. 6d. Twenty *Noctua subrosea*, of which several were quite good specimens, sold from £10 down to 16s. 3d. apiece. Seven *Cerastis erythrocephala* in one lot ran up to £9, but eight in a lot with other things made only 45s. A lot which included a varied series of *Epunda lutulenta* and a "very white var." of *Miselia oxyacanthæ* brought £4, and one consisting of nine *Heliothis armigera* and twenty *H. peltigera* £4 5s. *Xylina furcifera (conformis)*, put up in lots of three, made from 40s. to 60s. per lot, the two best *Catocala frazzini* 60s., and two others not quite so good 35s. The long series of *Chrysophanus dispar* were distributed over three of the sales, and those reserved for this one were not the worst of them. Two streaked varieties ran up to £16 and £12 each respectively;

males went at from £12 10s. to £5 10s., females £11 to £5 10s., undersides £7 10s. and £4, and a "pupa case" £4. The historic series of the *Eudoreæ*, contained in three cabinet drawers, was offered in one lot and made £12 10s., while the no less famous series of *Peronea cristana*, which occupied two whole drawers and contained the type-specimens of several of the named forms, ran up to £38 before falling into hands where we are glad to know that it is likely to be of real scientific value. Many other lots of the small fry also made good prices—a healthy sign as showing that these too often neglected groups have still some interest for the more intelligent workers. The few books included in the sale went irregularly; a lot consisting of two copies of 'Stanton's Manual,' the one interleaved with F. Bond's notes and the other Webb's own copy, also with his notes, sold for 65s., and 'Barrett's Lepidoptera,' large paper edition with coloured plates, made £26. Cabinets appeared to be less eagerly sought than they were a year or two ago, a really good forty-drawer making £44, and a forty-four £48. The total of the day's sale exceeded £800, thus bringing the total realised for the whole collection with its appurtenances to within a few pounds of £3000—an amount, we believe, well in excess of anything previously obtained for any private entomological collection at public auction.—R. A.

NOTES ON PARARGE MEGERA AND P. EGERIA.—As an indication of the remarkable forwardness of the season it may be of interest to note that on the 17th and 18th inst. I beat eight full-grown larvæ of *Pararge megera*. A few of these had already hung themselves up for pupation on the 19th. I have on three different occasions bred interesting forms of *Pararge egeria* by forcing the larvæ, which usually hibernate. Of three larvæ thus reared, 1903-1904, one emerged a variety. In 1905-1906 I repeated the experiment with better success, obtaining eight well-marked forms out of eighteen pupæ. This last winter a repetition of the conditions resulted in further varieties. I do not give the number as all the imagines have not yet emerged. The varieties bred are of three forms: (1) Upper side—some of the central spots are missing. Under side, fore wings—middle discoidal cell-spot much intensified. Hind wings nearly uniform in tint, with almost all transverse markings absent and the marginal dark shade much intensified to a dark purplish tint. (2) A general lightening of the ground tint of the upper side to a pale greyish-brown. (3) A smudging of most of the pale spots on the upper side and obliteration of the apical eye-spot.—E. D. MORGAN; "Freedon Cottage," 27, Sanford Crescent, Chelston, Torquay, February 20th, 1920.

SCARCITY OF AGLAIS URTICÆ.—When reading the interesting notes of Mr. Rowland-Brown and others on the above subject, it must have occurred to many how much entomological knowledge is lost through scattered and imperfect statistics and observations. Such partial statistics are very apt to lead us to erroneous conclusions. Surely the time has come for better methods? The number of lepidopterists has increased so rapidly that if the country was divided into 150 or 200 divisions there could certainly be found at least one collector in each district willing to aid any organised effort

to increase entomological knowledge by record-keeping. Such volunteers ought easily to be found through the various entomological societies. Sufficient knowledge to identify the species is all that would be necessary, so that beginners would be welcome. I would venture to suggest that the experiment be confined at first to the Rhopalocera and afterwards extended. Each volunteer could be supplied with a form on which to enter his particulars under headings such as "name of species," "date of first capture," "place found, whether woodland, marsh, moor, downs, mountain, etc.," "nature of soil, whether chalk, clay, etc.," "whether abundant, common, scarce or rare," "other observations." The volunteers should send in their forms at the close of the season, together with a type pair of each common species (wild caught, not bred), to an appointed secretary to tabulate and summarise. The results could be published annually either in the form of a special supplement to the 'Entomologist,' or as a cheap pamphlet. It is important that the secretary should be an enthusiastic, energetic and experienced lepidopterist of high standing, and I would venture to suggest the name of Mr. Rowland-Brown if that gentleman would accept the post. I should be quite willing to volunteer my services for the south coast of the Isle of Wight for 1920.—ERNEST CORNELL; Burmah, Newport Road, Ventnor, January 8th, 1920.

NOTES ON THE EARLY GEOMETRIDÆ.—The appearance of the early spring Geometers has been erratic this year at Windermere. By January 14th *Phigalia pedaria* was quite common on the electric lamps and *Hybernia leucophaæaria* and *H. marginaria* were just beginning. A very fine example of the "black" form of *P. pedaria* was taken. One noteworthy point this year with regard to both *H. marginaria* and *H. leucophaæaria* was the large proportion of dwarf specimens, some of the former species being no bigger than odd fine examples of *Cheimatobia brumata* in my collection. Perhaps the abnormal heat here in the latter half of May last year was accountable for the premature pupation of the larvæ. I have noticed the same tendency when larvæ have been "forced" at high temperatures. On February 5th the first *Anisopteryx æscularia* was observed—an early date for this part of the world; whilst on the same night the earliest examples of *Hybernia rupicaprararia* appeared—an insect we are accustomed to look for about mid-January. The extreme form (var. *fuscata*) of *Hybernia marginaria* is fairly common at Kendal (eight miles away), but apparently absent from Windermere, though occasional specimens with a leaning towards melanism do occur at the latter place. This is curious, for other species—*Phigalia pedaria*, *Gonodontis bidentata* (var. *nigra*), *Hybernia leucophaæaria* and *Himera pennaria* are more strongly melanic at Windermere than at Kendal. In the latter locality we have no recorded capture of a black male *P. pedaria*, although black females predominate.—FRANK LITTLEWOOD; 22, Highgate, Kendal, February 16th, 1920.

THE WINTER MOTHS.—I was interested to read the note of your correspondent, Mr. H. D. Ford (*antea*, p. 67), *re* the above, and in answer to his query I can inform him that his observation as to the prevalence of females over males in most of these moths is quite usual. This at first sight may not appear so to those who search for

the imagines in their natural haunts, as the males, being winged, are more readily seen and captured, but in breeding them I have invariably found such to be the case. Of the following species, all of which (except the last) have apterous females, I have had considerable numbers under my observation at various times over a number of years, mostly from larvæ collected during the previous summers, and have invariably found female emergences preponderating: *Hybernia rupicapraria*, *H. leucophæaria*, *H. aurantiaria*, *H. marginaria*, *H. defoliaria*, *A. æscularia* and *P. pedaria*. Of *A. hispidaria* and *N. zonaria* I have had no experience, and cannot therefore say if this character is general with them or not. Strangely enough, in the case of *L. hirtaria*, in which species the female is winged, of two batches reared by me the emergences were nearly equal. Last June, being in the neighbourhood of West Runton, Norfolk, I found the trees in many places entirely defoliated by countless hordes of caterpillars. They hung from the trees in festoons, and covered them and the hedges for several miles; it would be no exaggeration to say there were millions. The trees attacked were oak, birch, hazel, sycamore, whitethorn, also bramble and honeysuckle, and in a lesser degree ash and sweet chestnut. There were five species at work, and I collected about twelve of each, *defoliaria* and *pedaria* being apparently the most numerous. From these larvæ imagines emerged as follows: *H. leucophæaria*, 3 ♂, 7 ♀; *H. marginaria*, 3 ♂, 5 ♀; *H. defoliaria*, 2 ♂, 8 ♀; *A. æscularia*, 2 ♂, 7 ♀; *P. pedaria*, 1 ♂, 9 ♀. The theory of protection to the species by this arrangement of greater safety to the female (through her apterous condition) during the stormy and inclement weather general in the early months of the year is ingenious and taking, but when it is remembered that there are other moths abroad at this time of the year whose females are not apterous, and that there are some females that are so among summer-emerging species, the correctness of the reasoning may be questioned, and room is given for further research and speculation as to whether this is or is not the true answer to the riddle.—J. E. CAMPBELL-TAYLOR; March 6th, 1920.

THE "WINTER" MOTHS.—In reply to Mr. H. D. Ford ('Entom., March, 1920, p. 67), in my experience the females of the "winter moths" and of *Phigalia pedaria* are always quite as plentiful, and very often much more numerous, than the males. One evening in the second week of last June I beat out in Lepton Wood, near here, a quantity of full-fed larvæ of Hybernids and *Phigalia pedaria*, and this winter have bred fifty-eight *P. pedaria*—twenty-eight males and thirty-five females. I did not keep count of the other species, but in the considerable number of *Hybernia aurantiaria* which emerged a considerable majority were females. Of *H. defoliaria* I only bred six or eight specimens, about half being of each sex. Thus far the males of *H. marginaria* largely predominate, but as they are still emerging it is possible the females may appear later. But my more immediate object in writing this note is to ask if it has been observed in other parts of the country that the specimens of these moths are this winter much below the average in size? None of the males of the *P. pedaria*, *H. aurantiaria* or *H. marginaria* are of

ordinary size, most of them considerably below, and some only about half what they ought to be. It can scarcely be that the larvæ were starved, as although some of the trees were fairly well stripped, there was still sufficient foliage on all the trees I beat to have fed up all the larvæ on them and a good many more. I may add that all the *H. marginaria* I have bred or seen are melanic and so are also most of the *P. pendaria*.—GEO. T. PORRITT; Elm Lea, Dalton, Huddersfield, March 12th, 1920.

CACÆCIA UNIFASCIANA, DUP.—Mr. Sheldon's article on the larva of this species has helped to solve a little problem that has puzzled me for years, viz. how and where does it feed up in the spring? He quotes Spuler to the effect that it then feeds partly on *withered* leaves. I think Spuler is quite right, because although the imago is often excessively abundant one never or "hardly ever" finds the larva. I certainly have bred three or four from pupæ in spun-together privet leaves, but excepting on one occasion a search for the larva in the spring has always proved futile. Early in April, 1894, when examining one of those birds'-nest-like formations on a horn-beam tree in the forest at Woodford, I noticed a number of small larvæ amongst the accumulated dead leaves, etc., in the dense mass of twigs; thinking they might be *P. glaucinalis*, which has often been found in similar formations on birch trees, I brought it home and placed it in a cardboard hat-box. Looking in the box a fortnight later I noticed the larvæ still amongst the rubbish but they did not appear to have increased in size. Upon looking in again in June I was astonished at the sight of six *unifasciana*, and others emerged to the number of thirty-one all told. Now if these larvæ fed at all after I brought them home they *must* have fed on the dead leaves amongst the twigs because there was nothing else for them to eat! Perhaps if we searched amongst the dead leaves we might find them more commonly. On the other hand, they may be strictly nocturnal, retiring to the dead leaves at dawn as Mr. Sheldon's appear to have done. I alluded to the matter in 'Entom.,' vol. xxxv, p. 130. In 'Stainton's Manual' privet is given as the food-plant, and to this I find I have added "whitethorn," doubtless with good reason, but I cannot remember when this pabulum was added. I have seen it flying in great numbers at dusk over whitethorn where there was certainly no privet growing near.—A. THURNALL; Wanstead, Essex, March 8th, 1920.

PERONEA RUFANA DOES HIBERNATE IN THE IMAGO STAGE.—In the 'Entomologist' for 1919, p. 172, I question whether this species hibernates as an imago, and state that "so far as I am aware no one has seen a specimen after hibernation." Clearly I had overlooked a communication to this magazine by Mr. F. C. Whittle, vol. lii, p. 54, in which he observes that he obtained imagines of this species in the spring of 1918 at Camghouran. Since the publication of my paper I have heard from two correspondents, Mr. J. Gardiner, of Hartlepool, and Mr. T. Ashton Lofthouse, of Middlesbrough. Both these gentlemen inform me they have observed *P. rufana* after hibernation. Mr. Lofthouse says: "I have a specimen, apparently a male, which was taken by myself on March 30th, 1907." Mr. Gardiner writes:

"Some thirty years ago, when searching in early spring for larvæ of *Bombyx rubi* on our sandhills amongst *Rosa spinosissima*, I noticed several *P. rufana* flying about the plants in bright sunshine." Mr. Gardiner adds that neither *Myrica gale* nor *Salix* sps. were near, and suggests that the larvæ fed upon *R. spinosissima*. I do not know whether it has ever been found upon this plant, but as so many of the genus are pretty general feeders it would not be surprising.—W. G. SHELDON; March 1st, 1920.

THE MULLEIN SHARK.—Weismann ('Evolution Theory,' vol. i, p. 124), writing of the mullein, says that owing to the thick hairy felt on its leaves these are "spared by grazing animals, but they have smaller enemies, like the caterpillars of the genus *Cucullia*, which, however, never completely destroy them, but only eat large holes in their leaves." The statement is evidently not altogether true. During the summer the year before last I kept some fifty of the larvæ of *C. verbasci* in confinement, and invariably they one and all ate the mullein leaves clean from apex to base and margin to midrib. And that they eat after identically the same fashion in a state of nature the plants on the railway bank, whence I obtained my captures, fully testified: their leaves were just as wholly and cleanly devoured.—J. W. WILLIAMS, M.R.C.S., etc.; Bewdley, Worcestershire.

PYRAMEIS ATALANTA IN FEBRUARY.—On Sunday last at about mid-day a *Pyrameis atalanta* was seen by me sunning itself in the garden. This is worth recording, as a few years ago a suggestion was raised that it did not hibernate in this country.—(Miss) K. M. HINCHLIFF; Worlington House, Instow, N. Devon, February 24th, 1920.

EARLY APPEARANCE OF PHEOSIA (NOTODONTA) DICTÆOIDES.—I was surprised to find that a specimen of the above had emerged in one of my breeding-cages which had been kept during the winter in my dressing-room, which had no fire, on February 25th. A second specimen emerged on March 5th.—(Rev.) J. E. TARBAT; Fareham, Hants.

ABNORMAL (?) APPEARANCE OF CARADRINA QUADRIPUNCTATA.—On the evening of February 29th this year a freshly emerged specimen of *Caradrina quadripunctata* flew into the sitting-room window of my friend, Mr. J. Smith, attracted by the light. South notes the species as occurring sometimes in May, but usually associated with the months of July and August. With the weather so abnormally mild as has been the case this winter, anything, apparently, may happen! Continuing my previous note on the early spring moths in this district, it may be of interest to mention *Xylocampa areola* at electric light (Windermere) on February 18th, together with *Malenydris multistrigaria* and *Tenioocampa stabilis*. On the 22nd two melanic *Phigalia pedaria* in a wood quite close to Kendal, the first a good black, the true ab. *monacharia*, the other of similar pattern, but with the smoky parts and wing-rays brown rather than black.—FRANK LITTLEWOOD; 22, Highgate, Kendal.

GRYLLUS DOMESTICUS, LINN.—Examining recently a box of Orthoptera from the Cambridge University Museum I found (Mr. H.

Scott having called my attention to it) a specimen of the house-cricket (*Gryllus domesticus*) which had malformed maxillary palpi, that on the right having the distal segment double, while the left one had the same segment hollow at the end. The specimen, a female, was taken in a manure-heap at Kew on September 5th, 1917. There is an idea prevalent that the house-cricket is becoming less common. Have any of our readers noticed this?—W. J. LUCAS.

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*January 8th, 1920.*—Mr. S. Edwards, F.L.S., President, in the Chair.—Messrs. T. H. Grosvenor, of Redhill, F. W. Cocks, of Reading, O. R. Goodman and A. de B. Goodman, of Goswell Road, H. L. Gauntlett, of Putney, R. Swift and H. Garrett, of Bexley, were elected members.—Mr. Lister exhibited his local races of *Plebeius ægon* and gave an account of his observations on the mosses of Witherslack, where the race *masseyi* is the dominant form.—Local series and special forms of the same species were exhibited by Messrs. Buxton, Mera, Newman, Sperring, B. S. Williams, A. E. Tonge and Swift. A discussion ensued. The problem was, What are the causes which produce the *masseyi* form and make it dominant in the small area at Witherslack?—A further considerable number of species from the Digby collection of *Tinea* about to be placed in the Society's cabinet were exhibited.—Mr. Tonge, an underside of *Ruralis betula* with a curious perfect circle beside the normal narrow silvery band.—Mr. Moore, the very rare *Papilio nobilis* from E. Africa.—Mr. Dunster, the cranium of a skate.—Mr. Bunnett read notes on, and showed photographs of, the act of pupation in the *Nymphalidæ*.—HY. J. TURNER, *Hon. Editor of Proceedings.*

S.W. YORKSHIRE ENTOMOLOGICAL SOCIETY.—The eighteenth annual general meeting of this Society was held at Shelley on January 10th, 1920, Mr. B. Morley, President, in the Chair.—The President and other officers were re-elected. The following new members were elected; Dr. W. J. Fordham, F.E.S., Sheffield; Messrs. F. Hooper, Middlestown; A. H. Lodge, Normanton; G. T. Porritt, F.L.S., F.E.S., Huddersfield; Ashley Smith, Elland; and H. Spencer, Elland.—Among the exhibits were: Mr. Morley: Long and varied series of *Hybernia defoliaria* and *H. aurantiaria*; interesting series of locally taken *Acala variegana*, *Tortrix forskaleana*, *T. conwayana* and local specimens of *Olethreutes salicella* and *Gypsonoma neglectana*.—Mr. T. H. Fisher: Second-brood specimens of *Arctia caja*, variations of *Chrysophanus phlæas*, local specimens of *Incurvaria tenuicornis*, *Gelechia longicornis*, *C. scalella* and *Cerostoma sequella*.—Mr. J. Hooper: Dark forms of *Cosmia affinis* and variations of *Hybernia leucophæaria* and other Hybernids.—Mr. D. H. Harrison: a living *Vespa vulgaris* ♀ taken in the open early in January.—Dr. H. D. Smart: A few locally taken insects of orders other than Lepidoptera, including the rare Dipteron, *Xylophagus ater*, *Chironomus dorsalis*, *C. dispar*, *C. plumosus* and *Tanypus varius*, the last four species being new to the county.—H. D. S.

OBITUARY.

R. BOWEN ROBERTSON, 1860-1919.

It would seem that Major Robertson first began to take up entomology about 1887, when he was living at Hartley Wintney, near Winchfield, for he had then a very small collection and confined himself to Lepidoptera. Not only, however, was the locality in which he was living one of the best in England for a collector of that Order of insects, but Major Robertson was able to get the run of the Bramshill estate, which is specially good for some species, and, being strictly closed to the public, was practically an untouched hunting-ground. He was also free to devote his whole time to the pursuit, with the exception of a short period of training each year with the Militia, and even then, being near Swansea in another good district, he was able to give some attention to insects.

Being a very quick and indefatigable observer little escaped his eye or his net, and though later on his activity was much impaired by an accident which rendered him somewhat of a cripple for life, he still struggled about undauntedly after his prey, while his powers of observation remained as keen as ever.

A few years later he left Hartley Wintney for Pokesdown, near Bournemouth, where he was able to find the extremely local British dragonfly, *Oxygastra curtisii*, Dale, while he and his daughter Nellie re-discovered the Giant Earwig, *Labidura riparia*, Pallas. It was at this time that he commenced to make a collection of dragonflies, while later on he extended his researches to the sawflies and other insects. After some years he left Pokesdown and removed to Chandler's Ford, where he was residing at the time of his death. His insects, which by his wish are to be sold at Stevens' Auction Rooms, are particularly well set.

Although lame, during the war he rejoined the army as a Second Lieutenant in the Royal Defence Corps, but on demobilisation he recommenced in 1919 his old pursuit, appearing to be quite well and not nearly so lame as heretofore. That he did not entirely forsake entomology even during the war is evidenced by the list of captures (published in the 'Entomologist') which he made at Oare Camp, near Faversham, where he was stationed.

Major Robertson was a whole-hearted, keenly-observant, and most successful entomologist, a pleasant companion, and a faithful friend. The entomological world is the poorer for his loss, and especially so are those who were reckoned amongst his personal associates.

W. J. L.

EXCHANGE

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CONTENTS.

A. Noble on Some African Rhopalocera, *N. D. Riley*, 73. Rhopalocera from East Tyrol in 1919, with Notes on Variation, *Thomas Greer*, 76. Random Recollections of the Season of 1919 at Eastbourne, *Robert Alkin, F.E.S.*, 78. Five New Stephanidae in the British Museum, *F. A. Fleet, F.Z.S., F.E.S.*, 80. Collecting Fungus-Gnats, *Claude Morley, F.Z.S., etc.*, 83.

NOTES AND OBSERVATIONS. The Sydney Webb Collection, *B.A.*, 89. Notes on *Pararge megara* and *P. egeria*, *F. D. Mason*, 90. Scarcity of *Aglais urticae*, *Edward Cornall*, 90. Notes on the Early *Geometridæ*, *Frank Littlewood*, 91. The Winter Moths, *J. E. Campbell Taylor*, 91. The "Winter" Moths, *Geo. T. Porritt*, 92. *Cacocia unifasciata*, Dup., *A. Thurnall*, 93. *Peronea rufana* DeG. Hibernata in the Imago Stage, *W. G. Sheldon*, 95. The Mullein Shark, *T. W. Williams*, 94. *Pyrausta atalanta* in February, *K. M. Hinchliff (Miss)*, 94. Early Appearance of *Phaenicia notodonta* (diptera), *J. E. Thorol (Rev.)*, 94. Abnormal (?) Appearance of *Caradrina quadrimaculata*, *Frank Littlewood*, 94. *Gryllus domesticus*, Linn., *W. J. Lucas*, 94.

SOCIETIES. The South London Entomological and Natural History Society, 95. S.W. Yorkshire Entomological Society, 95.

ORIGINARY, 96.

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[No. 684

A NEW ARHOPALA (*LEP: LYCÆNIDÆ*) FROM CEYLON.

BY N. D. RILEY, F.E.S.

In a small collection of *Lycænidaë* recently received from Mr. W. Ormiston from Ceylon there is, amongst other interesting forms, a pair of an *Arhopala* which Mr. Ormiston considered new. After a fairly careful search I have been unable to find any published description with which it agrees and have therefore come to the same conclusion. In such a well-worked country as Ceylon one would hardly have expected such a distinctive species of this showy genus to have been overlooked so long. Its discovery therefore may, I hope, be taken as an earnest of many more yet to be made known.

Arhopala ormistoni, sp. nov.

Arhopala, sp. nov., Ormiston, "Notes on Ceylon Butterflies," pt. i, p. 58, in 'Spolia Zeylanica,' 1918.

♂. *Upper side*.—Both wings uniformly deep rich violet-blue. *Fore wing* with costa and hind margin narrowly black, widest at apex; *hind wing* with costa and inner margin broadly, hind margin narrowly, dark brown.

Underside.—*Fore wing*—ground colour light grey-brown with a faint vinous tinge, areas 1a, 1b and 2 centrally and for greater part very pale shiny grey-brown, cell and remainder of wing surface thickly sprinkled with grey; a small circular spot near base of cell, a larger oval spot in centre, and a still larger one at end of cell, all much darker brown and ringed with white; a discal band of six similar subquadrate spots, interrupted at vein 4, the lowest (in area 1b) very indistinct; a similar oblong spot at base of area 2 lying along vein 2, and an indistinct oblong pale-brown mark in 1b just before base of vein 2 and in line with central cell spot. A submarginal row of brown lunules edged both sides with whitish, largest and most distinct posteriorly. There are indications of two small costal spots, similar to the cell spots, in areas 9 and 10. *Hind wing*—ground colour similar, but, together with the markings, almost entirely obscured by very heavy ashy-grey scaling. The most distinct markings are the three small dark brown white-ringed basal spots in the cell and areas 1c and 7, the larger one in centre of cell, the triangular one in centre of 7, and the two squarish ones in 6 and 7—these last being the

uppermost spots of the discal band. The remainder of the discal band is represented very obscurely by the outer edges of the spots only, forming a very much broken wavy semicircular row of short curved dark lines. There is the outline of a long oval spot across cell end, and indications of three or four small spots between it and the inner margin. A small black spot is present at the anal angle, and another just to side of base of tail in area 2, both bordered proximally with metallic blue scaling, which is also present marginally in two small patches between these spots.

Head dark brown with a small white spot between the antennæ; the eyes, except dorsally, ringed with white; palpi white, the third joint and half the second dorsally and laterally only, brown. Thorax, above, covered with longish bronze-green hairs; below, white. Body dark brown, ventrally pale-buffish.

♀. Both wings above uniformly dark smoky brown, with no trace of blue or bluish reflections. Otherwise exactly similar to the ♂.

Length of fore wing, ♂ 2.0 cm., ♀ 1.9 cm.

B.M. Types No. Rh. 061 (♂) and 062 (♀) from Nakiadeniya, 16 miles from Galle, S. Ceylon, iv, 17, W. Ormiston.

Several other specimens in Coll. Ormiston.

This species seems to be nearest to *A. aliteus*, Hew., and *A. mirabella*, Doherty, but it can at once be separated from any Indian *Arhopala* known to me by its ashy-grey underside and plain brown female.

Natural History Museum,
South Kensington;
March 12th, 1920.

A CHALCID PARASITE OF *ENDOMYCHUS COCCINEUS*, LINN.

BY C. T. GIMINGHAM, F.I.C., F.E.S.

IN view of the comparatively few records of Hymenopterous parasites of Coleoptera, the following notes may be of interest.

On June 3rd, 1919, in a wood at Long Ashton, near Bristol, I came across a small mass of rather dry and shrivelled fungus at the base of a dead beech-tree, in which were crowded considerable numbers of the pupæ of a beetle, afterwards found to be *Endomychus coccineus*. These pupæ were a strikingly bright pink colour, with white limbs and black eyes, the whole body being covered with short, stout hairs, each with a glistening white knob at the end. There were two mushroom-shaped cerci at the apex of the abdomen, to which, in many cases, the black shrivelled remnants of the larval skin were attached. The average size was 6 mm. long and 3.5 mm. broad.

A portion of the fungus, containing about sixty of these pupæ,

was brought home, and on June 16th one was noticed just becoming adult. The elytra were then of a very beautiful pearly shell-pink colour with no trace of spots, the thorax and abdomen a deep salmon-pink with almost an orange tint and the legs and antennæ brown. Later in the evening the posterior spots on the elytra were faintly indicated by darker areas, and by the next morning all four dark spots were well marked, the ground-colour of the elytra remaining pink, while the thorax had deepened somewhat in colour. During the following days many more specimens became adult, though the final deep red colour of the elytra only developed very slowly, and it was not until July 3rd that the majority had assumed the typical appearance of *Endomychus coccineus*. During this period and for some long time afterwards the beetles showed no disposition to leave the fungus.

When first taken all the pupæ were alike in appearance so far as was observed, but about June 16th it was noticed that in a number of cases development was apparently not proceeding normally. Some of the pupæ had turned dark brown, the outer skin becoming harder and more chitinous and the abdomen completely changing in shape, becoming curiously elongated, narrower and cylindrical. Parasitism was suspected and these brown pupæ were isolated and kept under observation.

No further change was observed until July 11th (some days after all the healthy pupæ had become adult), when one or two were found to have small round holes in the back and a number of Chalcids were found in the box. On making a hole in another from which the parasites had not yet emerged, six of the parasites immediately crawled out and hopped about apparently fully developed. There was still a good deal of fluid in this pupa case. The flies were packed in the anterior two-thirds. During the next few days the parasites emerged from the remaining pupæ, and of ten cases in which the number of flies hatching from a single pupa was noted, eight produced 5 ♀ ♀ and 1 ♂ each (the ♂ much smaller than the ♀ ♀), one produced 6 ♀ ♀ and 1 ♂, and one 5 ♀ ♀ only. Of the total number of 65 pupæ originally taken, 25 became adult beetles, 26 were known to be parasitised and the remainder died or were killed at an early stage.

With regard to the identity of the Chalcid, the following reference to a parasite of *Endomychus coccineus*, which occurs in Curtis' description of this beetle ('British Entomology,' vol. ii, p. 570), is of interest: "Neither Latreille nor any author that I can remember has characterised the larvæ of *Endomychus*, and having found a considerable number. . . . I shall proceed to their description and history. In pulling the bark off the decayed stump of a fir-tree I saw some larvæ apparently entangled in a white cottony web, which I at first thought were

young glow-worms. On removing them I discovered that they were of various sizes; they moved slowly and some of the largest seemed as if they were either dead or in a torpid state, but these proved to have been punctured by a little parasite allied to *Gnatho dispar* (Colax, pl. 166), a great number of which afterwards hatched. The larvæ were of a dead deep chocolate colour, but ferruginous beneath. . . . In three weeks some of these larvæ became pupæ of a deep ochreous colour, but they soon died."

The *Colax dispar* figured on Pl. 166, 'British Entomology,' vol. iii, is not, however, identical with the Chalcid now observed (this is confirmed by Mr. Box), and it was not possible to discover in the present case whether parasitism actually took place before or after pupation. The passage quoted above does not, unfortunately, make it clear how the identity of the larvæ was established, and although the description "pupæ of a deep ochreous colour" might do for parasitised *Endomychus* pupæ, it could not possibly refer to healthy ones. Westwood ('Mod. Class. Insects,' vol. i, p. 394) mentions the observations of Curtis, and Walker published a short description ('Ent. Mag.,' 1836, p. 496) of the parasite from Curtis' MS., naming it *Pteromalus Endomychi* (see also Elliott and Morley in 'Trans. Ent. Soc.,' 1907, p. 12, and 1911, p. 456). There is also a description of a Chalcid parasite from an *Endomychus* sp., in a paper on "Parasitic Hymenoptera" by Ashmead ('Trans. Amer. Ent. Soc.,' 1896, p. 227), to which Mr. Claude Morley kindly referred me. This species, described as *Endomychobius flavipes*, sp. n., from "one ♂ and six ♀ specimens bred from the supposed larva of *Endomychus biguttatus*, Say," from Columbia, is, however, evidently not the same as the present insect.

Mr. Morley, who examined my specimens, is of opinion that they are undoubtedly the same species as that described by Walker as *Pteromalus Endomychi*. The description, however, does not apply to Curtis's figure of *Colax dispar*, which is unquestionably a different insect. Walker states that his description is from a male specimen, but Mr. L. A. Box kindly tells me he considers that it really refers to the female. He says, *in litt.*: "The ♂ has the antennæ shorter and entirely fulvous. In the ♀ the abdomen is almost circular and in colour as described by Walker. In the ♂ the abdomen is narrower, the sides being parallel, and æneous or dark except the base, which is fulvous."

In view of the interest attaching to this confirmation of an old record, it would seem worth re-publishing Walker's original description,* with one or two notes by Mr. Box.

"Sp. 163. *Pteromalus endomychi* (Curtis MSS.). Mas :

* Walker, 'Ent. Mag.,' 1836, p. 496.

Aeneus, antennæ nigro-fuscæ, abdomen basi fulvum, pedes fulvi, alæ limpidaë. Corpus crassum, latum; caput thorace paullo latius; antennæ subfiliformes, corporis dimidio longiores; articuli 5₀ ad 10 mm. breves, cyathiformes, subæquales; clava longi-ovata, articulo 10₀ angustior et plus duplo longior; thorax ovatus; prothorax brevissimus; mesothorax parapsidum suturæ vix conspicuæ; metathorax brevis; abdomen rhombiforme, thorace brevius, segmentum 1 mm. maximum; sequentia brevissima; alæ sat latæ; nervus cubitalis radiali multo brevior.

“Aeneus; oculi rufo-picei* ; antennæ nigro-fuscæ; articuli 1us et 2us fulvi† ; abdomen fulvum, nitens, apice æneum; pedes fulvi; coxæ æneæ; meso- et metatarsi flavi, apice fusci; alæ limpidaë; squamalæ et nevoi fulva, stigma obscurius, minutum. (Corp. long. lin. 1; alar. lin. 1½.)”

AN UNDESCRIBED SPECIES OF PTYCHOPTERA FROM WEST AFRICA (PTYCHOPTERIDÆ, DIPTERA).

BY CHARLES P. ALEXANDER, PH.D., URBANA, ILLINOIS.

THE very extensive collections of African crane-flies belonging to the British Museum (Natural History) were sent to me for study through the kindness of Mr. F. W. Edwards, custodian of the Nematoceros Diptera. A new species of *Ptychoptera* that is described herewith was included in this material. The crane-flies of this collection will be described and keyed in a monographic revision of the Ethiopian Tipuloidea that the writer has in preparation. I wish to thank Mr. Edwards very sincerely for the privilege of studying this unrivalled collection of tropical African crane-flies.

Ptychoptera africana, sp. n.

Antennæ with the basal segments yellow, the distal segments dark brown; head blue-black; mesonotal præscutum shiny metallic blue; pleura light reddish-yellow; wings with the costal margin, the broad apex and a narrow seam along the cord dark brown; abdomen shiny black, the tergites with two narrow yellow rings on the third and fourth segments.

Female.—Length about 9 mm.; wing, 7·8 mm.

Rostrum dark brown; palpi with the basal two segments dull yellow, the terminal segments dark brown. Antennæ with the basal segments dull yellow, on the sixth and succeeding segments passing into dark brown; basal half of the second scapal segment dark brown. Head shiny blue-black, the front more opaque, the vertex surrounding the antennal fossæ indistinctly reddish.

Pronotum pale yellow. Mesonotal præscutum shiny metallic blue-black, the humeral angles broadly but indistinctly reddish;

* The ocelli are amber coloured.

† Also third and fourth.

scutum, scutellum and median area of the postnotum deep black. Pleura and lateral regions of the postnotum light reddish-yellow. Halteres dark brown, the base of the stem paler. Legs with the coxæ and trochanters yellow; femora dark brown with the bases yellowish, these broadest on the fore legs, where they occupy almost the basal half, on the hind legs very narrow; tibiæ and tarsi dark brown. Wings subhyaline, the costal margin, the broad wing-apex and a narrow seam along the cord dark brown; the costal margin includes cells *C* and *Sc* and the bases of cells *R* and *M*; the wing-apex includes all of cells *R* 4 and *M* 2, the inner margin of this area being almost straight, continued obliquely backward from the end of *Sc*; the seam along the cord is broadest anteriorly, narrowed to a point at the bend of *Cu* 2; the outer margin of cell *Cu* 1 is narrowly darkened; veins dark brown. Venation: *Rs* short, almost straight, longer than *r-m*, *R* 2 + 3 and *R* 4 + 5 arising directly from the end of *Rs*. The macrotrichia in the distal cells are found in most of the area distad of the cord in cells 2nd *M* and *Cu* 1 and along the wing-margin in cell *Cu*.

Abdomen with the basal tergite yellow, the remaining tergites shiny black with a narrow yellow ring on the third and another at the base of the fourth segment; last two segments and the valves of the ovipositor pale brown.

Habitat.—Southern Nigeria.

Holotype, ♀, Ilesha, September 17th, 1911, caught in house, 8.30 a.m. (Capt. L. E. H. Humfrey).

Type in the collection of the British Museum (Natural History).

Ptychoptera africana is the second species to be described from the Ethiopian region, the other being *P. capensis*, Alexander, of Natal ('Annals South African Museum,' xvii, pt. 2, pp. 139, 140, 1917). By the author's key to the species of *Ptychoptera* ('Canadian Entomologist,' xlv, pp. 197, 198, 1913) the present form would run out at couplet 4. It more or less resembles *P. distincta*, Brunetti, of India, in the dark costal margin and wing-apex, but is readily told by the yellow thoracic pleura and other characters.

BUTTERFLIES IN MACEDONIA.

By HERBERT MACE.

(Concluded from p. 64.)

Pyrameis atalanta.—I never saw anything of this butterfly until the autumn of 1917, when I was sent to a post in a deserted village which had only been evacuated in the spring of that year. Almost every garden was haunted by one or more Red Admirals sailing to and fro in the fearless friendly way one associates with this insect. I saw it at intervals down to the beginning of

December, when it presumably went into hibernation, although the weather was still mild and open. It appeared again in March fairly freely, and although I left the village soon afterwards I used to visit there occasionally and often saw *atalanta* flying round the gardens. Comparison with home specimens reveals no important variation, but the red appears much more crimson than in British specimens.

P. cardui.—The most abundant of all butterflies in Macedonia, thronging everywhere, from the tops of the highest hills to the seashore. At times it seemed incredibly numerous. In the autumn of 1918, just before I left Janes, I found hundreds congregated round a barley-stack in the middle of the plain one evening. I presumed they were merely going to roost, but the numbers settled on the stack and flying around were uncountable. I was amused one day by four of these insects, which were fighting most furiously for quite a long time, dashing at each other and often sending an opponent headlong to the ground. It seemed to be quite a free fight and not the ordinary rivalry for a female, such as is often seen among other species.

Pararge megara.—A moderately common insect from April to October, haunting roadsides exactly as at home. All the specimens I examined were of the variety *Lyssa* with grey hind wings, and compared with British specimens there are two other differences worth noting. One is that the subsidiary eye near the large one at the tip, which in the type is often a mere tiny spot, is in the variety quite definite and clearly pupilled, both above and below. The eyes on the hind wings beneath are also larger and more distinct than in the type.

Ceanonympha pamphilus.—An abundant species from April to November. All my specimens are of the variety *Lyllus*. They are larger than the type, the apical spot is more distinct, and there is a submarginal row of small spots on the hind wings.

Hipparchia briseis.—This fine butterfly, though not unduly common, was occasionally seen in June and again in autumn. I found it only in the roughest and stoniest hollows and ravines and its powerful flight made it difficult to capture, although it seldom went far away and continually returned and settled on the same spot.

Epinephele lycaon.—It is quite possible that I overlooked this species, the male being extremely like *jurtina*, and I have only one specimen, a very worn female, taken near Lake Doiran in September.

E. jurtina.—A very abundant insect from May to September, the 15th of the former month being the earliest date on which I noticed it.

In a ravine near Janes I encountered a number of curious forms of this species. All were considerably darker than British specimens, especially the males, but many exhibited more or less

albinism, particularly round the outer margin of the hind wings. In conjunction with this there was a great deal of distortion, the affected wings often being shortened or crumpled, and one which I noticed to be flying awkwardly was found to be entirely destitute of the left hind wing.

Melanargia larissa was the only species of this genus that I secured, although I occasionally saw Marbled Whites in the neighbourhood of the Spang Kiver near Kurkut at the end of May. Probably they were all of this species, for their flight was considerably stronger than that of the British *galatea*. This specimen is larger than mentioned by Kirby, measuring 63 mm., and it is darker, having a broad, almost unbroken submarginal black band.

Thecla acaciæ.—The Hair-streaks are very local, and one might live in a locality for years and never find a species, which might nevertheless occur regularly and freely in one restricted spot. So it is not surprising that I only encountered two species.

Acaciæ I found in fresh condition flying round large clumps of a fine species of vetch under a rough hedge near Kucus in the last week in May.

Callophrys rubi.—I found one specimen in a ravine near Irikli in April.

Chrysophanus thersamon.—This very handsome little butterfly was exceedingly abundant on Janes plain, but elsewhere I only met two isolated specimens, one near Kasimli in July and the other at Yenikeuy on the Ardjan river in August. At Janes it was abundant from the end of August throughout September, 1917. In 1918 the first brood appeared the first week in May and continued throughout June, after which only a few isolated specimens were met with until the end of August, when it again appeared abundantly. Its flight is somewhat different to *phlæas*, being shorter and rather more rapid. It was addicted to the blossoms of *Polygonum rumicis* and heliotrope—the latter a plant which is abundant in the district on newly-turned land and is very attractive to numerous small species of Lepidoptera. It was charming to see several pairs of *thersamon* flying round and settling upon this plant, the intense colour of their wings forming a striking contrast to the white of the flowers. I took several specimens of the var. *omphale*, which are distinctly smaller, expanding only 27–30 mm. The ground-colour is rather more yellowish than in the type, and the spots above are larger while beneath they are distinctly smaller. The tails are longer and more slender.

C. phlæas.—Proved very interesting in some respects, the specimens I obtained being strikingly different to British forms. One solitary specimen approaches the British type, but in this the spots on the fore wings are larger. The vast majority of specimens were darker than the darkest British forms I have

seen, the whole of the upper surface, except the marginal band, being suffused with greenish-black. In size they slightly exceed British specimens and the tails at the outer angle are long and prominent. So far from being found in open country, in Macedonia I usually saw it in narrow ravines and brambly passages between rocks, where I often saw scores flying together. I met it from the last week in March to the last in November at intervals.

Tarucus telicanus was the most interesting of the Blues in the Balkans. Though extremely common where it occurred it was confined exclusively to ravines which have a perennial stream and remained in the vicinity of its food-plant, the purple loosestrife, round which there were often scores to be seen at a time. It is very inconspicuous and flies very swiftly, so that it would not have been an easy matter to secure specimens had not they been very numerous. I do not know another Blue which is so elusive. July was the earliest month in which I observed this species and it continue to be more or less common down to October.

P. argus (cegon) was common in June and July in open fields flying round *Polygonum rumicis*.

Aricia medon.—Common in ravines near Janes in April and May. The local form is rather smaller than British *medon*, the red spots are brighter, more uniform in size, and extend quite to the costa of forewings both above and beneath. The pupils of the eyes are also much larger than in British specimens.

P. icarus.—Abundant in the usual habitats of this species from April to September. One afternoon I observed a most extraordinary congregation of thousands in a dark cave-like opening in a ravine near Janes. Variation much as usual with this species, but I have no blue females among my specimens, all being uniformly brown. One female has basal bars on the fore wings, and a rather boldly marked male is remarkable for having only one hind wing marked with the triangular white patch generally found in this species.

Glaucopsyche cyllarus.—I only saw three specimens of this species, at Irikli in April, 1917, and Janes in May, 1918, and do not think it is common. It flies in bare rocky places, and in general appearance and habits the females remind one of *C. minimus*, though much larger than that species.

Celastrina argiolus. Common in ravines where ivy grows, from April to August. My specimens have the spots beneath very much smaller than in British ones.

Carcharodus alceæ.—The commonest Skipper in the parts I visited, flying freely over the open plains and visiting thistles, *Centaureas* and similar plants. I also saw a good many flying with *T. telicanus* at the loosestrife. On the wing in July and August.

C. altheæ.—Not so common as the last, but of similar habits. I have a note of its appearance in April.

Hesperia sideæ.—One specimen only, taken in a ravine near Janes on May 19th, 1918.

H. malvæ.—Common on hillsides in April and May. My Macedonians are much blacker than British and the submarginal band of the hind wings is very indistinct. This is a very variable species which appears to merge imperceptibly into its allies, and it is doubtful whether some of them are distinct.

Pyrgus orbifer, which I thought at the time of capture were dark *malvæ*, chiefly differs by the spots being smaller, less rectangular and more evenly distributed on both wings, while the large spots on the hind wings beneath approach spherical rather than angular form. It is on the wing a little later than *malvæ*, but frequents similar situations.

Adopœa flava.—Common in ravines at Janes and Kukus as early as May and not long on the wing. There is a decided difference between the Macedonian and British forms. All the former are larger, the average being about 33 mm., and in general the colouring is brighter orange. I have one of each sex with greenish-black margins. The underside is more uniformly orange fulvous than in British specimens and I have one outstanding example in which the underside of all the wings is unicolorous orange fulvous.

Faircotes, Harlow.

A SUPPLEMENTARY NOTE ON THE BUTTERFLIES OF SOUTH MACEDONIA.

By H. ROWLAND-BROWN, M.A., F.E.S.

IF only as a record of the lepidopterists who hunted and observed during the weary years of waiting and preparation on the Macedonian front from 1916 to 1918, the lists of butterflies published from time to time in the pages of the 'Entomologist' deserve to be made as complete as possible. Our first paper on the subject was put together from the ample notes furnished by Mr., now Captain, Barraud, "Notes on Lepidoptera observed in Macedonia, 1916, 1917" ('Entom.', 1918, vol. li, pp. 59-63, 86-88). After he had been home on leave early in 1918, I supplemented the species already noted with one or two which had escaped his identification (*ibid.*, p. 112), and Mr. Barraud himself added a list of the "Geometridæ in South Macedonia, 1917" (*ibid.*, pp. 145-6). Last year there followed "Notes on the Lepidoptera of Macedonia," by Mr. F. Norton and Mr. J. E. Delbanty (*ibid.*, vol. lii, pp. 139-141); and a supplementary note by Mr. H. V. Wilson (*ibid.*, p. 166); and Mr. Mace has

now concluded his interesting observations on the subject in our pages.

Before Capt. Barraud broke up his collections, he very kindly presented to me a number of his captures, including some of those of 1917-1918 which I had not seen before, and further, the Natural History Museum has been enriched by two collections for the most part made in localities other than those visited by Capt. Barraud, whose first-hand knowledge of the continental forms served him in good stead.

The Museum Collections were made by Mr. B. Blanchard and Mr. R. W. D. Barney, B.Sc., respectively (referred to as the "Museum Collections"), and I owe it to the courtesy of Mr. N. V. Riley, the Curator of the Butterflies at South Kensington, that I am in a position to extend still further the list of South Macedonian Rhopalocera with the following species or forms of species not hitherto recorded.

Hesperia fritillum (= *cirsii*, Rbr.).—Kopriva, 9 : v : '19. *Pyrgus tessellum*.—This Skipper turns up from two localities, Ferezei, 10 : vi : '17, and Paprat, 2 : vi : '18. Compared with the Hungarian form, it is an immense insect and probably is referable to var. *gigas*, Brem.* It is therefore somewhat remarkable that Capt. Barraud did not find it at Paprat when he was there. *Gegenes nostradamus*, Feragli, 10 : vi : '17.

Chrysophanus thetis, Klug.—Capt. Barraud wrote me when he sent his notes that he thought he had encountered this beautiful species, but he appears to have confused it with *C. thersamon*. I find, however, in the "Museum Collections" a male *thetis* from Ormonti, 10 : v : '17. [*C. dispar rutilus* ('Entom.,' lii, p. 166).—Specimens from Kopriva, 1917. It seems fairly common in suitable localities throughout S. Macedonia.] *C. ottomanus*.—Another copper not in Capt. Barraud's list; Kopriva, 22 : iv : '17; and apparently must have been well distributed by the numerous examples in the boxes. *C. alciphron*.—Very large females almost uniformly without light coppery ground-colour. I consider that this form is the *intermedia* of Steffanelli. It bears little resemblance to the type, and none whatever to *gordius*.

Langia telicanus.—Kopriva. *Tarucus balkanica*.—From various localities. *Polyommatus icarus*.—I have a number of this species which superficially appear much more like *P. candalus*; they are very small (= ? var. *minor*, Ckll.), and the underside markings are reduced to mere pin-points in some examples. *P. meleager*.—Hill 778; both forms of the female, type, and *stevani*, Tr. *P. amandus*.—From Kopriva and many other localities, apparently wide-spread, and not sporadic as in its western limits in France. *P. anteros*.—Paprat, 7 : vi : '18.

Parnassius mnemosyne.—A series from Paprat, 8 : vi : '18.

* Given specific rank by M. Mabille in Seitz's 'Lepidoptera of the World.'

Euchloë gruneri.—A single male in beautiful condition was sent to me by Capt. Barraud with label, "Salonica, April 5th, 1916." This is, no doubt, the butterfly suggested by him as *E. euphenoides* ('Entom', li, p. 63).

Colias edusa helecina, Öbthr.—Kopriva, 6 : v : '17.

Issoria lathonia.—I have from Capt. Barraud an aberration of the female taken on the Hedja Tepe at 3000 ft., which appears to be undescribed. Unfortunately the hind wings are in rags. It is melanic. All the black spots on the upper side are enlarged, especially the three basal spots nearest the costal margin of the fore wings, and they are coalescent. It must have been a superb example when fresh.

Melitæa phœbe ætheria.—Examples of this form in all the collections, e. g. from Kopriva, 2 : vi : '17. *M. didyma*.—The series contains forms of the female corresponding with Staudinger's *græca*. The males of the *gen. æst.* from Mahmudli are very small, not exceeding 35 mm., and dull in colour.

Pyrameis cardui.—Many dwarf examples from Baisili, vi : '17 (Barraud), not exceeding 37 mm., and much worn at that date.

Melanargia larissa.—Since the publication of Mr. Barraud's note on "var. *salonica* (? Gibbs)," I have received a considerable number of the *Salonica* form, but after careful comparison with those in the Natural History Museum, I am inclined to think that the range of variation exhibited does not warrant a varietal name for the *Salonica* examples. The late Mr. A. E. Gibbs, moreover, never published *salonica*; if ever he described it at all is doubtful. The name, therefore, is *nomen ineditum*. The form of *larissa*, represented in the "Museum Collections" by a single example, is none the less extremely fine and large compared with the smaller and darker form of the Eastern Rumelian Balkan. Indeed, while there is a wide tendency to variation locally, it is never very pronounced, though I can without difficulty distinguish those sent me by Major P. P. Graves from Kuchuk Chekmejé, near Constantinople on the European side, where it flies with *galatea*, from the Rhodope (Slivno), and South Macedonian forms. *Larissa* appears to consort with *galatea* in the latter localities also.

Comparing the several lists now published in the 'Entomologist' with those for the north and east slopes of the central Balkan Rhodope range up to 3000 ft., I find the following Bulgarian species absent from the South Macedonian collections under review: *Thais cerysi*, *Parnassius apollo*, *Pieris ergane* (which I expect has been overlooked), *Colias myrmidone*, *Zephyrus betulæ*, *Thecla pruni*, *Chrysophanus virgaureæ*, *Chilades trochilus*, *Plebeius zephyrus*, *Scolitantides orion*, *Polyommatus eroides*, *Agriades escheri*, *A. hylas*, *Hirsutina damon*, *Cupido sebrus*, *Lycæna alcon*, *Neptis lucilla*, *N. aceris*, *Apatura iris*, *A. ilia*, *Limnitis populi*, *L. sibylla*, *Eugonia l-album*.

The absence of Argynnid and Erebia in the neighbourhood of Salonica has already been commented upon, but the additional information given by Mr. Norton and Mr. Delbanty (*loc. cit.*) of the district between the Vardar River and Lake Doiran supplies two at least of the missing "Pearl-bordered" in this direction. Others unobserved or wanting are *Satyrus hermione*, *Hipparchia anthe* (?), *H. arethusa*, *Enodia dryas*, *Pararge mæra* (it is surprising not to find this usually common species in the lists), *Epinephele ida*, *Cænonympha leander*, *C. iphis*, *C. dorus*, and *Augiades comma*. All the above occur in the central Balkan as reported by Prof. Bachmetjew ('*Horæ Soc. Russ.*,' vol. xxxv, p. 396). Against this we find the following Macedonian butterflies unrecorded for Bulgaria in 1900 (*cf.* "The Butterflies of Bulgaria," H. J. Elwes, '*Trans. Ent. Soc. London*,' 1900): *E. gruneri*, *G. rhamnii*, (this seems remarkable), *T. acaciæ*, *C. thetis*, *C. ottomanus*, *T. balkanica*, *P. argus*, *L. celtis*, *C. jasius*, *E. antiopa*, *P. tessellum gigas*, *N. marloyi*, *G. nostrodamus*. But taking all things into consideration, it is clear that the Lepidoptera of South Macedonia is even less oriental than that of the regions north of the Balkan impinging on the Euxine. Probably when the scene of our Macedonian campaigns is revisited by a new generation of lepidopterists, the many seeming gaps in the catalogue will be filled up, and other species added thereto. For a variety of reasons, chiefly political and polemical, Macedonia was, until 1916, left severely alone by our pioneer workers. If, as likely, Salonica is destined to become a port and rail-head of the first commercial importance, and peace is really to dawn upon this land of unrest, the time for systematic exploration of the entomological fauna may not be very far distant.

Harrow Weald; 1920.

COLLECTING IN FINMARK, SWEDISH LAPLAND, JEMTLAND, ETC.

BY ALBERT F. ROSA, M.D.

It is some years since I first considered the possibility of a journey to Scandinavia, and the project had been gradually gathering strength as the little difficulties which surrounded the carrying of it out, such as a knowledge of the languages, were slowly cleared up.

Last spring the abnormal conditions prevailing throughout Europe, especially in the central and eastern areas, again caused me to cast my thoughts towards the north, where one might not unreasonably expect there would be less involvement in the settling up of European troubles.

Many difficulties not experienced by pre-war travellers immediately presented themselves. A passport was required,

but in addition permits for the two countries had to be obtained. These I found were not difficult to secure, but as a result of delay in receiving them my expedition was affected adversely from the very beginning. Bread cards had to be obtained, consequently one had to keep oneself in touch with the ration offices, which occupied time, thought, and trouble.

While crossing to Bergen from Newcastle we passed two floating mines at uncomfortably close quarters, and one was exploded, which incidents somewhat enlivened an otherwise rather tranquil voyage. On reaching Bergen I went on at once to Christiania, where I arrived in the morning of June 6th, and in the afternoon took train to Aarnäs, in the province of Odalen.

I had little expectation of doing much here, but could not pass without satisfying myself as to the possibilities of the bog at Disenaen yielding some of the specialities which have been in the past found there, and I am of opinion had I had better weather conditions I should have turned up not a few of them. The bog itself has, as expected, been still further reduced in size since 1912, when Mr. Sheldon was there, the then remaining half having been reduced by one-third. As it turned out, on my first day here, during an hour or two of feeble sunshine, amongst a considerable number of species observed I found *Glaucopsyche optilete cyparissus*, *Cneis jutta* and *Pararge hiera*. *Brenthis euphrosyne* was abundant, but this was unfortunately the only *Brenthis* seen.

I stayed over the next day in the hope that the weather might improve—not that it was wet, because the season had been and continued to be remarkable for its dryness; but there was a persistent absence of sunshine. The sun broke through for a little while, but nothing fresh was seen, and as the third morning promised nothing better I took leave of the province of Odalen, with regret at not having had an opportunity of exploring it thoroughly, took train to Kongsvinger, and booked through Charlottenberg to Stockholm.

The next two days were spent at Stockholm—both of them brilliant—calling at various offices, including the Swedish Touring Club (Svenska Turistföreningen), the Consulates, and the Svenska Vetenskapsakademi at Fräskati, where I had an interview with Prof. Aurivillius.

Leaving Stockholm in the evening of the 11th, I went on to Mattmar in Jemtland, arriving there about noon the following day, and had a look round after booking a room at the little hotel. I should mention here that I had only a possible five or six days to spare before I was due in Lapland, so that it was no use thinking of going on in the direction of Storlien, which I thought at first I might possibly manage. My first day here was dull, and I only saw one or two *Chrysophanus amphidamas* and an *Erebia* which I believe was *embla*.

I remained at Mattmar for five days. The most likely bog

on the lower road towards the Storsjö I found had been freely drained, the scrub appeared to have been burned, at any rate at parts, and the surrounding trees cut down, and it proved to be a complete blank. However, on the road and in the neighbouring woods *Brenthids* were rather numerous; but with the exception of *B. apherape* var. *ossianus*, the only other species encountered was *B. euprosyne*, individuals of which were very common and some of them are closely approaching var. *finjal*. *Chrysophanus amphidamas* var. *obscura* was very abundant and in perfect condition, both sexes, the females being very brilliant and varied. I also picked up a few *Erebia embla*, the first being seen on the higher bog on the 12th. This being an odd year the latter species was not expected to be abundant as it is said to be so only every second or even year. The only perfect day here was Sunday, the 15th; the others were dull, or with insufficient sun to tempt many species to fly freely.

Leaving Mattmar in the evening of the 17th, I moved on to Brücke and joined the north-bound snälltåg the next morning, arriving at Boden in the evening, where I obtained a sleeping berth in a sofvagn and reached Abisko in Lapland on the morning of the 19th.

"Abisko turiststation," which is truly a very excellent establishment, was to be opened on the 20th, and I had succeeded in arranging to be put up a day or two earlier. The restrictions as regards collecting in this interesting spot are a great drawback, and must be counted upon, and I am afraid there is little likelihood of them being relaxed.

At the time of my arrival there the birches were well out, which forboded no good as far as collecting was concerned, and bad luck still lingered with me, this day proving to be so completely dull that I never saw a single one of the species of which I was in search, but next morning in the swamps well east of the Marble Quarry I got a couple of *Colias nastes* var. *werdandi*, and in the birch woods several *Brenthis freija* and some *Erebia lappona*. Further collecting was prevented by the advent of clouds. Next day was bright, and I overhauled a considerable number of the same species as the day previous, along with some *B. apherape* var. *ossianus* and *Hesperia centaureæ*.

I stayed at Abiskojokk for eight days visiting the different places round about: Björkliden, the shores of the Torne Träsk and Lap-porten, on the way up to which I found *Colias* var. *werdandi* and *Brenthis freija* in better condition, *B. apherape*, *Pieris* var. *bryoniæ*, and several times saw another *Brenthis* larger than the others which I believe was *B. frigga*.

C. var. *werdandi* occurred in all suitable—i. e. swampy—places right up, though getting scarcer, to the crests approaching the pass. There is no trail leading up, though one is indicated in the map.

The railway—Ofotenbanen—from Gellivare to Narvik, which, by the way, is the most northern in the world, has been electrified on the Swedish portion, that is, from Gellivare to Riksgränsen next the Norwegian frontier. Two passenger trains are, or were, run daily, one each way; one going to Narvik passed Abiskojokk at 10 a.m., and the other, going inland to Kiruna, Gellivare and Boden, passed about 8.30 p.m.

So leaving in the morning of June 27th I went on to Narvik, and immediately boarded the small steamer for Løfdingen, and directly changed there to the larger steamer, the "Polarlys," which had been waiting for us, bound for Hammerfest, which, after we had coaled at Tromsø during the night and passing Skjervø, was my next stop, unfortunately a three days' one, arriving at this most northern town at 6 p.m. on the 28th, just two hours late for the little boat that plies to Alten twice a week.

Here I was stranded with practically nothing to do two days—Sunday and Monday—brilliant sunshine with a temperature someway about 80° Fahr. I was told that it had not been so hot for many years—knowing that each day's delay reduced my chance of getting fresh specimens of certain estimable Arctic species for which I had travelled so many hundreds of miles.

The island of Kvalø, at any rate round Hammerfest, does not appeal to one as a promising collecting-ground, but walking round the bay on Sunday, not expecting to find anything of consequence, I noticed a yellow copper flying rather commonly, and some *Brenthids* which I felt sure were *freija*. So on the Monday morning I went to the same spot and found *Chrysophanus phleas* var. *hypophleas* (*americanus*, d'Urban) rather frequently, a fine form, and on the rocks overhanging the bay *Brenthis pales* var. *lapponica*, *Erebia lappona*, and several very dark, though worn, *Aglais urticae* var. *polaris* were seen.

I am sure I saw another species of *Brenthis* like *freija*, but the wind was strong and constant, and anything rising was immediately carried away.

I left Hammerfest at 10 a.m. on Tuesday, July 1st, with a feeling of intense relief, though I am bound to say the Hotel Cora Jansen was very comfortable and the food good. The weather had changed during the night, and the wind was bitterly cold. The journey through the Vargsund and the Altenfjord to Bossekop took fifteen hours, the boat arriving at about 1 a.m., and I found that the hotel—save the name—had changed hands, was in a state of upturn and was not available. In these climes people seem to walk about at all hours of the night; there is always somebody about, no doubt due to the perpetual daylight, and I suppose the arrival of the steamer on this occasion would make this more apparent. I got hold of a boy to make inquiries about a room, but he was unsuccessful in finding a place. It was a beautiful night, quite warm, the sun was

shining brightly in a cloudless sky, and I was thinking about how to put in my time till morning when the boy came running up and told me that the doctor, who had heard of my difficulty, had offered me a room in his house, and I am extremely grateful to Dr. Gjessing and his Fru for all their kindness. Dr. Gjessing also obtained rooms for me at Jöraholmen—not unknown to Scottish salmon-fishers—which is a farm situated about a Norsk mile inland on the Alten elv (the Norwegian mile equals 10 kilometres), where I was conveyed by stolkjærre the next afternoon.

In the morning, before proceeding to my new quarters at Jöraholmen, I had only to cross the road to the field opposite the house of my friends to find butterflies abundantly. *Brenthis selene* var. *hela*, *B. pales* var. *lapponica*, *Chrysophanus hippothoë* var. *stieberi*, *Plebeius argus* (*argyrognomon*) var. *lapponica*, *Erebia medusa* var. *polaris*, and a passing *Colias* with a ruddy or violet sheen apprised me of one of the specialities of the district, namely *C. hecla*, several of which were seen hurrying along while I remained at this spot.

Moving on to the marsh beside the church, a careful search produced nothing more than *Pieris napi*, so proceeding inland I captured one or two *Colias paleno* var. *lapponica* in the wooded district, and then was lucky in striking the very farm mentioned by Mr. Rowland-Brown, where I enrolled the services of a boy to row me over the river. I found, however, this was not necessary, because on the near side I found *C. hecla* quite common and easily captured under the shelter of the banks approaching the water's edge. I took in a short while eleven males and one female.

I also here became acquainted with *Eneis norna*, which, however, was worn, and I also secured one or two more of *C. paleno* var. *lapponica* and *Chrysophanus hippothoë* var. *stieberi*. At this stage I had to stop for want of boxes, so had to return.

After this, my headquarters being at Jöraholmen, where I had very comfortable rooms, and the people, who are accustomed to visitors, very homely, I lost connection with this favoured spot, which will always be remembered as one of the most interesting in my collecting experiences, where the Arctic *Colias C. hecla* was to be found in abundance, and in such good condition.

At Jöraholmen *C. hecla* was even more freely met with, but the males were rarely without blemish; the females were, however, very common—more common than males—and many were in the best of condition. *Plebeius* var. *lapponica* was nearly everywhere. At some parts they could simply be disturbed by the dozen at nearly every step. *C. paleno* var. *lapponica* was found here also, and *Brenthis pales* var. *lapponica* most commonly, as well as *B. selene* var. *hela*. *Erebia polaris* was frequently taken, and *C. var. stieberi* again turned up. *Glaucopsyche optilete*

occurred not commonly on the river bank, but only at the edge of the pine woods, *P.* var. *lapponica* displacing it on the open bank.

On my last day I essayed to secure *Erebia disa*, though I knew I was far too late for it, exploring the ground between Ebidal and the Skadavaara mountain, but unfortunately the sun went in and I failed to turn it up.

Returning to Bossekop that afternoon by kariol, I called as promised upon my friends who had been so kind on the morning of my arrival, the steamer leaving for Hammerfest about midnight.

At Hammerfest I had to wait again one day for the steamer to Harbin, *en route* to Narvik, so I occupied myself in looking for larvæ of *Aglais urticae* var. *polaris*. The difficulty was to find the food-plant. Some of which at last I noticed in a back garden yielded only small larvæ; but after another search some more clumps were discovered on the left bank of the river, leading from the Storvand, which flows into the harbour towards the north end of the town. On these the larvæ were half grown, and I took about fifty, of which I lost a considerable number through the food-plant becoming mouldy while I was on the boat. I managed, however, not without difficulty, in rearing a few.

After an uneventful journey on board the "Midnatsol," on the night of the 9th July I slept at the Grand Hotel, Narvik, and the next morning netted *Erebia ligea* commonly. *C.* var. *stieberi* was also taken here, as well as *G. optilete* and *Colias* var. *lapponica*.

In the afternoon I took train again to Abiskojokk where I put up for two days, wishing to see if any other species had made their appearance during my absence. All the species seen on my first visit had disappeared completely. Visiting Björkliden next morning I found *G. optilete*, *Pieris napi* var. *bryoniae*, *Erebia ligea* tending more to var. *borealis*, *Brenthis pales* var. *arsilache* and var. *lapponica*, *Augiades comma* var. *catena*; and I also found here some full-fed larvæ of *Aglais urticae* var. *polaris*. The second day was spent on the slopes on the way up to Lapporten, where I again got *B. pales* var. *arsilache*, *C. palæno* var. *lapponica* and *G. optilete*, the last of which was here obtained in perfect condition. There was a high wind as usual and little sun, and this finished collecting as far as this journey was concerned, and I returned home *via* Boden, Bräcke and Hallsberg, taking the boat at Christiania for Newcastle, where I was held up nearly two days by the local railway strike.

The following is a full list of species observed and taken, which altogether number thirty-six.

Pieris brassicæ, L.—Seen at Mattmar.

P. napi, L.—Several at Mattmar. Var. *napeæ*?—Disenaæn. Var. *frigida*, Scudd.—Males taken at Abisko and Narvik are without spots or apical blotch, and would seem to be near, if not this

variety. The nervures are rather more powdered towards the apex of fore wing. Var. *bryonicæ*, Esp.—Abisko, not so dark as specimens from the Swiss Alps.

Euchloë cardamines, L.—Disenaæn, not common.

Leptostia sinapis var. *lathyri*, Hb.—Mattmar and Disenaæn, not common.

Colias palæno var. *lapponica*, Stgr.—The males vary greatly in colour. Some are bright sulphur, most of them are very pale and some are as white as the female. One female is of a creamy colour. I have specimens from Bossekop, Jöraholmen, Abisko and Narvik.

C. nastes var. *werdandi*, Zett.—Like all my predecessors I was rather late for this species; some, however, were quite good. Var. *immaculata*, Lampa.—I do not seem to have any varieties except this one.

C. hecla (var. *sulitelma*, Auriv.).—This fine species was to be taken all over the delta of the Alten elf, even in the village of Bossekop, but was found only in the neighbourhood of the river or in adjacent fields. Males were found in good condition at Bossekop. At Jöraholmen females were abundant, more so than males, and it was common to see half-a-dozen of the species on the wing at one time. In the males there is a curious violet reflection very similar to that which is found in *Apatura ilia*. It can be seen quite distinctly in some fresh examples when held in certain positions, and is noticeable when the insect is in flight. I think I have seen it stated somewhere that this violet reflection is found sometimes in *Colias edusa*.

(To be concluded.)

NOTES AND OBSERVATIONS.

SWARMING OF MICRO-LEPIDOPTERA IN AUSTRALIA.—The following observation, quoted from a paper by my expert and esteemed friend Dr. A. Jefferis Turner ('Proc. Roy. Soc. Queensland,' xxxi, 1919), p. 108, is so curious and difficult of explanation that I wish to call the attention of entomologists generally to it. The insect mentioned is a small Gelechiid moth, nearly allied and very similar to the English *Dichomeris* (*Ypsolophus*) *fasciella*, expanding about 16–20 mm., and a chemical balance would be needed to find the weight of an individual. "One species, *Dichomeris capnites*, Meyr, sometimes occurs in countless millions. I came upon one of these swarms near Gympie, Queensland, on April 15th, 1906. For 20 yards in length and several yards in breadth along the bank of a small creek the eucalyptus saplings, some of considerable size, were so covered with moths that not only was their foliage completely blackened, but the saplings themselves were actually bowed with the weight. On beating a sapling with a stick it recovered its uprightness, while the moths arose in a dense black cloud, and the rustling sound of their wings

was distinctly audible. The moths were imbricated on the leaves like the slates of a roof. In order to form some estimate of their numbers I captured with a sweep of the net the moths on two large leaves (at the utmost 5×2 in.) and counted 710 specimens. As the leaves on the shrubs were numerous and the shrubs fairly close together, the total number of insects must have been beyond computation." The eucalyptus is probably the food-plant, but these vast numbers cannot possibly have been reared on the particular group of saplings affected. This impulse of congregation recalls in miniature the prodigious flocks of passenger pigeons in North America, roosting over square miles of forest in such numbers that large limbs were broken down from the trees, and the birds were piled a yard deep on the branches; all this overflowing exuberance of life was reduced in forty years to a single bird in the Zoological Gardens at New York, probably now dead.—E. MEYRICK; Thornhanger, Marlborough, April 4th, 1920.

ZYGÆNA TRIFOLII AB.—On the Downs near Wye last season I took a specimen of *Z. trifolii* with all the wings entirely black with the exception of a pale whitish streak in each fore wing.—F. A. SMALL; 6, Westgate Grove, Canterbury.

EARLY APPEARANCE OF EUCHLOË CARDAMINES.—On February 15th I saw and caught a freshly emerged male of this species. Surely this is very early? The day was warm and spring-like, and had been preceded by a spell of remarkably warm, bright weather. We did not see the species again until March 17th, after which date males were quite common. *Pieris napi* appeared at the same time, also *Celastrina argiolus*. All the hibernating butterflies have shown up in good numbers, notably *Eugonia polychloros*.—G. G. B. MEADE-WALDO; Hever, Kent.

IRREGULAR EMERGENCE OF DREPANA CULTRARIA.—A small batch of ova of this species hatched on May 23rd, 1919, and fed up rapidly, pupation taking place in July. Either because of the abnormally cold summer, or because they were reared many miles north of their native place, no moths emerged in 1919. Two insects have emerged so far this year—on March 5th and March 20th. The larvæ were sleeved out and the pupæ kept in an outdoor cage.—H. DOUGLAS SMART; Shelley, Huddersfield.

EARLY SPRING BUTTERFLIES.—*Euchloë cardamines*: Male taken at Muddleswood, Sussex, on March 28th. *Celastrina argiolus*: Two males seen flying in the Brighton streets on March 30th. *Pieris rapæ*: Several males flying at Brighton on March 30th.—F. G. S. BRAMWELL; 1, Dyke Road Drive, Brighton.

PIERIS RAPÆ IN MARCH.—On March 22nd I saw a specimen of *Pieris rapæ* flying in my garden. In 1918 I noted a specimen on March 24th.—W. M. CHRISTY; Watergate, Emsworth, Hants.

PHLOGOPHORA METICULOSA IN MARCH.—I have collected Lepidoptera for many years, and I think the following record is worthy of notice. On March 28th I found a freshly emerged female of *Phlogophora meticulosa*; the wings are perfect and fringes intact, so

that it cannot be a freak that has lived through this mild winter.—VERNON P. KITCHIN; The White Cottage, Oxted, Surrey, March 30th, 1920.

[Although most frequently seen in the summer, one or more specimens of *P. meticulosa* have been recorded for most months of the year.—ED.]

THE "WINTER" MOTHS.—There is an obvious error in my note under this heading in the current number of the 'Entomologist,' p. 92. In lines 7 and 8 it should read, "*P. pedaria*—twenty-three males and thirty-five females." This makes the percentage of females considerably higher.—GEO. T. PORRITT.

WINTER MOTHS.—I do not think any scarcity of winter moths has been very noticeable here this winter, with the exception of perhaps *Cheimatobia boreata*. *P. pedaria* has been very abundant, 50 per cent. at least of which were dark forms, but contrary to Mr. Ford's experience the females were very scarce. The females of *H. defoliaria*, on the other hand, were very numerous.—E. P. BUTTERFIELD; Wilsden, Bradford.

PARARGE MEGÆRA, ETC., IN YORKSHIRE.—Mr. Nimmy's remarks on *P. megæra* in Herts and Middlesex (*antea*, p. 67) brings to my recollection how plentiful this insect was in this district (Wilsden) in the late sixties of the last century, and I believe it has not since been seen in any intervening year. It has disappeared in like manner from other districts in the north of England. Previous to the year 1918 I had never seen *Chrysophanus phlæas* in this neighbourhood, but in that year it was not at all uncommon, and in the following year (1919) it was very plentiful. *C. solidaginis*, Hüb., is another species that was apparently absent from this district during the years from 1876 to 1896, when it was turned up quite commonly.—E. P. BUTTERFIELD; Wilsden, Bradford.

HIBERNATION OF AGLAIS URTICÆ.—Referring to the note by Mr. Harold D. Ford in the 'Entomologist' for March, p. 66, perhaps there are few, if any, districts in England where there is such a paucity of butterflies as here, the three species of "whites" being all that can be counted on with certainty. In average years *A. urticæ* cannot be called common, but last year there must have been thousands in this neighbourhood in August, but these were met with at somewhat high elevations, very few being seen in the valley. A lady brought one from Egypt near Bradford, where she resides, for determination, and said she had counted about seventeen flying about the flower of what I took to be ragwort from her description. A few days later I had to go to Bingley, and on the higher ground this insect was not only common, but actually swarmed, whilst in the valley very few were to be seen. A few days later I visited Harrogate, where I saw a few, but it was by no means common.—E. P. BUTTERFIELD; Bank House, Wilsden, Bradford.

NOTES ON THE SEASON 1919 FROM BURNLEY AND DISTRICT.—*Phigalia pedaria* was the first species to put in an appearance on February 1st, and continued plentiful until the middle of March.

The best day was February 16th, when 93 were noted (81 ♂, 12 ♀), of which 21 were melanic, and I think this about represents the proportion in the total catch. One specimen was very pale, and one of the melanic males had one wing "diaphanous." April was generally cold, but during a mild period from April 18th to 21st the common species of *Teniocampa* were plentiful at willows, and at the same time about a dozen *Panolis piniperda* were taken, about one-third with a more or less greenish appearance. So far my experience is nearly the opposite to that of Mr. Burras in the New Forest (see p. 37). During May *Saturnia carpini* was scarce, also *Acronycta menyanthidis* and *Hadena glauca*; indeed Noctuidæ generally were scarce during the whole season. May 24th was a warm, lovely day, and insects abounded, *Ematurga atomaria* in variety, *Callophrys (Thecla) rubi* (which seems to be extending its range in Lancashire), *Gelechia ericetella*, *G. longicornis*, *Argyresthia godartella* and *A. spiniella*, with *Cnephasia politana*, mostly amongst bilberry. June was mostly cold, especially the last week, but during some warm intervals *Hepialus hectus* occurred freely, also *Bupalus piniaria*, one having one fore wing diaphanous. On the 15th quite a number of *Macroglossa stellatarum* were buzzing along a wall in the bright sunshine (would not these be immigrants?). June 22nd: One or two *Tinea fulvimitrella* on trunks, and *Micropteryx auratella* among bilberry were numerous. I was away during the early part of July, but on the 13th I took *Notodonta dictæoides* on a trunk in a birch-wood (new to district), and a few *Venusia cambrica* were also seen. On August 3rd *Crambus tristellus* was abundant, one very dark brown specimen being taken, also *Pædisca occultana* flying round pine-trees. *Polia chi* were about average, but were over by the end of the month. September was fine generally. *Pædisca solandriana* were abundant and very varied among the birches, also *P. corticana* on oak trunks. On the 9th *Chrysophanus phlæas*, which was more abundant than I had ever seen; I took one ab. *schmidtii* and one dark form. *Oporabia filigrammaria* was scarce, but at the end of the month *O. dilutata* was numerous. In October *Exapate congelatella* were generally to be found on fine days, also *Chimabache phryganella*, and on the 18th I took *C. phlæas*—possibly a partial third brood, as they were in good condition. Of the late autumn I will only remark on the extreme abundance of *Hybernia defoliaria* and *H. aurantiaria*, well over 1000 examples of the former being observed; 31 females were counted on one tree and several hundreds in the wood one afternoon. Naturally they were very varied; all the ordinary forms were noted, while two melanic males and one female and two very light orange males of *H. defoliaria* were obtained; also two *H. aurantiaria*, unicolorous and melanic.—W. G. CLUTTEN; 132, Coal Clough Lane, Burnley, Lancs.

ENTOMOLOGICAL RECORDS (MACRO-LEPIDOPTERA).—In reply to Mr. Ernest Cornell's note advocating a systematic collation of notes and statistics of the relative seasonal abundance, or scarcity of species in various localities, and suggesting myself as secretary, after consulting Major H. C. Gunton, who kindly promises his assistance, I have outlined a scheme which I hope to place before lepidopterists

interested in the June number of the 'Entomologist.'—II. ROWLAND-BROWN; Harrow Weald, April 17th, 1920.

EARLY APPEARANCES.—*Euchloë cardamines*: one was plainly seen here on March 31st (the day before the weather broke). Also a blue which could only have been *Celastrina argiolus*, was seen flying round an ivy-covered house on March 30th.—E. A. C. STOWELL; Eggar's Grammar School, Alton, Hants.

MOTHS CAPTURED BY LIGHT-TRAP.—On April 10th the following Lepidoptera were found in my moth-trap: *Cucullia verbasci*, *Spilosoma menthastri*, *Diaphora mendica*, *Selenia bilunaria*, *Eucoxia certata*, *Anticlea badiata*, *Gymnoscelis pumilata*, *Xylocampa areola*, *Pachnobia rubicosa*, *Tæniocampa gothica*, *T. pulverulenta*, *T. stabilis*, *T. incerta*, and *Anisopteryx aescularia*.—FREDERICK GILLETT, Major; Cheriton House, Sevenoaks, Kent.

WICKEN FEN FUND.—This fund is raised annually by entomologists to assist in defraying the expenses incurred by the Custodian of Wicken Fen, the National Trust, in administering and preserving the Fen, and in providing a watcher to protect the plants and wild life dwelling therein. Contributions are earnestly solicited; they should be sent to the Hon. Treasurer, W. G. SHELDON, Youlgreave, South Croydon.

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*February 12th*, 1920.—Mr. K. G. Blair, F.E.S., President, in the Chair.—Mr. Withycombe, of Walthamstow, and Capt. Crocker, of Bexley, were elected members.—Exhibition of the genus *Hybernia* and its variation. The Rev. F. M. B. Carr introduced the discussion and exhibition. Messrs. A. A. W. Buckstone, R. Adkin, A. E. Tonge, H. E. Leeds, B. S. Williams, S. Edwards and Hy. J. Turner exhibited the various species and joined in the discussion. Mr. R. T. Bowman specially dealt with *H. defoliaria* as it occurs in Epping Forest.—Mr. Newman, a box of aberrations bought at the Sydney Webb collection, including remarkable specimens of *Aretia caya*, *Hipocrita jacobææ*, etc.—It was reported that *Phigalia pedaria* was out full near Huddersfield on January 17th, and one specimen as early as December 4th, 1919.

February 26th, 1920.—The President in the Chair.—Mr. F. Lindeman, of Sao Paulo, Brazil, and Mr. S. Abbott, of Catford, were elected members.—Exhibition of lantern-slides. Mr. W. T. Lucas, Oxshott, before and after the "devastation" caused by the cutting of the trees. Mr. Main, illustrating details of the life-histories of the beetles *Cetonia aurata*, *Dorcas parallelopipedus*, *Lucanus cervus*, *Necrophorus humator*, *Nebria brevicollis*, *Pterostichus madidus* and *Rhagium inquisitor*. Mr. Bunnnett, ova of *Chrysopa* sps., resting attitudes, a record of changes of form in the amœba during six minutes, the egg-breaker of the larva of *Stenopsocus eraciatus*, etc.—Mr. A. A. W. Buckstone exhibited a long bred and captured series of *Himera pennaria* from various localities, and read notes on the

forms included.—Mr. Garrett, an extremely pale xanthic example of *Cænonympha pamphilus* taken at Wicken.

March 11th, 1919.—Mr. Stanley Edwards, F.L.S., President, in the Chair.—Mr. A. C. Jump, of Wandsworth Common, was elected a member.—Mr. R. Adkin exhibited aberrations of *Pyrameis atalanta*, yellow instead of red coloration, and of *Vanessa io* without eye-spots on the hind wings.—Mr. W. J. Kaye, several striking species of South American *Theclidæ*.—Mr. Barnett, series of *Satyrus semele* showing much aberration in the spotting of the underside of the fore wings; a series of *Plebeius ægon*, underside aberrations; and of *Polyommatus icarus*, undersides.—Mr. A. W. W. Buckstone, the 1919 specimens of the three forms of *Agríades coridon* from Shere, Surrey, and read notes on these races.—Mr. L. E. Dunster, underside aberrations of *Polyommatus icarus* with ab. *obsoleta* and ab. *icarinus*.—Messrs. Blair and H. Main, living larvæ of *Corethra* sp., *Mochlonyx* sp., *Ochlerobatus nemerosus* and *Anopheles bifurcatus*, all denizens of water, and made remarks on their habits in captivity.—Mr. B. S. Williams, a bred series of the melanic form of *Dysstroma truncata* from Finchley.—Mr. Hy. J. Turner, a large number of Lepidoptera taken in the latter part of 1919 in Jamaica by a member (Mr. D. Pearson).—HY. J. TURNER, *Hon. Editor of Proceedings*.

MANCHESTER ENTOMOLOGICAL SOCIETY.—Meeting held Wednesday, March 3rd, 1920, at the Manchester Museum.—B. H. Crabtree, Esq., F.E.S., in the Chair.—Mr. Harold Halkyard, of Oldham, was proposed a member.—Mr. J. Watson made remarks on some Arctic American butterflies. He exhibited a drawer of *Parnassius phœbus* from Irkutsk, Siberia; and *P. phœbus apricatus* from Goodnews Bay, Alaska, with *Cobias nastes* and a species of Brenthid from the same place; also *Parnassius clodius claudianus* from California and British Columbia, sent to him by Mr. G. O. Day.—Mr. Johnson, a drawer containing the genus *Coremia*.—Mr. H. Britten, a *Sirex gigas* taken at the Museum in 1919, and *P. juvenens* from Flanders.—Mr. Cope, British and exotic Lucanidæ, *Rhinoscapta bennetti*, etc.—Mr. Buckley, under the microscope, ichneumonid ova of *P. bucephala*, with the ichneumons which had emerged from the ova.—Mr. Burrows, a variety of *S. menthastri* and *E. pygmæata* from Wilmslow.—Mr. Crabtree, *B. repandata*, *P. plantaginis*, *A. lucerneæ*, *N. pulveraria*, etc.—W. BUCKLEY; H. L. BURROWS.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—Meeting held at the Royal Institution, Colquitt Street, Liverpool, January 19th, 1920, Mr. S. P. Doudney, President, in the Chair.—Mr. J. Davis Ward, Limehurst, Grange-over-Sands, was elected a member of the Society.—Mr. W. Mansbridge read his report as Recorder for Lepidoptera for 1919.—Five species new to the Lancashire and Cheshire List were mentioned, viz., *Nonagria geminipuncta*, Hatchmere. *Depressaria cuicella*, bred from sallow, Formby. *Retinia purdeyji*, Burnley. *Lithocolletis sorbi*, Delamere, Eastham and Woolton. *Elachista magnificella*, Sales Wood, nr. Prescot. *Crambus uliginosellus*, new to Lanc. from Holker Moss. In support of the paper, Mr. W. A. Tyerman exhibited a number of his most interesting captures during 1919.—WM. MANSBRIDGE, *Hon. Sec.*

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CONTENTS.

A New *Arhopala* (Lep.: Lycaenida) from Ceylon, *N. D. Riley, F.E.S.*, 97. A Clasical Parasite of *Endomychus coccineus*, Linn., *C. T. Gunningham, F.I.C., F.E.S.*, 98. An Undescribed Species of Psychoptera from West Africa (Psychoptera, Diptera), *Charles P. Alexander, Ph.D., Urbana, Illinois*, 101. Butterflies in Macedonia, *Herbert MacLeod (concluded from p. 64)*, 102. A Supplementary Note on the Butterflies of South Macedonia, *H. Rowland-Brown, M.A., F.E.S.*, 106. Collecting in Finnmark, Swedish Lapland, Jemtland, etc., *Alfred F. Rosa, M.D.*, 109.

NOTES AND OBSERVATIONS.—Swarming of Micro Lepidoptera in Australia, *E. Mayrck*, 115. *Zygana trifoliata*, *P. A. Small*, 116. Early Appearance of *Euchloe cardamines*, *G. G. B. Meade-Waldo*, 116. Irregular Emergence of *Drapala cultraria*, *H. Douglas Small*, 116. Early Spring Butterflies, *P. G. S. Bramwell*, 116. *Pieris rapa* in March, *W. M. Christy*, 116. *Phlogophora meticulosa* in March, *Vernon P. Kitchin*, 117. The "Winter" Moths, *Geo. T. Forrell*, 117. Winter Moths, *E. P. Butterfield*, 117. *Pararge megara*, etc., in Yorkshire, *E. P. Butterfield*, 117. Hibernation of *Agias urticae*, *E. P. Butterfield*, 117. Notes on the Season 1919 from Burnley and District, *W. G. Clifton*, 117. Entomological Records (Macro-Lepidoptera), *H. Rowland-Brown*, 118. Early Appearances, *P. A. C. Stowell*, 119. Moths Captured by Light trap, *Major Frederick Gilbert*, 119. Wicken Fen Fund, *W. G. Sheldon*, 119.

SOCIETIES.—The South London Entomological and Natural History Society, 119. Manchester Entomological Society, 120. Lancashire and Cheshire Entomological Society, 120.

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NEW SPECIES OF NOCTUIDÆ FROM THE PHILIPPINES.

BY A. E. WILEMAN AND RICHARD SOUTH.

Euxoa luzonensis, sp. n.

♂. Head and thorax brownish-grey, abdomen slightly paler. Fore wings greyish-brown, sprinkled with darker; antemedial line black, serrated; postmedial line black, outwardly pale-edged, curved round outer end of cell, thence inwardly oblique to dorsum; subterminal line pale, sinuous, biangulate below middle, inwardly edged with black; terminal dots black; orbicular and reniform stigmata blackish, faintly outlined in pale brown. Hind wings dark fuscous, darker towards termen, discal dot black. Underside dark fuscous, fore wings paler on costa and termen; all wings have a black discal mark.

♀. Similar to the male, but the stigmata are brown, and the subterminal line is whitish.

Expanse, ♂ 40 mm., ♀ 38 mm.

Four specimens (3 ♂♂, 1 ♀) from Haight's Place, Pauai, subprov. Benguet, Luzon (7000 ft.), November 7th-14th, 1912.

Comes near *E. canariensis*, Rebel.

Agrotis luminosa, sp. n.

♂. Head and thorax reddish-brown, abdomen greyish-brown with reddish dorsal and anal tufts. Fore wings reddish-brown, suffused with darker brown on costal area to the postmedial line; orbicular and reniform stigmata pale ochreous, outlined in black, claviform strongly outlined in black; the reniform is preceded by a black dash, followed by a black streak to termen which is interrupted by the postmedial and subterminal lines; antemedial line pale ochreous, crenulate, outwardly edged with black; postmedial line crenulate, pale ochreous, inwardly edged with black, curved round end of cell, thence inwardly oblique to dorsum; subterminal line pale ochreous, crenulate, interrupted, and wider towards dorsum; a connected series of black dots on termen; fringes tawny brown, chequered with darker. Hind wings pale brown with darker veins and terminal border. Underside fore wings suffused with blackish except on the costal and terminal areas, which are tawny brown; hind wings pale, almost whitish, brown, tinged with tawny brown on costal area, terminal border blackish; all the wings have a black discal dot and transverse line beyond; fringes tinged with tawny brown.

Expanse, 43 mm.

A male specimen from Haight's Place, Pauai, subprov. Benguet, Luzon (7000 ft.), November 8th, 1912.

Near *A. mandarinella*, Hampson.

Agrotis marmoraria, sp. n.

♂. Head and thorax brown, abdomen paler. Fore wings pale brown, freckled and clouded with darker; orbicular and reniform stigmata pale, almost whitish, centred with brown, claviform outlined in black; subbasal line black, outwardly pale edged, interrupting a black streak from base to claviform stigma; antemedial line black, inwardly pale edged, crenulate, and slightly bent outward towards dorsum; postmedial line pale, edged on each side by a crenulate brown line curved round cell thence straight to dorsum; subterminal line pale, sinuate, broadest towards dorsum; terminal line represented by black triangular marks; fringes brownish, paler marked at ends of the veins. Hind wings pale fuscous brown, darker on terminal border; fringes pale. Underside whitish-brown suffused with dark fuscous on disc of forewings and on terminal area of hind wings; all wings have a black discal mark and line beyond.

Expanse, 40 mm.

A male specimen from Haight's Place, Pauai, suprov. Benguet, Luzon (7000 ft.), November 7th, 1912.

Possibly this may be a colour form of *A. luminosa*.

Agrotis crassipuncta, sp. n.

♂. Head and collar grey, thorax brown; abdomen paler and tuft darker. Forewings grey flecked with red-brown between the antemedial and postmedial lines; subbasal line black, terminating in a longitudinal black mark from the base; antemedial line blackish inwardly edged with whitish, outwardly oblique to vein 1 and thence sharply curved to dorsum; postmedial line blackish, serrated, excurved from costa to middle, thence incurved to dorsum, followed by a series of black dots on the veins; subterminal line blackish, preceded on costa by a double brown spot and by a triangular mark below; terminal line represented by black points between the veins; stigmata indistinct; preceding the reniform is a large black spot, its upper edge cut into by a cone-like pale mark. Hind wings whitish-brown clouded with darker on the terminal area. Underside whitish-brown; all the wings have blackish discal dot and line beyond; the discal area of fore wings clouded with fuliginous.

Expanse, 44 mm.

A male specimen from Haight's Place, Pauai, subprov. Benguet, Luzon (7000 ft.), December 5th, 1912.

Belongs to the *c-nigrum* group of the genus.

Cirphis albomarginata, sp. n.

♂. Head whitish, thorax ochreous mixed with brown; abdomen rather paler, anal tuft whitish. Fore wings ochreous powdered with brown, costal and terminal borders whitish irrorated with brown;

apical streak white, from which an oblique brown line runs to dorsum and limits the terminal border; orbicular stigma of the ground-colour set in a white blotch which extends to four black dots representing the reniform stigma; fringes brown, preceded by black dots on termen. Hind wings whitish, silky; all the wings have a black discal dot and dotted line beyond, and there is a blackish cloud about middle of the line on fore wings.

♀. Similar to the male above, but the blackish cloud is absent on the underside of fore wings.

Expanse, 36 mm.

One example of each sex from Haight's Place, Pauai, subprov. Benguet, Luzon (7000 ft.), May 12th, 1912.

Comes near *C. decissima*, Walk.

Cirphis cuneata, sp. n.

♂. Head and thorax pale brown, collar with darker lines, abdomen greyer. Fore wings pale brown, a white streak from base along median nervure extending to termen; a less distinct streak along subcostal area, most distinct on terminal area; between these streaks is a blackish, wedge-shaped cloud from termen to cell, a blackish shade below the median nervure and another on dorsum; two black dots in the cell, the first linear and the second punctiform; fringes darker brown. Hind wings fuscous, fringes pale brown. Underside pale brown, fore wings suffused with blackish on the disc; all wings have traces of a black discal dot.

Expanse, ♂ 38 mm., ♀ 36 mm.

Three specimen (2 ♂ ♂ and 1 ♀) from Haight's Place, Pauai, subprov. Benguet, Luzon (7000 ft.). One male captured November 17th and another (type) December 16th, 1912; the female was taken on December 3rd, 1912.

Allied to *C. diagramma*, B.-Baker.

Trachea luzonensis, sp. n.

♀. Head and thorax dark grey mixed with paler, abdomen grey-brown; tarsi dark brown with paler rings. Fore wings brownish suffused with fuliginous; orbicular stigma black, reniform outlined in black; sub-basal line black, outwardly edged with pale greyish-brown on costal area; antemedial line black, crenulate, inwardly edged with greyish-brown, especially towards costa; postmedial line black, double, sinuous, inwardly flecked with greyish-brown; subterminal line grey, sinuous, diffuse; terminal line black, interrupted; fringes greyish-brown. Hind wings fuscous, with black terminal line and greyish-brown fringes. Underside fuscous with traces of a darker discal mark and a line beyond.

Expanse, 34 mm.

A female specimen from Haight's Place, Pauai, subprov. Benguet, Luzon (7000 ft.), November 25th, 1912.

Comes near *T. oppositata*, Walk.

Athetis multilinea, sp. n.

♂. Head, thorax and legs grey, abdomen paler. Fore wings grey with faint violet tinge; reniform stigma outlined in brown; sub-basal and antemedial lines brown, the latter wavy, deeply indented before dorsum; a brown transverse shade before antemedial line; central shade brown united with the reniform; postmedial line black, roughly serrated, excurved below middle, thence incurved to dorsum; terminal area clouded with brown, obscuring the sinuous and finely dentate subterminal line; black dots and pale line on termen, fringes brown. Hind wings whitish, tinged with fuscous; discal dot and terminal line darker. Underside of fore wings dark fuscous and of hind wings whitish suffused with fuscous on costal area; a dark discal mark and a dark line beyond on all wings.

Expanse 30 mm.

A male specimen taken Baguio, subprov. Benguet, Luzon (5000 ft.), July 9th, 1912. Another male from Sapiangao, subprov. Benguet, Luzon (5500 ft.), taken December 16th, 1912.

The specimen from Baguio (type) is darker and the markings better defined than in the Sapiangao specimen.

Comes nearest to *A. bremusa*, Swinh.

Proxenus (?) *obscura*, sp. n.

♂. Head and thorax brown mixed with grey, second joint of palpi grey at tip, third joint blackish; abdomen brown, rather paler than thorax. Fore wings brown freckled with blackish chiefly on basal and terminal areas; orbicular stigma black, reniform indistinct with two white dots on its outer edge; transverse lines blackish, very indistinct; terminal line black with pale dots on it; fringes dark brown, paler at ends of the veins. Hind wings whitish, clouded with fuscous on costa and termen. Underside whitish, the fore wings and outer costal area of hind wings clouded with fuscous; orbicular and reniform of fore wings indicated by pale marks.

Expanse, 28 mm.

A male specimen from Sapiangao, subprov. Benguet, Luzon (5500 ft.), December 17th, 1912.

(To be continued.)

ON A SMALL COLLECTION OF HOMOPTERA FROM
BRITISH GUIANA.

BY W. L. DISTANT.

THE following descriptions and notes refer to a small collection sent by Mr. G. E. Bodkin, the Government Biologist of British Guiana, to Dr. G. Marshall, of the Imperial Bureau of Entomology. The specimens were all collected by Mr. A. A. Abraham, who was attached to a survey of a road for bringing down cattle from the interior of the Colony.

Apart from the new species here described, the collection also contained two very rare species. One, *Odontoptera carrenoi*, Sign., a Fulgorid, described by Signoret from an unlocalised specimen, was quite new to the British Museum Collection, and was the first example I had seen; another, a Jassid, belonging to the genus *Peltocheirus*, is represented by a single specimen, quite distinct from the type *P. bigibbosus*, Sign., but which may have been described elsewhere and perhaps under another generic name.

Family FULGORIDÆ.

Echetra modesta, sp. n.

Head, pronotum and scutellum brownish-ochraceous, vertex of head with the margins, a central longitudinal carinate line and two small discal spots on each lateral area, black; eyes fuscous: pronotum with a greenish tint, three concolorous central carinate lines and two central small black spots; scutellum with three discal carinate lines, of which the central is straight and the two lateral irregularly curved, and two somewhat large black spots near each lateral angle; abdomen above almost entirely black; sternum, legs and rostrum ochraceous with a pale greenish tint, face with narrow lateral margins, and three central carinate lines—of which the central is straight and the two lateral curved—black; pro-sternum with a wavy black line near anterior angle; abdomen beneath ochraceous; posterior tibiæ prominently spined; tegminæ very pale castaneous, basal half of costal area virescent, the apical third spotted with greyish-white; wings very pale bronzy-brown, the venation distinctly fuscous-brown.

Length, excl. tegm., 16 mm.; exp. tegm., 44 mm.

Hab.—British Guiana (Cattle Trail Survey), A. A. Abraham.

Echetra abrahami, sp. n.

Head and pronotum dull virescent, each with some small black spots, of which the most prominent are two small and rounded on the disc of each; scutellum more greenish-ochraceous with irregular, angulated, black fasciæ; abdomen above black, the segmental margins greenish-ochraceous; body beneath and anterior and intermediate legs greenish-ochraceous, face and clypeus more or less mottled with black, apices of femora, central and apical annulations to tibiæ, and the tarsi, black; posterior legs pale castaneous, more or less greenish at basal areas, and with six prominent marginal spines; tegmina pale castaneous, the costal area pale greenish with dark castaneous spots, the discal area more or less spotted with black between the veins, the apical area more greyish-white with darker suffusions; wings black, extreme basal area, two spots on basal half and two somewhat larger on posterior margin greenish or greyish white; pronotum and scutellum centrally strongly longitudinally carinate, and less prominently but obliquely carinate on each lateral area; abdomen above centrally finely longitudinally carinate.

Length, excl. tegm., 15 mm.; exp. tegm., 42 mm.

Hab.—British Guiana (Cattle Trail Survey), A. A. Abraham.

Allied to *E. fuscata*, Dist., from Costa Rica.

ABRAHAMERIA, gen. nov.

Vertex of head broader than long, the lateral and anterior margins distinctly, somewhat broadly carinate, the disc thus moderately foveate; pronotum much broader centrally than at lateral angles, laterally concavely sinuate, the lateral angles broadly, obtusely angulate, convexly produced between eyes, the posterior margin moderately concave; face about as broad as long, strongly longitudinally carinate; scutellum strongly carinate; abdomen broad, moderately compressed, about as long in male as head, pronotum and scutellum together; posterior tibiae thickly finely spinose. Tegmina long and slender, about three times as long as broad; wings about twice as long as broad, their apices subangulate. Rostrum about or almost reaching the apical abdominal segment, its second joint very long and sulcated; femora and tibiae strongly sulcate beneath.

The position of this genus in the *FULGORIDÆ*, *Div. Aphanaria*, is somewhat at present indeterminate.

Abrahameria typica, sp. n.

Head above pale slatey blue, the apical and lateral margins virescent; eyes ochraceous; pronotum brownish, the margins and a central longitudinal carination virescent; scutellum brownish, speckled with ochraceous, a central longitudinal carination and much waved lateral carinations yellow; three small spots on anterior margin, and four unequal spots on lateral areas, black; abdomen above ochraceous, the segmental margins black; body beneath and legs ochraceous, anterior femora and tibiae darker beneath; rostrum ochraceous, almost reaching the apical abdominal segment; tegmina reddish-brown, some spots on costal margin, ochraceous, the apical area spotted with greyish-white, and with an undulating black line extending from base to apex and a more fractured and slender black line near anterior margin; wings carmine-red, the veins and broad apical area black, the latter containing two small pale spots near apex.

Length, excl. tegm., 19 mm.; exp. tegm., 68 mm.

Hab.—British Guiana (Cattle Trail Survey), Takama Ck. N. Berbice, A. A. Abraham.

“COLLECTING FUNGUS-GNATS”: REMARKS ON
MR. C. MORLEY'S PAPER.

BY F. W. EDWARDS.

MR. CLAUDE MORLEY'S paper in last month's 'Entomologist' seems to call for two or three comments, which I hereby make in the hope of adding to the inducements offered by Mr. Morley's

remarks to the collection of these interesting insects. In the first place a word of warning may be necessary: The great majority of the species are not, as Mr. Morley suggests, conspicuous and easy to name, but small, obscure and difficult of determination without a close study of the male hypopygium.

The places to look for them (apart from window-panes, which, though not to be neglected, yield a comparatively small number), are steep or overhanging banks in woods, or against cliffs, or at the mouths of small caves, especially if these situations are damp; also the steep overgrown banks of small streams, especially in woods. By sweeping in such places it is often possible to obtain many hundreds of specimens in a few minutes. *Provided that no heavier insects are taken with them* they may all be put into the killing-bottle together, and no matter how tangled the mass may appear, it will be found on shaking it out that only a small percentage have lost more than one leg. They must not be left too long, however, before they are pinned.

The flower-heads of umbellifers are not in my experience very extensively frequented except by members of the subfamily Ceroplatinæ, and this will perhaps account for Mr. Morley's curious opinion that this is "the most abundant group as regards specimens." It is certainly the least abundant.

Only a comparatively small number of species live as larvæ under decaying bark, most of these being Ceroplatinæ. Practically nothing is known as to the life-history of the species of *Macrocera*, which are common and conspicuous flies.

The larvæ of the others fall into two groups: those which feed on the spores of fungi or moulds, especially those growing on bark, or on liverworts; and those which feed internally on the substance of various fungi, chiefly *Agarics*. The first group are exceedingly fragile and delicate, but not difficult to rear once they are safely home. They must not be allowed to become too dry, but require plenty of air, or else they will succumb to mould. The second group are more hardy and are easily reared, though they suffer much from the attacks of parasites. They usually pupate in a cocoon just below the surface of the ground, whereas most of the others merely spin a slight web on the bark or fungus on which they are feeding and pupate in it.

There is still a great deal of work to be done on this family in Britain, especially as regards the life-histories, and if anyone feels sufficiently interested to breed specimens from the larvæ the writer will gladly name the resulting flies. An extensive work on the early stages of the family is being prepared by Dr. D. Keilin, of Cambridge University, who, I have no doubt, will welcome co-operation from any quarter. The present writer hopes to be able to publish, in the not very distant future, tables and keys to the known British species.

NOTES ON BRITISH ORTHOPTERA, 1919.

By W. J. LUCAS, B.A., F.E.S.

DURING 1919 a few somewhat interesting notes and observations were made in connection with our Orthoptera, though perhaps nothing of striking importance has to be recorded.

FORFICULOIDEA.—*Labia minor*, Linn. in fair numbers was met with in September on a dunghill at Sudbury in Suffolk (B. S. Harwood). *Apterygida albipennis*, Meg. also was captured by beating and sweeping at Sudbury in September (B. S. H.). On the occasion of the South London Natural History Society's excursion to Boxhill on May 31st a considerable number of *Forficula auricularia*, Linn. were observed. Most were females, but there were at least two males. There is practically no doubt that all were hibernated specimens, and this observation therefore confirms the belief that both sexes may pass the winter as imagines. Of some the wing-tips bore a small pale spot. One young nymph was seen. A few weeks later, on June 21st, upon the occasion of an excursion of the same Society to Boldermere, near Wisley, in Surrey, no earwigs appear to have been taken.

BLATTODEA.—*Ectobius lapponicus*, Linn. was taken in July at Goodwood, in Sussex (P. Harwood). *Ectobius panzeri*, Steph., chiefly in the nymph stage, was found swarming in July on *Beta maritima*, Linn. and other plants, close to the edge of low cliffs above the shore at St. Mary's, one of the Scilly Isles (K. G. Blair).

LOCUSTODEA.—Of *Metrioptera brachytera*, Linn. one imago (besides nymphs) was met with at Wellington College, Berks, from July 23rd to 25th (B. S. H. & P. H.). I found it myself on dry ground at the top of the hill facing Oxshott Station, Surrey, as late as October 4th, and took a grey female and a greenish male. I have been accustomed to expect this species on damper ground. Of its congener, *M. roeselii*, Hagenb., B. S. Harwood took several males and one female, and saw nymphs also, near Clacton, Essex, on August 8th. He says that it was his best take of the species, and his first capture since 1913. On August 31st it was common at Shoeburyness, Essex (Blair).

It is always interesting to hear of the occurrence of *Phasgonura viridissima*, Linn. In July it was met with at St. Mary's, one of the Scilly Isles (Blair). J. F. Rayner showed me a male which he had captured on July 17th in long grass at South Stoneham, near Swaythling, Hants. A. E. Boycott sent me a male which he took at Morthoe, in North Devon, on August 5th. It reached me alive in the New Forest on August 8th, having gone to Kingston before being delivered to me at Brockenhurst.

C. W. Bracken met with a few in marshy places at Newquay, in Cornwall.

On June 21st, on the occasion of the South London Natural History Society's excursion to Boldermere, very young nymphs of *Meconema thalassinum*, De Geer were beaten from rhododendrons (F. M. Carr). A male taken by G. T. Lyle on August 27th at Gog Magog Hills, in Cambridgeshire, and sent to me, had a malformed elytron. On October 18th, at Stamer Park, near Falmer, in Sussex, six females were noticed on beech trunks from about 18 in. to 10 ft. above the ground: the specimen 18 in. up the trunk appeared to have been ovipositing in a crack in the bark (A. Sich).

In the New Forest on August 3rd I swept a male *Leptophyes punctatissima*, Bosc. probably off willow, by the side of Blackwater above Queen's Bower. It was not quite mature, but was found to have become so by the morning of August 16th. No cast skin was noticed in the box containing it, so presumably it was eaten. The long hind legs, though apparently of full size, were bent and seemed to be of little use. The captive was fed on rose-leaves from the garden. A curious habit it had of putting its tarsi in its mouth, perhaps to moisten them so that they might cling the better to the surface on which it was walking. No doubt this would be a useful expedient for the creature when it was progressing upside down on the under surface of the glass lid of its box. On August 13th I took one at the foot of the cliffs near Mudeford, Hants. The species was also found at Colchester, Suffolk, in September, and in a garden at Sudbury (B. S. H.), as well as at Hassocks in Sussex (Sich).

ACRIDIODEA.—On April 22nd, at Marlborough Deep, in the New Forest, *Tetrix subulatus*, Linn. was about in considerable numbers, but perhaps not so commonly as I saw it there in 1918; or possibly it did not move so readily, for, though the weather was usually bright, there was a cool air. I caught by hand two males and fifteen females, and missed a great many. The small dark males are very difficult indeed to follow when they leap, or to see upon the ground; so the disproportion of the sexes may not be so great as from these numbers would appear. When on the ground most of the females are also well protected by coloration. Perhaps these grasshoppers leap first and then open their wings as they proceed. Females with fiddle-shaped pale dorsal marking (var. *stylifer*, Luc.) and others with pale longitudinal dorsal streak were taken, though most were of a fairly uniform brown tint. At Newquay C. W. Bracken found a very small colony in a marsh, but he thinks this insect is by no means common in the extreme south-west of England. One had a white line along the centre of the pronotum and the edges of the elytra.

On April 18th a small conspicuously coloured male imago of

Tetrix bipunctatus, Linn. jumped into the water at Duck-hole Bog, in the New Forest. It had pale ochreous antennæ and a mid-dorsal longitudinal band of the same colour, this band being edged with very dark brown about the middle. The rest of the colouring was fairly uniform brown of moderate depth. The next day, on the other hand, I took at Rhinefield a female imago, in colour dark brown mottled somewhat with other shades of brown, but really very uniform in colour. On April 22nd, when its congener was so plentiful, one only was taken at Marlborough Deep — a female almost cream-coloured with slightly darker mottling — perhaps the palest I have seen. At Boxhill, on May 31st, a large dark female with some whitish markings on the hind femora was secured. Near Boldermere, on June 21st, a very small dark male was taken mature, but this could scarcely yet have belonged to the new brood.

On July 5th a female *Gomphocerus maculatus*, Thunb. was taken mature near Horsley, in Surrey. On the 23rd of the same month, near Brockenhurst, in the New Forest, on very black ground, due to a heath fire, this insect was remarkably dark — in some cases almost black, so that no differentiation was apparent between it and the black soil. Again, at Blackheath, Surrey, on September 14th, close to a large burnt area, specimens were taken very black indeed. One could not help feeling that there was in each case some connection between this melanism and the very black surface of the burnt heath.

In the late summer I met with *Mecostethus grossus*, Linn. in several parts of the New Forest. On July 28th, at Duck-hole Bog, I took a male. The next day I took two more males in the same locality. Perhaps they were only just becoming imagines, although the weather certainly was not very favourable on both occasions, sunshine being only intermittent and the air at other times cool. On the 29th I caught and released a nymph. On August 6th, at the same bog, a few more were seen. I expected a greater number, as the day was warm and bright, but possibly even yet they were not generally mature. The next day, at Highland Water Bog, a good number were seen, and I took a male and a female. On August 27th, at a bog near Rhinefield, a female was captured, and a fine female was secured on September 1st at Crockford Bog. On September 5th, at Silverstream Bog, it did not seem very common, or perhaps it did not get up readily. I took three males and two females. Neither of the females, I believe, rose on the wing.

On July 24th W. Evans saw two *Omocestus viridulus*, Linn. at Hillend, in the Pentlands.

On August 13th, at the foot of sandy cliffs near Mudeford, amongst sparse vegetation, chiefly brambles on the cliff-foot and marram-grass on the sand, were large numbers of *Stawroderus bicolor*, Charp., generally well assimilating in colouring with the

sand. The females were very large. This species, being able to fly, was not much incommoded by the sand, but a *L. punctatissima*, Bosc, which apparently came out of the brambles, was quite helpless. One or two *Metrioptera albopunctata*, Goeze seemed to try to get back into shelter, as if knowing that the sand would render them helpless. On September 10th *S. bicolor* was very plentiful on the coast at Longniddry, Haddingtonshire, some of them being of a beautiful reddish-purple colour (W. Evans). It was common at Newquay (Bracken). On October 4th it was still about on the darkened soil of Esher Common, Surrey, and a dark tendency seemed to be showing itself.

Near Boldermere a male *Chorthippus parallelus*, Zett. was taken mature on June 21st. Bracken found it common at Newquay. Evans met with it at Loganlee, in the heart of the Pentlands, on August 15th. On August 18th *C. elegans*, Charp. was mature at Holmsley, in the New Forest.

Kingston-on-Thames,
April 12th, 1920.

COLLECTING IN FINMARK, SWEDISH LAPLAND, JEMTLAND, ETC.

BY ALBERT F. ROSA, M.D.

(Concluded from p. 115.)

Gonepteryx rhamni, L.—Seen at Disenaæn.

Araschnia levana, L.—I am sure I saw this species at Disenaæn, but I do not seem to have any specimens.

Polygonia c. album, L.—Disenaæn.

Aglais urticæ var. *polaris*, Stgr.—Seen on the wing at Kvalø—very dusky examples. Imagines bred from Hammerfest and Abisko larvæ. The ground-colour in some is of a dull pinkish-grey as exhibited in the wild examples. A lesser number have in addition a black band between the middle costal spot and the inner central one. One or two have the ground-colour brighter red, approaching the type.

Euvanessa antiopa, L.—Disenaæn.

Brenthis aphirape var. *ossianus*, Hbst.—A few from Mattmar and Abisko.

B. selene, Schiff.—Taken at Narvik and Björkliden, July 10th and 11th. The silver spots are inclined to be deficient in brilliancy. Var. *hela*, Stgr.—Specimens taken at Jöraholmen were of this variety, being deficient of silver spots under-side hind wing, which is more or less dusky. The upper sides also are darker than the type, some of them markedly so. Some show a tendency to have pearly bars between the nervures under-side hind wing. Ab. *thalia*, Hb. (*rinaldus*, Hbst.)—One has no central spots upper-side fore wing, and has bars of dull silver or pearly running between the nervures under-side.

B. euphrosyne, L.—Common at Disenaen and at Mattmar; also taken at Narvik and Abisko. Var. *finjal*, Hbst.—Amongst those taken at the first two localities are examples closely approaching if not of this variety.

B. pales, Schiff., var. *arsilache*, Esp. (form *aquilonaris*, Stichel).—Abisko, July 11th and 12th. Var. *lapponica*, Stgr.—Very common at Jöraholmen. Single specimens also taken at Kvalø and Björkliden.

B. freija, Thnb.—Very common at Abisko, but getting worn. In better condition on the way up to Lap-porten.

Erebia medusa, F. var. *polaris*, Stgr.—Fairly common at Jöraholmen and Bossekop. Quite fresh out, but not easy to get perfect.

E. lappona, Esp.—Common and newly emerged at Abisko, and around Hammerfest.

E. ligea, L.—Narvik, July 10th, fresh out and common. At Björkliden it was also common. Var. *borealis*, Brown.—Some of the latter—Björkliden specimens—are of this variety.

E. embla, Thnb.—Only a very few at Mattmar.

Æneis jutta, Hb.—Disenaen bog.

Æ. norna, Thnb.—Bossekop, worn on July 1st.

Pararge hiera, F.—Rather common in the woods at Disenaen.

Cænonympha pamphilus, L.—I saw this species at Disenaen, but did not take any specimens.

Chrysophanus hippothoë var. *stieberi*, Gerb.—Taken at Bossekop, Jöraholm and Narvik. The females from Narvik are ruddy copper and those from Finmark are brassy.

C. phlaeas var. *hypophleas*, B. (*americanus*, d'Urban).—Only at Hammerfest on the right or northern side of the bay, where it was common. As with the northern form of the last species the copper is brassy. The underside of the hind wing is pale ash-grey. The spots and borders are very black, broad and distinct. It was not easy to catch on account of the high wind on this wind-swept island: it frequently no sooner showed itself than it was carried away.

C. amphidamas, Esp., var. *obscura*, Rühl.—Very abundant at Mattmar. They were in perfect condition, but very easily tarnished. The females are very varied.

Plebeius argus (*argyrognomon*) var. *lapponica*, Meissn.—This was the most abundant of any species seen. Many females have very little if any blue. Taken at Bossekop and Jöraholmen; and at Narvik and Abisko on my return visit, July 11th and 12th.

Glaucopsyche optilete, Knoch., var. *cyparissus*, Hb.—Specimens taken at Jöraholmen and Abisko do not seem to have such a pale underside as those taken at Disenaen, but the latter were all worn, which may account for the difference. I got them absolutely fresh out on July 12th near Lap-porten.

Polyommatus icarus, Rott.—Narvik, July 10th. At Jörahol-

men one specimen was taken, which was deficient in size and paler than normal.

Celastrina argiolus, L.—Disenaaen, not common.

Callophrys rubi, L.—Common at Disenaaen and also at Mattmar, but in both cases worn.

Hesperia centaureæ, Rbr.—Abisko, just emerging June 21st.

H. malvæ, L.—Disenaaen, not uncommon.

Augiades comma var. *catena*, Stgr.—Abisko, July 11th.

As already stated the season was a very dry one. I had only three wet days while on suitable collecting ground. One occurred at Mattmar and two while I was at Abisko.

In conclusion I have to thank Mr. H. Rowland-Brown and Mr. W. G. Sheldon for kindly giving me information relative to my journey, and I felt honoured by the interest taken in my work by the Swedish Academy of Science, from which I received a communication when I arrived at Abisko.

28, Pitt Street, Edinburgh.

SOME INDIAN BEES OF THE GENUS ANDRENA.

BY T. D. A. COCKERELL.

A small series of Indian *Andrena* received from Mr. T. Bainbrigg Fletcher has given me a good deal of trouble, and I can only hope that I have avoided errors in my account of them. Bingham's key (as Nurse remarked in 1903) is of little use, and the descriptions by Cameron and others are not very satisfactory. I have made repeated efforts to obtain authentic specimens of the species of Nurse and Cameron, but entirely without result. I have Bingham's *A. harrieteæ*, but it is a *Melitta*. I have seen *A. balucha*, Nurse, in the U.S. National Museum. There is undoubtedly a large *Andrena* fauna in Northern India, of which the known species constitute only a small part.

Andrena ilerda, Cameron.

♀. Lyallpur, Punjab, July 24th, 1917 (*G. R. Dutt*), Fletcher 23. I am satisfied that this is *ilerda*, although the hair of thorax above is tinged with fulvous, the stigma is rufous margined with fuscous, and the clypeus is quite sparsely punctured in the middle. Cameron, in his short diagnosis, says the stigma is dark rufous; in his description below he says it is fuscous. A male, also marked 23, bears the label: "Sugar cane, Lyp., Punjab, 16, 12, xi (*M. M. L.*).” The female very closely resembles *A. bipartita*, Brullé (*urometæna*, Costa).

Andrena ilerda inglisi, subsp. n.

♀. Length about 10.5 mm., ♂ about 11 mm., thus a little smaller than typical *ilerda*; fringe of long hair on fifth abdominal segment

of female pale brown, and on apical segment white stained with reddish (all this hair black in *ilerda*). Possibly a distinct species.

Female (type) from Banhar, Behar, December 14th, 1917 (*H. Inglis*); male from same locality and collector, March, 1917. Both are Fletcher 49. Additional characters are as follows :

♀. Mandibles long and falciform, with an inner tooth; malar space well developed; process of labrum broad and emarginate; clypeus convex, polished, with weak sparse punctures, its lower margin broadly reddish; vertex dull, except a shining line along orbits; facial foveæ narrow, white, with an ochreous tint; flagellum entirely red; third antennal joint about as long as next two combined; thorax above with short pale fulvous hair, brighter on scutellum; mesothorax dull, with minute feeble punctures; posteriorly it is more shining; area of metathorax feebly defined, but subrugose, with oblique nearly transverse plicæ; tegulæ fuscous; wings faintly dusky; second submarginal cell large and broad, receiving first recurrent nervure beyond middle; tibiæ and tarsi entirely clear red, femora darker but partly reddened; hair on inner side of hind basitarsi reddish-golden; abdomen with first four segments red, the first broadly blackened basally; segments 2 to 4 with rather narrow white hair-bands.

♂. Face, front and cheeks with abundant long white hair; clypeus black; flagellum long but stout, black above; only second abdominal segment distinctly red, and this with dusky median and lateral spots.

Andrena peridonea, sp. n.

♀. (Type.) Length about 11 mm., anterior wing 9.3 mm.; robust, black, including clypeus and legs, but first abdominal segment (except a dark L-shaped mark on each side) and base, apex and extreme sides of second ferruginous; third segment with depressed hind margin brown. Head broad; malar space linear; process of labrum broad, not emarginate; clypeus shining, with irregular, large, strong punctures, no smooth middle line; facial foveæ pale fulvous, only moderately broad; antennæ black as far as fourth joint, beyond that castaneous red; third joint not very long, but about equal to next two combined; face and cheeks with dull white hair, but it becomes fuscous on front and long and black on vertex; mesothorax and scutellum shining, with very distinct punctures; area of metathorax triangular, covered with coarse irregular rugæ; hair of thorax dull white at sides, faintly tinged with ochreous above; wings yellowish hyaline, with clear ferruginous stigma and nervures; basitarsi rather broad; abdomen distinctly punctured, finely and closely on third and fourth segments, more sparsely and irregularly on first; second segment depressed less than half; segments 2 to 4 with white hair-bands; apex with dense black hair. The second submarginal cell receives first recurrent nervure in middle.

♂. Clypeus black; flagellum entirely black; face with pale ochreous-tinted hair; abdomen red as far as base of fourth segment, but first with a broad black band connected with longitudinal lateral

ones, leaving a triangular red central area, second and third with broad, dusky, transverse bands.

Both sexes, Hangu, N. W. J. P., May 10th, 1916 (*Fletcher*, 34, 35.)

Resemble *A. ilerda*, but easily known by the stronger punctures and other characters.

Andrena comberiana beharica, subsp. n.

♂. (Type.) Abdomen with apical margin of first segment, second, except a broad black band (which may be interrupted sublaterally), and base and apex of third, all yellowish ferruginous. Clypeus creamy white with two black spots, as in *comberiana*; no lateral face marks.

♀. Third abdominal segment often with a broad black band, but sometimes with only lateral spots.

Banhar, Behar (type locality), 3 ♀, 5 ♂ collected by H. Inglis (*Fletcher*, 47, 48.) The females are dated April 10th, 1919, the males April 7th and 8th. One male is from Chapra (*Mackenzie*), *Fletcher* 15. This is certainly only a local race or subspecies of *A. comberiana*, Ckll., described from Karachi. It belongs to the *nitidiuscula* group as defined by Perkins.

NOTES AND OBSERVATIONS.

ENTOMOLOGICAL RECORDS (MACRO-LEPIDOPTERA).—At the meeting of the Entomological Society of London on March 17th, Major H. C. Gunton read a paper entitled "Entomological-Meteorological Records," and exhibited a chart showing observations of Macro-lepidoptera during the year 1919 in special relation to the relative abundance of species occurring in the Gerrard's Cross district, Bucks, under the meteorological conditions obtaining on the dates of observation, and to the effect of weather on time of appearance. It has further been suggested by Mr. Ernest Cornell, of Ventnor (*antea*, pp. 90-91), that a bureau should be established for the purpose of ascertaining the occurrence and seasonal abundance of species in various appointed localities throughout the United Kingdom. Mr. Cornell is also good enough to invite me to act as central Secretary, with a view to the collation and co-ordination of local reports. I am quite willing to act in this capacity, provided I receive adequate support in the way of records from local observers. To be of scientific value there must be comparable reports handed at the end of each year from the local centres appointed, and I have conferred with Major Gunton in order to determine the methods best suited to meet requirements. We are of opinion—(1) That the scope of the investigation, at present, be confined to observation of the Macro-lepidoptera in the imago state only. (2) That the selection of districts, where possible, be made in relation to the official meteorological observation posts. (3) That records be compiled on a uniform model (*e. g.* as set out below). (4) That a note of nature of soil of localities cited be appended to each

record when complete; Ordnance maps will indicate other general characteristics of districts selected. (5) That momentary local weather conditions only be recorded, the Secretary being responsible for the general regional meteorological conditions. (6) That occasional seasonal notes be inserted in the "Remarks" column referring to state of vegetation, blossom, etc. (7) That, in the case of rare local species, no precise localities will be made public.

SUGGESTED FORM OF RECORD.

Locality—Uxbridge, Middlesex.				Period—January—December, 1920.		
Date.	Time.	Weather.	Species.	Sex.	Conditions.	Remarks.
23/3	10 a.m.	Misty	<i>H. leucophearia</i>	♂	Settled; oak trunks	Three.
23/3	3 p.m.	Sunny	<i>B. parthenias</i>	♂	Flying; birch plantation	One.
23/3	9 p.m.	Overcast	<i>T. pulverulenta</i>	♀ ♂	Sallows	Abundant; sallow bloom nearly over.
10/4	9 a.m.	Showery	<i>X. areola</i>	♀	Settled; paling	One; practically all trees foliating except oak, beech and ash.

Name of Observer.....

Address

I shall be obliged, therefore, if lepidopterists willing to assist as observers will kindly communicate with me, so that if sufficient support be forthcoming, a start may be made this year, and at once. I ask particularly the support of local natural history societies and of observers in remoter parts of the country, in Scotland and the Isles, in Ireland and in Wales. Secretaries of societies are also requested to bring the scheme to the notice of members.—H. ROWLAND-BROWN; Harrow Weald, Middlesex.

MONKS WOOD.—I am sure entomologists will be sorry to hear that the celebrated Monks Wood, Hunts, will soon be a thing of the past, with disastrous results to many a local insect. Lord Chesham having sold the estate, the woods have been purchased by an American company, who are, I hear, cutting down all the timber, and making a clean sweep of this fine old collecting-ground. Having spent many days (and nights) in this rich locality, one cannot but regret such an end to one of the best known collecting-grounds in the country.—R. TAIT; Roseneath, Harboro' Road, Ashton-on-Mersey, Cheshire.

MONKS WOOD.—In the early days of my teens, when I first began seriously to collect butterflies, I used to study with keen interest the lists of places reputed to be good localities for certain rare species. In course of time the names of those places became to me almost synonyms for the names of the insects in question, and

my ambition to capture the butterflies became one with my desire to visit the places. In the years that have passed since those days of fresh enthusiasm, I have added to my collection most of the insects without having visited the notable localities, with but one or two exceptions. The truth is that these lists, which have, year by year, become longer, are simply the names of places where the insects have been taken at one time or another, and it does not by any means follow that a butterfly found in a given place twenty, ten, even five years ago, is still to be had for the mere journeying thither. By far the wiser plan for every ambitious entomologist to pursue is to carefully study the insects in the place where he happens to be, rather than indulge vain cravings to visit places where they may have been. Among the spots which were thus early enshrined in my memory was Monks Wood, Huntingdonshire, which, in every list, was given as a locality for quite a number of rare species. One realises now that it was not so much the place, as the man, constantly and closely on the watch, who lived in the district, kept careful notes and gave them to the world; but, nevertheless, when an opportunity of visiting the place occurred, I looked forward, notwithstanding that I had already filled all the blanks in my cabinet which Monks Wood seemed representative of, with a curious sensation of having at last attained to one of my early ambitions. It was a fine, albeit cloudy day in early July when, in company with an enthusiastic botanico-entomological friend, I cycled along the fine surface of the Great North Road from Alconbury Weston to the narrow by-road which leads to the extensive woods that bear the time-honoured name. This part of the county entirely belies its general reputation as a fen district. Hills, quite steep enough to render walking a necessity at times, overlook pleasantly undulating stretches of cornfield and meadow, with here and there deep green patches of well-grown woodland, dense, if not of very great extent. To the eastward, it is true, there stretches away a monotonous level, now rich corn and meadow land, yet still strikingly suggestive of its former marshy state, when the swallowtail was an almost unnoticed beauty to be seen over the whole district, and where the much-to-be-envied entomologist of those days could capture his fill of the now extinct Large Copper. A couple of miles of level and somewhat uninteresting road brought us to the edge of the woods, just outside of which the first indication of the distinctive character of the local flora was visible in the shape of some well-grown specimens of the *Angelica* springing from a ditch filled with the ordinary vegetation of a moist position in any part of the south. A few yards beyond this we entered the woods, which are in two large blocks separated by a broad meadow, the road running on the inside edge of the most southerly half. We rode slowly along, keeping our eyes open for a suitable break in the undergrowth to permit of pushing our machines into cover. This appeared shortly in the form of a circular opening covered with tall grasses and meadowsweet, and splashed all over with gorgeous spikes of purple loosestrife. We entered and stayed a few moments, seeing nothing, however, but a few specimens of *Epinephele (janira) jurtina* and *Aphantopus hyperanthus*. There was, however, an abundance of the common Plume Moth, *M. ptero-*

dactylus, flying over the brambles. Finding the wood somewhat too dense at this point, we proceeded a little further along the road till we came to a broad ride covered with low-growing brambles—a very likely spot for many of the typical woodland species. That ride will long live in my memory as the most beautiful piece of woodland I have ever seen. Immense patches of willow herb of several species splashed the opening with their vivid colour, and contrasted strongly with the golden star of the upright St. John's Wort, which grew in the greatest profusion. Around all immense masses of meadow-sweet stretched to the very horizon. Never have I seen such quantities. For miles along the roadside it ran in a broad white ribbon and made the air heavy with its fragrance. Notwithstanding its attractive appearance, the ride yielded nothing except a few common whites and a single specimen of *Dryas paphia*, and lunch-time having arrived we sought refuge from the attentions of the most exasperating flies I have encountered since I last visited the New Forest in the wide meadow between the two woods. Here there was evidence of a distinctly more interesting local fauna. Hundreds of cocoons of the familiar Burnet moth of the south coast (*Zygæna filipendulæ*) smothered the grass stems, and towards the centre of the meadow the insects themselves appeared in the greatest profusion, every thistle-head being crowded with as many as it could comfortably accommodate. We took two nice varieties of this species, one with an extremely small spot at the anal angle, the other with the two hinder spots coalesced into a broad red patch. The next thing of interest to appear was the Marbled White, which was apparently just hatching out, the specimens being in perfect condition. This insect is one of the most curiously local of all the widely distributed species, being often found in the greatest abundance in one field and hardly to be seen in the next. A large number of specimens of *Argynnis aglaia* were seen in the meadow from time to time. Had the day been sunny I imagine there would have been swarms of this elegant species. The edge of the northern wood on this side looked an ideal place for the Hairstreaks, but close scrutiny failed to reveal any of these in either form, but the variety and beauty of the wild flowers growing on the margin of the encircling ditch was most striking. A couple of hours here yielded nothing further of special interest, so we took the road once more and came round to the north-western corner of the same wood. There was a striking difference in the appearance of the vegetation here, some mallows and other local plants being noticed which were not to be found on the southern side. It was growing well past four and, no sun having appeared, there seemed little probability of seeing any more butterflies. We walked along the rough track at the edge of the wood, which was here composed largely of young oaks, but saw nothing of special interest until just near the end, when a solitary female of *Zephyrus (Thecla) quercus* was found resting on the ground. Well satisfied with a most enjoyable day, we turned our wheels towards the line of double telegraph poles that marks the great Roman highway to the north. On the whole, although we did not, as was perhaps hardly to be expected on a cloudy day, meet with any of the rarities, it was made quite clear that there are still great

possibilities of the existence in these beautiful woods of some of the rarities formerly taken there. At all events, no entomologist or botanist could spend other than a profitable and enjoyable day in this out-of-the-way corner of Cromwell's county.—HERBERT MACE; Faircotes, Harlow.

EUPITHECIA PUSILLATA IN DERBYSHIRE.—It seems, perhaps, worth while to record in the 'Entomologist' the occurrence of this species in Repton Shrubs, as the locality is so far outside its recorded range. Apparently it is well established in one small group of old spruce trees, as upwards of twenty specimens were taken in two consecutive afternoons. It is curious that it should have so long escaped notice in a wood that has been so regularly investigated, but it does not appear to be present in other groups of spruces in the wood, and this particular clump had probably never been searched at the right time of year. *Coccyx fimbriana*, also not hitherto recorded from Derbyshire, occurred fairly freely in the same wood this March, but that is a species more readily overlooked.—H. C. HAYWARD; Repton, Derby.

SCARCITY OF SPRING INSECTS.—I wonder if collectors in other districts are undergoing the same experience that is to be met with here. The moths common to the three first months of the year were all to be met with in fair numbers, including *P. strataria* and *A. hispidaria*, while *X. areola* was also seen in its usual numbers. At sallow the *Tæniocampas* were not up to the average, though *gothica*, *pulverulenta*, *stabilis*, *incerta*, *munda*, *opima* and *gracilis* were all taken, as was also *P. rubricosa* and *O. vaccinii*. With the passing of the sallows insects seem to have ceased. A list of those observed or taken consists of the following species: *E. abbreviata* (2), *E. pumilata* (1), *L. carpinata* (2)—last year this species was, as usual, common everywhere in woods. *T. crepuscularia*, common in our fir woods as a rule, furnished about half a dozen specimens this year. In addition to these may be added two specimens of *L. suffumata* and one extraordinarily early specimen of *X. fluctuata* (April 25th), a fair number of *A. badiata*, and one or two *S. bilunaria*. With the exception of a few specimens of *B. parthenias* in April, and of *E. atomaria*, just beginning to be seen upon our moors, the foregoing list comprises every species noted since the middle of April. As to butterflies, the same scarcity is apparent. *Aglais urticae*, unusually plentiful at this time last year, has afforded a few odd specimens; *C. rubi* is appearing in moderate numbers, but of the "whites" two specimens only of *P. rapæ* have been seen, April 28th and May 3rd; neither *P. brassicae*, *napi*, nor *E. cardamines* have put in any appearance at all. On the other hand, vegetation is unusually forward; both the trees and hedgerows are at least a fortnight in advance of what they were in 1919. To me this scarcity of insect life at present is quite inexplicable. Is it being experienced in other districts than ours?—H. D. FORD; Thursby Vicarage, Carlisle, May 15th, 1920.

MACEDONIAN BUTTERFLIES.—I have read with interest Mr. Rowland-Brown's notes in this month's 'Entomologist' on Macedonian butterflies, and have gone carefully through the other articles which have appeared from time to time. I was pleased to find that

the collection I gave to the Museum contributed so many new species, particularly as Capt. Barraud and I were serving in the same Division, and must have worked over very similar ground. I was handicapped by lack of knowledge, having done no collecting since 1904, and my knowledge was only a rudimentary one of the British and North German species. There are, however, two omissions of some importance. They are:—*Brenthis hecate*: I took one worn specimen near Kopriva Bridge on the Struma between June 14th and 27th, 1916. This was included in the collection given to the Museum. *Apatura ilia*: I took three specimens of the form *clytie* which appear to be identical with the specimen figured on Plate XXXV, No. 2 (right hand side), in Lang's 'Rhopalocera Europæ.' These were taken between June 14th and 27th, 1916. I saw several others, all worn, but it was a difficult insect to capture. Two of these specimens are in the Museum collection. In addition I saw one specimen of the typical *ilia* resting on blackberry flowers, but as usual my net caught in the brambles. This was between the same dates. In addition the following notes may be of interest:—*Euvanessa antiopa*: I saw a single specimen in early spring (probably March), 1917, near Kopriva Bridge, when I had no net. *Epinephele tithonus* has so far only been reported by Mr. Norton and Mr. Delbanty. I took some specimens at Sneyce in August, 1917, but it was not common. I thought these were in the Museum collection, but they did not appear in the list of species which Mr. Riley sent me after going through them. In conclusion may I point out that "Ferezei" and "Feragli" in the article should be "Ferezli," and "Ormonti" should, I think, be "Ormanli."—D. BLANCHARD; 16, Warneford Road, Oxford, May 14th, 1920.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*Wednesday, February 4th, 1920.*—Miss Winifred E. Brenehley, D.Sc., F.L.S., Rothamsted Experimental Station, Harpenden, Herts; Messrs. Alfred Ellis Burras, 3, Connaught Road, North End, Portsmouth; Albert Ernest Hodge, 14, Astonville Street, Southfields, S.W. 18; Rev. Melville Jones, 16, New Bridge Street, E.C. 4, and Hope Fountain, Box 283, Bulawayo, Rhodesia; Messrs. George Beddome Curtis Leman, George Curtis Leman, Sydney Curtis Leman, Wynyard, 152, West Hill, Putney Heath, S.W. 15; and Frank Reginald Mason, Oxford, Harpenden, Herts, were elected Fellows of the Society.—The President announced that he had nominated Dr. A. D. Imms, the Rt. Hon. Lord Rothschild and Mr. W. G. Sheldon as Vice-Presidents.—Prof. Poulton, F.R.S., exhibited a coloured figure to illustrate the protective movements of the conspicuous larva of the Catocaline moth, *Cocytodes cærulea*, Guér., in Fiji; also the moth bred from one of the larvæ by Mr. H. W. Simmonds.—Prof. Poulton also drew attention to an observation by Mr. W. Feather at Kibwezi, B.E. Africa, that of bats flying in a room and taking moths, mainly *Cylogramma latona*

Cram., and *limacina*, Guér. As long as the moths were on the wing the bats caught them, but immediately they came to rest on the walls or ceiling they were quite safe, the bats, although flying past them quite close, never attempting to take them.—Prof. Poulton also gave his experiences of *Musca autumnalis*, De G. (*corvina*, F.), hibernating in a loft at St. Helen's, Isle of Wight, as in 1914–15 and 1917–18, and exhibited example of the rare Ichneumonid, *Ophion undulatus*, Grav., bred from *Bombyx quercus*, L., cocoons, from N. Staffordshire.—Prof. Poulton also communicated Mr. W. Feather's observations on the red (*gregoryi*, Dist.) and green (*speciosa*, Melich.) forms of the Homopteron *Ityræa nigrocincta*, Walk., at Kibwezi, B.E. Africa.—Mr. G. Talbot exhibited the following species on behalf of Mr. J. J. Joicey: A melanic aberration of the female *Dasygophthalma rusina*, Godt., in which the bands are only present as vestiges; dark aberrations of the male *Papilio ridleyanus*, White, in which the red spots of the fore wing are obscured by dark scaling. A ♂ example of the very rare and extraordinary species, *Papilio phidias*, Ob., from Tonkin, and a number of *Heliconius*, spp., from Matto Grosso.—Mr. E. B. Ashby exhibited the following species of European Orthoptera from N. Italy: *Forficula auricularia*, L., *Acrida nasuta*, L., *Stauroderus bicolor*, Char., *Chorthippus (Stenobothrus) dorsatus*, Zett., *Epacromia thalassina*, Fabr., *Pachytylus danicus*, L. (*cinerascens*, Fabr.), *Edipoda miniata*, Pall., and *Æ. carulescens*, L.—Mr. Hy. J. Turner exhibited a tinted photograph of the larval habit of assembly, when not feeding, of *Morpho lertes* (?), sent to him by Mr. F. Lindeman, of São Paulo, Brazil, and also a coloured photograph of the pupa *in situ* showing its close protective resemblance.—Mr. Hy. J. Turner also exhibited several races of the very variable *Zygana transalpina* from peninsular Italy, sent to him by Signor Querci, and stated the relationship of the various forms as explained by Dr. Verity, of Florence.—The Rev. F. D. Morice exhibited a book of Charles Darwin's ('Descent of Man') give by the author "with kind regards" (autograph) to the late Mr. Roland Trimen. He also called attention to the very abnormally developed hind-legs of a ♀ bee of the genus *Megachile* from Mesopotamia, apparently belonging to a section of the genus in which no character at all similar had yet been described in either sex. He did not feel able to say for certain whether the character was specific or a case of monstrosity, but at present inclined towards the former opinion.—Lord Rothschild, F.R.S., exhibited two aberrant specimens of the genus *Plusia* in which remarkable aberration is very unusual. The one was a specimen of *P. gamma*, the other the beautiful example of *P. pulchrina* described and figured in the 'Entomologist' (*antea*, p. 2).—Dr. C. J. Gahan exhibited specimens of the East African Flatidæ named *Ityræa patricia*, Melich., *I. speciosa*, Melich., *I. electa*, Melich., and *I. gregoryi*, Dist., and said he believed them to be all forms of the South African species *Ityræa nigrocincta*, Walk., with which they agreed in structural characters.

Wednesday, March 3rd, 1920.—Comm. J. J. Walker, M.A., R.N., F.L.S., President, in the Chair.—Messrs. E. H. Blackmore, President of the British Columbia Entomological Society, P.O. Box 221, Victoria, B.C.; Ernest Hargreaves, Zoological Department, Imperial

College of Science, South Kensington, S.W. 7; Arthur Loveridge, Nairobi, British East Africa; and John George Rhynehart, Harristown, Taghmon, Co. Wexford, were elected Fellows of the Society.—The President announced the death of Dr. Gordon Hewitt.—Seasonal dimorphism in *Androconia*: Dr. F. A. Dixey exhibited some outline drawings showing variation in form between the scent-scales of the spring and summer form of certain butterflies.—Mr. H. J. Turner exhibited a collection of butterflies from Cyprus.—Capt. J. Waterston exhibited and commented upon a series of Macedonian Odonata.—Mr. Talbot, on behalf of Mr. Joicey, exhibited numerous new and little-known forms of Rhopalocera from Central Ceram.—Mr. G. J. Arrow showed a series of lantern-slides to illustrate different types of armature occurring in Lamellicorn Beetles.—Mr. Riley exhibited aberrations and species of *Lycenidæ* from Ceylon on behalf of Mr. W. Ormiston, of Kalupahani, including ♂ ♀ of an apparently undescribed *Arhopala* species, and *Aphnæus nubilis*, Moore. This would appear to be a good species. It is quite constantly different from the *Aphnæus* known in Ceylon as *A. ictis*, Hew.—Prof. Poulton, F.R.S., exhibited and illustrated by a lantern-slide examples to illustrate the attacks of birds on butterflies witnessed in Nyassaland by W. A. Lamborn. The marks of a bird's beak were recognisable on rejected wings.—Prof. Poulton also read a note on "Observations on the Enemies of the Larvæ of the Pierine Butterfly, *Catopsilia florella*, in East Africa," by Mr. W. A. Lamborn, F.E.S., at Karanga.—The following papers were read: "Butterflies of Cyprus," by H. J. Turner, F.E.S.; "An Undescribed Lycenid from Cyprus, *Glaucopsyche paphos*, n. sp.," by T. A. Chapman, M.D., F.R.S., etc.—G. C. WHEELER (Rev.), *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*March 25th*, 1920.—Mr. K. G. Blair, B.Sc., President, in the Chair.—Mr. A. W. Buckstone exhibited series of *Brephos parthenias* from Wimbledon, Oxshott, West Wickham and Darenth and pointed out local characteristics, also ova of *Apocheima hispidaria*.—Mr. B. S. Williams, a striking new form of *Cidaria (Dysstroma) truncata* from Finchley; the basal third black, margined by a conspicuous white line.—Mr. Hy. J. Turner, three species of *Utetheisa*, *U. pulchella*, several localities, ab. *candida*, Natal, ab. *totrix*, Assam and New Ireland, ab. *thyter* (?), Cyprus; *U. ornatix*, warmer parts of America, and *U. bella* sub-sp. *venusta*, Jamaica.—Mr. Blair, galls of larvæ of *Saperda populnea* (Col.) in stems and twigs of aspen.—Mr. Barnett reported for March 21st at Oxshott, *B. parthenias* (abundant), *X. areola*, *T. crepuscularia*, *T. punctularia*, *T. carpinata* and *G. rhamnii*, and at Ashted *E. polychloros*. Reports showed general scarcity of spring larvæ, larvæ very small, larvæ of *A. caia* in fair numbers, *B. parthenias* in swarms, *H. leucophearia* scarce, *E. cardamines* out, and *E. polychloros* in various places.

April 8th.—Mr. G. Edwards, Vice-President, in the Chair.—Mr. S. Gordon-Smith, of Boughton, Cheshire, was elected a member. A resolution was passed strongly condemning the proposal to enclose portions of Wanstead Flats and of Epping Forest for permanent allotments.—There was a special exhibition and discussion of

Dysstroma (Cidaria) truncata; Messrs. Bowman, Turner, Newman, Mera, Tonge, Williams and others took part. Mr. Bowman dealt particularly with the race (new) with which he and Mr. Williams had met; Mr. Turner summed up the variation of the species and its differentiation from *D. citrata (immanata)*.—Mr. Newman, a specimen of the curious gynandromorph of *Hybernia marginaria* taken at Chaily, Sussex.—Mr. Harding, the aberrations of *Aglais urticae* bred or captured by him during the last forty years, with a chrome-yellow banded *P. atalanta* and a chrome-yellow *H. jacobæe*.—Mr. Tatchell, a fine xanthic *Epinephle tithonus* from Dorset, and a living larva *in situ* of *Trochilium crabroniformis* in a willow stem.—Mr. Bunnnett, imagines and larval cases of the Psychid *Taleporia tubulosa* from Farnborough, and the beetle *Dorytomus tortrix* bred from poplar catkins.—Dr. Robertson, larvæ of *Plusia iota*.—HY. J. TURNER, *Hon. Editor of Proceedings*.

RECENT LITERATURE.

Entomologisk Tidskrift, 1918, 1919. Uppsala.

The complete volume of the 'Entomologisk Tidskrift' for 1919 contains much interesting reading for British lepidopterists, especially among the "Shorter Communications and Notes." *Pyrameis cardui pallida* has been reported as far north as the Syd-Varanger by Sandberg, and by Zetterstedt in Lapland. Herr Einar Wahlgren now gives an account of a migration in 1918 (?) reaching south-west Skaonia, the extreme south-west province of Sweden, with data which go to prove that the wandering *cardui* there, as with us, produce a further generation even in this northern latitude; and his observations are supplemented by Herr E. Welander to the same effect in the Malmö district. The latter, also, records oviposition of *Nemeobius lucina* on the underside of a leaf of *Anemone nemorosa*—possibly a mistake on the part of the female, as there were plants of *Primula veris* growing near. Even more interesting, in view of the recent discussion in the 'Entomologist' of the distribution of *Zygæna (Anthrocera) exulans* in Scotland (*cp. op. cit.*, vol. lii, pp. 217–226), is Herr C. O. von Porat's note on the discovery of this "decidedly northern (var. *vanadis*, Dalm.) species" at Ternholt, near Jönköping, in the summer of 1918, a district to which I paid a flying visit at the end of June, 1906 ('Entomologist,' vol. xxxix, p. 222). Jönköping, 57° 45', on the south shores of Lake Vättern, is in almost precisely the same latitude as Braemar, and authentic *exulans*, typical or var. *vanadis*, do not appear to have been detected hitherto south of Dalarnia between lat. N. 61° and 62°. In the Arctic it is not necessarily an Alpine insect; Ternholt, in Skaonia, is about 700 ft. above the lake. Another paper on the "West-Arctic Element in Scandinavian Butterflies" will appeal to all students of geographical range. Herr Einar Wahlgren further contributes a valuable note, "Über drei Zetterstedt'sche Geometriden," discussing the specific value of *Acidalia annotinata*, *A. relictata*, and *Larentia decrepitata* respectively. In the 'Tidskrift' for 1918, which has only recently come to hand owing to war conditions, will be found a useful collection

of notes on the life-histories of the Swedish butterflies, as well as comments upon the variation and nomenclature of the Lepidoptera taken by Mr. W. G. Sheldon in his Scandinavian travels in 1911 and 1912, and described in this magazine (vols. xliv, p. 357, xlv, p. 311, and xlvi, p. 11). The same paper gives a summary of the forms of *Plebeius argus*, L. (?) (*false, argyrognomon*, Bergstr.), from the Torne-träske (Swedish Lapland) region, considered by me in "Some Notes on *Plebeius argus*," etc. ('Entomologist,' vol. li, pp. 73-82), compared with the *argus* of the Stockholm district, e.g. *ab. crassipuncta*, Courv., and *ab. disco-elongata*, Courv. An albino female is figured and described (= *ab. lutea*, Car.), and it is rather unexpected to hear that the butterfly was still on the wing as late as August 20th at 68° lat. N., including the *abs. retro-juncta*, Courv., *retro-puncta*, Courv., *parvi-puncta*, Courv., and a male *trs. ad sagittata*, Courv. Is it too much to hope that some day *argus-lapponica* will turn up in Scotland, and incidently have the *ægon* taken at the highest northern limit of Scotland ever been systematically examined for the purpose? Or, are there any Scots *ægon* in existence? Tutt says it is exceedingly rare or has been overlooked, and only cites two localities—Argyllshire, Port Ellen (W. Braunston-Jones), and Perthshire, Perth (Dr. Buchanan White, 'E.W.I.,' vii, p. 147), and near the Pass of Killiecrankie (Morison, 'E.W.I.,' vii, p. 169). Mr. Meyrick fixes the northerly extreme at Aberdeen. I shall be much obliged, therefore, if any of our collectors who have met with the species north of the Border will communicate their experiences. Meanwhile, looking through these two volumes of the 'Tidskrift,' it is clear that the Scandinavian insectsoffer a rich field for research and speculation to those concerned with the affinities of the Lepidoptera and other orders occurring in North Britain and the north-western limits of continental Europe. The Swedish entomologists are to be congratulated on their enterprise and activities in observing and publishing particulars of their own fauna, not least because they afford great assistance to ourselves in understanding the problems of origin of so many of our indigenous insects.

H. R.-B.

OBITUARY.

WITH much regret we have to announce the death of Mr. D. Chittenden, of 188, Beaver Road, Ashford, Kent, on April 20th last, at the age of seventy-two years.

As an entomologist he was chiefly interested in Lepidoptera. He became a member of the South London Entomological Society in 1888 and resigned therefrom in 1912. We understand that he leaves a fine collection of British Lepidoptera and that he specialised in the Noctuidæ.

Although of late years he was unable to devote much energy to collecting he was a keen worker, and happiest when "sugaring" at night. During the course of his lifetime he worked the whole of the suitable districts in Kent, and particularly the Wye Downs, where he turned up *Pachetra leucophæa* in some numbers.

EXCHANGE.

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CONTENTS.

- New Species of Noctuids from the Philippines, *A. F. Walsman and Richard South*, 121. — On a Small Collection of Hemiptera from British Guiana, *H. L. Jordan*, 124. — Collecting Inagrasidæ, with Remarks on *Tr. C. Mores* and *A. J. G. De Meijere*, 126. — Notes on Lepidoptera, 127. — *H. L. Jordan*, *F. L. C. M. S.* — Collecting in Florida, Sweden, Lapland, Jämtland, etc., *Albert F. Rehn, M.D.*, *scorched* from p. 115, 131. — Some Indian Bees of the Genus *Audrena*, *T. D. A. Cockerell*, 132.
- NOTES AND OBSERVATIONS.— Entomological Records (Macrolepidoptera), *H. L. Jordan*, 135. — *Morus* Wood, *R. Tait*, 136. — *Morus* Wood, *Herbert Mace*, 136. — *Eupithecia pusillata* in Derbyshire, *H. C. Hayward*, 139. — Scarcity of Spring Insects, *H. L. Ford*, 139. — Macedonian Butterflies, *D. Blanchard*, 139.
- SOCIETIES.— Entomological Society of London, 140. — The South London Entomological and Natural History Society, 142.
- RECENT LITERATURE.— Entomologisk Tidskrift, 1918, 1919, 143.
- OBITUARY, 144.

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Vol. LIII.]

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[No. 686

EREBIA EPIPHRON, KNOCH: ITS SYNONYMY AND FORMS.

BY H. ROWLAND-BROWN, M.A., F.E.S.

THIS study of *Erebia epiphron* was commenced in 1914, and it had been my intention to complete a monograph of this species. The war intervened when Part I only was finished, and since August, 1914, I have been unable to proceed further. I had hoped, also, to present with Part II at least one or two coloured plates illustrating unfigured forms, but I fear now that, owing to the cost of production, the scheme must be abandoned. though I adhere faithfully to M. Oberthür's formula that verbal descriptions (especially where local and aberrant forms are concerned) should be accompanied by accurate plates, whether coloured or from photographs.

PART I.—SYNONYMY.

Some little time ago I published in the 'Entomologist' (vol. xlv, 1912, pp. 334-336), a few remarks suggested by a question raised by M. Charles Oberthür in his "Lépidoptérologie Comparée" (fasc. iii, pp. 284-288) as to the actual species or forms of one species intended by Knoch and Fabricius in their descriptions of *Erebia epiphron* and *E. cassiope*. The confused and baffling nomenclature of the writers who followed them has provided entomologists with a number of synonymic and specific puzzles, among which the relative values of *Epiphron* and *Cassiope* may be reckoned not the least difficult of solution. But whereas systematists have painfully unravelled the synonymy of other lepidopterous insects, I do not think that the classification of what I will call the *Epiphron* form collectively has been established until quite recently on a complete and satisfactory basis. In this paper, therefore, I shall do my best to determine from the evidence of the authors who have written upon this *Erebia* and its nearly associated allies—

- (i) On what grounds they regarded *Epiphron* and *Cassiope* as distinct species of the same genus.
- (ii) To what extent one should be regarded as a variety of the other.

- (iii) How far the varietal name *Cassiope* is permissible for forms of the male of the species in preference to the name of *Epiphron*.

The bibliography of the two butterflies as arranged by (1) Kirby and (2) Staudinger is as follows:

(1) Catalogue of Diurnal Lepidoptera, W. F. Kirby, 1871; Nymphalidæ, p. 9, MANIOLA EPIPHRON, Knoch (*Pap. E.*), Beit. Ins. iii, t. 6, f. 1 (1783); *Ereb. E. Herr. Schöff.* Schmett. Eur. i, f. 92-94 (1843-1844).

Var. *a. Pap. cassiope*, *Fabr. Mant. Ins. ii*, p. 42, n. 417 (1787); *Hüb. Eur. Schmett. i*, f. 626-629 (1813?); *Sat. C. Godt. Enc. Méth. ix*, p. 535, n. 154 (1823); *Hipparchia, C. Frey Neuere Beitr. i*, t. 20, f. 1, 2 (1831?).

Pap. alyone, *Borkh. Eur. Schmett. i*, p. 96, n. 35 b (1788); *P. egea*, *Borkh. l. c. i*, p. 77, n. 16; *ii*, p. 202, n. 16 (1788); *Hipp. E. Frey Neuere Beitr. vi*, t. 567, f. 1, 2 (1852?).

Pap. aethiops minor, *Vill. Ent. Linn. ii*, p. 37, n. 57 (1789).

Pap. melampus, *Herbst. Natur. Schmett. viii*, p. 186, n. 109 (1796).

Pap. ianthe, *Hüb. Eur. Schmett. i*, f. 202 (1800?).

Melampias Rhodia, *Hüb. Verz. bek. Schmett. p. 63*, n. 611 (1816).

Var. *b. Pap. mnemon*, *Haw. Ent. Trans. i*, p. 332 (1812).

Var. *c. Ereb. cass. var. Nelamus*, *Boisd. Gen. Ind. Méth. p. 26*, n. 195.

Var. *d. E. melampus*, *Newm. Zool. ii*, p. 729, fig. (1844).

(2) Catalog der Lepidopteren Europa's und der angränzenden Lander, O. Staudinger und M. Wocke, 1901.

261. *Epiphron*, *Kn. Btr. iii*, p. 131, t. 6, f. 7 (1783); *O. I. l. 258*; *H. S. 92-94*; *Frr. 544*, l. 2; *Buckell, Ent. Rec. v*, p. 161; *Tutt. Brit. Butt. p. 245*; *Egea*, *Bkh. i*, 77 (1788); *Frr. 567*, 1, 2* (fascia [maculis] extrema rufa, ocellis [♀] albopunctatis). *Hercyn. Siles. Alsat. mont (Vogesen)*; *Hung. et Bulg. mont. (trans.)*.

(a) *v. Cassiope*, *F. Mant. 42*; *Hb. 626-7*; *O. I. l. 261*; *God. ii*, 15, l. 2; *Frr. 20*, l. 2; *Meyer-Dur. Tgf. t. 2*, f. 4, 7 (*v. Valesiana*); *Melampus Esp. 78*, 2; *Hbst. 209*, 7, 8† (mac. ruf. obsoletis, ocellis nigris cæcis). *Germ. m.*; *Helv.*; *Gal.*; *It. s. et c. mont. et Alp.*

(b) *v. Mnemon* *Hw. Tr. Ent. S. i* (1812), p. 332; *Buckell, l. c. 161*; *Tutt, l. c. 427* (al. ant maculis rufis 4, ocellis 3 nigris cæcis, al. post. unicol. fuscis). *Scot. mont.*

(c) *ab. obsoleta*, *Tutt, l. c. 427* (al. omnib. unicol. fuscis). *Scot. mont.*

(d) *v. Pyrenaica*, *H.S. 535-8* (*v. †ocellis magnis*). *Pyr.*

(e) *ab. Nelamus*, *B. Gen. p. 26*; *Cassiope*, *Meyer-Dür. Tgf. t. 2*, f. 3 (*ab. nigro-ocellata*). *Alp.*

* Catalog, 1871; here follows ? *Janthe*, *Hb. 202*.

† Catalog, 1871 (ad *Epiphronem* refer.?).

‡ Catalog, 1871, major.

The passages in the above underlined do not occur in the earlier editions. In both editions *Rhodia*, Hb., as a synonym for *Cassiope* is ignored, and in that of 1871 neither var. *mnemon* nor ab. *obsoleta* find a place.

The first authentic account of *Erebia epiphron*, then, occurs in Knoch's 'Beitrag,' t. iii, p. 178 (1783), and the description is accompanied by an excellent illustration. Unfortunately the figure (tab. vi, fig. 7) is of one sex only, and one side of it—a female—though the letterpress leaves us entirely in the dark as to which sex the author is defining, or, indeed, whether he differentiated the sexes at all, or had the material before him for the purpose when he wrote. It is, however, essential that we should keep Knoch's original description well before us alike in considering the genesis of the name and the relation of Knoch's *Papilio epiphron* to the *Cassiope* of Fabricius, and of those who followed him. At least there can be no question that Knoch fixed the type, and this from specimens captured by himself in the Brocken region.

"PAPILIO NYMPHALIS GEMMATUS EPIPHRON.—Pap. Nymph. Gem. alis rotundatis fuscis, fascia rufa: utrobique ocellis seu maculis nigris pro individuis diversis. Long. lin. 7–8½; lat. 5–5¾.

"Descr. *Antennæ*, 'Pap. Tab.,' vi, fig. 7, capitatae nigræ, subtus albescentes. *Palpi, oculi* ac totum corpus fusco-nigra. Fasciæ transversæ margines abhorrent. *Alæ superiores ante* ocellis duobus seu pluribus, sæpius maculis tantum vel punctis nigris; *post eadem* ratio. *Inferiores supra* ocellos tres *infra* totidem plures (que seu maculas exhibent."

I translate the German description, which follows, as below:

"The antennæ of the butterfly figured on Plate vi, fig. 7, are long; dirty white beneath; for the rest quite black. The head and its several parts and the entire body are also of that colour. The wings on both sides are black-brown. Not far from the outer margin is a broad, and on the underside a narrower, orange-brown coloured diagonal band, of which the upper and lower parts are not in contact. On the upper side of the former there are in the band two or more black eyes with white pupils. A like number more or less on the underside. On the hind wings there are usually two on the upper side, and beneath a similar or even larger number. I have seen them with six eyes. Some examples, instead of eye-markings, have on one or even on both sides black marks or spots only. When the eye-spots and markings are taken into consideration, variations of this butterfly are found in plenty. Very close to *Papilio ligea*, Esp. ('Esp. Schm.,' I Th., tab. vii, fig. 2), it is to be distinguished by the broader and darker bands. I have met with one example, the wing of which is 8 lines long and 6 lines broad. Then it is very difficult to find a specimen of *Ligea* which is without pupillations or markings as in our butterfly.

"I found it in a firwood on the way to the Brocken, near Oder-

brück, where it is very common in sunny and open spaces. On the wing in August."

From this description it will be seen that Knoch not only did not regard the white-pupilled ocellation as a specific character of either sex, but actually gave it as his opinion that the commoner form of his *Epiphron* was that with the simple black spots, or points—"sæpius maculis tantum vel punctis nigris."

The figure referred to is that of a normal-sized female with white-pupilled ocellations on the bands of both fore and hind wings. Had Knoch, then, figured the male as well, the subsequent confusion of nomenclature might have been avoided. But his immediate successors in entomological literature at all events do not appear to have doubted that the male *Epiphron* resembled the female in this particular respect. Fabricius, for example, writing four years later, accepted the description for both sexes, repeats the account of the species given by Knoch so closely that it is permissible to surmise that he never saw the species alive, and finally introduces to the world his new species *Papilio cassiope* ('Mantissa Ins.,' ii, p. 42, 1787), which he places in the group, not next to *Epiphron*, as might be expected, but immediately after his *Pyrrha* (= *Manto*, Esp.); and, there being no figure explanatory of the text, this circumstance is not without significance as we shall presently see.

As I have transcribed Knoch's description of his *Epiphron*. I now append in full Fabricius's account of this and his own species *Cassiope* :

"EPIPHRON, 411, P. N. G. Alis integris nigris; fascia rubra; anticis supra ocellis duobus subtus tribus, posticis supra tribus subtus quinque.

"Papilio Epiphron Knoch Beytr. 3, tab. 6, fig. 7.

"Habitat in Germaniæ montosis, Dom. Bœber.

"Statura omnino et summa affinitas P. Medusæ at duplo fere minor. Corpus atrum antennis subtus albis. Alæ supra nigricantes fascia fulva anticarum imprimis valde abbreviata ocellis duobus approximatis, posticæ ocellis tribus omnibus pupillatis. Subtus concolores at anticis ocellis tribus, posticis ocellis quinque. Numerus ocellorum alæ anticæ variat.

"417. CASSIOPE, F. P. N. G. Alis integris fuscis; fascia rufa; punctis tribus ocellaribus nigris, posticis subtus punctis solis.

"Habitat in Austriæ Gramine, Dom. Schieffermyler (*sic*).

"Præcedenti affinis" (*i. e.* *Pyrrha* F.) "at paullo minor. Corpus nigrum. Antennæ subtus pallidæ. Alæ omnes supra nigræ, fascia marginis haud attingente, in posticis in primis maculari rufa et in hac puncta tria nigra. Subtus anticæ concolores, posticæ punctis tribus at absque fascia rufa."

Again no differentiation of the sexes. But it is, I think, worth mention that in the 'Systematische Beschreibung der

europäischen Schmetterlinge,' published at Halle in the same year as the 'Mantissa' by D. H. Schneider, author of the 'Nomenclator Entomologicus' (Stralsund. 1785), a similar doubt is expressed with regard to the white-pupilled female. Under the title "Papilio Melampus" (pp. 110-111) Schneider refers to Esper's tab. 78, fig. 2, to Knoch's 'Beitrag,' iii, tab. 6, fig. 7, and to Engramelle's 'Papillons d'Europe,' the footnote (89) with the text making it evident that he regarded *Epiphron*, *Melampus*, and perhaps *Cassiope* as of one and the same species, and the white-pupilled form of the female of Knoch's figuration as peculiar to that sex.

"There Herr Knoch not only says that in this butterfly the number of the eye-spots is very variable, but states that the white pupils are often present, and Herr Esper had but a single example. I maintain, therefore, that this butterfly found on the Brocken, and also generally in the mountain regions, is no more than a variety or the female form of our *Melampus*."

From this it would seem as if Schneider also was unacquainted at first hand with the female of either of the three *Erebi*as under consideration; for, a little further on (p. 111), commenting on the figures in the 'Papillons d'Europe,' he says, "ist hier eine vollige Binde mit verblischen Augen gezeichnet, die sich an sammtlichen Exemplaren des Hrn. Esper nicht gefunden haben. Vielleicht eine Eigenschaft des Weibchens?" "Here there is a complete band marked with obsolescent eyes, which we have not found in Esper's kindred examples. Perhaps it is a peculiarity of the female."

A year later, again, Borkhausen is describing the type ('Naturgeschichte Eur. Schmett.,' th. i, p. 77, No. 16, 1788) as *Papilio egea* in what appears to be a mere transcript of Knoch's description. But the following year (*loc. cit.*, th. ii, p. 202) he has evidently discovered that the white-pupilled ocellations are a female character, though, strangely enough, he proceeds to identify Knoch's *Epiphron* (which he re-christens *Papilio alcyone*) with Fuessly's *Melampus* on this ground, and is content to repeat in substance Fabricius's account of *Cassiope* as follows:

"All wings above black-brown with an orange band, which on the fore wings is undivided and does not reach the margins, but which on the hind wings consists of separate blotches and has three black points. On the underside the fore wings are marked as above; the hind wings lack the orange band, but the three black bands are present."*

Why Borkhausen in both cases should have re-named the species is a mystery, the more difficult to comprehend in view of the obvious fact that he had access to both Knoch's and

* Transcribed from "*Erebia epiphron* and its Named Varieties," by Fras. J. Buckell, M.B., 'Entomologist's Record,' 1894, vol. v, p. 163.

Fabricius's works, and that as yet no question of preoccupied names had arisen to vex the souls of the systematists.

Knoch's 'Beitrag' was published at Leipzig, Johann Christian Fabricius's 'Mantissa' at Copenhagen, Borkhausen's work on European butterflies at Frankfort, and the three authors were contemporaries.

In 1789, however, there was published at Lyons an edition of Linnæus's 'Entomologia, Faunæ Suevicæ descriptionibus aucta, D.D. Scopoli, Geoffroy, de Geer, Fabricii, Schrank, etc.,' under the editorship of Charles de Villers, and here we find *Cassiope* with Engramelle's name—"Le Petit Negre à Bandes Fauves" *Papilio Æthiops minor*.

"57. P.G. (le petit Ethiopien) obscure fuscus, fascia fulva sæpius oblitterata, ocellis cæcis, v. *Pap.* d'Eur. t. 24, f. 45.

"*Hab. in pratis montium Occitanie.*"

But, on reference to the figure in Ernst Engramelle's work cited, the butterfly is seen to have white fringes to the wings decidedly suggestive of a small *E. euryale*, and the figure of the underside (45) might well represent that species.

That de Villers enjoyed a personal knowledge of *Epiphron* is more than doubtful; the "*montium Occitanie*" is vague and negatives any such assumption. Still, he is the first French writer in the field with the Erebias, and for a long time on the word is entirely with the Germans, whose energy and productiveness in entomology is the more remarkable when we remember the disturbed state of all northern Europe—Germany included—at this period. Esper's *Æthiops minor*, Illiger,* considered to be a form of *Mnestra*, and by way of clearing up (!) matters he suggested the name of *Æthiopellus* for it.

The next writer to make the confusion of this group worse confounded is Johann Friedrich Herbst, whose 'Natursystem' and 'Continuation of Buffon's Natural History' was published at Berlin in 1796. Here we have *Epipron* (*sic*) and *Cassiope* (p. 116) separately described and at some distance from one another, clearly indicating the author's view of their respective individuality. But though he places *Cassiope*, as Fabricius did, immediately after *Pyrrha*, it is pretty certain that his *Pyrrha* is not Fabricius's *Pyrrha*, but *Pirene* (= *Stygne*, Ochs.), which he says is an Austrian species, questioning whether it can be truly distinguished from *P. epiphron* (this time spelt correctly). The "præcedente paullo minor" is echoed, none the less, in his "er ist etwas kleiner als der vorige," but either he overlooks or ignores Borkhausen's important sexual differentiation.

For some reason or other neither Kirby nor Staudinger appears to have realised that the *Papilio melampus* described in Leonardo de Prunner's 'Lepidoptera Pedemontana,' published at Turin in

* 'System. Verz. Schmett. du Wiener Gegend.,' Brunswick, 1801.

1798, is actually *Erebia epiphron*, var. *cassiope*. At all events neither mentions de Prunner's work in this connection. The references he gives, however, and the description of the butterfly, as well as the locality cited, seem conclusive (p. 21) :

"Esper pag. 329, tab. 31, suppl. 7, fig. 2, pag. 131, tab. 78, cont. 28, fig. 2. Alis integerrimis fuscis, primoribus fascia utrinque ferruginea, punctis duobus nigris; posterioribus supra maculis duobus marginalibus minutis fulvis.

"*Bergst.* tab. 50, fig. 78, tab. 71, fig. 5-6, tab. 102, fig. 3-4. *Engramelle*, tab. 24, n. 45 a-b, *le petit nègre à bandes fauves*. *Fuesly*, pag. 31, n. 604, *Syst. Besch.*, pag. 110, n. 51, *Borkhaus.*, pag. 96-244, n. 356, *Alcyone*.

"Imago in ditione Nice en Provence non rare mense Julio."

On the other hand, Werneburg ('Beitrag zur Schmetterlingskunde,' Erfurt, 1864) had already identified as *Cassiope* Esper's figure on tab. lxxviii, there described as *Melampus*. While it is hardly less doubtful that Esper's two *P. ætherius*, p. 26, F., figured tom. 1, tab. cxxii, Cont. 79, figs. 3 and 4, are a male *Epiphron* ab. *melampus*, Bsdv. (with all the ocellations wanting), and a female var. *Cassiope* respectively. Bergsträsser's figs. 3, 4 on his tab. 102 are also *Cassiope*, as well as Engramelle's *Papilio cassiope*, tab. 24, fig. 45, "aus Steiermark." De Prunner, probably, had no personal acquaintance either with *Melampus* or *Cassiope*; for the latter is included only in the "Elenchus ad cognoscenda lepidopterorum nomina" at the end of his book, this being an index of all the Lepidoptera known to him at the time of writing. All the same the first record of *Cassiope* in what are now the Alpes Maritimes of France must be placed to his credit.

In 1801, or thereabouts, Jacob Hübner figured an *Erebia ianthe* which is criticised by the Graf von Hoffmannsegg in Illiger's Magazine, vol. v, p. 181: "Alphabetischen Verzeichnisse von Hübner's Papilionen Durch denselben." This, he says, is *Cassiope* Fab., and "consequently *Cassiope*, Bork." meaning thereby, I suppose, that Borkhausen ought to have called his *Alcyone cassiope*, which he does not.

"Diess ist *Cassiope* Fab. bei der man jedoch in der Beschreibung den verdrukten text nach dem Art-Kinzeichen und der Mantissa so verbessern muss, das in der 4te und 5te Zeile die Worte *nigra* und *rufa* gegen einander vertauscht werden. Es ist folglich auch *Cassiope* Bork.

"This is *Cassiope* Fab., in regard to which we must amend the printed text in the description in accordance with the 'Species Insectorum' and the 'Mantissa' so that in the lines 4 and 5 the words *nigra* and *rufa* are transposed."

But Kirby in his 'Catalogue of Diurnal Lepidoptera,' 1871, identifies Herbst's *P. melampus* (*loc. cit.* p. 186) with *Cassiope*.

Our next authority is Ferdinand Ochsenheimer (Leipzig, 1807),

and from the completeness of his observations we may be sure that he had a first-hand knowledge of both *Epiphron* and *Cassiope*, which, none the less, he continues to treat as distinct. Indeed, Freidrich Treitschke, his collaborator, informs us that his colleague had received examples of *Epiphron* from Knoch himself. In the diagnosis of the first-mentioned species ('Schmett. v. Eur.,' Bd. i, Abtheil 1, p. 258, No. 41), the white-pupilled ocellation of the female is recorded as a sexual character, and as Dr. Buckell remarks ('Ent. Record,' vol. v, p. 162), we are presented with three new characters: (1) "A greenish gloss on the upper surface; (2) a projection from the centre of the hind margin of the hind wings; (3) the occurrence of a reddish coloration over the disc of the fore wings on the under surface." But Knoch's localities in the Harz are still, it seems, the only known habitat of the species.

Ochsenheimer's account of *Cassiope* is also excellent in detail; and we now hear of it for the first time as a Swiss species. "Alis integris fuscis fascia rufa, punctis tribus nigris; posticis supra maculis rufis nigro-punctatis, subtus fæminæ cinerascentibus, punctis solis." Upon which follows an accurate description of both sexes.

Ochsenheimer's and Treitschke's publication covers a long period of years from 1807 to 1835. In vol. x (1834) Treitschke has come to the conclusion that *Epiphron* and *Cassiope* are one and the same species. Fr. Meissner, in the 'Naturwissenschaftlicher Anzeiger der Allegemeiner Schweizerischen Gesel. für Naturwissenschaften,' published at Bern in 1818 (Erster Jahrgang, p. 71), deals with *Cassiope* from the high Alps only, and distinguishes it from *Melampus*, though the remark, "die Unterseite der Hinterflügel ist stets einfarbig braun, ohne alle flecken," leaves us still in some doubt as to the form of the butterfly under his observation.

(To be continued.)

SOME NOTES ON THE COLLECTION OF BRITISH MACRO-LEPIDOPTERA IN THE HOPE DEPARTMENT OF THE OXFORD UNIVERSITY MUSEUM.

By F. C. WOODFORDE, B.A., F.E.S.

THE original source of this collection was the presentation to the Oxford University in 1849 by the Rev. F. W. Hope of all his very extensive collections of books, prints and zoological specimens, including that of the British Lepidoptera. This latter he augmented in 1857 by the purchase of the private entomological collection of Mr. J. O. Westwood, and the two were henceforward known as the "Hope-Westwood Collection."

In 1861 Mr. Hope founded and endowed the Hope Professorship of Zoology, and, exercising the right conferred by the Trust Deed, appointed the illustrious Curator, J. O. Westwood, to the Chair. At his death in 1893 he was succeeded by Dr. E. B. Poulton, D.Sc., F.R.S., etc.

The Hope Collections, at first housed in the Taylorian Buildings, were transferred about 1860 to the New University Museum which had just been completed. Thus originated the Hope Department of Zoology, greatly enlarged in 1894 by the addition of rooms formerly used by the Mathematical Professor, and again in 1912 by including the southern part of the old Radcliffe Library.

Later the Rev. F. M. Spilsbury, who died in 1878, left his entomological collection to the Hope Department, and this was combined with the Hope-Westwood Collection.

During the present century very large additions have been made to the entomological collections by bequest and gifts.

In 1906 the extensive British collection formed by J. C. and C. W. Dale was bequeathed by the latter to the Museum with the stipulation that it was to be kept whole and intact and not incorporated with other collections. Detailed notes on this collection were published in the 'Entomologist's Monthly Magazine,' 1907-1910, by Commander J. J. Walker, M.A., R.N.

In 1908 the collections formed by the late Mr. A. J. Chitty were presented unconditionally to the Museum by his widow, and in 1909 that of the late Mr. H. S. Sellon was given, also without condition, by his mother and sisters. In 1915 the collection of the late Mr. Pogson Smith, Fellow of St. John's College, Oxford, was similarly presented by his widow, and in the same year the collection of the late Prof. Meldola, F.R.S., was bequeathed by him to the Museum also without conditions attached. Finally, last year the collection of the late Lieut. R. J. Champion, of Jesus College, Oxford, who was killed in France during the war, was presented by his parents, also unconditionally. Furthermore, large additions have been made by the kindness of many private collectors. All these collections, with the exception of that formed by the Dales, have now been incorporated into one, and are contained in upwards of 500 drawers in more than twenty cabinets.

The specimens of each separate collection are at once identifiable by their labels, so that nothing is lost by incorporation, but on the contrary much is gained by the opportunity of easy comparison with other individuals from other collections. Ample space has been left for future additions, the aim being to represent, as far as possible, each species by a short series of specimens from every locality in its area of distribution in the British Isles.

The classification and nomenclature is that adopted by

South in 'Butterflies and Moths of the British Isles,' except for the Geometræ, for which group L. B. Prout in Seitz's 'Macro-Lepidoptera of the World' has been followed. Before entering upon more detailed description of species and particular specimens it may be observed that with a very few exceptions every species that has occurred in the British Isles is represented in the combined collections. Unfortunately before 1880 very few collectors labelled their specimens and accurate data of most of the specimens in the older collections were wanting, but even in these some of the very rare specimens have good data attached. As an eminent exception mention must be made of the great naturalist, William John Burchell, who, nearly a century ago, labelled his small collection of British Lepidoptera with the same accuracy and minuteness as the specimens in his vast exotic collections, which are also in the Hope Department. Even in the later collections many specimens which would otherwise have been of great value were unlabelled. And here perhaps, as a digression, attention may be called to the importance of accurate and minute data. Many collectors even of the present day seem to consider it sufficient to label their specimens with the locality and the year of capture, but for insects that have more than one generation in a year, the date of the year alone is of no use for the study of the very interesting subject of seasonal dimorphism—the dates of the month and the day of the month are essential. Taking the collection as a whole, however, by far the larger proportion is well furnished with accurate data, labels being attached not only to the insect itself, but a label also being pinned by the side so that the data are clearly legible to the observer. Historically, also, the collection is interesting, there being in the Hope Collection many specimens and some of the types of Haworth, and also some of Doubleday's specimens.

PAPILIONIDÆ.

PAPILIONINÆ.

Papilio machaon.—Twenty-four specimens, mostly from Cambridge fens, but 4 from Norfolk Broads, presented by the late Major R. B. Robertson. Very little noteworthy variation, but one very pale cream, almost white, bred by the late Lieut. R. J. Champion.

P. podalirius.—Two specimens in the Hope Collection, both unlabelled. The following is a quotation from Barrett's 'British Butterflies': "The Rev. F. W. Hope records that he has a specimen which he took at Netley (Shropshire), and also that he had two larvæ feeding on wild plum, but it does not appear whether they were reared."

PIERINÆ.

Aporia cratægi.—Forty-three specimens. Five from the Hope Collection, 11 from the Spilsbury, 9 from the Chitty, 10 from the Sellon, all without data. From the Meldola Collection are 8, 5 of which are labelled: 1 "Wales," but no date; and 4 "New Forest, Lyndhurst, 1875."

Pieris brassicæ.—A long series from many localities. A series of eight from the Isle of Wight labelled as a third brood from ova deposited in August, 1898, and as emerging October 13th, 1898. All of these are rather small. No remarkable variation, except that one male has a small black spot on the fore wings corresponding in place with the upper spot on the fore wing of the female. It was bred at Lee, North Devon, May 3rd, 1897, by Prof. Selwyn Image.

P. rapæ.—A long series of upwards of 100 from many localities among them a *quite* spotless male with the usual dark mark at the apex of the fore wings only indicated by a few grey scales, taken at Finchley, April 15th, 1893, by Dr. F. A. Dixey, F.R.S. Another very similar male from North Staffordshire, May 5th, 1917, taken by myself. In both the black spot on the costa of the hind wings is wanting. Several cream or pale buff-coloured females from various localities. A female with a third spot in the fore wings between the usual two, taken by myself in North Staffordshire. Several dwarfs.

P. napi.—A very long and varied series, from England, Scotland and Ireland. A *very* small female in the Sellon Collection taken in the New Forest in July, 1892. Another very slightly larger taken by Mr. Holland near Reading, in July, 1893, and three other dwarf specimens taken by myself in the New Forest. A very heavily marked female with the tips of the fore wings quite black, not grey, the base of the fore wings heavily suffused with grey; the veins of the hind wings pale, inconspicuous except near the edges of the wings, where they are quite black; north Staffordshire, August 7th, 1917, taken by myself. Another very similar from Perthshire, August, 1905, from the Meldola Collection. A long series from many parts of Scotland in which are many fine varieties from the Meldola Collection. A series of four very finely marked specimens from Enniskillen, bred by H. Main, presented by the late A. Harrison. One of the males has a supernumerary spot at the inner angle of the fore wings in the same position as the normal black spot of the female. A dark cream-coloured female from Tyrone.

P. daplidice.—Nine specimens, 4 from the Hope and 3 from the Spilsbury collections, without data. One from the Chitty Collection labelled, "Taken by a labourer near Brighton." Another labelled, "Berks, Ascot. Capt. July, '97, by J. Paterson, a schoolboy. Presented 1900 by H. A. Ormerod."

Euchloë cardamines.—A long series from many localities, but very little variety, except three very small specimens.

Leucophasia sinapis.—A long series of upwards of 100, including many ab. *diniensis*. Two specimens approach very nearly to ab. *erysimi*, having only a very few scattered grey scales at the apex of the fore wing.

Colias hyale.—Upwards of 70, chiefly from Sussex and Kent, but including a fine series of 15 from Oxford taken by Mr. A. H. Hamm. There is also a pale buff-coloured male from the Isle of Wight from the Meldola Collection. In a very remarkable specimen from the Spilsbury Collection, the black border is prolonged to the discal spot in the costal part of the fore wing, and the usual pale marks in the black area are reduced to three small dots in the upper half and a small spot towards the inner angle.

C. edusa.—A long series of upwards of 120, including 24 ab. *helice*. A female taken in Oxford, by Mr. A. H. Hamm, has a very large discal spot, thus approaching the Himalayan *C. fieldii*. A fine lemon-coloured male, taken at Sidmouth in 1872, was presented to the collection by Prof. Poulton. In some of the females the spots in the marginal black area are greatly reduced in size, and in one the spots are practically obsolete.

Gonepteryx rhamni.—A long series without many aberrations. A fine gynandromorph, in which the male colour predominates, has the female coloration in the whole of the left fore wing except the costal portion and in the lower portion of the right hind wing. It was taken near Reading about 1873; presented to the collection by Prof. Poulton. In a short series from the Champion Collection three males have the undersides of a buff colour instead of the normal greenish, while the uppersides are of the usual sulphur colour. Two of the females have the undersides pale buff with upper sides cream-coloured. They were all taken or bred at Woking about 1912. There is also a cream-coloured female with pale buff underside bred at Oxford, August 9th, 1918, by Mr. A. H. Hamm.

NYMPHALIDÆ.

APATURINÆ.

Apatura iris.—A fine series of 34—19 males, 15 females, all but one in perfect condition. Eighteen have full data. Of these 14 are from the New Forest, from the Chitty, Sellon and Meldola Collections. Four are bred from larvæ found near Oxford by Mr. J. Collins. The remainder, which are without data, are from the older Hope and Spilsbury Collections.

NYMPHALINÆ.

Limenitis sibylla.—A series of 58, mostly from the New Forest, but 11 from Berks, 7 from Surrey and 2 from near Oxford. All

are normal except one ab. *nigrina* from the Spilsbury Collection and one intermediate with a portion of the white band clouded with black, from near Reading, taken July 17th, 1919, by the Rev. C. F. Thornewill.

Polygona c-album.—Series of over 80, without any very remarkable aberrations. There are 7 ab. *hutchinsoni* from Leominster. Much variation is shown in the undersides, from an almost unicolorous very dark brown to the light, well-marked pale brown of ab. *hutchinsoni*.

Eugonia polychloros.—Series of more than 50, with no extreme aberration. A very large specimen from the Champion Collection, taken in the Isle of Wight, August 6th, 1909, has a rather broad black margin to the hind wings adjoining the blue lunules, which are very large and bright.

(To be continued.)

NOTES AND OBSERVATIONS.

VARIETY OF EUCHLOË CARDAMINES.—One out of two pupæ only which I had this year produced a fine ♂, with a conspicuous black discoidal spot on each hind wing, and the spots on the fore wings are unusually large. Although I have specimens, both ♂ and ♀, with black dots more or less developed in the hind wings, I have never seen one approaching this bred specimen as regards these markings.—F. W. FROHAWK.

ASYMMETRICAL VARIETY OF PIERIS NAPI.—The only butterfly seen in my garden on March 29th last, a dull and chilly day, happened to be an asymmetrical specimen of *Pieris napi*, a ♂, very perfect, and apparently only just emerged. The left primary has a large black central spot, which is represented on the right side by a faint dot only; the apical blotch is also less developed than that on the left side, as well as the costal blotch on the secondary. It forms a striking aberration. A precisely similar type of variation exists in a specimen of *P. rapæ* in the Hon. N. Charles Rothschild's collection.—F. W. FROHAWK.

UNUSUAL VARIETY OF AGLAIS URTICÆ.—On May 9th last I captured a very unusual variety of *Aglais urticæ* in my garden (as it sometimes happens the only specimen seen). I noticed as it flew past me it looked somewhat dark; it soon settled on a strawberry blossom, and seeing it was abnormal I fetched my net and captured it. The ground-colour is rich and deep, the normal yellow costal blotches reduced in size, and the outer one almost obliterated by brown scales, the basal blotch clouded with red, the subapical white mark replaced by greyish-buff; the two central black spots are missing except a mere trace of the lower one on each primary, indicated by a few black scales. There is no sign of the usual blue marginal spots on either the primaries or secondaries; the latter wings are unusually dark. The specimen is in such perfect condition

and so rich in colour that it evidently entered into hibernation very soon after its emergence. I may add that it is the only specimen of *Urtica* seen in the garden during May.—F. W. FROHAWK; June, 1920.

XANTHORHOË FLUCTUATA IN APRIL.—My experience as to the scarcity of insect life up to the middle of May was very similar to that of the Rev. H. D. Ford (*antea*, p. 139), who refers to an extraordinarily early specimen of *Xanthorhoë fluctuata* observed April 25th at Carlisle. I saw a large female of this species on a fence at the Culbin Sands, near Forres, on April 19th.—F. G. WHITTLE; Duieside, Rothiemarchus, Aviemore.

MACEDONIAN BUTTERFLIES.—I see that in my note (*antea*, p. 139) I forgot to mention *Melitæa athalia*. In the list sent me by Mr. Riley, after my specimens were set, he mentioned five specimens of this species as having been included in the Museum collection. Having parted with all my specimens and lost the notes I made out there I cannot give any definite date, but to the best of my recollection I caught them at Hill 778 (between Snevece and Rajanovo) in late July or early August, 1917.—D. BLANCHARD; 16, Warneford Road, Oxford.

[If so, the date suggests *M. parthenie*, *gen. æst.*—H. R.-B.]

SPRING LEPIDOPTERA IN CAMBRIDGE.—With reference to the Rev. H. D. Ford's note (*antea*, p. 139), the following records of spring insects in this district may be of interest. On April 27th two *Pieris brassicæ* and one *P. rapæ* were seen. From May 4th *Heliaca tenebrata* and *Chiasmia clathrata* were common, and on that day were seen two *Aglais urticæ* and one *Vanessa io*. *Gonepteryx rhamni* first seen on May 7th, when one specimen of *Hemerophila abruptaria* was taken. From May 9th *Euchloë cardamines* was common, as was *Pararge megæra* from May 16th. *Hesperia malvæ* and *Nisoniades tages* plentiful from May 22nd. On May 31st *Pyrameis atalanta* and *P. cardui* were seen, and *Cupido minimus* emerged on June 1st.—A. D. HOBSON; Christ's College, Cambridge.

SPRING INSECTS IN BERKSHIRE.—My experience with insects this spring has been rather different from those of the Rev. H. D. Ford ('Entom.', liii, p. 139). As far as Rhopalocera were concerned it seemed to me that they were more plentiful than usual. *Aglais urticæ* and *Gonepteryx rhamni* were first seen on March 19th, and have been much in evidence since. Already I think I have seen more specimens of *Vanessa io* and *Pyrameis atalanta* than during the whole of last season. There has been no dearth of *Pieris* and *Callophrys rubi*, and *Euchloë cardamines* were very common on Aldworth Downs during the middle and latter part of May. In early June *Hepialus humuli* was in swarms in the water meadows along the Kennet. The same remark also applies to *Calopteryx splendens* (Odonata).—A. STEVEN CORBET; 21, Sidmouth Street, Reading.

SPRING INSECTS AT DOVERCOURT.—The three common Pierids have been numerous. I saw *Pieris brassicæ* on March 20th—an unusually early date. These abnormal appearances, both of this

species and of *P. rapæ*, are due to their larvæ having changed to chrysalids in some warm window corner, where the sun's rays shone upon them, so that they were more or less forced. I did not see *P. rapæ* until two days later, and the first *Celastrina argiolus* was observed the same day, flying about some ivy in my garden. I have not seen another, and it is generally plentiful here, particularly the second brood. The first *Euchloë cardamines* was noted on May 9th, and I daresay I should have seen it before if I had been able to visit its haunts. On May 22nd I counted ten males in the lane when I released some North Devon bred examples last year. *Pararge megæra* was out in some numbers at the same time, and also one or two *Polyommatus icarus*. On May 26th, while passing through a yard, I saw a *P. brassica*, that had only just emerged from its chrysalis on an adjacent wall, flutter down in front of three hens. They just looked at it, but made no attempt to seize it. I have previously observed that poultry will not touch white butterflies, or the larvæ of *brassica*. They are evidently distasteful to them. *Cænonympha pamphilus* was out in numbers by the middle of May. Hibernating Vanessids have been very scarce. I have only seen two *Aglais urtica* and eight *Vanessa io* since March 19th, and there are no nests of larvæ yet to be seen on the nettles. With regard to moths I cannot say much, as I have not been to the woods, nor do I go out at night. But the larvæ of *Arctia villica* have been rather numerous. I saw the first on March 19th, and the last on April 30th. I took 180 of them altogether on the chance of breeding varieties. The first moth appeared on May 27th, and up to the present date I have bred 125, and among them are several very nice examples of my ab. *wardi* (vide 'Entom.,' xlvii, pp. 41-42) and other varieties finer, I think, than any I have bred before. Of course all typical specimens were given their liberty. June 2nd was very warm, and after breakfast I went to the sea bank to release some that had emerged the previous day. Soon after I got there I saw two *villica* flying wildly about in the hot sun, and one of them was ab. *wardi*. I had no net, but managed to knock it down with the palm of my hand as it fluttered over the coarse grass. I was then able to box it, but unfortunately it was not a very good specimen. *Euclidia mi* was flying in great profusion, and appeared to be fine and fresh. *Cænonympha pamphilus* was flying everywhere with *Pararge megæra*. The temperature this day was 73° in the shade. Two days after, June 4th, at 8 a.m. the thermometer stood at 48°, and it did not rise higher than 53° all day, or 20° degrees lower than on the 2nd. I went to the same place again in the forenoon to release more *villica*, and there was not an insect flying. I only saw one *C. pamphilus*, which I brushed off the grass as I walked through it.—GERVASE F. MATHEW; Dovercourt, Essex, June 9th, 1920.

HIBERNATION OF PYRAMEIS ATALANTA.—In reference to this question my own experience is undoubtedly in favour of its doing so. In January, 1909 (January 27th, I think), I saw some men demolishing an old wood-stack at Lydiard Park, and they called my attention to a number of "dead" butterflies they were finding there. The species were *urtica* and *io*, at least a dozen of each, but I was

chiefly impressed by finding two *atalanta*. It was freezing hard at the time, so it was no wonder that the insects seemed dead. I also remember when a boy at Ludgvan, Cornwall, a wood-stack was pulled down in the winter for firewood, and we children were greatly interested in the butterflies found therein. I am sure that there were several *atalanta* among them, and I was even then much interested in butterflies, and knew most of the ordinary species quite well. At any rate I know that owing to this experience I never had any doubt about the hibernation of the Red Admiral until in later years I found it denied by most authorities. I saw an *atalanta* on April 16th, 1919—surely not an immigrant.—J. PERCY HARRISON; Lydiard Millicent Rectory, Swindon.

[In the 'Entomologist,' February, 1913, vol. xlvii, pp. 40-42, I was able to place on record for the first time authentic instances of the actual finding of *P. atalanta* hibernating. Three specimens were found by Mr. Walter Barnes at Orpington, Kent. The first one was discovered by him clinging to the woodwork under the slates on his house, together with two *Vanessa io* and two *Aglais urticae*, in February, 1907. In January, 1908, he found another *atalanta* in a holly hedge; it was resting on a dead leaf under a thick covering of a mass of withered leaves in the centre of the hedge, which also contained three *Gonepteryx rhamni* hibernating. The third *atalanta* he found the following November under the eaves of his house. As there are but few cases of *atalanta* being found in a hibernating state the above note by the Rev. J. Percy Harrison is particularly interesting.—F. W. FROHAWK; June, 1920.]

UNUSUAL IMMIGRATION OF PYRAMEIS ATALANTA AND *P. CARDUI*.—During May a great immigration of both *Pyrameis atalanta* and *P. cardui* seems to have been general throughout the south-eastern and southern counties. I saw the first *P. atalanta* on May 14th in my garden here—S.E. Essex—and several *P. cardui* made their appearance on May 22nd. The large number which have occurred here and elsewhere denotes a great and general immigration has taken place, far in excess of anything of the kind I have known to occur. I have also heard of *Colias edusa* having been seen in different places. I may add that both *Pieris brassicae* and *P. rapae* have been unusually abundant here, the result of immigration.—F. W. FROHAWK; June, 1920.

PYRAMEIS CARDUI IN MAY.—On p. 80 of your 'Butterflies of the British Isles' you say that specimens of *P. cardui* seen in the spring are early immigrants. On May 11th I took a specimen in a wood near Oxford which was so fresh that it could not have been out more than a few hours and certainly could not have been an immigrant.—E. BOLTON KING; Balliol College, Oxford.

PYRAMEIS CARDUI, ATALANTA, ETC., IN MAY.—I saw several specimens of *P. cardui* in this neighbourhood on May 22nd and 23rd, as well as two specimens of *P. atalanta*. Both species were very faded. I am glad to be able to record that *Pararge megæra* is very plentiful at present. I saw very few last summer, and in the Chandler's Ford neighbourhood it has been very scarce for years. Up to the

present all the common species of butterflies seem very abundant this season.—Lieut.-Comm. R. A. DICKSON, R.N.; The Hermitage, Bishop's Waltham, Hampshire.

PYRAMEIS ATALANTA IN MAY.—On May 24th I saw a specimen of *Pyrameis atalanta* flying in my garden, and this was not the first occasion, but I forgot the previous date. Such an early appearance seems suggestive of its having hibernated in England rather than that it should have migrated here from the Continent.—W. M. CHRISTY; Watergate, Emsworth, Hants.

HIBERNATION OF AGLAIS URTICÆ.—With reference to the recent notes in this Journal on the hibernation of *Aglais urtica*, I should like to add that it has long been known that *urticæ* frequently hibernates very shortly, probably during its first flight, after emergence from the pupa about mid-summer. A very interesting note regarding this habit is recorded by the Rev. O. P. Cambridge in the 'Entomologist,' dating as far back as 1867, stating: "On one of the first Sundays in August last, during divine service, a specimen of *Vanessa urtica* flew into the parish church of Winterbourne-Tomson, in which I was officiating. After fluttering in the windows and flying about the church for a short time, the insect settled on a projecting rafter in a conspicuous place, and remained, with its wings in the usual state of repose, during the remainder of the service. On the Sunday following it was still *in statu quo*; and so, Sunday after Sunday, throughout the autumn and winter, evidently never having once moved from its first position. There it was until, on Sunday, the 5th instant, it came off its perch, and was flying briskly about the church when I came away after the conclusion of the service. Its period of motionless repose has thus been just nine months, and it was apparently as fresh in colour and condition as if just out of the chrysalis.—O. P. Cambridge; Bloxworth, May 22nd, 1867." I have noticed this species entering into hibernation as early as July on more than one occasion. In 1918, towards the end of July, I found a specimen which had taken up its winter quarters by a skylight in my house, where it remained until the following spring, when it left the spot and flew away during a short warm spell of weather on April 19th, 1919, the duration of its winter's sleep being nine months, similar to the one under the Rev. O. P. Cambridge's observation. Last autumn *urticæ* was scarcer than I have ever known it. I did not see more than half a dozen specimens from the end of July onwards, and the hibernated individuals have been equally rare in this district—S.E. Essex. On March 28th I saw two in the garden here and one or two during April; on May 9th one only, which, however, turned out to be a nice variety—recorded in a separate note. The *Vanesside* have a habit of congregating for hibernation—not only individuals of the same species, but the different kinds have from time to time been found assembled in the same shelter. Instances are recorded of large numbers of *V. io* having been found together. Mr. A. B. Farn once found a large colony of these butterflies in a hole in the trunk of a tree; thinking it might be a likely place for hibernating butterflies he looked in, when he heard a hissing sound caused by the large number of speci-

mens rubbing their wings together—a habit peculiar to the Vanessidæ. Over forty *V. io* were found by the late Edward Newman hibernating in a hollow oak. Several other cases of a similar kind have been observed. Faggot-stacks appear favourite hibernating resorts for the different species—in fact all the species have been found in faggots stacked up for the winter, including *Euwanessa antiopa*; a specimen of this rarity I have in my series which was found crawling out of some burning faggots at Castle Eden on February 8th, 1869. I know of many instances of *polychloros*, *urticæ* and *io*, also a case of *atalanta*, all hibernating in stacks of wood.—F. W. FROHAWK; June, 1920.

DEILEPHILA LIVORNICA, ETC., IN DEVONSHIRE.—*D. livornica* occurred in this district during the latter half of May. I netted one on the 15th of the month and subsequently saw several others. *Pyrameis cardui* has been plentiful since May 13th, and I saw two specimens of *Colias edusa* near Brixham on May 22nd.—E. D. MORGAN; 27, Sanford Crescent, Cheston, Torquay.

DEILEPHILA LIVORNICA IN SUSSEX.—On May 23rd last I took a specimen of *D. livornica* at Elsted, Sussex. It was hovering over blossoms of red campion.—E. B. HAYNES; 25, Denmark Avenue, Wimbledon, S.W. 19.

COCCINELLIDÆ WANTED.—Coccinellidæ, dead or alive, are greatly needed from various parts of England, Scotland and Wales for the purpose of studying the distribution of species and varieties. Will collectors kindly send surplus specimens of *any species, however common*, to Mrs. O. A. MERRITT HAWKES, M.Sc.; 405, Hagley Road, Birmingham.

SOUTH-EASTERN UNION OF SCIENTIFIC SOCIETIES.—This Union has held its annual congress uninterruptedly since its inception, just a quarter of a century ago, and although owing to the stress of war conditions, the last three have been held in London, it this year resumed its nomadic traditions, and the twenty-fifth congress was held at Eastbourne from June 2nd to June 5th, when a goodly number of delegates and members attended. Considering the large number of subjects that come within the Union's activities, entomology had a fair share of attention. On the afternoon of the opening day a party of between thirty and forty "devotees of the net and pin" attended a "ramble" along the parades and lower portions of the Downs under Beachy Head, the haunts of many of the local species being visited, and in several cases the species themselves being met with. On their return the party were entertained to tea by Mr. and Mrs. R. Adkin, at "Hodeslea," formerly the residence of the late Prof. Huxley, much interest being taken by the visitors in the historic house and grounds. On Friday evening Prof. Poulton, F.R.S., gave an illustrated lecture on "Recent Discoveries in Insect Mimicry" to a large and appreciative audience. On Saturday morning the report of the "Mosquito Investigation Committee" was presented and discussed, and the business of the Congress was brought to a close by the reading of a paper by Mr. Robert Adkin, F.E.S., on "Migrations of Lepidoptera in regard to the British Islands," at which Prof.

Poulton occupied the chair; the paper was illustrated by exhibits of many of the species referred to and by maps and diagrams, and was followed by a discussion.* The press of business at recent congresses has been so great that it has been found necessary to hold sectional meetings for some of the more important subjects; among these a Botanical Section has been in existence for some time past, and it is now proposed to found a Zoological Section in which entomology will no doubt hold a leading part. It is proposed to hold the next Congress at Reading in June, 1921, Prof. Poulton, F.R.S., being President-elect.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*Wednesday, March 17th, 1920.*—Comm. J. J. Walker, M.A., R.N., F.L.S., President, in the Chair.—Messrs. Christopher Arthington Cheetham, Wheatfield, Old Farnley, Leeds; G. S. Cotterell, Newlyn, Gerrard's Cross; Harry Leon Gauntlett, F.Z.S., M.R.C.S., L.R.C.P., A.K.C., 45, Hotham Road, Putney, S.W. 15; Thomas Frederic Marriner, 2, Brunswick Street, Carlisle; C. Snee, 6, Wildwood Road, Golders Green, N.W. 4; and Dr. B. Uvaroff, the Georgian Museum, Tiflis, Transcaucasia, were elected Fellows of the Society.—Prof. Poulton, F.R.S., exhibited, on behalf of Mr. F. C. Woodforde, the following varieties from the collection of British insects in the Hope Department at Oxford: (1) *Chrysophanus phleas*, L., ab. *schmidtii*, Gerh., Burnt Woods, Market Drayton, N. Staffs.: September 8th, 1917. F. C. Woodforde. (2) A variety of the same species with the coppery area of the fore wing replaced by a smoky ochreous. The same locality: August 5th, 1918. H. F. Onions. (3) The var. *eleus*, F., of the same species, Milford, Surrey; July 29th, 1908. From the collection of the late Lieut. R. J. Champion, (4) *Celastrina argiolus*, L., var., with radiate spots on the hind wing underside, the fore wing spotless. Near Ashurst Lodge, New Forest: May 8th, 1915. F. C. Woodforde. This variety approaches the ab. *subtus-radiata*, Oberth., taken at Rennes. (5) *Catocala nupta*, L., var. with the red of the hind wings replaced by a dark maroon colour. Taken at light, Guildford: September 2nd, 1907. From coll. R. J. Champion.—Prof. Poulton exhibited a series of six examples of *Beris vallata*, Forst., captured with the following Tenthredinidæ—2 ♀ *Dolerus ariceps*, Th., 1 ♂ *Selandria serva*, F., 4 ♂ *Athalia lineolata*, Lep., by Mr. A. H. Hamm, on July 13th, 1907. All thirteen insects were taken from flowers, chiefly Umbelliferae, growing over a small area of Hogley Bog, Cowley, near Oxford. The first-named sawfly was far less perfect as a model than the other two, the last-named being the most perfect.—Major H. C. Gunton exhibited a diagram referring to Macro-lepidoptera of the 1919 season in order to suggest a graphical method of recording observations of the appearance and habits of

* During the Congress a loan exhibition was on view, the portion of which devoted to entomology included many interesting local species, among them being examples of *Pieris daphnidice*, *Sphinx convolvuli*, *Tortrix pronubana*, etc., taken in the neighbourhood of Eastbourne.

insects in relation to weather conditions. A copy of the diagram can be seen at the Society's Library.—Dr. G. D. H. Carpenter said that since many naturalists believe that birds do not eat butterflies no case of such an occurrence should be left unrecorded; on February 15th of this year, about mid-day, he saw a male Brimstone Butterfly fly through the garden at Oxford, and three sparrows that were on the ground leapt into the air, and, fluttering clumsily, attempted to catch it; the butterfly easily evaded the birds.—Mr. H. Main exhibited lantern-slides illustrating the life-history of the Beetles *Copris lunaris*, *Onthophagus vacca*, and *Necrophorus lunator*.—The following papers were read; "A Contribution to our Knowledge of the Life-history of the Stick Insect, *Carausius morosus*, Br.," by George Talbot, F.E.S.; "A Record of Insect Migration in Tropical America," by C. B. Williams, M.A., F.E.S.; "The Geographical Factor in Mimicry," by F. A. Dixey, M.A., M.D., F.R.S., etc.—G. C. WHEELER, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*April 22nd, 1920.*—Mr. K. G. Blair, B.Sc., F.E.S., President, in the Chair.—Mr. S. Edwards exhibited *Tenoris honrathi* from Java and *T. selene* from N. Guinea, *Dynastor napoleon* from S. America, and several species of *Opsiphanes*.—Mr. Newman, the pale Cheltenham form of *Gonodontis bidentata*, unusually large *Tephrosia luridata*, curiously radiated forms of *T. bistortata*, and varied series of *Hydriomena impluviata*, *H. furcata*, etc.—Mr. Hy. J. Turner, a copy of Mufet's 'Insectorum sive Minimorum Animalium, Theatrum,' 1634, and numerous species of the genus *Plusia*.—Mr. B. S. Williams, *Rumiccia phlæas*, heavily spotted, dusky, with pear-shaped spots, ab. *Kochi*, with dark nervures with wide borders, etc., all from Finchley in 1911 chiefly—a hot season.—Capt. Crocker, a collection of Lepidoptera representative of what he had met with in the battle-fields of N.W. France chiefly in 1919, including *Issoria lathonia*, *Melitea cinxia* from a very wet marsh, *Nordmannia ilicis*, *Colias hyale*, etc. Among the moths were *Aglaiia tau*, *Lymantria dispar*, *Notodonta tritophus*, *Sciopteron tabaniformis*, bred from poplar stumps, *Senta maritima* in great variety, etc.—Various notes on the season were communicated.

May 13th, 1920.—The President in the Chair.—Exhibition of orders other than Lepidoptera.—Mr. Stanley Edwards exhibited a collection of exotic Coleoptera and Orthoptera.—Mr. S. R. Ashby, British ground-beetles, Lamellicornes, Buprestids, Elaterids and many Weevils from his collection.—Mr. Barnett, part of a gate-post excavated by a leaf-cutter bee, one cavity containing fifteen cells; an exceptionally brilliantly marked young viper; and the body of a large lizard taken from the stomach of another viper.—Mr. Cocks, Coleoptera characteristic of the Wellington College area, including the fire-beetle *Melanophila acuminata*, which was quite abundant there.—Mr. H. Moore, many species of Orthoptera collected by Mr. Grosvenor near Bangalore, India, and read notes on the exhibit.—Mr. West, four drawers of his collection of British Hemiptera.—Mr. Step, the weevil, *Balinus nucum*, from Wimbledon.—Mr. H. W. Andrews, many species of British Diptera showing wing-pattern and coloration, and read

notes on the exhibit.—Mr. Main, examples of various species of Mosquito and a series of preserved larvæ of the same, with a cage which he had made for breeding mosquitoes.—Mr. Dennis, on behalf of Mr. R. S. Bagnall, species of *Protura* and *Symphyla* shown under the microscope.—HY. J. TURNER, *Hon. Editor of Proceedings*.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—Meetings held at the Royal Institution, Colquitt Street, Liverpool.—*February 16th*, 1920.—Mr. S. P. Doudney, President, in the Chair.—The evening was chiefly devoted to a discussion of the rules of the Society.—Exhibits were as follows: By Mr. S. Gordon Smith, a case of very fine varieties of *Vanessa io*, *V. urtica*, *V. polychloros*, *Apatura iris*, *Epinephile hyperanthes*, and *Arctia caia*, many being from the collection of the late Sydney Webb.—Mr. W. Mansbridge showed a long series of *Leptogramma literana* and varieties from the New Forest and a series of *Elachista magnificella* from near Prescott.

March 15th, 1920.—The President in the Chair.—Mr. F. N. Pierce read a paper entitled, "Notes on American Tortrices." In his interesting communication Mr. Pierce described the affinities of a small collection of North American Tortricidæ with certain British species, as shown by their genitalia, and exhibited the specimens. If there were any longer doubt as to the value of the genital ancillaries in questions of relationship it would be dispelled by the facts brought forward in the paper. Mr. Pierce conclusively demonstrated that generic as well as specific limits could be recognised by a study of this branch of insect morphology. An animated discussion followed the paper.—Spring Lepidoptera were exhibited by Messrs P. J. Rimmer, W. A. Tyerman and the Rev. F. M. B. Carr. It was noted that melanism in *Phigalia pedaria* and *Hybernia leucophaearia* seemed to be more marked at Delamere and Eastham than usual.—Mr. Wm. Mansbridge brought some curious short-winged specimens of *Cænonympha pamphilus* and *Selenia bilunaria* from Grange and Torquay respectively.

April 19th, 1920.—Meeting held at the Liverpool School of Tropical Medicine.—Mr. S. P. Doudney, President, in the Chair.—Prof. Leonard Doncaster, D.Sc., F.R.S., was elected a member of the Society.—Robert Newstead, Esq., M.Sc., F.R.S., Professor of Entomology in the Liverpool University, welcomed the members to the School of Tropical Medicine, and gave a short account of its history and objects. The new buildings have only recently been entered; during the war they were used as a military hospital. Full suites of rooms and laboratories are arranged for the requirements of each subject—tropical medicine, entomology and parasitology—with a staff of professors and assistants highly qualified for the special work of the School. The building includes a museum and lecture theatre. The efficiency and completeness of the School was rendered possible by the foresight and liberality of the late Sir A. L. Jones, who fully recognised its value to the Empire. Prof. Newstead and his assistants then showed the members of the Society over the building, and made the following special exhibits: Mosquitoes—(a) *Stegomyia fasciata*, a culicine mosquito responsible for the transmission of yellow fever. Examples of the fly were shown and a case

illustrating phases in the life-history of the species. (b) *Anopheles maculipennis* and other anopheline mosquitoes concerned in the spread of malaria. (c) Living larvæ of the rot-hole breeding mosquitoes, *Anopheles plumbeus* and *Ochlerotatus geniculatus*, which had been taken from the water in rot-holes in trees at Aigburth and other districts near Liverpool. Tsetse-flies: A large collection containing all the known species of *Glossina* was on view. The most important species are *Glossina palpalis*, chiefly responsible for the transmission of sleeping-sickness, and *G. morsitans*, which spreads trypanosomiasis among horses and cattle. Acarids affecting flour: Specimens of the acarid *Aleurobius farinosa* and samples of flour in various stages of deterioration owing to infestation with this mite. Plague fleas: Specimens of the Indian plague flea, *Xenopsylla cheopis*, and the common rat flea of temperate countries, *Ceratophyllus fasciatus*, were shown. Tabanidæ: A collection of blood-sucking flies of the family *Tabanidæ*, chiefly African species, was on view.—MM. MANSBRIDGE, *Hon. Sec.*

THE ENTOMOLOGICAL SECTION OF THE NORTHUMBERLAND AND DURHAM NATURAL HISTORY SOCIETY.—*April 9th.*—Dr. F. C. Garret, President, in the Chair.—Mr. Bagnall showed and described slides of Thysanoptera and other obscure groups.—The Messrs. Rosie beautiful sets of local Diptera, Micro-lepidoptera and preserved larvæ.—Mr. J. Baxter, a fine *Eruvanessa antiopa* with its marginal yellow band heavily speckled with black, caught by himself at the Black Hall Rocks, also a series of *Vanessa io* which after an absence of forty years has occurred every year since 1911 in the Team Valley.—Major Gardner exhibited recently captured local forms of *Phigalia pedaria* and *Hybernia leucophaearia* showing its full range of variation.—Dr. J. W. H. Harrison brought for exhibition and discussion fine series of various hybrids, including many new ones; likewise a black *Selenia bilunaria*, a brown black example of the same, a gynandromorphous *Oporabia autumnata* (right side male, left female), and some remarkable aberrations of *O. dilutata*, a pure black form, the ordinary grey form with all markings inward from the subterminal line obsolete, a black form with a silvery central band which abounds in a wood near Lanesley, and the variety *latifasciata*. He also showed a fine *Pieris napi* var. *flavescens* from Forres and some *Tephrosia bistortata* of the single-brooded local form which, reared at 80° C., approximated closely to the other species, *T. crepuscularia*. Various members joined in the discussion and gave their experiences of the past season.

THE LONDON NATURAL HISTORY SOCIETY now meets in Hall 40, Winchester House, Old Broad Street, E.C. 2. Full Society meetings are held on the first Tuesday in the month, and Sectional meetings on the third Tuesday at 6.30 p.m. (No meetings in July and August.) Visitors welcomed at all meetings.—W. E. GLEGG, 44, Belfast Road, N. 16, *Hon. Sec.*

RECENT LITERATURE.

Zoology: A Text-book for Colleges and Universities. By Prof. T. D. A. COCKERELL. Pp. xiii + 558. New York: World Book Company.

THIS handy and very well-illustrated volume forms a welcome departure from the average "text-book of zoology" with which one is familiar. It contains upwards of two hundred excellent text-figures, most of which are original. The title is perhaps a little misleading; it might perhaps have been described better as "An Introduction to the Study of Zoology." Approximately half the volume is devoted to a systematic survey of the classes and orders of living animals, accurate, but not too elaborately detailed even for a beginner. The author has succeeded very well in these chapters in presenting the necessary facts and conclusions in a fresh and readable manner, quite escaping from the deadening system of enumeration of multitudinous details, than which little can prove more disheartening to most students. It is pleasing to find in this section of the book a larger part than usual devoted to insects. Entomologists are too frequently regarded with a kind of tolerant scorn by the "zoologist" who does not study insects, yet entomology affords a readier ground for the study of many of the most fascinating problems of modern zoology than does the study of almost any other large class of animals. In addition it is hardly necessary to mention the immense importance to man of the work now being done by entomologists in all parts of the world, and to hope that the treatment of this subject in the present volume is an indication that entomology is at last about to come into its own.

The remainder of the book is devoted to chapters on heredity, variation, sex, natural selection, evolution, disease, eugenics, sociology, distribution, etc., and also includes several sketches of the lives of the fathers of zoology. Necessarily the author has been able only very briefly to outline these subjects in the space allotted, yet the information is as full as possible and accurate, and is quite sufficient to stimulate interest and to show the importance of these problems and their intimate connection with everyday life. The inclusion of the more important references to more important works on special subjects is a sound point and of much value to the student. The book provides a very useful summary of the present state of zoology, and should prove a very useful and handy work for both the student and the "man in the street" who wants to know what zoology is.

N. D. R.

Catalogue of the Lepidoptera Phalænæ in the British Museum. Supplement. By Sir GEORGE F. HAMPSON, Bart. Vol. ii, pp. i-xxiii and 1-619. London: Printed by order of the Trustees, 1920.

As the genus *Lithosia*, Fabr., is older by some fourteen years than *Arctia*, Schrank, the Family Arctiadae of vol. iii (1901) becomes Lithosiadae in this supplementary volume.

Present knowledge of the Arctianæ of the world embraces 2060 species, and of these no less than 1215 are brought forward in the work before us. The number of genera in the subfamily is here increased by 25, thus giving a grand total of 172.

Eighty species are added to the Phalænoididæ (= Agaristidæ, vol. iii) and 7 new genera are introduced, the present number of genera and species in this family now being 60 and 305 respectively.

Over 100 species, with structural details, are figured in the text, and we gather from the Preface that the plates in connection with this volume are numbered xlii-lxxi. We have not seen the latter.

A Monograph of the British Orthoptera. By WILLIAM JOHN LUCAS, B.A., F.E.S. Pp. i-xii + 1-264. London: The Ray Society, 1920.

THE Ray Society as publishers, and Mr. Lucas as author, are to be congratulated on the highly successful manner in which this volume has been produced. The author has performed the somewhat laborious task of bringing together all that is at present known concerning members of the Orthoptera occurring in the British Isles. Hitherto the insects belonging to the group have received but scant attention from the majority of entomologists in our islands. We may reasonably hope, however, that with the advent of this important work, as guide and mentor, our orthopterous fauna will henceforth receive the recognition of which it is in every way worthy.

Rejecting all accidental or occasional visitors that are reported as having been detected in Britain, some 46 species in all, Mr. Lucas deals with 39 species of Orthoptera as British. Of this number several are not really indigenous, but may be regarded as well-established colonists.

These 39 species, representing 28 genera, are considered under five suborders as follows: (1) Forficulodea (Earwigs), 7 species; (2) Blattodea (Cockroaches), 8 species; (3) Gryllodea (Crickets), 4 species; (4) Locustodea (Long-horned Grasshoppers), 9 species; (5) Acridiodea (Short-horned Grasshoppers), 11 species.

The original description, we are pleased to note, is given of each species. Both sexes are then described in the vernacular, followed by notes on the earlier stages, remarks on variation, times of appearance, habits and distribution.

All the species are figured on the plates, of which there are twenty-five, and there are twenty-five figures in the text. Nearly all these illustrations are reproductions of drawings or photographs by the author.

Although some changes in nomenclature are made, students of the group will not experience much to perplex them in this matter.

There can be little doubt that when greater interest is taken in the Orthoptera by entomologists, it will be found that some, especially the commoner species, have a more general distribution throughout our islands than they would appear to have from the records up to date. Again, more information would accrue on the important matters of habits and life-histories.

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CONTENTS.

- Erebia epiphron*, Knoch: Its Synonymy and Forms, *H. Rowland-Brown, M.A., F.E.S.*, 145. Some Notes on the Collection of British Macro-lepidoptera in the Hope Department of the Oxford University Museum, *F. C. Woodforde, F.E.S.*, 152.
- NOTES AND OBSERVATIONS.—Variety of *Euchloe cardamines*, *F. W. Frohawk*, 157. Asymmetrical variety of *Pieris napi*, *F. W. Frohawk*, 157. Unusual variety of *Aglais urticae*, *F. W. Frohawk*, 157. *Xanthorhoe fluctuata* in April, *F. G. Whittle*, 158. Macedonian Butterflies, *D. Blanchard*, 158. Spring Lepidoptera in Cambridge; *A. D. Hobson*, 158. Spring Insects in Berkshire, *A. Steven Corbet*, 158. Spring Insects at Dovercourt, *Gervase F. Mathew*, 158. Hibernation of *Pyrameis atalanta*, *J. Percy Harrison*, 159. Unusual Immigration of *Pyrameis atalanta* and *P. cardui*, *F. W. Frohawk*, 160. *Pyrameis cardui* in May, *E. Bolton King*, 160. *Pyrameis cardui*, *atalanta*, etc., in May, *R. A. Dickson (Lieut.-Comm., R.N.)*, 161. *Pyrameis atalanta* in May, *W. M. Christy*, 161. Hibernation of *Aglais urticae*, *F. W. Frohawk*, 161. *Deilephila livornica*, etc., in Devonshire, *E. D. Morgan*, 162. *Deilephila livornica* in Sussex, *E. B. Hughes*, 162. *Coemellida* wanted, *O. A. Merritt Hawkes (Mrs.)*, 162. South-Eastern Union of Scientific Societies, 162.
- SOCIETIES.—Entomological Society of London, 163. The South London Entomological and Natural History Society, 164. Lancashire and Cheshire Entomological Society, 165. The Entomological Section of the Northumberland and Durham Natural History Society, 166. The London Natural History Society, 166.
- RECENT LITERATURE.—Zoology: A Text-book for Colleges and Universities, 167. Catalogue of the Lepidoptera Phalena in the British Museum, 167. A Monograph of the British Orthoptera, 168.

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AUGUST, 1920.

[No. 687

DESCRIPTION OF A NEW SPECIES OF NEOTROPICAL CICADIDÆ.

By W. L. DISTANT.

THIS species, presented to the British Museum by Lady Bute, was collected by her son, the Earl of Dumfries, who captured it while travelling across the Andes on the Argentine side. It flew into the railway carriage in which he was seated. Two specimens were thus obtained.

Tettigades dumfriesi, sp. n.

Body black; margins before central lobe to head, narrow anterior margin, anterior lateral margins and posterior margin to pronotum, two central angulate, discal spots and broad posterior margins to mesonotum ochraceous; abdomen above sparingly, greyish longly pilose, the segmental margins narrowly, somewhat obscurely dark dull ochraceous, abdomen beneath more longly greyish pilose; tegmina and wings hyaline, the venation black, the first with the costal membrane, the basal cell, the apical transverse vein to radial area, the inner margin to lower ulnar area, inner margin to claval area, and a small spot near bases of longitudinal veins to first, second and third ulnar areas and a similar spot near apex of upper vein to fifth ulnar area, pale dull ochraceous, wings with greyish marginal streaks to the veins on about basal half; face broadly centrally longitudinally channelled.

Long. excl. tegm. 21, exp. tegm. 58 mm.

Hab.—Argentine side of the Andes, about 6000 ft. above sea-level.

Allied to *T. lebruni*, Dist., from Patagonia, and *T. parva*, Dist., from the Argentine, but differing from both those species by its larger size, longer and narrower lower apical area to tegmina, which is more than twice as long as broad, and the broadly, centrally, longitudinally channelled face.

A THEREVID FLY IN BURMESE AMBER.

By T. D. A. COCKERELL.

IN a new lot of Burmese amber recently received from Mr. Swinhoe is a small species of the Dipterous family
ENTOM.—AUGUST, 1920.

Therevidæ. The family is new to Burmese amber, but is known from Baltic amber and from the Florissant miocene. So far as can be seen, the species may go in the genus *Psilocephala*, where it is remarkable for the small size, broad wings, and strongly diverging sides of the second posterior cell. It may be called *P. electrella*.

Psilocephala electrella, n. sp.

Thorax and abdomen dark brown, bared (probably black in life); wings not over 4.3 mm. long, very broad, hyaline, with brown veins, the end of the subcostal cell clouded as usual. Compared with Verrall's figure of the wing of *Thereva annulata*, Fab., the following differences are found: Wing considerably broader, with the apex more obtuse; auxiliary vein with a distinct double curve, so that it approaches the first longitudinal subapically, and then curves upward; second submarginal cell narrower, scarcely going below the apex of wing, the section of the margin it encloses presenting only a slight even curve (instead of a conspicuous bend); anterior cross-vein very distinctly before middle of discal cell; second posterior cell much more widely open, its sides diverging.

ENTOMOLOGY IN THE HOLY LAND.

BY CAPT. P. J. BARRAUD, F.Z.S., F.E.S.

WHILST serving as Entomologist to the Egyptian Expeditionary Force since the end of June, 1919, my time has been largely occupied with malarial surveys, the collection and identification of mosquitoes, and the supervision of anti-malarial work. This has given me opportunities of visiting most parts of Palestine and of making small collections of other insects at odd times.

In this series of papers I propose to place on record my general notes on the insect fauna of Palestine. I have included a few records obtained while on a somewhat rapid tour through Syria and Cilicia in September and October last. The Culicidæ will be dealt with elsewhere separately.

I am indebted to a number of friends at home who from time to time have been kind enough to examine specimens I have sent, and to furnish identifications as far as possible. I wish to specially thank Dr. Guy Marshall, Mr. H. Rowland-Brown, Mr. L. B. Prout, Mr. George Talbot and Mr. Herbert Champion for their valuable assistance.

A brief description of the physical features and climate of Palestine is necessary.

The country is divided into several distinct regions.

Firstly, the coastal belt, a more or less rich tract of grain lands and orange groves, varying in width from a few yards,

where the mountains approach the sea, to many miles where they recede. Many towns and villages lie along this plain, the chief of which are Gaza, Jaffa, Haifa, and Acre.

Secondly, the central mountain chain of barren limestone, rising steeply from the plain, here and there attaining a height of from 2000 to 3000 ft. This is made up, from north to south, of the Galileean hills, the mountains of Samaria, and the mountains of Judæa. The Mount Carmel range lies in a lateral direction, approaching the sea westward of Haifa. Upon the central range are situated the towns of Safed, Nazareth, Samaria, Nablus, Jerusalem and Hebron. Southward from Hebron the mountains sink into the plains around Beersheba.

Thirdly, the Jordan Valley, a stupendous and unique "fault" in the earth's crust. This includes the upper and lower Jordan, the Dead Sea, and the Sea of Galilee, Tiberias, and Jericho.

Although the average annual rainfall over a large part of Palestine is as great as that of London, the country suffers from want of water in summer. The whole of the rainfall occurs between November and April. During the summer months a majority of the inhabitants and their domestic animals depend upon supplies of rain-water collected in catchment tanks.

The winter months, although very wet, are usually mild along the coast, the thermometer seldom falling to freezing-point. In some years there may be a considerable snowfall on the higher parts of the mountain ranges. There are frequent and terrific gales, alternating with tremendous storms and downpour.

The spring commences fitfully in January or February, and for three months the country is a land of flowers, of wonderful abundance and variety.

COLEOPTERA.

At the commencement of the wet season, when the first autumn crocuses and dwarf cyclamen peep forth, and the parched country begins to look green once more, the mountain slopes form an ideal hunting-ground for beetles. Hundreds may be found in an hour or so by turning over loose stones and rocks.

Adults of *Carabus punctulatus*, Bon., were plentiful in November and December. Early in January several larvæ were found. These were kept in a tin half filled with earth, and supplied with slugs. These molluscs were readily attacked by the larvæ. Usually the first thing that happened was the decapitation of the slug by a few powerful strokes of the strong jaws. The body was then slit open along the side, and the juicy contents eaten. Apparently the skin is too nasty, even for these permanently hungry larvæ, as it was generally avoided, and left to shrivel up. On more than one occasion several slugs were eaten in quick succession by the same larva, and one day a large larva completely devoured an earthworm about

four times its own length, resulting in enormous distension. The soft integument between each segment was tightly stretched, and for two days the larva remained in a comatose condition, lying helplessly on its side, and refusing to be tempted by any fresh victims. I found that the larvæ would never touch millepedes (*Julus*), which were found plentifully under stones, in similar situations to those from which the larvæ were taken. One of the larvæ pupated on March 10th, and the adult emerged at the end of April. Many of the mature insects were found on Mount Carmel, during the wet season, at 300 ft. and above, and specimens were also found at Nazareth up to 2000 ft. It is probably widely distributed over the central mountain chain.

Calathus fuscipes, Goeze, and two other species of the genus, at present unnamed, were also found on Mount Carmel, and on the hills at Nazareth, in November, December and January. Quickness of the hand and eye are required to capture these, as they immediately run for safety down the nearest crevice on the stone being turned.

Other captures belonging to the Carabidæ include unnamed species of *Brosicus*, *Pristonychus* and *Cymindis*, all from Mount Carmel, in November and December; and *Stenolophus? vaporariorum*, F., at the end of September on Mount Carmel.

Representatives of the Tenebrionidæ were plentiful, notably *Dendarus impressus*, Reiche, of which scores could be collected in a few minutes. Mount Carmel during the wet season: *Dailognatha crenata*, Reiche, from the same locality, and another unnamed species of the genus, Haifa, 1 : vii : '19. *Tentyria laticollis*, Krtz., Haifa, on sandy soil, at sea-level, 29 : xi : '19. *Adesmia ulcerosa*, Klug., Haifa, 25 : xi : '19. *Pimelia mittrei*, Sol., and *P. nazarena*, Mill., under stones amongst palm trees, sandy soil, Haifa, 29 : xi : '19. *Tentyria herculeana*, Reiche, Haifa, 1 : viii : '19, and Mount Carmel, November. *Gonocephalem rusticum*, Oliv., Haifa, November. *Opatrum libani*, Baudi, and *Opatroides longulus*, Reiche, Mount Carmel, November and December. *O. punctulatus*, Brull., Haifa, 29 : xi : '19. *Cossyphus rugosulus*, Peyron, Haifa, along the Nazareth road, under rocks, 29 : xi : '19. *Scaurus puncticollis*, Sol., Ludd, 25 : x : '19. *Amnodeis giganteus*, Reiche. The remains of one of these were found under a stone in the Anti-Lebanon mountains, between Damascus and Baalbek, in September, 1919.

Of the Tiger beetles, *Cincindella lunulata*, F., was common on muddy banks at the mouth of the Kishon river, near Haifa, in July, 1919, and of the water-beetles, *Cybister lateralimarginalis*, deG., was taken from pools at Athlit, near the coast, 2 : vii : '19.

The weevil *Hypera variabilis*, F., a pest of clover and lucerne, was found at Haifa, 29 : vi : '19.

The lady-birds, so far, are represented by *Chilocorus bipustu-*

latus, L., Jerusalem, 6 : ix : '19, and an unnamed species of *Lithophilus*, Haifa, 29 : vi : '19.

The following complete my captures of Coleoptera to the early part of this year: *Hister græcus*, Brul., common on Mount Carmel in November and December. *Trox hispidus*, Pont., a few at Haifa in November. *T. perlatus*, Goeze, Haifa, 3 : xi : '19. *Aphodius granarius*, L., Mount Carmel, November, and *Chryso-mela chalcites*, Germ., from the same locality. *Dermestes vulpinus*, F., and *Necrobia rufipes*, deG., Haifa, July, 1919. *Melyris versicolor*, Chev., common on flowers at Haifa, July, 1919. *Lasioderma serricorne*, F., and *Melanotus fuscipes*, Gyl., Haifa, June, 1919. *Coryna birecurva*, Mars, var., Acre, July, 1919. Unnamed species of *Arrhaphipterus*, *Agrypnus* and *Ablattaria*.

(To be continued.)

SOME NOTES ON THE COLLECTION OF BRITISH MACRO-LEPIDOPTERA IN THE HOPE DEPARTMENT OF THE OXFORD UNIVERSITY MUSEUM.

BY F. C. WOODFORDE, B.A., F.E.S.

(Continued from p. 157.)

Aglais urticae.—Upwards of 120 with several remarkable aberrations. The most striking is one from the Spilsbury Collection with no data. The whole of the ground-colour is creamy-white. A very perfect ab. *ichnusoides* almost exactly corresponding to the figure in Seitz was taken wild in N. Staffs, July 30th, 1918. In another ab. *ichnusoides* taken at Parsonstown, in Ireland, by the Hon. G. L. Parsons, in August, 1886, the black spot of the inner margin is greatly enlarged and prolonged towards the inner angle of the fore wings and the outer portion of the wing is much suffused with a dark shade, thus greatly reducing the red ground-colour. Another remarkable specimen of the same type has the outer margin of the fore wings of what can only be described as a pale mud-colour. It is from the Hope Collection, and is labelled "S. Wales, St. David's, 1876." In two specimens taken wild on two successive days in a garden in the town of Market Drayton, by Mr. H. G. F. Onions, the ground-colour is of a pale ochreous brown, as are also the usually yellow spaces between the black costal spots. A series of five very similar specimens, but with the yellow spaces of the normal colour, was bred by Mr. P. Tautz from larvæ found at Chorley Wood, Rickmansworth, in 1914. Possibly the pupæ of these, as well as the pupæ of the specimens of *V. io* referred to further on, were subjected to abnormal conditions, but the labels attached make no mention of such

being the case. Two specimens from Herts, one from Bute and one from Kincardine, make approaches towards the subspecies *A. polaris*, Stgr. From Morthoe, N. Devon, a fine specimen, taken by Dr. F. A. Dixey, F.R.S., August 25th, 1892, very closely approaches the Japanese form ab. *connexa*, Btlr., but there are faint indications of blue spots at the margin of the fore wing.

Vanessa io.—Series of 80, from many English localities and two from Tyrone, with few aberrations. One very remarkable one was taken in the Museum grounds in 1878. The fore wings are normal except that the yellow portion of the interior edge of the ocellus is much reduced in size and the space between the black costal spots is dull ochreous. In the hind wings the normal blue and black centre of the ocellus is reduced to a small black spot set in the middle of a circular patch of very pale ochreous colour. In a series of 10 bred from larvæ found in Chorley Wood, Rickmansworth, Herts, in 1914, by Mr. P. Tautz, the typical red is replaced by a dull maroon or madder-purple colour. The two specimens from Tyrone have a black spot below, but touching, vein 2 in the inner discal portion of the fore wings.

Ewanessa antiopa.—Fifteen specimen. Three from the Hope Collection, and one from Spilsbury Collection, all unlabelled. Another from the Spilsbury Collection is labelled "Bred by the late Mr. Kirby [author of an 'Introduction to Natural History'], given to me by Mr. Dummitt, of Uttoxeter." Another also from the Spilsbury Collection is labelled "Caught by — Farrell, near Macclesfield, September, 1858." A specimen in splendid condition was taken by the Rev. J. W. B. Bell on a sugared post at Pyrton, Oxon. This specimen was recorded in the 'Entomologist,' 1900, p. 250. Two specimens taken at Cromer in late August or early September, 1872, by Miss M. C. and Miss E. H. Lowe, were presented to the collection by Prof. Poulton. A hibernated specimen taken by a boy at Mapledurham in the spring of 1873 was presented to the Collection by Prof. Poulton. A very fine and perfect specimen from the Chitty Collection is labelled "New Forest, 11/6/92." Another from the same collection is labelled "New Forest, 10/8/88. 'Entomologist,' vol. xxi, page 229." A specimen from the Meldola Collection labelled "G. Ruffel, Bigods, Sept. 20, 1900." One from the Sellon Collection, labelled "Worthing, 1879." Another from the same collection labelled "Salwey's Collection, originally from F. Standish's."

Pyrameis cardui.—Upwards of 70, with no noteworthy aberration.

P. atalanta.—No aberration, except one small but apparently very rare, consisting in the absence of the lowest of the normal five subapical spots. It was bred in the New Forest by C. Gulliver, October, 1912.

Argynnis paphia.—Upwards of 80 specimens, including 39 ab. *ralesina*, with otherwise no noteworthy aberrations.

A. cydippe.—Upwards of 60 specimens. A beautiful aberration in which the ground-colour is creamy-white, taken in S.W. Bucks by Miss L. B. Evetts, July, 1896.

A. aglaia.—A fine series of more than 80, with much slight variation in the females, some being very dark.

Issoria lathonia.—Eleven specimens. Four from the Hope Collection, each labelled "Wells British Collection." Four from the Spilsbury, without any data. One from the Sellon Collection labelled by Mr. Sellon "Salwey's Collection." Another label, apparently Salwey's original label, has on it, "Folkestone, 1868, presented by T. Briggs, Esq." Two other specimens are labelled "O.E.S." (Oxford Entomological Society).

Brenthis euphrosyne.—Series of 90 specimens. A fine aberration from the Hope Collection without data has the interior portion of all the wings blackish, this coloration extending nearly to the transverse row of submarginal spots. The rest of the wings is much suffused with black. An underside taken May 29th, 1916, near Abingdon, Berks, by the Rev. C. F. Thornewill, entirely wants the normal reddish markings, and the ground-colour is of a very pale ochreous. A specimen of that very rare occurrence, a second brood, taken August, 1899, near Reading, by Mr. W. Holland, is in perfect condition and much below the normal size.

B. selene.—Series of over 100. A fine aberration taken June 11th, 1913, at Crowthorne, Berks, by the Rev. C. F. Thornewill, has a broadish black band in the outer portion of the fore wing along the margin. All the wings are also much suffused with black. A series of 11 specimens of a second brood from the Pogson-Smith Collection was taken near Oxford, August 8th, 1911. They are in perfect condition and much smaller and paler than normal first-brood specimens. Another specimen of the second brood from the Chitty Collection was taken at Dodington, Kent, in August, 1895.

Melitea cinxia.—Series of 60. One specimen from the Spilsbury Collection, without data, has the row of spots in the central pale band on the underside of the hind wing very large and some of them converted into streaks.

M. athalia.—Series of 63. Mostly from Kent and Sussex, with no remarkable aberration.

M. aurinia.—Series of upwards of 130 from many English localities, six Scottish and one Irish specimen. The series is interesting in showing the slight variation between the series taken in different localities, but there are no very striking aberrations. In a specimen from the Meldola Collection taken at Ivybridge, June 23rd, 1889, and in another without data from the Sellon Collection, the paler ochreous markings are

absent and the whole ground-colour of the wings is tawny fulvous. The series of six from Scotland, bred from Oban larvæ, May, 1913, presented by Mr. A. Horne, has the pale markings of a cream colour, giving the series a very striking appearance.

SATYRINÆ.

Melanargia galatea.—Series of upwards of 90. No very remarkable but several minor aberrations. In two specimens from Kent, both females, and one from Northants, a male, on the upper side the outer black band in the hind wing is almost obsolete, only the ocelli being left, which are thus rendered very conspicuous.

Erebia epiphron.—Thirty-eight English from Lake District, 13 from Perthshire, 20 without data. From the Meldola Collection is a specimen labelled "Lake District," but without date, of a unicolorous dark brown = *ab. obsoleta*, Tutt.

E. æthiops.—Series of 24 English, 50 Scotch, 10 without data. No very striking aberration.

Hipparchia semele.—Series of 100. Much variation of a minor character, but none very remarkable.

Pararge ægeria.—Series of upwards of 70.

P. megæra.—Upwards of 60.

Epinephele jurtina.—Series of upwards of 100, with several striking aberrations. Two females, one from the Meldola Collection, taken in the New Forest, the other from the Pogson-Smith Collection, taken at Nettlebed, Oxon, have the fulvous subapical blotch on the fore wing white instead of the usual fulvous. A very remarkable female taken September 1st, 1891, by Mr. W. Holland, has nearly the whole of the right fore wing bleached, but retains in the bleached portion traces of the fulvous subapical blotch of the normal colour. In the left fore wing only the apex is bleached. In both the ocellus is reduced to a white spot surrounded by a very narrow ring of black. On the right hind wing is an oblique bleached stripe from the middle of the costa to the anal angle. From the Meldola Collection is a very beautiful symmetrically bleached female taken near Romford, Essex, in July, 1895. Towards the apex of the fore wing is a large irregularly-shaped white blotch of similar size, shape and position, on each wing. Both hind wings have the central portion of the wing bleached, with a narrow margin of normal colour running completely round the wing. There are seven other specimens with partial bleaching of the wings.

Epinephele tithonus.—Series of 70. Six specimens have supernumerary black spots on the fore wings. One from the Chitty Collection, labelled "New Forest, 1890," has the outer margin of the right fore wing bleached, and the central dark

band is almost obsolete. The left fore wing is normal except that the outer marginal band is very light brown. From the Champion Collection, labelled "Woking," is a remarkably dwarfed male.

Aphantopus hyperanthus.—Series of 95. Two undersides, one from near Bude, the other from the New Forest, are asymmetrical on the undersides, having three ocelli on one fore wing and only two on the other. A fine specimen of ab. *arete*, Müll., was taken by Mr. F. A. Dixey in Darenth Wood, July 17th, 1876. Two other specimens of ab. *arete*, one from the Hope, the other from the Spilsbury Collection, are without data.

Cænonympha tiphon.—A series of over 50 Scotch specimens and 54 English = ab. *rothliebii*, with 18 unlabelled, mostly English, from the Hope and Spilsbury Collections. The English specimens show a very great range of variation of the size of the ocelli on the underside.

C. pamphilus.—Series of over 80, with no remarkable aberration.

Nemeobius lucina.—Series of 80.

(To be continued.)

CONTRIBUTIONS TO OUR KNOWLEDGE OF THE BRITISH BRACONIDÆ.

BY G. T. LYLE, F.E.S.

No. 6.—AGATHIDÆ.

In the 'Genera Insectorum' Szeplegiti catalogues twenty-eight genera belonging to this sub-family containing 222 species. The very great majority are exotic, for undoubtedly the true home of the group is in the tropics, but few representatives having strayed to northern latitudes. Five genera only are known to be British, and of these *Neoneurus*, Hal., was classed by Ashmead* with the Microgasteridæ, while he placed *Orgilus*, Hal., in a distinct tribe between his *Blacini* and *Calyptini*. In addition he followed Forster in making a separate sub-family of *Microdus* and *Earinus*, as distinct from *Agathis*, merely on account of the difference in the length of the face, but, as Marshall truly remarks, "this in our opinion is not a sufficient reason for the establishment of a sub-family, the rest of the structure in both groups being similar." It is perhaps fortunate that Szeplegiti has re-united the various genera, although such classification is not without difficulty.

Marshall gives the following characters :

* 'Proc. U.S. Nat. Mus.'

Clypeus entire, mouth closed, maxillary palpi 5-6, labial 3-4-jointed. Eyes glabrous, vertex short, occiput concave; face subtriangular, often very elongate. Mesothoracic sutures distinct (excepting in *Earinus*). Cubital areolets 2 or 3; in the latter case the second is minute, subquadrate or triangular, first cubital often confused with the first discoidal, radial cell minute, straight, lanceolate, not nearly reaching the apex of the wing; nervures distinct, recurrent nervure rejected, submedian cell as long as or longer than the median. Terebra elongate.

TABLE OF GENERA.

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|--------|----------------------------------------------------------------------------------------------------------------|-------------------------|
| (8) 1. | Fore wings with three cubital cells. | |
| (3) 2. | Antennæ 16-jointed. | <i>Neoneurus</i> , Hal. |
| (2) 3. | Antennæ with more than 16 joints. | |
| (5) 4. | Clypeus and face triangularly produced. | <i>Agathis</i> , Lat. |
| (4) 5. | Clypeus and face not triangularly produced or very slightly so. | |
| (7) 6. | First cubital cell confused with the first discoidal, mesonotum very distinctly trilobed. | <i>Microdus</i> , Nees. |
| (6) 7. | First cubital cell separated from the first discoidal by a nervure, mesothoracic sutures effaced or almost so. | <i>Earinus</i> , Wesm. |
| (1) 8. | Fore wings with only two cubital cells. | <i>Orgilus</i> , Hal. |

The three genera *Agathis*, *Earinus* and *Microdus* are distinguished from one another by characters of but little more than specific value. *Agathis* has the face produced to a much greater extent than in *Microdus*, though the difference is not more than may be found between species of the genus *Apanteles*. The principal distinction between *Microdus* and *Earinus* is the extent of the development of the nervure which divides the first cubital cell from the first discoidal—a most unsatisfactory character which varies considerably even in examples of the same species. I am inclined to think that Marshall scarcely attached sufficient importance to a character emphasised by Reinhard, viz. the mesothoracic sculpture, for in every species of *Earinus* known to me there is extremely little or no trace of sutures, while in all those of *Microdus* the sutures are deep and the mesothorax distinctly trilobed. The insects appear to prey exclusively on larvæ of *Lepidoptera*, principally *Tineidæ*, and with very few exceptions our British species are anything but common. Considering this scarcity I have been most fortunate in the amount of material I have been able to study. Prof. Paulton has most kindly entrusted to me, for examination at leisure, the whole of the specimens in Dale's Collection, and also several from the old Hope Museum Collection. The Dale Collection was formed by J. C. Dale and his two sons, E. R. Dale and C. W. Dale, during a period of roughly one hundred years, and bequeathed by the last-named to Oxford University some eight or nine years ago. The

earliest specimen in the collection is dated October, 1807, and the great majority of the insects come from Glanvilles Wootton, a small agricultural parish in Dorset, where the Dales resided, although the neighbouring woods of Middlemarsh and Holnest were thoroughly well worked, and, indeed, the surrounding country generally, while occasional visits were paid to Bourne-mouth (in the days when that now fashionable watering-place consisted of a few fishermen's and coastguards' cottages, backed by heather and pine-clad hills), Purbeck and the New Forest. The earlier specimens, many of which were no doubt seen by Curtis and Haliday, are correctly named, but such is not the case with those of more recent date.

Dr. Hugh Scott, of the University Museum of Zoology, Cambridge, has also granted me every facility for examining the specimens in the University Collection, which, although few in number, are most interesting. Mr. B. S. Harwood with his usual kindness has assisted me in every way possible, and I am also greatly indebted to Mr. Percy Thompson, of the Essex Museum, Stratford, who when visiting Cambridge, brought with him the very interesting *Agathidæ* from the Fitch Collection and so afforded me the opportunity of examining them thoroughly.

GENUS 1. *Neoneurus*, Hal.

In the 'Entomological Magazine,' vol. v, p. 213, Haliday mentions a Braconid having "*Areola radialis appendiculata prædiscoïdali autem effusa.*" Nothing further was heard of it until Marshall ('Spec. Hym. Eur.,' vol. v *bis*, p. 197) described the sexes and placed the genus doubtfully in this sub-family. Marshall's hesitation appears to have been justified, for with the exception that the radial cell is small there seems to be little to connect the insect with the *Agathidæ*.

The single species, *N. Halidayi*, is quite unknown to me. Marshall captured a pair at flowers of *Umbeliferæ*.

GENUS 2. *Agathis*, Latreille.*

Maxillary palpi 5, labial 4-jointed; head seen from the front shaped like an elongate triangle, mesothorax distinctly trilobed; three cubital cells, the first never distinctly separated from the first discoïdal,† wings infuscated, with a pale streak under the stigma. Segments 1-3 of the abdomen longer than the rest taken together, 2 and 3 each marked with a curved transverse impression.

The shape of the second cubital cell is irregular and inconstant so that it is not a character to be greatly relied upon for separating the species. Small obscure insects but rarely met with, and, in spite of the fact that they prey upon larvæ of Lepidoptera, very infrequently reared.

* 'Hist. Nat. Crust. Ins.,' vol. iii, p. 175.

† See, however, under "*Microdus*."

TABLE OF SPECIES.

- (4) 1. Abdomen above centrally more or less rufous.
 (3) 2. Wings pale at base, somewhat dark at apex. *malvacearum*, Nees.
 (2) 3. Wings much darker, with a whitish streak beneath the stigma *nigra*, var.
 (1) 4. Abdomen entirely black.
 (8) 5. Hind tibiæ with at most a faint trace of a dusky ring before base, terebra longer than body.
 (7) 6. Palpi rufous, only basally blackish. *rufipalpis*, Nees.
 (6) 7. Palpi entirely blackish *nigra*, Nees.
 (5) 8. Hind tibiæ with a distinct dark ring before base, terebra shorter than body.
 (10) 9. Second cubital cell irregular, usually sub-triangular, terebra as long as abdomen and metathorax or thereabouts *anglica*, Marsh.
 (9) 10. Second cubital cell quadrangular, terebra almost as long as abdomen. *crevisetis*, Nees.

Agathis malvacearum, Nees.*

A single male in the Dale Collection is so named; it has the second abdominal segment rufous excepting at apex, but the first is piceous, antennæ 22-jointed; length $4\frac{1}{2}$ mm. To me the specimen appears to approach very nearly to Marshall's rufous var. of *A. nigra* described by him in André, 'Spec. Hym. Eur.,' vol. iv, p. 565. In this work Marshall tells us that *A. malvacearum* is found only in Central and Southern Europe, though in 'Trans. Entom. Soc.,' 1885, p. 264, he states that Stephens professed to have taken it in the London district. Westwood informed Marshall that a male and two females were in Walker's Collection at Oxford; these three specimens I have been allowed to examine through the kindness of Prof. Paulton, and find they may all be undoubtedly referred to the genus *Meteorus*.

Morley records it as taken by Donnisthorpe in abundance at Rye, in August.

Agathis nigra, Nees.†

A rather stout, dusky-winged species with the terebra as long as body and head combined; antennæ 22-24-jointed. Nees describes the femora as "*basi parim nigra*," but in all the examples I have seen the hind and middle femora are concolorous, as in Marshall's specimens.

Harwood has a male labelled "Higham, 27/7/85," and in Dale's Collection are two females and seven males; two of these have the second abdominal segment at the base decidedly dull

* 'Mon.,' vol. i, p. 137.

† *Idem*, vol. i, p. 128.

rufous. All are without data excepting one which is labelled "Newton, 1903" (possibly this is Buckland Newton, in Dorset). Ten of the eleven specimens mentioned by Marshall as having been bred by Elisha from *Eupœcilia roseana* are still in the Fitch Collection.

Agathis anglica, Marsh.*

Up to the present recorded only from Britain, and said by Marshall to be commoner than *A. nigra*, from which species it may be distinguished by the noticeable dark ring before the base of the hind tibiæ and shorter terebra (as long as abdomen and metathorax or rather longer). The author also mentions that the antennæ have more joints, viz. 29-31; in Dale's Collection, however, is a female which I feel confident may be referred to this species, having only 24-jointed antennæ. In my own collection is a female that has 28 joints and also a male with 26.

A female in Dale's Collection is labelled "B.N.," and Harwood has another from "Box Hill, 27/6/85." I took a male on the muddy shore of the Solent, near Lymington, August 2nd, 1916, and a female from bushes on the Gog Magog Hills, Cambridge, June 8th, 1917.

Marshall tells us that W. H. B. Fletcher reared the species from a *Coleophora* and also from *Depressaria nervosa*, Haw. A pair in the Fitch Collection bear Marshall's label, "*A. anglica*, n. sp."

Agathis brevisetis, Nees.†

The males are difficult to distinguish from those of *A. nigra* and *A. anglica* though perhaps rather larger; the females, however, are easily separated by the length of the terebra, which in this species is much shorter. In *brevisetis* the second cubital cell is usually subquadrate while in *nigra* and *anglica* it is usually triangular, but, as before mentioned, the shape is inconstant.

Harwood has three females on one card (bearing Marshall's yellow label), which, judging from the mounting, came from Cameron's Collection, and which are probably the three specimens taken by him in Scotland and mentioned by Marshall. These insects have the terebra stout, pilose, and distinctly rather shorter than the abdomen, so agreeing with Nees' description.

Bignell records it from *Coleophora troglodytella* and *Nannodia hermanella*.

Agathis rufipalpis, Nees.‡

In the Essex Museum is a single female under this name; two labels are attached, one I believe in Marshall's writing,

* 'Trans. Entom. Soc.,' 1885; p. 265.

† 'Mon.,' vol. i, p. 131.

‡ 'Mon. Af.,' vol. i, p. 129.

“*rufipalpis certissime*,” and the other “*Ex. Gl. Hermanella*, G. Elisha, 6/7/84”—no doubt the example seen by Marshall and noted by him in ‘*Trans. Entom. Soc.*,’ 1885, p. 266. I find that the terebra is not longer than the abdomen (it is certainly not broken), and therefore scarcely agree with Marshall in considering the insect to be *rufipalpis*, Nees, which has the terebra longer than the body. Being “set” in an awkward position I have been unable to satisfactorily examine the specimen; the palpi, however, are certainly rufous.

The only other British record is that of Curtis (‘*Guide*,’ 2nd ed., col. 116).

GENUS 3, *Microdus*, Nees.*

Very similar to the last, though the face is not produced to anything like the same extent and the mesothorax is perhaps more distinctly trilobed. As at present understood, the genus is co-extensive with *Eumicrodus*, Forster,† and the subgenus *Therophilus*‡ of Wesmael.

Ten species are now known as British. I have omitted *M. brevicaudis*, Rein.§ as I find that the single male recorded by Marshall || should undoubtedly be referred to the genus *Agathis*; the specimen is still in Fitch’s Collection. As described by Marshall, it has a distinct nervure separating the first cubital cell from the first discoidal (further proof of the doubtful value of this character as a means of classification), and is also anomalous in having the first abscissa of the radius obsolete. The antennæ are 27-jointed, as stated on a label attached, and not 29 as noted by Marshall. Underneath the card on which the specimen is mounted is written “Bred, 24/7/75, fr. l. case of *Coleophora troglodytella*, Guestling, Hastings”; there is also a small green label bearing the number 11. This insect is very near *Agathis anglica*, though, of course, differing in the characters mentioned above; it is certainly not a *Microdus*, the face being characteristically produced.

TABLE OF SPECIES.

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|-----|----------------------------------------------------------------|---------------------------|
| (2) | 1. Mesothorax rufous. | <i>calculator</i> , Fab. |
| (1) | 2. Mesothorax black. | |
| (8) | 3. Second abdominal segment more or less rufous or testaceous. | |
| (5) | 4. Second segment entirely testaceous. | <i>conspicuus</i> , Wesm. |
| (4) | 5. Second segment not entirely testaceous. | |
| (7) | 6. Second segment rufo-testaceous with a central black patch | <i>linguarius</i> , Nees. |

* ‘*Mag. Ges. Nat. Fr. Berl.*,’ vol. v, p. 184.

† ‘*Verh. Nat. Ver. Preus. R.*’ vol. xix, p. 247.

‡ ‘*Nouv. Mem. Ac. Brux.*,’ 1837, p. 15.

§ ‘*Berl. Ent. Zeit.*,’ 1867, p. 356.

|| ‘*Trans. Entom. Soc.*,’ 1885, p. 274.

- (6) 7. Second segment black with a rufous spot at either side *clausthalianus*, var.
- (3) 8. Second segment entirely black.
- (13) 9. Hind tibiæ rufous or ochreous with apex fuscous.
- (16) 10. Third abdominal segment smooth.
- (12) 11. Orbits with a rufous spot, length $4\frac{1}{2}$ mm. *tumidulus*, Nees.
- (11) 12. Orbits immaculate, length 6 mm. *clausthalianus*, Ratz.
- (9) 13. Hind tibiæ not rufous or ochreous, with apex fuscous.
- (15) 14. Hind tibiæ blackish throughout *nugax*, Rein.
- (14) 15. Hind tibiæ half black, half white *cingulipes*, Nees.
- (10) 16. Third abdominal segment at least partially acciculate or coriaceous.
- (18) 17. Hind coxæ rufous *rufipes*, Nees.
- (17) 18. Hind coxæ black.
- (20) 19. Hind tibiæ rufous with apex black *mediator*, Nees.
- (19) 20. Hind tibiæ half white, half black *rugulosus*, Nees.

Microdus calulator, Fab.*

A fine, handsome species, distinguished principally by the rufous mesothorax and black hind femora and tibiæ (hind femora rufous at apex and hind tibiæ narrowly whitish at base). A very scarce insect and in this country known so far only from the New Forest, where in 1822 Curtis captured both sexes alighting on the stool of a felled tree. In the Dale Collection is a gigantic female having a length of $7\frac{1}{2}$ mm., which was taken in the New Forest on July 1st, 1881 (the date is indistinct and may possibly be 1831), while in the Cambridge University Museum is a pair obtained by Dr. Sharp in the same locality in June, 1902; the Cambridge specimens have a length of only 6 mm.

Marshall throws doubt on the correctness of Curtis's figure ("B.E.," plate lxxiii), where the antennæ are depicted as longer than the body, as according to Nees they should be shorter. All the antennæ of the specimens taken by Dr. Sharp are broken but fortunately Dale's example has one intact; this is certainly rather shorter than the body.

Microdus conspicuus, Wesm.†

In 1885‡ Marshall described a new species of *Earinus* under the name of *E. zonatus*, from two specimens, presumably both males, in Fitch's Collection. The types (on gilt pins) are still in existence though one is in a deplorable condition, the whole of the abdomen and half the thorax having been eaten by mites,

* 'Ent. Syst.,' sup., p. 225.

† 'Nouv. Mem. Ac. Sc. Belg.,' vol. x, p. 17...

‡ 'Trans. Entom. Soc.,' p. 268.

the remains being attached to the pin, apparently, merely by a plentiful growth of verdigris. Of this insect there is left only the head, scape of both antennæ and half flagellum of one, dexter half of thorax with two wings and three legs attached and sinister fore leg; the other type is in better state, wanting only the tips of the antennæ.* Marshall describes the first cubital cell as being very distinctly separated from the first discoidal, and when examining the specimens I was surprised to find that although this is correct of one example, in the other the dividing nervure is widely interrupted. As I have elsewhere remarked, in my opinion far too much importance has, in the past, been attached to the development of this nervure as a means of classification, and no doubt the well-marked division in one of his types misled Marshall into thinking that the insect should be referred to the genus *Earinus*. The distinctly trilobed mesothorax and rugose metathorax leave no doubt in my mind that the species is a *Microdus*, and I should certainly ascribe it to *M. conspicuus*, Wesm., the only points of difference I can detect (excepting that the insects described by Marshall are perhaps rather lighter than Wesmael leads us to believe) being in the colour of the hind tibiæ and in the number of joints of the antennæ (31 according to Wesmael and 32 given by Marshall). Wesmael describes the hind tibiæ as black at the tips, but this is not so in Fitch's specimens, all being concolorous. Such a small difference in the tibial coloration is not, however, of primary importance.

In the male the posterior orbits only are reddish and the abdomen black with the second segment testaceous, basal half of the antennæ also testaceous, and second abdominal segment with a curved, transverse, impressed line. Length about 4 mm. The female is said to have the abdomen entirely testaceous or rufo-testaceous after the first segment and the orbits more marked with testaceous than in the males; tibiæ as long as the body.

One of Fitch's insects bears Marshall's yellow label "*Earinus zonatus*, n. sp.," and both are ticketed as from *Eupœcilia notulana*.

* The condition of Fitch's Collection is greatly to be deplored. I understand that during the last twenty years or so of his life, his time being very fully occupied with local government affairs, he took little or no interest in entomology and his collection suffered in consequence,—particularly from the attacks of mites. After his death the greater part of the collection, contained in a cabinet, was purchased, fortunately before it was irretrievably ruined, by the Trustees of the Essex County Museum, and it is good to know that these specimens are now in such good hands. Not until some years later was Mr. B. S. Harwood, by a lucky chance, enabled to save from destruction the remainder of the collection, which was housed in several store-boxes. Mites and mould have, however, worked terrible havoc with the contents of these boxes, great numbers of the specimens having utterly perished. The Fitch Collection is made particularly valuable by containing numbers of Marshall's types.

Microdus linguarius, Nees.*

A fine robust species; seemingly rare, though Morley tells us that Butler has taken it commonly at Abinger Hammer. Distinguished by the very long terebra (three times as long as the abdomen) and the rufo-testaceous second abdominal segment, which has an isolated central black patch. The first abdominal segment is striolate and but little longer than its apical width; mesothorax broad, with the sutures very distinct.

In the Fitch Collection is a female labelled—"Given to me, British?"

Microdus tumidulus, Nees.†

Probably the commonest species we have. A small robust insect having the legs rufous, with the exception of the coxæ, upper trochanters, hind tarsi and hind tibiæ at the apex; metathorax rugulose with traces of two medial, longitudinal carinæ and a smooth space on either side at the apex; second cubital cell triangular, radial cell very small, radius straight or almost so; antennæ usually 28-jointed; terebra slightly shorter than abdomen and thorax combined. Marshall gives the length as 3-4½ mm., but I have seen none less than 4 mm., the size mentioned by Nees. Marshall's "var. 1," which has the hind coxæ rufous, seems to be rare, the only example I know being in the Cambridge University Museum; it was taken by F. Jenkinson at Cambridge in 1907. There are two females in the Dale Collection, one marked "G.W." and the other "B.O." On the Gog Magog Hills, near Cambridge, and also at the Fleam Dyke it is common, and I have many times taken it when sweeping, my earliest date being August 5th and latest September 7th.

Microdus clausthalianus, Ratry.‡

Very near *tumidulus*; indeed, Marshall says—"Probably the size of this species and colour of the squamulæ are the only real means of determination." The squamulæ are said to be black instead of rufous or piceous as in *tumidulus*, but this character is inconstant and of little value. Nevertheless, the two are no doubt distinct. *Clausthalianus* has the terebra quite as long as the body, while in *tumidulus* it is slightly shorter. A female in the British Museum has a very distinct rufous spot on either side of the second abdominal segment, and this marking is present, though not so noticeable, in two of the three specimens in Dale's Collection. A fine female in the University Museum, Cambridge, was taken at Wicken, July 26th, 1891. In Fitch's Collection is a female bred from either *Ephippiphora scutulana*

* 'Mon.', vol. i, p. 149.

† 'Mon.', vol. i, p. 147.

‡ 'Ich. d. Forst.', vol. i, p. 58.

or *E. cirsiaria* by W. Bennett (no doubt the specimen recorded by Marshall), accompanied by its white, shiny, transparent cocoon. This cocoon is 10 mm. in length by $2\frac{1}{2}$ mm., and somewhat attenuated at either end, the insect having evidently emerged through a jagged hole at the side. There are also two males and three females from *Semasia rufillana* and a pair from *Depressaria atomella*, all reared by G. Elisha in July, 1883.

Microdus nugax, Rein. *

Introduced as British by Morley,† who tells us he captured a male at *Spirea ulmaria* at Foxhall and has a female taken by Saunders at Greenings in 1872.

Microdus cingulipes, Nees. ‡

Very similar to *tumidulus* but easily distinguished therefrom by the black and white hind tibiæ and the minute radial cell.

The only species known to Bignell, who reared it from a *Coleophora*. Two females recorded by Marshall are still in Fitch's Collection and in good condition; one is dated August 11th, 1870, and the other labelled "Bugb." In these examples the terebra is not as described by Nees and Marshall as long as the body but only a little longer than the abdomen and metathorax. Under this name in the Dale Collection are several specimens which should quite certainly be referred to *tumidulus*.

(To be continued.)

NOTES AND OBSERVATIONS.

HURBECS.—The following notes, which will interest entomologists, are excerpts from 'Notes and Queries' of June 26th, 1920: "Hurbeccs.—This equivalent to the word 'caterpillars' is probably a Swiss or Roman term, which has dropped out of use. It is to be found in David Martin's translation of the Bible into French, which is that most commonly in use in the Cantons Vaud and Neuchâtel. It is also retained in the editions (revised) issued by the British and Foreign Bible Society, printed in Brussels. . . . The actual rendering of the original Hebrew word, according to Dr. Driver, should be the larvæ or wingless progeny of the locusts.—L. G. R." "Roquefort's 'Glossaire de la Langue Romane' (Paris, 1708) gives: 'Hurebec.—Chenille de Vigne'—that is, caterpillar of the vine.—Herbert-Maxwell." It would be interesting to know what particular vine-feeding larva is indicated.—H. R.-B.

ZYGÆNIDÆ IN THE CHILTERNs.—On July 4th I visited the Bucks Chilterns. There are certain localities in the hills where the usual flora of the chalk formation is almost wholly wanting. The great stretches of *Hippocrepis comosa* and *Helianthemum chamæcistus*, now

* 'Berl. Ent. Zeits.', vol. xi, p. 352.

† 'Entom.'

‡ 'Mon.', vol. i, p. 148.

in all their golden glory elsewhere, had disappeared, but the display of *Lotus corniculatus* was more beautiful here than I have ever seen it. The close-cropped grasses and hawkweeds of the downs are also unrepresented at such spots, their place being taken by the high grasses beloved of *Aphantopus hyperanthus* and *Melanargia galatea*. It was, indeed, to determine how it fares with the latter species that I made the little expedition; and not in vain, for though only just emerging I saw males sufficient to justify the hope that *galatea* is re-establishing itself satisfactorily. On the same ground I had taken two years ago *Z. hippocrepidis*, Stephens, and the females were present in some numbers, though usually worn, flying with *Z. trifolii*, *trifolii* being in perfection and in great force, and observed for the first time by me in the Bucks Chilterns. Males of *Z. filipendulæ* were also just beginning to fly, and I observed particularly how active these three Zyganidæ—usually so sluggish—are when the sky is overcast or heavy. They seem to revel in this sort of noontide twilight, but keep sedulously apart from one another. I have no doubt other observers must have encountered *trifolii* hereabouts before; as there is no record, however, for the county in Tutt's 'British Lepidoptera,' vol. i, and only one—Great Marlow—for *hippocrepidis*, I think my observations may be useful.—H. ROWLAND-BROWN; Harrow Weald, July 7th.

OBSERVATIONS ON THE LARVAL HABITS OF DIMORPHA (ENDROMIS) VERSICOLORA, L.—For the first time in the Alpes-Maritimes we have taken fourteen larvæ of *D. versicolora* this season—on birch of course. They were in each case in the second instar (I found the batch of eggs on a dead twig somewhere about the tree), seven on one tree, three on another, and four on another, in different localities, but all in the same valley. I suppose the extraordinary habits before spinning up have been noted many times, but I have never reared the species before. I kept them in my room on large fresh branches of birch in wine-bottles, and a newspaper under; they have fed up magnificently. What astonished me is the self-effected purgation of the entire alimentary tract. This is produced by the larva, a short time after ceasing to feed, licking itself—one may say so for the process—all over from head to foot, anointing very thinly every part of its body with a liquid which dries rapidly as it is produced; and it does not even forget to "varnish" its legs and feet. In a short time—an hour or so—this unction takes effect, producing violent spasmodic but regular contractions from the head to the anal segment, and with the result that the whole body is emptied of its contents in the digestive organs. I have never known of a larva behaving in this way. I watched all of them, and everyone treated itself thus after the purge. They turn pink like *D. vinula*, and descend to spin up amongst moss or leaves. The convulsive contractions are most violent, and quite appalling to witness! I thought, the first time, the larva was ill, but then I recognised the meaning of the all-over licking process. The drug acts through the skin. Has anyone made an examination of the properties of the peculiar secretion, which must act as does ergot of rye on the uterus under certain circumstances.—C. E. MORRIS; Hotel Rabuons, St. Etienne-de-Tinné, A.M., July 3rd, 1920.

[I have not had an opportunity of looking up the bionomics of *D. versicolora*, but there is no doubt the peculiar secretion of the larva in its last instar has been observed and considered, though without arriving at the conclusion reached by Mr. Morris. For example, Mr. A. Bacot contributes some interesting notes on the larval habits of the species in Tutt's 'British Lepidoptera' (vol. iii, p. 246). "Before pupating," he writes "the larva changes to a livid hue, pinkish or purplish on the dorsal area; it shrinks considerably, and the skin becomes moist as though the larva was in a profound sweat. The excrement is mixed with a dark green fluid just before they leave off feeding. . . . I have always connected this trait with silk-spinning, but am by no means sure that there is really any connection."—H. R.-B.]

THAMNONOMA BRUNNEATA IN STAFFORDSHIRE.—When collecting in Staffordshire my friend Mr. C. N. Hughes and I took on June 18th and 19th four specimens of *T. brunneata*, all males and all somewhat worn. The weather was unpropitious and we had no opportunity of further search for the species. The insects were taken at two places, several miles apart.—PERCY C. REID; Feering Bury, Kelvedon.

CHRYSOPHANUS PHLEAS, AB.—On June 7th of this year I had the good fortune to take a specimen of *C. phleas* at Sutton Park in this district, with hind wings uniformly black and devoid of any other colour. The fore wings were quite normal in colour, but perhaps a little small proportionally to the hind wings. The insect was newly emerged, from which resulted a mild disaster in the setting as the edge of one wing stuck to the board. As I cannot trace this aberration, I shall be extremely obliged if you can tell me whether or not it has been recorded.—G. P. SUTTON; 60, Oval Road, Erdington, Birmingham.

NOTES FROM TEIGNMOUTH.—On July 7th I took a male specimen of the grey form of *Stauropus fagi* on a telegraph post and a female *Sphinx ligustri* on a gate-post. Rhopalocera are scarce even in sunshine, and sugar has only had common visitants so far. Larvæ of *Cucullia verbasci* are full fed.—W. BOWATER, F.E.S.; Moseley, Birmingham.

NOTES ON LEPIDOPTERA FROM BUCKS.—During last May I spent several afternoons on the hills near Princes Risborough, and made the following captures: *Melitæa aurinia*: One only. I had not met with this butterfly before around here. *Nemeobius lucina*: Several, including one very pale specimen. *Callophrys rubi*: Extraordinarily abundant this year. *Hesperia malvæ* and *Nisoniades tages* were also very abundant. Among the day-flying moths were the following: *Ino geryon*: Very abundant. *Zygæna trifoli*. *Macrothylacia rubi*: Abundant. Four *Argynnis paphia* that I was breeding emerged on May 29th. Is not this very early?—WALTER PIERCE; Queen's Road, High Wycombe.

NOTES FROM THANET.—*Euchloë cardamines*: This insect has been remarkably uncommon in this neighbourhood this spring. Personally, I have only seen one specimen—on May 14th. I am too

busy to be able to do much insect-hunting in the daytime, but I am sure I should have seen them had there been more specimens about. *Macroglossa stellaturum*: I saw a specimen on June 13th flying round flowers on the cliffs. From the place where I saw it, added to the facts that the moth was somewhat worn and that yesterday's thunderstorm came up here with a strong wind off the sea, I rather think that this occurrence supports the theory that some of our earlier *stellaturum* are immigrants. *Lobophora viretata*: I took a specimen at Ramsgate on May 12th. I do not know whether this is worth recording, but I have not previously met with this species either in this neighbourhood or on the immediate coast in south-east Essex. *Abraxas grossulariata*: This always abundant moth is flying here at present in greater numbers than usual at this time of the year. No doubt this is due to the warm spell in March. On the 2nd of that month I found larvæ about half grown, frequently on *Euonymus*. The first specimen emerged in my breeding-cages on May 17th, which appears to me to be a singularly early date. Another point I have noticed is that, though, one way and another, I have already seen some scores of this moth here this season, I have not seen a single specimen which even approached a variety. It has occurred to me that either time of year or food may have something to do with this. All the *Euonymus* bushes here have been covered with larvæ, but I only saw one larva (on plum) which was feeding on any other pabulum, although there are plenty of fruit trees and bushes about.—N. O. R. SERJEANT; Cholmeley Hotel, Broadstairs, June 13th.

PYRAMEIS ATALANTA AND P. CARDUI.—On June 10th I took a very dilapidated *P. atalanta* in the Churnet Valley and since that date have met with three more: a very fresh ♀ which remained some time near my home on the 15th ult., and two more near Dovedale on the 19th ult. I saw a *P. cardui* here at Whiston on the 15th ult. I have never before seen four *atalanta* in a single spring, and usually this species is uncommon even in autumn in my own district. Insects have been generally much scarcer than usual this spring, and the only really good capture I have made so far was a *N. chaonia* on May 8th—the first recorded for N. Staffs since 1875 at least. The moth was a ♀ and in good condition.—THOMAS SMITH; Whiston Eaves, Froghall, N. Staffs.

MIGRATION OF PYRAMEIS ATALANTA, ETC.—Last year, for the first time during forty years' observation, not a single example of *Pyrameis atalanta* occurred in our garden. The unusually abundant flights to our shores recorded in the June number of the 'Entomologist' lead me to hope that history will not repeat itself, for on May 23rd I was pleased to note several females. It was interesting, too, to see that one of them came regularly for two or three nights in succession to roost on the same arbutus, this tree having a western aspect. On the 22nd *P. cardui* was in possession of the railway banks on the Chalfont-Road side of Amersham, Bucks, and a visit on the 23rd to the L. & N.W.R. bridge, where I recovered *Pararge megera* in Middlesex two years ago, was rewarded by the sight of some freshly-emerged males.—H. ROWLAND-BROWN; Harrow Weald, June 19th, 1920.

RAVAGES of *TORTRIX VIRIDANA* IN MIDDLESEX.—Never in my recollection have the Middlesex oaks been so cruelly tormented by this pest. An avenue, 300 yards long perhaps, in Oxhey Lane was left practically leafless the first week in June, and the same deplorable nakedness was visible wherever I walked in the neighbourhood. It was curious to note, however, that here and there among the affected there would be one immune. Last year the ravages were not abnormal, and in view of previous observations it would appear as though an open winter is particularly favourable to the development of *Tortrix viridana*.—H. ROWLAND-BROWN; Harrow Weald, June 19th, 1920.

GONEPTERYX RHAMNI IN WESTMORLAND.—For a few years prior to 1914 *G. rhamni* was something of a rarity with us in Westmorland, but since then its numbers have steadily increased, until now (May, 1920) it has become once more a fairly common butterfly. On any favourable day in spring hibernated examples can be met with abundantly—particularly in Arnside or Witherslack—either feeding upon the wild hyacinth, or the males may be seen flying low over the open stony places in search of the females, which love to sun themselves in such situations. Copulation takes place in the spring.—JAMES SMITH; 67, Captain French Lane, Kendal, Westmorland.

DEILEPHILA LIVORNICA, ETC., IN DEVONSHIRE.—I had the pleasure of netting a fine specimen of *D. livornica* in my garden on May 22nd this year; there was also another at the same patch of sweet rocket which I failed to net. This and *S. sacraria*, which I took at Tor Cross (September 14th, 1911), are the best two insects I have had the luck to capture since I came into Devon ten years ago.—R. H. MOORE; Heathfield, Plymstock.

DEILEPHILA LIVORNICA IN KENT.—It may be interesting to report that I was lucky enough to catch a good specimen of *D. livornica* on May 23rd.—R. M. A. SUTTON; Clare House, Sidcup.

DEILEPHILA LIVORNICA REARED FROM OVA.—On May 14th Mr. Alfred Hedges, F.E.S., of Sandbanks, Dorset, took a female of this species at rhododendron blossom at Canford Cliffs, and wired me *re* obtaining ova. I replied, and he was successful in obtaining a good batch. He entrusted most of these to me to try and rear, and I am pleased to report that I have succeeded in obtaining some pupæ which I hope in due course will produce imagines. I give a few particulars that may be of interest. The ova were laid from May 17th to 22nd, the first larva hatched on May 31st, and last on June 5th. Food-plants tried were vine, fuchsia, bedstraw, knotgrass and dock. My larvæ, when young, utterly refused the first two named plants, but took readily to *Galium verum*, on which they were reared till the last skin, when my supply of the growing plants of this species failed. I then fed them on *Galium mollugo* and I noticed that the flowers only were eaten of both species of galium. When all the flowers were eaten larvæ became very restless. The larvæ repose in the daytime right up on top of the partly eaten stalks in the full glare of the sun, if touched they "spit" and emit a dark, almost black fluid, which stains the hand and is very hard to remove. Mr. Hedges tried dock

and found they took to this well. I tried a few on knotgrass and they ate this, but I did not like to risk change of food, so kept them on *Galium* throughout. The first larva to pupate was on July 7th, and on this day I had larvæ of various sizes down to quite small ones. They spin a cocoon among moss similar to *C. elpenor* and *Porcellus*. I will send another report later giving the date of last pupation and first and last emergence.—L. W. NEWMAN; Bexley.

COSSUS LIGNIPERDA.—I took a male *Cossus ligniperda* from the footboard of a Folkestone train at Cannon Street Station on June 17th. It had evidently been blown off by the passing train, the thorax being damaged.—FREDERICK GILLETT, (Major); Cheriton House, Sevenoaks, Kent.

RESEMBLANCE TO SURROUNDINGS IN MOTHS.—On April 3rd last I came across a specimen of *Phlogophora meticulosa*, Linn., near Boldermere, in Surrey, resting on a wall covered with short ivy. This moth bears so strong a resemblance to a dead leaf, which is very frequently seen in such situations, that one might almost have supposed the position taken up purposely, if this supposition were not so unreasonable. An even more striking case of "resemblance" was noticed on May 7th on Esher Common. A specimen of *Drepana falcataria*, Linn., was hanging to a dried grass stem (probably *Molinia carulea*, Mœnch.). As it rested its wings appeared to be bent somewhat forward so as to slightly clasp the stem. I first of all took it for a dead leaf, but not feeling quite satisfied went up to examine it more closely, when the "leaf" took to itself wings, flew a short distance, and then was boxed. On May 29th a specimen of *Phalera bucephala*, Linn., was by a great chance seen on the ground in the New Forest in a spot where bits of stick were a common feature. It required both in myself and L. Balcomb, who was with me, considerable faith in what we knew of the moth to enable us to believe, until we boxed it, that the morsel of "stick" was not really such, but a moth in disguise.—W. J. LUCAS.

NEUROPTERA FROM MACEDONIA: A CORRECTION.—Last October you published a note of mine concerning the *Neuroptera* in Macedonia. Recently I have been in communication with Mr. K. J. Morton, of Edinburgh, to whom, by request, I forwarded specimens of the *Neuroptera* and *Ascalaphus* I had taken. Mr. Morton now kindly informs me that the *Neuroptera* is *N. sinuata* and not *N. coa*, and the *Ascalaphus*, *A. macaronius* var. *polyvanensis*, not *A. longicornis*. I must express regret if anyone has been led astray by this unfortunate error, which I can only explain by saying that I am not an expert on the Order, and identified my specimens by a plain plate and text in a general work, which seemed to imply that these species were the only ones of their respective genera found in Europe.—HERBERT MACE; Faircotes, Harlow.

AGRION MERCURIALE, CHARP., ETC., AT EASTLEIGH.—Mr. W. J. Lucas remarks in his 'British Dragonflies' that *A. mercuriale* is no longer known in the Winchester district. I should like to mention that it is in abundance this year along the River Itchen between

Eastleigh and Winchester. The first specimen I took was on June 2nd, and it had the horns of the black mercury-spot of the second abdominal segment lacking; since that date I have taken quite a number, especially males, with abnormal markings, a common form being one with the horns of the above-mentioned spot detached. When flying, *A. mercuriale* so closely resembles the other British members of the genus that it is undoubtedly often overlooked. Another species of the genus *Agrion* not recorded from Hampshire in the above book is *A. pulchellum*, Lind.; this also I have found in the same spot as *A. mercuriale*, but not in such numbers. *A. puella*, Linn., is very common along the Itchen and elsewhere. Other Odonata that I have taken in this district this year at present are *Pyrrhosoma nymphula*, Sulz., *Libellula depressa*, Linn., *L. quadrimaculata*, Linn., *Æschna cyanea*, Mull. (June 12th), *Calopteryx splendens*, Har., *Cordulegaster annulatus*, Latr. (May 25th), and *Ischnura elegans*, Lind.—F. J. KILLINGTON; 68, Archer's Road, Eastleigh.

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL SOCIETY.—*May 27th*.—The President in the Chair.—Mr. A. W. Richardson, of Southall, was elected a member.—Exhibition of Living Objects.—Mr. H. Main exhibited the Californian Hesperid *Epargyreus inyrus*, bred from a pupa sent by Miss Fountaine, also *Adscita statices*, larvæ of *Meloë* sp. and of *Galerucella lineola* all from Eastbourne.—Mr. Blair, males and the very rare ♀ of *Siphivrus armatus* (Ephem.) from Middlesex; *Odynerus pictus* (Hym.), and *Cassida equestris* with egg-clusters.—Mr. H. Moore, *Callophrys rubi* from Westerham, and *Clytus arietis* from Bromley.—Mr. R. Adkin, a series of galls from willow.—Mr. Dunster, larvæ of *Melitæa aurinia* from Somerset.—Mr. Withycombe, *Donacia* sp. from Epping Forest; *Osmylus* sp. from Sevenoaks; and *Melolontha vulgaris* from Richmond Park.—Mr. L. W. Newman, ab. *radiata-lutea* of *Abraxas grossulariata*, an almost black ab. *varleyata*, larvæ of *Calymnia pyralina* on elm, four forms of larvæ of *Saturnia carpini*, a *Dryas paphia* bred indoors, a *Callimorpha dominula*, varied larvæ of *Trichinwa cratægi*, etc.—Mr. Sich, imagines of *Nepticula septembrella*, from Hindhead; and larvæ of *Salebria betulæ* from Richmond.

June 10th.—The President in the Chair.—An exhibition of *Calymnia trapezina*, Messrs. R. Adkin, B. Adkin, Stanley Edwards, A. E. Tonge, Hy. J. Turner, etc., taking part.—Mr. Turner read notes on the variation of the species and gave a summary of the characteristics of various named forms.—Mr. R. Adkin showed a very fine example of the rare ab. *nigra*.—Mr. B. Adkin, a very dark-banded ab. *nigrovirgata*, Tutt., and a clear slate-coloured example.—Mr. Withycombe, an immature *Ledra aurita* (Hem.), from oak.—Mr. Bunnett, living larvæ of *Ennomos illunaria*.—Mr. Main, larval tracks of *Phyllotoma aceris* (Sawf.) in sycamore leaves.—HY. J. TURNER, *Hon. Editor of Proceedings*.

EXCHANGE

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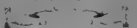
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CONTENTS.

- Description of a New Species of Neotropical Cicadidae, *W. L. Distant*, 169. A
Therevid Fly in Burmese Amber, *T. D. A. Cockrell*, 169. Entomology in the
Holy Land, *Capt. P. J. Barraud*, *F.Z.S., F.E.S.*, 170. Some Notes on the
Collection of British Macro-lepidoptera in the Hope Department of the Oxford
University Museum, *F. C. Woodforde*, *F.E.S.* (continued from p. 157), 173.
Contributions to our Knowledge of the British Braconida. No. 6. Agathida.
G. T. Lijflö, *F.E.S.*, 177.
- NOTES AND OBSERVATIONS.—Herbices, *H. K. L.*, 186. Zygænidæ in the Chilterns,
H. Röwland-Brown, 186. Observations on the Larval Habits of *Dimorpha*
(*Endromis*) *versicolora*, L., *G. E. Morris*, 187. *Phamnonoma brunneata* in
Staffordshire, *Frey C. Reid*, 188. *Chrysophanius pelias*, ab., *G. F. Sutton*, 188.
Notes from Teignmouth, *W. Bewater*, *F.E.S.*, 188. Notes on Lepidoptera
from Bucks, *Walter Pico*, 188. Notes from Thanet, *N. O. R. Serpant*, 188.
Pyraonis atalanta and *P. cardui*, *Thomas Smith*, 189. Migration of *Pyraonis*
atalanta, etc.; *H. Röwland-Brown*, 189. Ravages of *Tortrix viridana* in
Middlesex, *H. Röwland-Brown*, 190. *Gonepteryx rhamni* in Westmorland,
James Smith, 190. *Deilephila livornica*, etc., in Devonshire, *R. H. Mear*, 190.
Deilephila livornica in Kent, *R. M. A. Sutton*, 190. *Deilephila livornica* reared
from Ova, *L. W. Newman*, 190. *Cosmus liguperda*, *Frederick Gilbert (Major)*,
191. Resemblance to Surroundings in Moths, *W. J. Lucas*, 191. Neuroptera
from Macedonia: A Correction, *Herbert Mace*, 191. *Agriion meremiale*, Charp.,
etc., at Eastleigh, *F. J. Kington*, 191.
- SOCIETIES. The South London Entomological Society, 192.

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THE ENTOMOLOGIST.

VOL. LIII.]

SEPTEMBER, 1920.

[No. 688

EREBIA EPIPHRON, KNOCH: ITS SYNONYMY AND FORMS.

BY H. ROWLAND-BROWN, M.A., F.E.S.

(Continued from p. 152.)

Meanwhile, an event of importance in the history of our *Erebia* had taken place in Britain. In the original volume of the 'Transactions of the Entomological Society of London' (1812, vi, p. 332) occurs the first description of the butterfly known to succeeding generations as *Erebia epiphron*, var. *cassiope*. The President, who is the industrious and reliable Adrian Hardy Haworth, communicates "A Brief Account of some Rare Insects announced at various times to the Society as New to Britain." The date of publication is June 2nd, 1812, and No. 3 in the list is:

"*Mnemon*. *Papilio* (the Small Ringlet) *alis supra nigro-fuscis, fasciæ postica communi annulari, annulis coccineis.*

"*Habitat in Scotia.**

"*Obs.* *Statura et magnitudo Pap. Pamphili. Alæ anticae supra annulis quatuor, horum tertius dimidiatus et aliquantillum exterior. Posticae alæ annulis tantum duobus, viz. secundus et quartus anticarum alarum. Subtus alæ cupreofuscae, anticae punctis subtribus fere evanescentibus fuscis fulvo obscure circumcinctis, loco annulorum: posticae fere omnino impunctatae.*

"*In musæo Dom. Francillon, a capto Dom. Stoddart.*

"*Obs.* I have not found any account of this species in the works of Fabricius, Huebner, Herbst, or any other author in my possession."

Haworth's find, indeed, was a variant form of *Epiphron* apparently undistinguished at that time by the writers quoted, and it remains var. *Mnemon* to this day. In a later part of this paper I propose to trace the history of *Epiphron* and *Cassiope* in the United Kingdom. At present, therefore, I content myself with noting the discovery and original publication of the species in Britain. As stated, its bibliography so far on the Continent, with one doubtful exception, is all with the Germans; and it is well to note that none of them, de Villers included, hint at the existence of the type form away from the scene of Knoch's

* We now know that the original published locality of *Mnemon* was incorrect. Stoddard's examples, from which Haworth made his description, were derived from English sources (*cp.* Dale's 'British Butterflies,' 1890).

investigations of the Harz. Haworth's *Mnemon*, I believe, was never figured.

In 1816, however, there is a double change in the nomenclature (of *Cassiope*). For the first time we have the "grass *Erebia*" generically separated; and *Papilio cassiope* becomes *Melampias rhodia* in Hübner's "Verzeichniss bekannter Schmetterlinge," published at Augsburg. But what has become of *Epiphron* in this work? It is not sunk in any one of the named species in the group; and I can only conclude that No. 614, which has disappeared or dropped out altogether, must have been this species. The genus *Melampias* has for its type No. 609, *Melampias hyberbia*, *Hyberbius*,* 'Linn. Syst.' Pap. 130, Cram. 168, C. D., and includes the following species only:

610. *M. Mnestra*, *Melampus*, Esp. Hübn.

611. *M. Rhodia*, *Cassiope*, Fabr. Mant. Hübn. (why is *Cassiope* changed?).

612. *M. Janthe*, *Melampus*, Fuesl. Hübn.

613. *M. Pharte*, Hübn.

614. ?

615. *M. Arete*, Fab. Mant. Hübn.

(I have omitted the references to avoid unnecessary repetition.)

Fuessley's rather primitive figure (Verz. 604, f. 6), reveals an unmistakable *Melampus*. But whether my surmise regarding the missing number 614 be correct or not, Hübner at a later date, viz. in the 'Eur. Schmett.,' published in 1824, seems to have changed his mind as to the specific identity of *Epiphron* and *Cassiope*. His figures of the latter (626-627 male 628-629 female), are unmistakable. In his description (p. 33) he makes no mention of the white pupil character of the female, though it is perhaps worthy of notice that he limits the regional distribution to the Deutschlands Alpen, while making his "Unevenly Spotted Butterfly" (Ungleichpunkterter Falter) synonymous with Fabricius's *Papilio cassiope*. So far as the name *Epiphron* is concerned, it is sunk as a synonym in his *Papilio Janthe*, or "Small Spotted Butterfly" (figs. 624-625 male, 202 female). But whereas the males figured are unmistakable *Melampus*, Fuessley, the female would seem to belong to some other species—the broad band of the fore wings, rust brown with black spots; the small rusty rings of the hind wings also adorned with black spots. His *Janthe* must be considered to be what we know as

* *Hyberbius* is not an *Erebia* at all, though the description might well serve. It runs: "Alis integerrimis fuscis area rufa: primoribus ocello bipupillato; posticis subtus septempunctatis, M. L. U., 257. *Habitat*, Cap. b. spei. D. Tulbagh," and the butterfly figured in 1777 by Cramer (vol. ii, plate clxviii, figs. e, f), is the South African species, still confined to Cape Colony, described in Roland Trimen's 'South African Butterflies' (vol. i, pp. 75-76), under the title *Pseudonympha* (Wallengren), *hyberbius*, L. But until Wallengren created the genus, it remained apparently the type of Hübner's *Melampias*, to which by strict priority it should still be referred, and some other generic name found for the European members of the group, if, indeed, they are to be separated from the all-inclusive *Erebia*.

Melampus, and he omits *Epiphron* altogether—a conclusion irresistible when we turn up his reference to Esper's Tab. ciii, Cont. lviii, fig. 1, which again leaves no doubt in our minds that Huebner finally regarded Knoch's *Epiphron* and Esper's (Fuessly's) *Melampus* as identical.

However, in Meigen's 'Syst. Beschreibung der Europ. Schmette.' (b. 1, pp. 137-138), published at Aachen and Leipzig in 1829, we find the separate identity maintained. The "species" are still some way from one another in the "omnibus" genus *Maniola* which is made to contain *Satyrus*, *Hipparchia*, *Ceneis*, *Epinephele*, *Cænonympha*, *Erebia*, and *Triphysa*, and numbers altogether eighty-two members. "Bands on either wings with three to four white-pupilled eye-spots." But in the detailed account of *Epiphron* the white pupillation is assigned to the female only, though the illustration, which is poor (tab. xxxvi, fig. 2), looks as if it had been copied from Godart; that is to say the band on the fore wings is unbroken with four spots on the apical termination; the hind wings with six rings all white-pupilled. As for the figure of *Cassiope* (tab. xxxvii, figs. 1 a, 1 b), it is about as unlike any known form of that butterfly as possible, the blotches on the fore wings being lemon-yellow dusted with rusty red. The synonyms published refer back to the tenth edition of the 'Systema Naturæ,' 1, 5, 2297, 536, edited by J. F. Gmelin (Leipzig, 1788-1793). I have searched this work, but though the figures 1, 5, appear to refer to Part I, Order 5, the numbers 2297, 536, do not exist, and I suppose that is the reason why the reference is discarded by subsequent authors.

Four years after Meigen comes C. F. Freyer's 'Neuere Beitrage zur Schmetterlingskunde' (Augsburg, 1833 ?); and here once more there is no mention of *Epiphron*. *Cassiope* is the insect described (p. 37), and figured (tab. 20, fig. 1, male; 2 female), without the least trace of white pupillation in either sex; and as *Epiphron* is neither recorded in the text, nor figured on the plate, it is likely, too, that Freyer had come to the conclusion that the two were of one and the same species; though, of course, then, as to-day, the name *Cassiope*, as I contend, should have been employed for the blind-spotted female of *Epiphron*. Of *Cassiope* he says the native land is Switzerland, Hungary and Styria.

To sum up, then, the German authorities, from Knoch to Freyer, have gradually shifted their ground, though none of them vouchsafe a reason for the momentary elimination of *Epiphron* as a species from their works.

In the meantime, as the ardour of the German naturalist for the Macro-Lepidoptera begins perceptibly to diminish, and, if I may say so, the golden age of German lepidopterology draws to a close, the parable is taken up by a brilliant group of Frenchmen, while in England we have the first and best notice of

Epiphron, because it is the fullest, and marshals in detail the variation of the species as known to James Francis Stephens.

The annals of French entomology are exceptionally rich at this epoch: Godart, Duponchel and Boisduval are all at work upon native Lepidoptera, and the indefatigable collectors of Provence, the Comte de Saporta and Donzel, are providing material for the description of many butterflies hitherto unknown to the writers on this side of the Rhine. Godart and Duponchel, however, accept the original proposition of the German writers, and describe *Epiphron* and *Cassiope* as separate species (Diurnes, vol. ii, pl. xvi, figs. 3, 4). Of the former they write:

“Ailes entières, d’un brun noir, avec une bande ferrugineuse, maculaire: bande des supérieures offrant sur chaque face 2 à 4 points noir, pupillés de blanc; bande des inférieures avec 3 à 5 en dessous. . . .”

Again the sexes are not differentiated, and it is permissible to suppose that once more it is a case of the authors merely quoting Knoch’s original description. For, when we turn to the plate on which the male and the female are presented, we find an insect about twice the size of *Epiphron*, all four wings studded in the band with silvery white spots in both sexes. But this butterfly is certainly *Ceto*—a view which we shall presently see Boisduval holds, though Godart comes forward with the information that his *Epiphron* occurs in the Vosges, where *Ceto* has never been known.

“Ses ailes sont d’un brun noirâtre-chatoyant, et elles ont de part et de l’autre une bande ferrugineuse, plus ou moins longue légèrement divisée aux supérieures, maculaire aux secondes. La bande des premières ailes offre de deux à quatre yeux noirs à prunelle blanche. La bande des secondes ailes en à ordinairement trois en dessus, et de trois à cinq en dessous. Des Vosges.”

Apparently at this time (‘Hist. Nat. des Lépidoptères,’ 1822) the existence of *Cassiope* in this region is unsuspected. “Il se trouve au mois de juin, dans les montagnes du Languedoc, et dans les Pyrénées-Orientales.”

The description of *Cassiope* tallies closely with that of Fabricius:

“Ailes entières, d’un brun noir: les supérieures avant de part et de l’autre une bande ferrugineuse, avec trois à cinq points noirs: dessous des inférieures plus pâle vers l’extrémité, avec pareil nombre des petits points à iris rougeâtre. Dessus des ailes inférieures avec trois à quatre taches ferrugineuses, marquées chacune d’un point noir. Dessous des mêmes ailes d’un brun clair dans la femelle.”

Alexis Noel’s work, published at Paris in 1830 under the title, ‘Collection Entomologique ou Histoire Naturelle des Insectes,’ consists entirely of plates, which are nothing remarkable in their

execution, and follow Duponchel's closely. All the same, on plate 34, liv, 5 partie 1, there is a fair representation of a male *Epiphron*, the chestnut band on the fore wings continuous with three black spots; the hind wings with four well-developed chestnut-ringed black spots, which suggest that the model was derived from the Vosges rather than the Alps.

Boisduval, in his 'Index Methodicus' (1829), divides the species and its near allies as follows :

<i>Epiphron</i> , F., Och.	.	.	.	Hircynia	.	Julii.
<i>Ianthe</i> , H.						
<i>Pharte</i> , Esp., H., God.	.	.	.	Alpes	.	Julii, Augusti.
<i>Melampus</i> , Esp., Och., God.	.	.	.	Alpes	.	Julii.
<i>Cassiope</i> , F., H., Och., God.	.	.	.	Pyren.	.	Julii.
Var. <i>Nelamus</i> , Bd. (Subcæca)						
<i>Mnestra</i> , Esp., H., Och., God.	.	.	.	Alpes	.	Julii.
Var. <i>Mnemon</i> , Haworth	.	.	.	Alp. Scotie	.	

In this classification the var. *Nelamus* makes its first appearance, laconically described as "almost blind" in the matter of the ocellation, the author apparently not having yet made the acquaintance of the form named years after *obsoleta* by J. W. Tutt.

Later, Boisduval, in his 'Icones' (p. 179, 1833), expresses himself somewhat forcibly both upon the views of the German writers and Godart's unhappy plate. "Fabricius and the German authors," he observes, "describe a species nearly related to this [*i. e.* *Melampus*] under the name of *Epiphron*. I very much doubt the authenticity of the pretended species, because all those I have received from Germany and other localities under the name of *Epiphron* have been either *Cassiope* or *Melampus*. As for Godart's *Epiphron* I don't know what he wished to represent; I think it must be *Ceto*." The plates in the 'Icones' devoted to the *Erebia*s are extremely fine, and the copy before me has retained its primitive freshness of coloration.

Prof. Cantener ('Hist. Nat. Lépid. Rhopalocères des Départemens des Haut et Bas Rhin, de la Moselle, de la Meurthe, et des Vosges,' Nancy, 1834) continues the record (p. 134) as follows :

"*Nelamus*, Boisd., variété de *Cassiope*, Alpes de Dauphiné; Juillet, 'Ind. Method,' pag. 22, Boisd.

"*Epiphron* (i) Fab., Hircynie, Juillet, 'Ind. Method,' pag. 22, Boisd."

"(i) Nous croyons devoir d'autant plus signaler ici la doute que le Docteur Boisduval élève a la page 178 de son icones sur l'authenticité de cette espèce, que Godart l'indique comme appartenante aux montagnes des Vosges; sans affirmer positivement qu'elle ne s'y rencontre pas, nous devons dire que les renseignements qui nous ont été fournis par MM. les amateurs qui chassent habituellement dans ces contrées, ne portent pas qu'au nombre de cinq les espèces du genre *Erebia*, qui jusqu'à présent y aient été trouvées; ces espèces sont *Stygue*, *Medusa*, *Cassiope*, *Blandina* et *Ligea*"—

a statement which clearly indicates the absence of the white-pupilled form in the Vosges, and crystallises the opinions of contemporary entomologists that *Epiphron* and *Cassiope* are forms of one and the same species.

With regard to the occurrence of *Cassiope* in the Vosges Cantener adds in a note (*loc. cit.*, p. 136) :

“M. le professeur Schreiner est le premier, à ma connaissance, qui ait rencontré cette espèce dans nos montagnes. Depuis lors M. Darbas amateur zélé . . . l'a vu voler par milliers sur le Brézouar.”

Meanwhile, *Cassiope*, Fabr., has been established as an English species quite dissociated from *Epiphron*, Knoch, and is duly figured and described by James Francis Stephens in his ‘Illustrations of British Entomology, *Haustellata*,’ 1829, and included in his ‘Systematic Catalogue of the British Insects’ of the same year, to which publications I shall refer more fully in that part of this paper devoted to the history of the butterfly in the United Kingdom.

Cassiope (*sic*) appears alone in the first account of the Silesian *Erebias* in the ‘Syst. Verz. der Schmett. Schlesiens,’ parts i, ii, by A. Neustadt and E. von Kornatzki, published at Breslau in 1842, with rough lithographic illustrations by A. Assmann. According to the legend, it is figured on the supplementary plate 41, and numbered 126/4*a* and 4*b*, with a further reference to plate 16, fig. 51, the preceding figure in *that* case being one of *E. melampus*. I cannot discover any description in the text of Assmann’s *Cassiope*, which represents a small black *Erebias* with continuous bright yellow black-spotted bands on the fore wings, and an unbroken series of similar yellow-ringed black spots on the hind wings. The figures (upper and underside) are of males, but I have never seen examples of *Epiphron* or *Cassiope* the least resembling them in coloration. In the catalogue index of the work, p. vi, we are told that the species (*Cassiope*) occurs in July in the wooded marsh-region of the mountains. “Hitherto found only in the Altvater by Prof. Lutzner and his pupils,” thus extending the then known range of the species considerably eastwards.

Finally, Duponchel places *Epiphron* as a doubtful variety of *Cassiope* in his ‘Catalogue Méthodique des Lépidoptères d’Europe,’ Paris, 1844, where even the locality is changed, the Black Forest now taking the place of the Harz and the Vosges :

<i>Cassiope</i> , F., H., O., G., B.	Alpes	Juillet.
<i>Eriphile</i> , F.		
Var. <i>Nelamus</i> (presque aveugle)	Alpes du Dauphiné.	
Var. <i>Mnemon</i> , Haworth	Écosse.	
Var. ? <i>Epiphron</i> , F.	Fôret Noire.	
<i>Janthe</i> , H., 202.		

But his views are not shared by Herrich-Schaeffer, who in the preceding or same year once more restores *Epiphron* to the rank of a species separate from *Cassiope*; while G. H. Heydenreich ('Syst. Verz. Europ. Schmett.,' second edition) in 1846 not only separates them, but attributes Knoch's name of *Epiphron* to Fabricius.

(To be continued.)

SOME NOTES ON THE COLLECTION OF BRITISH
MACRO-LEPIDOPTERA IN THE HOPE DEPARTMENT
OF THE OXFORD UNIVERSITY MUSEUM.

BY F. C. WOODFORDE, B.A., F.E.S.

(Continued from p. 177.)

LYCÆNIDÆ.

Zephyrus betulæ.—A long and fine series chiefly from Devon, Hants and Oxford, in all about 80, with only one remarkable aberration. This is a male specimen from the Spilsbury Collection in which the white line on underside of the fore wing is entirely wanting, as is also the outer white line of the hind wing. It has no data.

Z. quercus.—A fine series of upwards of 60, mostly bred chiefly from Devon, Hants and the New Forest. There are two indications of aberration, and both seem to be pathological. One is a ♂ bred by myself in the New Forest, and the other, unlabelled, from the Meldola Collection. In both the aberration is in one of the hind wings. A large proportion of the normally blue scales are white, giving a rubbed appearance, but a lens shows that this is not the case. In the New Forest specimen the aberration is on the right side, in the other on the left. In both specimens the shape of the affected wing is abnormal, the edge of the wing from the angle to the tail being straight instead of curved.

Thecla prunii.—Thirty specimens, labelled, from Northants, Huntingdon and Oxford. Twenty, unlabelled, from the Hope, Spilsbury and other Collections.

T. w-album.—A series of 45. Thirty, with data, from several localities.

Callophrys rubi.—A long series of upwards of 100. One underside from Cumberland, with a row of white spots in the fore as well as in the hind wings. Another has the underside altogether spotless; this is from Cornwall.

Chrysophanus dispar.—A very fine series of 27—14 male, 13 female. Most of them are in perfect condition, even with respect to antennæ. With them are two ichneumons, labelled by Prof. Westwood as "ichneumons of *C. dispar*." The species has not yet been determined.

C. virgaureæ.—A specimen, not in very good condition, from the Hope Collection, is the one referred to in Humphreys

and Westwood's edition, 1841, p. 98, and has a label to that effect by Prof. Westwood: "I possess a specimen given me by the late Mr. Haworth as an undoubted native specimen."

C. phlæas.—A fine varied series of upwards of 150 from many localities. The chief aberrations are two ab. *alba*, Tutt, one taken near Oxford by Mr. W. Holland, the other from N. Staffs taken by myself. An ab. *eleus*, unlabelled, from the Spilsbury Collection, and another ab. *eleus*, from the Champion Collection, labelled "Milford, Surrey, July 29th, 1908." A very remarkable ab. *suffusa*, Tutt, taken in N. Staffs by Mr. H. E. F. Onions, August 5th, 1918. In this specimen the normal bright red of the fore wing is replaced by a pale buff colour along a narrow subcostal strip embracing the discal spots. The rest of the wing is deeply suffused with dark fuscous. In the hind wing the usual red band is buff coloured and much reduced in length and breadth. A very similar specimen, except that the ground-colour is more normal, was taken in the same locality, 1917, by myself. A fine ab. *radiata*, Tutt, Woking, August 13th, 1912, is from the Champion Collection, as is also a very fine ab. *juncta*, Tutt, taken near Woking. It approaches ab. *kochi*, two of the upper spots of the transverse set being elongated. There are also in the series several specimens of ab. *magnipuncta*, Tutt, ab. *parvipuncta*, Tutt, and ab. *intermedia*, Tutt, from various localities.

Plebeius ægon.—A long series of upwards of 100, but with very few aberrations. A series of 12 ab. *masseyi*, Tutt, from Witherslack. A remarkably dwarfed female specimen from the Meldola Collection, taken in Surrey, is no larger than a normal *Cupido minimus*.

Aricia medon.—A long series embracing all three forms—*medon*, *salmacis* and *artaxerxes*. One ab. *artaxerxes* is labelled "Durham, Castle Eden, capt. July 25th, 1893, by T. Maddison." In three specimens of ab. *artaxerxes* from Kincardine there is a black spot in the subterminal row of ocelli of the fore wing.

Polygonommatus icarus.—A series of upwards of 190 from many English localities and from Scotland and Ireland. There are two ab. *icarinus* and three others closely approximating to that form. A remarkable pale lilac male, ab. *pallida* Tutt., from the Sellon Collection, is labelled "Grut's Collection." Two females are entirely blue except at the outer margins. Other female aberrations are too numerous for description.

Agriades bellargus.—A series of 67, all normal.

A. corydon.—A long series of upwards of 150. Two ab. *syngrapha* from Princes Risboro', 1917, taken by L. W. Newman. Ten *semi-syngrapha* taken at Royston, 1917. One ab. *corydonis*, Bergst., Princes Risboro'. Two female undersides, ab. *obsoleta*, also from Princes Risboro'. Another female ab. *obsoleta*, taken by Prof. Poulton near Reading about 1893. The above are the principal aberrations.

Celastrina argiolus.—A long series of upwards of 100, well illustrating the season dimorphism. The aberrations are few except in the size and number of spots on the underside, but there are two pinkish lilac males, ab. *lilacina*, Tutt, unlabelled, from the Spilsbury Collection. Also a female ab. *lilacina* from the Meldola Collection, but the usual black borders are light brown. Taken at Deal, August, 1901. A very remarkable male underside was taken by myself in the New Forest May 8th, 1915. The fore wings are spotless except for the central lunule, which is very faint, but in the hind wings the spots of the marginal row are elongated into streaks. In Tutt's 'British Lepidoptera,' vol. ix, pl. xviii, fig. 10, exactly represents the hind wings of this specimen, but has also the fore wings with spots and streaks. It is named *subtus-radiata*, Obth. This specimen might be described as ab. *subtus-partim-radiata*. A very minute female, smaller than many specimens of *C. minimus*, was taken by Prof. Poulton, August 6th, 1896, at St. Helens, Isle of Wight.

Cupido minimus.—A series of upward of 70 without any noteworthy aberration.

Nomiades semiargus.—A series of 12, most in very good condition, 5 from the Hope Collection, 4 from the Spilsbury, and 3 labelled "Grut's Collection" from the Sellon Collection.

Lycæna arion.—A series of 119. Twenty-nine from the Bude District, taken by myself, 41 also from the Bude District, taken by Mr. B. G. Adams, 29 from the Cotswolds in the Pogson Smith Collection. The rest without data. Except in the number and size of the spots the aberration is small. A male in the Pogson Smith Collection has only two submedian spots in the fore wings, and no spots in the hind wings. Of the small race there are 4 from Bude (2 males, 2 females), 3 from the Cotswolds (2 males, 1 female), 3 from the Hope Collection and 1 from the Spilsbury, the last 4 being all males.

HESPERIIDÆ.

Hesperia malva.—Series of upwards of 80. One specimen from the Sellon Collection labelled "Winchester" has an unspotted hind wing. Fourteen specimens exhibit every degree of modification from the type to the fully developed ab. *taras*. Of the remaining species of the Hesperiidæ it need only be stated that all are well represented in the normal forms.

(To be continued.)

SOME MACEDONIAN MOTHS.

BY HERBERT MACE.

WHEN I say that the extremely small list of moths which forms the subject of this paper represents all the species I collected or made notes upon during the two years I was in

Macedonia, it will appear either that I was exceptionally indolent, or that the order is very poorly represented in Macedonia.

It is, of course, a fact that very little time could be employed in collecting, properly speaking, but this would not account for such a paucity of results. The main reason was that indicated in my paper on the butterflies—the impossibility of working at night. One could not, of course, potter about promiscuously with lights, so that the chief means of attracting moths were barred to me. Equally as important, however, is the fact that all the places at which I was stationed were remarkably open. Woods were non-existent and trees remarkably scarce. Even bushy ground, which affords much cover for moths in many places, was rarely encountered, and this accounts, I think, for the entire absence of many moths which are generally considered as universally abundant through Europe.

Chief interest attaches to the diurnal groups belonging to the Noctuæ, most of which are unknown in Britain, and are, indeed, more distinctly Eastern, and I fancy that, should opportunity occur for someone to do systematic work in Macedonia, those groups would prove of exceptional interest as forming a strong connecting link between the Lepidopterous fauna of Europe and Asia Minor.

Zygena pilosella.—Common in May in various places near Kukus.

Z. filipendulæ.—Very abundant in May in the customary habitats of the genus. I saw no marked variation from the British forms, but noticed one feature which seems worth recording: On one hillside where the insects were exceptionally abundant there was a species of *Dianthus* with flowers of rich crimson, almost the exact shade of the insect, and these flowers were particularly favoured as alighting places. Either the insects mistook them for fellows of their own species or it is merely another example of protective resemblance.

**Procris pruni*.—Fairly common on hillsides near Kukus at the end of April and early May.

P. statices.—An abundant species, with a great range of variation, some forms being markedly bluish, while others were distinctly green.

Ocnogyna parasitum.—One specimen only, found floating on a stream at the end of February (Sarigueul).

Arctia villica.—Several found at Kukus and Janes in May.

Coscinia striata.—Very abundant in a patch of rough grass near Kurkut in May, 1917. I took several striking varieties of the male, in which the fore wings were darker than normal and the hind wings entirely black.

Macroglossa stellatarum.—Extraordinarily abundant from March to November, and very interesting on account of its ubiquity and its marked indifference to the presence of man. I

was sitting on a hillside at Kukus one evening and within a foot of my head there was a large thistle, to which a *stellatarum* kept coming and going for half an hour, quite heedless of my presence. Its remarkable *penchant* for exploring dark holes in cliffs and excavations came particularly under notice. It seems hard to account for this habit, since neither flowers nor food-plant can possibly be found there. In the garden of a house I occupied at Armutci in the spring of 1918 I often saw these insects going into the pigeon-holes in the mud walls. Has it been suggested that the object of these visits may be the nests of bees? Numerous solitary bees occupy such places, and I have found even the hive-bee, *Apis mellifica*, inhabiting quite an open cave of this sort. *Acherontia atropos*, as is well known, enters and robs bee-hives. Why not *stellatarum*?

Acherontia atropos.—I found several larvæ of this on the *Datura stramonium* in November, 1917, but did not succeed in rearing them. One was the remarkable white variety with sepia dots in two shades. I saw two or three specimens of another *Sphinxid* during July, 1918, at Gerbazel, but did not succeed in capturing them, nor can I be sure of their identity. The species was either a *Charocampa* or *Deiliphila*. The remarkable feature was that it was flying freely in full sunshine. Perhaps someone knows of a species with this habit, which was new to me?

Saturnia pavonia major.—I took a larva of this great insect on a willow at Yenikeuy in July, 1917, but it got out of the somewhat crazy box and spun up in my mackintosh cape. I tried not to disturb it, but ultimately it was unavoidable and the thing went under. A specimen of the moth was brought to me for determination in the spring of the following year.

S. spini.—Several taken at Kukus and Janes in April.

Odonestis potatoria.—One found at Doiran, September, 1918.

Crateronyx taraxaci.—On Janes plain I used to find many of these at rest on the herbage in the early morning (November).

Cossus cossus.—I saw a number of Turkey oaks with the characteristic borings in January, 1917 (Sarigueul).

Hepialus lupulinus.—Fairly common on the hillsides at Janes in April and May.

**Evergestis frumentalis*.—A few found flying amongst rough herbage at Kukus at the end of May.

Dianthœcia albimacula.—One or two flying round fennel at Janes (September).

Plusia gamma.—Common at Armutci from the beginning of May through the summer.

Chariclea delphinii.—One or two at Armutci (May).

**Janthinea frivaldskyi*.—I took two specimens of this exquisite little insect, which does not appear to have been recorded from Europe before, flying round the flowers of *Fumaria*, which was an extraordinarily abundant weed in some potato-fields at Armutci.

Its rich purple and blue colouring harmonised delightfully with the flowers. They were flying in the hottest part of the day (May 3rd). Although I kept a sharp look-out for the rest of the month I did not meet the species again.

Emmelia trabealis.—Common over a rough hedge at Armutci (May).

Acontia luctuosa.—Kukus and Armutci (end of May).

A. lucida.—Kukus (end of April). One only.

Anthophila purpurina.—One specimen of this lovely pink-flushed moth taken in a ravine near Kurkut (May 12th, 1917).

**Metaponia subflava*.—Common at Armutci early June. I saw many pairs flying about the flowers of *Delphinium consolida* in the early morning.

Catocala puerpera.—Resting on shady rocks at Yenikeuy (August).

**C. conversa*.—One found at Kukus (end of June).

Leucanitis stolidia, *Grammodes geometrica*, *G. algira*.—These three insects, which closely resemble each other in appearance and habits, were found freely in shady ravines in September. They have a singular and unmistakable habit of dashing swiftly, without apparent reason, from one place to another, invariably settling on the bare ground, where they are not easily detected.

Nychiodes lividaria.—One found at Janes (May).

**Eucrostis indigenata*.—One specimen only. No data.

**Idæa rubiginata*.—Common at Kasimli (end of June).

I. ornata.—Kukus and Janes (May and September).

A. imitaria.—In ravines, Janes (June).

Timandra amataria.—Common in ravines (June).

Rhodostrophia calabraria.—Flying over long grass on hill-tops in the evening. Kukus and Janes (May and June).

Lythria purpuraria.—Very common over waste ground near Yenikeuy (end of July).

Aspilates ochrearia.—Common near Irikli (May).

Camptogramma bilineata.—A few found in ravines (May).

Anaitis plagiata.—On hillsides at Yenikeuy (end of July).

Chesias farinata.—One. No data.

Pyralis farinalis.—One.

**Botys moldavica*.—Abundant on a hilltop at Kukus (end of May). Flying over rough herbage in the evening.

B. hyalinalis.—One only, Yenikeuy (end of July).

Hydrocampa nymphæata.—In ravine at Gerbazel (June).

Acipitilia pentadactyla.—Over waste ground at Kukus (end of May).

Myelophila cribrum.—Round thistles, Janes (May).

Psecadia bipunctella.—One on elm-trunk, Armutci (April).

The above list, imperfect as it must necessarily be under the circumstances of observation and collection, discloses this interesting fact: Mr. Rowland-Brown and others who have

interested themselves in the Lepidoptera of Southern Macedonia have professed themselves struck by the "western" aspect of the butterflies. I submitted a few species unknown to me to Mr. Tams, the Curator of Heterocera at the Natural History Museum, and he kindly identified them, with the remark that those marked with an asterisk in the above list are species usual to Armenia, so that, whatever may be the case with the Rhopalocera, it is obvious that the western-oriental species of Heterocera extend at least as far west in this direction to the region indicated.

Faircotes, Harlow.

NOTES ON BRITISH ODONATA, 1919.

By W. J. LUCAS, B.A., F.E.S.

PERSONALLY the dragonfly season of 1919 commenced on April 22nd, when I saw an example of *Pyrrhosoma nymphula*, Sulz. at Marlborough Deeps in the New Forest; but after that date a long break occurred before I met with a dragonfly again. The season, for myself, ended early also—on October 4th—though there is no reason to doubt that examples of one or two species lingered on as usual into November.

ÆSCHNIDÆ.—*Gomphus vulgatissimus*, Linn. was not met with as an imago at all during the season, but an empty nymph-skin was obtained at Apsley Passage of Oberwater in the New Forest. It was found upon a bare spot on the bank, as was to be expected, for the build of a *Gomphus* nymph makes climbing a reed or stick to all appearance an impossibility. *Cordulegaster annulatus*, Latr. (one male) was reported from Aber-edw in Radnorshire—apparently the first time that a dragonfly has been notified from that county (H. Bendorf). This species was taken on June 28th in Devon at Dartsmeet, Dartmoor (R. N. Goodman). One was met with near Hawkshead in Lancashire between June 19th and July 15th (O. Whittaker). One or two were observed at Newquay in Cornwall (C. W. Bracken). On July 31st in the New Forest I frequently saw males. Females are less often seen than males, and I did not notice one of the former sex till August 3rd. This one was ovipositing in the margin of Blackwater in the New Forest under alder and other vegetation. I discovered its presence by the sound produced, which seemed at first like the song of some unknown grasshopper. When the dragonfly came out from cover I caught it, but, finding a wing damaged, set it free: males were again plentiful that day. The last example of *C. annulatus* that I saw was one at Blackwater on September 6th. *Brachytron pratense*, Müll. was taken (a teneral female) at Hickling in Norfolk between May 24th and 28th, and a nymph-skin, no doubt of the same species, was also secured (T. A. Coward).

A male of *Æschna grandis*, Linn. was captured between June 8th and 16th near Drumreaske in Co. Monaghan in Ireland (Goodman); and several were seen in September at Sudbury in Suffolk along the River Stour, as well as one hawking round a tree in the garden towards dusk while it was raining fast (B. S. Harwood). On August 15th *Æ. juncea*, Linn. was seen at Loganlee in the heart of the Pentlands (W. Evans). *Æ. cyanea*, Müll. was met with on August 1st in Alice Holt in Hampshire as well as in other localities in the neighbourhood (E. A. C. Stowell); in the New Forest on September 5th (Lucas); and at Sudbury (Harwood). *Anax imperator*, Leach was sighted in Princes Coverts near Claygate in Surrey on June 7th, and the same species was frequent at the Black Pond on Esher Common in Surrey on the 10th, while on the 14th it was seen flying over a small pond on Effingham Common in Surrey (Lucas). In June it was plentiful at Yateley in Hants (G. T. Porritt). On June 21st it was met with at Boldermere near Wisley in Surrey (Lucas), and on July 9th in Alice Holt (Stowell), while on August 13th it was recognised at some pools (no doubt brackish) on the shore near Mudeford in Hants (Lucas). As late as September 1st a somewhat worn male *A. imperator* was taken by the side of Crockford Pond on Beaulieu Heath in the New Forest (Lucas).

LIBELLULIDÆ.—On June 7th *Cordulia ænea*, Linn. was seen in Princes Coverts, while on the 10th it was frequently seen at the Black Pond, when two males were taken; on the 21st it was noted at Boldermere (Lucas). *Libellula quadrimaculata*, Linn. was captured on May 24th near Cadbury Camp in Somerset, and was seen there again on the 31st flying high round some oaks catching flies (T. F. Hewer). Early in the season E. R. Speyer met with the species frequently near Shenley in Herts, and thought there might have been an immigration. On June 10th it was very common at the Black Pond, when two examples of var. *prænubila*, Newm. were seen, one being secured (Lucas); on the 14th it was observed on Effingham Common (Lucas). It was met with at Alton, and on May 27th at Hampage Wood near Winchester, both in Hants (Stowell). Both sexes were taken between June 8th and 16th near Drumreaske, Co. Monaghan, in Ireland (Goodman). On June 21st an example of var. *prænubila* as well as the ordinary form were noted at Boldermere (Lucas). From July 23rd–25th the same species were found at Wellington College in Berks (Harwood). A very teneral male of *Libellula fulva*, Müll. was taken at Hickling in Norfolk between May 24th and 28th (Coward). Early in the season Speyer found *Libellula depressa*, Linn. to be very frequent at Shenley, so much so that he thought there must have been an immigration accompanied by a smaller number of *L. quadrimaculata*, though there was no direct evidence of this having occurred. It was noted in Princes

Coverts on June 7th, on Esher Common on June 10th, and on Effingham Common on June 14th (Lucas), on May 21st at Alice Holt, and at other places in the neighbourhood later (Stowell), also at Sudbury in Suffolk and at Colchester and Alresford in Essex (Harwood). Bendorf captured *L. depressa* at Aber-edw. On June 28th *Orthetrum ceruleescens*, Fabr. was taken at Dartsmeet, Dartmoor (Goodman); from July 23rd to 25th it was seen at Wellington College (Harwood); it was fairly abundant at Newquay (Bracken).

Stowell found *Sympetrum striolatum*, Charp. in teneral condition at Kingsley Pond near Alton on July 11th, while later they were numerous and showy all over the heath; in Scilly it was not uncommon in July along roadsides (Blair); on August 13th it was observed over pools by the shore near Mudeford (Lucas); a few were noticed near Newquay (Bracken). Stowell met with *Sympetrum scoticum*, Don. at Kingsley Pond on August 18th, and I found it on October 4th at the Black Pond—the last dragonfly I saw during the season. On August 30th three examples of *Sympetrum sanguineum*, Müll. were taken between Baildon and Hawkworth in the Bradford District of Yorkshire, this capture constituting a new record for the county (Morrell).

CALOPTERYGIDÆ.—*Calopteryx virgo*, Linn. was very plentiful in June at Aber-edw, one female being very dark, while some of the males had the tip and base of the wings nearly hyaline (Bendorf); in the same month it was swarming by the River Wey at Bentley, etc., in Hants (Stowell); on June 28th it was taken at Dartsmeet (Goodman); it was noted at Sudbury in June (Harwood). In the New Forest, towards the end of its season, *C. virgo* was seen in decreasing numbers from July 26th till August 15th, after which none were noticed (Lucas). Bendorf found *Calopteryx splendens*, Harris at Aber-edw, but less abundant than its congener, and stated that the birds did a fair amount of destruction amongst them, as seen by the wings left lying about on the ground. On June 10th *C. splendens* was fairly numerous at the Black Pond, and as one seemed to be a female they may be breeding there, although a pond is not usually chosen by the species (Lucas). In June it was found in numbers with *C. virgo* by the Wey at Bentley (Stowell).

LESTIDÆ.—A very teneral example of *Lestes sponsa*, Hans. was found at Boldermere on June 21st (Lucas), and one or two individuals were noted at Wellington College from July 23rd to 25th (Harwood).

AGRIONIDÆ.—*Ischnura elegans*, Lind. var. *rufescens*, Leach was captured at Old Quay Canal, Cheshire, on June 1st (C. Madeley). The normal form was taken near Tilford in Surrey on June 21st, and at Kingsley Pond on July 11th (Stowell); in the Scilly Isles this species was found locally in a marsh in July (Blair); it was taken at Wicken Fen on August 4th (G. T. Lyle);

and was last noticed on August 15th in the New Forest (Lucas). In 1919 *Ischnura pumilio*, Charp. again eluded notice. On May 24th Coward was fortunate enough to secure at Hickling Broad a few of both sexes of *Agrion armatum*, Charp., but unfortunately did not recognise his captures at the time: he was, however, good enough to add a pair to my collection. At Hickling he also took a male *Agrion pulchellum*, Lind. between May 24th and 28th. Of the last-named species Goodman took a very teneral male between June 8th and 16th near Drumreaske, while Stowell captured it at Alice Holt on the 26th of the same month. On July 25th I found *Agrion mercuriale*, Charp. numerous in the New Forest at Oberwater near Apsley Passage, most being males; on the 28th at Duck Hole Bog they were common but only one female was seen; on August 2nd they were again plentiful at Oberwater and one female was captured; they appeared to be still plentiful there on August 6th, but when sought for some time later none were seen. On May 31st a female of *Agrion puella*, Linn. was taken in Juniper Valley on Boxhill, whither it had probably come from some distance (L. C. E. Balcomb); a male was captured at Aber-edw in June (Bendorf). In Cheshire Madeley took a female at Runcorn on May 19th, a male at Old Quay Canal on June 1st, and a somewhat teneral male at Stretton Moss on June 9th. It occurred at Alice Holt on May 21st and subsequently at many places near (Stowell). The same species was taken at a small pond on Effingham Common on June 14th, at Boldermere on June 21st, and at Bishop's Dike in the New Forest on August 9th (Lucas).

Pyrhosoma nymphula, Sulz. is probably our earliest dragonfly and I first saw it, as already mentioned, in the New Forest on April 22nd. Between May 24th and 28th Coward took teneral and full-coloured specimens at Hickling. On the 30th of the month Evans found it in considerable numbers at Auchincorth Moor in Midlothian. In June males were taken at Aber-edw and males at Stretton Moss on June 9th (G. A. Dunlop). From June 8th to 16th both sexes occurred at Drumreaske (Goodman). It was taken at Boldermere on June 21st (Lucas). On July 25th this dragonfly was numerous in the New Forest and many were noticed connected *per collum*; it was observed there subsequently on July 30th and 31st, and on 1st, 6th, 11th, and finally August 15th, being therefore seen on the wing practically four months (Lucas). Males of *Enallagma cyathigerum*, Charp. were taken at Hickling between May 24th and 28th, having the black spot on the second segment of varying forms, one with a straight fore margin, causing the spot to resemble a goblet. A teneral female was captured on May 31st in Juniper Valley on Boxhill, and therefore some distance from water (Balcomb). Males, one extremely teneral, occurred at Aber-edw in June (Bendorf). The

species also occurred at Effingham Common and East Horsley in Surrey on June 14th (Lucas); males near Drumreask from June 8th to 16th (Goodman); near Hawkshead plentifully from June 19th till July 15th (Whittaker); at Boldermere on June 21st (Lucas); in Alice Holt on June 28th and at Kingsley Pond on July 11th (Stowell); and at Wicken Fen on August 4th (Lyle). One of the specimens taken at Alice Holt had the black spot on the second segment of a very strange shape. It consisted of a somewhat coarse U as in *A. puella*, with an elliptical spot nearly filling up the space between the prongs. It somewhat suggested a combination of *A. puella* and *E. cyathigerum*, which, since both were present at the same pond, is just possible but not very likely.

28, Knight's Park,
Kingston-on-Thames.

NOTES AND OBSERVATIONS.

COLIAS EDUSA, ETC., IN HAMPSHIRE.—On Sunday, August 8th, I took a specimen of *C. edusa* near Winchester, also a splendid specimen of var. *helice*, the hind wings of which are unusually blue. *Atalanta*, *Io*, and *Cardui* are very abundant this year, and *Polychloros* is also quite in evidence. I have bred a large number of *Io* (wild), and not one has been ichneumonated.—WM. PIERCE; Queen's Road, High Wycombe, Bucks.

COLIAS EDUSA IN SOUTH HAMPSHIRE.—*Colias edusa* has been quite abundant on the downs here during the past week. On Sunday, August 8th, when I was cycling in another locality twelve miles away I observed several in the lanes. Only two *C. hyale* have come to my notice.—A. T. POSTANS; 148, Fawcett Road, Portsmouth, August 12th, 1920.

NOTE ON PIERIS BRASSICÆ.—I wish to mention the finding of *P. brassicæ* on two occasions in my house. Whilst clearing an upstairs room on May 12th (1920) I found a male specimen, and on May 25th I found a female specimen on the curtains of the front room. Both were perfectly fresh specimens, and the dark marking on wings a very deep black. Both forms were large. It seems strange to account for them being in the house, for I have not bred the species this year, and gardens are scarce in the middle of the city. *A. urtica* was seen flying in Abbey Park, Leicester, on April 24th (1920).—G. U. WARNER; 47, Chester Street, Leicester, July 9th, 1920.

LIMENITIS SIBYLLA IN SURREY.—On July 27th I took a specimen of *Limenitis sibylla* flying around the birches on Wimbledon Common.—L. COUCHMAN; Beechworth Lodge, West Heath Road, Hampstead, N.W. 3.

LIMENITIS SIBYLLA, LINN., IN SURREY.—For the sake of the locality it may be worth recording that while I was collecting dragonflies near

Byfleet on August 16th, a large White Admiral butterfly made its appearance over the tow-path beside the Basingstoke Canal. A capture was made, and when examined by Mr. Norman D. Riley the specimen proved to be of the female sex.—F. W. CAMPION; 58, Ranelagh Road, Ealing, July 26th, 1920.

PYRAMEIS ATALANTA IN SCOTLAND.—I was both pleased and surprised to see, on Saturday last, flying at the roadside between Blair Atholl and Glen Till, *Pyrameis atalanta*. I was near enough to it to note its wasted condition. *Aglais urticae*, much worn, was seen at the same time.—F. G. WHITTLE; Struan Inn, Catrine, Perthshire, July 6th, 1920.

DEILEPHILA LIVORNICA IN SOMERSET.—On May 10th of this year my youngest son brought me a fine specimen of the above which he had found at rest on the road just outside my gate.—G. B. CONEY; The Hall, Batcombe, Bath.

DEILEPHILA LIVORNICA—A VINEYARD PEST.—In relation to the several reports received of the occurrence of this Sphingid in the South of England this season, it seems that the migration has been from the South of France, where it was exceedingly abundant last year. Writing in the 'Bulletin de le Société Entomologique de France' (No. 12, 1920, pp. 201-2), M. F. Picard says—"D. *lineata livornica*, Esp., usually very scattered in the South of France, made its appearance (in 1919) in considerable numbers in the vineyards round St. Tropez (Var), and devastated them. The young vines newly grafted were worst attacked. This invasion recalls in its intensity that which occurred in Algeria in 1904." M. Picard also denounces the larva of *Calocampa exoleta* as a special vine-pest in the neighbourhood of Beziers (Hérault), but, as he points out, this species is by no means peculiar to the vine, but is polyphagous. H. ROWLAND-BROWN; August 2nd, 1920.

EPINEPHELE TITHONUS AB. ALBIDA IN ISLE OF WIGHT.—I have pleasure in recording the capture by myself on August 16th of a specimen of *E. tithonus* ab. *albida* on downs near Ventnor. I believe that this form of the species is very rare in England. The specimen taken was a male in fine condition except for loss of half its left antennæ. It also has six spots on underside of hind wing.—ERNEST CORNELL; Burmah, Newport Road, Ventnor, August 18th, 1920.

ACRONYCTA ALNI, LARVA.—On July 25th last I took a full-grown larva of *Acronycta alni* on a sapling of *Betula alba*, that was growing by the roadside about half-a-mile to the north-east of Bransgrove. The sun was shining, but half-an-hour previously it had been raining. It is the first specimen I have so far taken in this district.—OLIVER GATTY; Beech House, Christchurch, Hants.

CATOCALA FRAXINI IN KENT.—On July 24th last I took a very fine specimen of *C. fraxini* in the neighbourhood of Dartford. It was resting on the trunk of an apple-tree.—J. M. JACQUES; The Red House, Banstead, Surrey.

THAMNONOMA (HALIA) BRUNNEATA AT WICKEN IN JUNE.—The most interesting event of a very enjoyable time spent by Mr. G. B. Coney and myself at Wicken from June 14th to 26th this year was

the capture of two specimens, at light, of *Thamnonoma brunnata*, the first by myself on June 16th, and the second by my friend on June 19th. Till then we believed it to be confined to the highlands of Scotland, but we hear that it has been recorded in the August number of the 'Entomologist' as having been taken in Staffordshire on June 18th and 19th.—A. P. WICKHAM; East Brent, Somerset.

A VISIT TO WICKEN, JUNE 14TH TO 26TH, 1920.—At first dusking and light were our most productive methods, sugar proving quite unattractive, but after the first few nights we had plenty of sport at the sugar patches as well as at the sheet. Other insects noted or captured included the following: *Papilio machaon*—nearly over; a few good specimens taken also at the end of our time, a few larvæ, then very small. *Sphinx ligustri*, *Cherocampa elpenor*, *Smerinthus ocellatus*, *Earias chlorana*, *Nudaria senex*, *Phragmatobia fuliginosa*, *Spilosoma urticae*, *Macrogaster castaneæ*—fairly plentiful at light, also dusking among reeds. Three ♀ taken off reeds, two flying at dusk, and two at the sheet—*Cosmotriche* (*Odonestis*) *potatoria*, one ♂ pale variety, *Cerura furcula* (on wing, dusking), *Pterostoma palpina*, *Notodonta ziczac*, *Palimpestis* (*Cymatophora*) *octogesima*, *Arsilonche albovenosa*—not plentiful, about one dozen—*Leucania obsoleta*, *L. impudens*, *L. comma*, *L. impura*, *L. straminea* (fairly common among reeds), *L. pallens*, *Meliana flammea* (scarce after first few nights), *Senta maritima*, *Cænobia rufa*, *Neuria reticulata* (scarce at sugar), *Mamestra sordida*, *Apamea unanimitis* (fairly common but generally badly worn), *Agrotis corticea*, *Noctua festiva*, *Triphena subsequa* (one at sugar, June 25th), *Dianthæcia capsicola*, *Aplecta advena*, *Hadena dissimilis*, *H. thalassina*, *H. pisi*, *Plusia festuceæ*, *Bankia argentula* (plentiful enough to make a visit to Chippenham unnecessary), *Hydrelia uncula*, *Herminia cribralis*, *Epione apiciaria*, *Hyria muricata*, *Acidalia immutata*, *Eupithecia succenturiata*, *Collix sparsata* (Mr. Coney took thirteen at one spot one night), *Lobophora sexalisata*, *Phibalapteryx vittata*, *Scotosia vetulata*, *Cidaria dotata*, *C. associata*, *Pelurga comitata*, *Naxia ciliatis*—plentiful at light June 14th, scarcer later—*Chilo phragmitellus*, ♂ plentiful, ♀ scarce, *Schœnbius mucronellus*, *S. gigantellus*, *Crambus uliginosellus*, *Pterophorus monodactylus*, *Platyptilia ochrodactyla*, *Leioptilus microdactylus*, *Cataclysta lemnata*, *C. stratiolata*, *Hydrocampa nymphæata*, *H. stagnata*, *Tortrix costana*, *Anysychia funerella*. Two visits to Tuddenham, June 17th and 21st, secured us the following insects: *Hecatera serena* (on the way there on a paling at Freckenham), *Heliothes dipsacea*, *Agrophila trabealis*, *Acontia luctuosa*, *Acidalia rubiginata*, *Lithostege griseata*, *Spilodes verticalis*, *Orobena extimalis*, *Crambus chrysonuchellus*, *Homœosoma sinuella*.—A. P. WICKHAM; East Brent, Somerset.

NEMORIA VIRIDATA IN SUSSEX.—It may be of interest to readers to know that during late May and early June this year I took *Nemoria viridata* here plentifully; though I have not seen any record of it from East Sussex, I think it may be worth recording. Also on March 18th of this year I took the Gynandromorphous *Hybernia marginaria*, which Mr. Newman exhibited at the South London

Entomological Society meeting mentioned in your June number (*antea*, p. 143). It is now in the Natural History Museum at South Kensington.—STANLEY N. A. JACOBS; High House Farm, Chailey, Sussex.

ZYGÆNA HIPPOCREPIDIS IN SOUTH HAMPSHIRE.—I have much pleasure in recording an almost pure colony of *Z. hippocrepidis* (Stephens) for this district of Hampshire. In early July of this year I collected casually a number of *Zygana* cocoons, which I thought were ordinary *filipendula*, hoping to obtain varieties later of that species. I was agreeably surprised, therefore, when no less than 90 per cent. of the cocoons produced very fine and undoubted *Z. hippocrepidis*. Only 10 per cent. were true *filipendula*. I have no knowledge of a May-June emergence, as I have not been on this particular ground at that time of the year. Such a high percentage of *hippocrepidis* in late July strikes me as remarkable, as I have always understood that the hybrid occurs chiefly in May and June. From my own observations I believe that *hippocrepidis* not only pairs with its own kind, but also that such pairings are undoubtedly fertile, and therefore has the power of carrying on from season to season a colony of its own. That the sexes of *hippocrepidis* do pair I think most entomologists who have made its acquaintance are agreed upon. As proof, however, I quote the following instance that occurred to myself. It is invariably my custom to leave all insects that emerge from pupæ in my cages for twenty-four hours, so that the wings may be perfectly dry before I introduce their owners to the killing-bottle. And so with the *hippocrepidis*; and after they had emerged, which always happened during the early morning, and had dried their wings, I always found the sexes paired freely some time during the day, and one batch of ova that I kept for observation produced larvæ later.—A. T. POSTANS; 148, Fawcett Road, Portsmouth, Hants, August 9th, 1920.

NOTES ON INSECTS IN LONDON SUBURBAN GARDENS.—The Tortrix Moth *Sericoris littoralis* was very common in my garden last June. It is generally referred to as a coast or salt marsh species, the larva feeding on flowers of *Statice armeria*. Some Thrift in the garden accounts for its presence. The larva is pale dingy green with a shiny dark brown head and black plate on 2nd segment. Amongst other insects taken and not usually associated with a garden was a male of the fine dragonfly *Æschna grandis*. This is the only dragonfly I have seen in this garden. There are no ponds near, and I think it must have come from Wanstead Park, a mile or more away. *Fœnus jaculator*: Several flying about flowers. The ovipositor of the female is as long as the insect. This belongs to the Evaniidæ division of the Ichneumonidæ distinguished by the abdomen being inserted upon the *back* of metathorax. Said to be parasitic on other Hymenoptera. I ascertained the name by referring to Curtis's 'British Entomology,' vol. ix, at the Guildhall Library. See also 'Entomologist,' vol. xiii, p. 253. *Pyrausta punicealis*: Larva feeds on garden mint, greenish with black spots, usually found on chalk downs. *Hyponomeuta evonymellus*: Frequent on garden *Euonymus*. It is usually found on wild *Euonymus* or spindle-tree. Referring to

this genus, has *H. irrorellus* been observed lately. Many years ago I bred a specimen from a solitary larva feeding on the seed-head of an Umbelliferous plant, *Anthriscus sylvestris*, at Greenhithe. In 'Stainton's Manual' the food-plant is given as spindle.—W. PASKELL; 85, Second Avenue, Manor Park, E. 12, August 10th, 1920.

LARGE ATLAS MOTH FROM THE MALAY PENINSULA.—In the 'Entomologist' for 1916, p. 233, I recorded a particularly large example of *Atlas attaccus* from the Himalayas. This was a female, measuring just over 11 in. from tip to tip of the wings. The largest recorded by Hampson in the 'Fauna of British India' is under 10 in. Last week I saw in the Federated Malay States Museum at Kuala Lumpur a particularly large male which measures exactly 10½ in. across. It was taken in Kuala Lumpur (the capital of Selangor, Malay Peninsula). The measurement is perhaps worth recording, if only in the hope of drawing further records of perhaps yet larger specimens.—J. C. MOULTON (Major); Singapore, Straits Settlement.

SPHECOLMYA INANIS, FLN.—I am entirely with Dr. Meade when he terms ('Descrip. List Brit. Anthomyidæ,' 1897, p. 19) "this peculiar fly" "not common." I have been on the look-out for it for thirty years, and to-day, having found it, I make a note of it. This garden has been continuously "worked" for sixteen years, yet no specimen has previously been noticed. At 2.45 (true time) I was passing along the most shady part of all, a narrow bye-path so dark that no plants but ivy will cover the ground beneath interlaced shrubs overhead, when *S. inanis* appeared on a level with my eyes, seated conspicuously high on its unusually long legs upon a Laurestinus-leaf, covered with honey-dew from the aphides (*Chaitophorus aceris*, L.) on the overhanging maples. Politically I gave it no second glance—what is the curious power of our eyes that frightens insects?—but silently turned back to the house, some hundred yards, for a net, and was rejoiced to find *S. inanis* unmoved upon my return. I moved it, and found it a fine male. It was first found in the County by Tuck, who bred it at Tostock in 1896 ('Ent. Mo. Mag.,' *ann. cit.*, p. 155) from the nest of *Vespa germanica*, whence I suppose came Meade's "The larvæ have been found in wasps' nests." Bennett told me he took it in 1908 near Ipswich, where I failed to find it in a dozen years' collecting, 1892–1904. Elsewhere Bloomfield records it vaguely from "Norfolk"; Malloch ('Ent. Mo. Mag.,' 1909, p. 41) took "1 male in Murroch Glen in August" in Dumbartonshire during 1908; and twenty years ago Adams gave me a male he had taken in his "fly-trap" at Clay Hill in Lyndhurst on July 19th. Further west Dale in 1878 says it is "very rare" at Glanvilles Wooton—all which shows that it has a pretty broad distribution with us.—CLAUDE MORLEY; Monks Soham House, Suffolk, June 27th, 1920.

ODONATA AND NEUROPTERA OF LANCASHIRE AND CHESHIRE.—The Lancashire and Cheshire Fauna Committee have published papers by Mr. W. J. Lucas on *Leucorrhinia dubia*, Vand., and on the Odonata and Neuroptera of the two counties. With the former is a reproduction, in plate form, of the author's drawing of the nymph of *L. dubia*.

ÉTUDES DE LÉPIDOPTÉROLOGIE COMPARÉE.—In an article entitled "Nature Study and War," the writer, a member of our staff, reviews at length Mr. Oberthür's classic work in 'The Times Literary Supplement' of Thursday, August 26th.

SOCIETIES.

THE ENTOMOLOGICAL SOCIETY OF LONDON.—*Wednesday, April 7th, 1920.*—Mr. W. G. Sheldon, F.Z.S., Vice-President, in the Chair.—Mr. C. F. C. Beeson, Indian Forest Service, Forest Recorder Institute, Dehra Dun, U.P., India; Capt. Bushell, Imperial Bureau of Entomology, Natural History Museum, South Kensington, S.W. 7; Major H. C. Gunton, M.B.E., Hobart, Gerrard's Cross, Bucks; Messrs. Owen Huth-Walters, M.A., Knoll Cottage, Ufford, Woodbridge, Suffolk; Percy I. Lathy, Curator to Mme. Hornack-Fournier, 90, Boulevard Malesherbes, Paris; and Prof. Benedicto Raymundo, Director of the Museum of the Agricultural Society of Rio di Janeiro, Rio di Janeiro, Brazil, were elected Fellows of the Society.—Exhibitions: Mr. Bedwell exhibited a specimen of the beetle *Otiorrhynchus ligustici*, L., taken near Ventnor, one of the rarest of the British weevils, of which there has been no recent record.—Dr. J. C. Mottram, F.Z.S., and Dr. E. A. Cockayne, D.M., gave a demonstration of fluorescence in Lepidoptera by ultra-violet radiation. In view of the interest which physicists have taken in the brilliant coloration of many birds and insects in an endeavour to explain them, the examination in ultra-violet radiation would go far to decide whether or no fluorescence played any part in these brilliant colours. The first insects examined were various Lycenidæ and other iridescent species, it having been suggested that their colour is due to a fluorescent pigment, including *Agriades coridon* and *A. thetis* and a *Morpho*, as examples of iridescent blues. Purples and purplish-blues were represented by *Apatura ilia*, *Terinos poros*, *Isamia superba*, *Elymnias casiphone* and the Castniid moth *Cyclosia ampliatus*, copper by *Chrysophanus rutilus*, *Rumicia phleas* and a male *Zegris chrysomallus*, and blue-green and green by *Papilio blumei*, *Zygæna filipendulæ*, *Ino statices* and others. Some Pyrales, which showed a mother-of-pearl iridescence, the pearly underside of *Agraulis venulia*, and the metallic *Plusia festucae*, *P. chrysitis*, *P. moneta* and *Spatalia phisiotis* had been examined, but none of these showed any fluorescence. Later on most of the British moths and a large number of tropical butterflies and moths belonging to widely different groups had been tested, but only a very small proportion proved to be fluorescent. The discovery raises the question of whether the fluorescence is of any value to the insects. It is generally accepted that the male of *Hepialus humuli* is coloured white in order to attract the female during his hovering flight at dusk. The fact that the white is fluorescent probably aids the female, which is non-fluorescent, in her search. It is interesting that the white males from the Shetlands are much less fluorescent

than English ones, those with red markings on a white ground only very slightly fluorescent, and those coloured like females are non-fluorescent. It is so light when the males fly in the Shetlands that the white coloration and fluorescence are not of much use. In the case of the Geometers both sexes are equally fluorescent. All are light-coloured and therefore conspicuous on the wing at dusk, and their fluorescence must add to their visibility.—The Secretary read a letter from the Essex Field Club protesting against a Parliamentary Bill for the permanent alienation of parts of Wanstead Flats and Epping Forest for allotments, and on his motion, seconded by Lord Rothschild, it was unanimously resolved to send a letter in similar terms to the Prime Minister, and others who might be interested in supporting the protest.

Wednesday, May 5th, 1920.—At the Special Meeting Comm. J. J. Walker, M.A., R.N., F.L.S., President, in the Chair.—Mr. G. T. Bethune-Baker proposed that the suggested alterations in the Bye-laws be received. This was seconded by Lord Rothschild and carried. The suggested alterations were then put separately before the meeting from the Chair. At the Ordinary Meeting which followed, M. F. le Cerf, Curator of the Lepidoptera in the Paris Museum, 13, rue Guy de la Brosse, Paris, Miss Alice Ellen Prout, Lane End, Hambledon, Surrey, and Messrs. W. H. Tams, 8, Whitla Road, Manor Park, E. 12, and Alfred E. Tonge, Ashville, Trafford Road, Alderley Edge, Cheshire, were elected Fellows of the Society.—Lord Rothschild, F.R.S., exhibited a long series of *Zygænas* of the *transalpina* group together with a series of *Z. ephialtes* showing parallel variation, and Mr. Bethune-Baker in illustration exhibited with the epidiascope a number of slides showing the differences in the genital armature of the various species.—Mr. C. B. Williams demonstrated a method of collecting and storing insects, etc., fixed to leaves without pressure. A small, round, shallow pill-box, with or without a glass lid, is taken, and the inner cardboard ring separated from the rest of the box. For collecting, the lid of the box with this inner ring in it are placed over the specimen on the leaf and the rest of the box beneath. On pressing the two halves of the box together the leaf with the specimen on it is pressed to the bottom of the box, where it is protected and kept in position by the cardboard ring, which is pushed back into its original position.—Mr. Deuquet, who was present as a visitor, exhibited a number of Australian insects of various orders, many of which were still undescribed and unnamed.—G. C. WHEELER, *Hon. Sec.*

OBITUARY.

WILLIAM WEST (of Greenwich) passed peacefully to his rest on July 30th last at the residence of his son, 343, Green Lanes, Harringay, N. 4, in his eighty-fifth year. Born at Rotherhithe in 1836, he early removed to Greenwich, where he was apprenticed to John Penn & Son, then one of the, if not the leading engineering firm in the South of England, with whom he served for nearly fifty

years, the greater part of his time being spent in the brass foundry, where he attained to a position of some distinction, and from which he retired in 1899. Entomology seems to have had a fascination for him from his earliest youth, first as a collector of Lepidoptera, but later the Coleoptera, Hemiptera and Orthoptera claimed the larger part of his attention, and of all these orders he amassed good representative collections, and only last year he presented his collection of Homoptera to the Natural History Museum. He was a good field naturalist, and in the days when Lee and Kidbrook were country places, these, with Greenwich Park, were among his, in the truest sense of the words, happy hunting-grounds. Of late, with more time at his disposal, it was his custom to spend a few weeks each year in such well-known localities as the New Forest, Wicken Fen, and so forth, and on these excursions he turned up many good and interesting species.

He was a man who wrote little, but in the earlier volumes of this magazine are a few notes from his pen, in one of which he records the capture of *Sphinx convolvuli* in Greenwich Park, and in another sets at rest the then moot point as to the identity of *Leptogramma scabrana* and *L. boscana*. He also wrote the articles on the Hemiptera-heteroptera and Hemiptera-homoptera for the 'Survey and Record of Woolwich and West Kent,' published in 1909, the appearance of the letters "W.W." as the authority for the record of the greater number of the species enumerated testifying to the assiduity of his work in these orders in the district under review. He was one of the founders of the South London Entomological Society, served on its first council, and was appointed its first Curator, an office that he held continuously until his death, thus covering a period of some forty-eight years. From small beginnings the collections under his care have grown to practically complete typical collections of all orders of insects, and it was he alone who knew how largely he had contributed to their completeness, for he appeared to have no greater pleasure than to fill in some gap that might add to their usefulness. A man of singularly equable and happy temperament, he will be missed by a large circle of friends, but perhaps by none so much as the members of the South London Society, where, meeting after meeting, with hardly a break, he was in attendance to assist the members in naming any doubtful specimens and to encourage them with his many reminiscences. Thus was he engaged even at the last meeting that he attended—little more than a week before his death. His end came as he could have wished. He had retired, as was his custom, to his own room to amuse himself with his books and collections, and on being called to the evening meal made no response. It was then found that he had passed peacefully away surrounded by the objects that in life he had loved so well. He was interred at Shooter's Hill Cemetery, Blackheath, with his wife, who had some years pre-deceased him. He leaves two sons and two daughters.

R. A.

EXCHANGE

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NOTICES OF EXCHANGE should be received by the 21st of each Month to insure insertion. Not more than SIX LINES can be allowed for each.

Duplicates. Malvae, Tages, Potatoria, Vinnulids, Moneta, Tephre, Plecta, Assimilata, Bidentata, Abruptaria, Tenebrata, Larva, Vindex, S. populi, Bufida. *Desiderata.* Numerous, especially boys.—*E. F. Anquetil*, 12, The Burroughs, Hendon, N.W. 4.

Duplicates. Anthaxerxes, Menyautindis, Myricæ, Valligera, Triton, Glareosa, Lucerna, Micacea, Graminis, Testicæa, Garpini, Primatiæ. *Desiderata.* Numerous.—*James Cowie*, 52, Skene Square, Aberdeen.

Duplicates. Valezina, Agiana, Adippe, Selene, Edusa, Adams, Sarcis, P. populi, Pavonia, Prunaria, Prosapiaria, Syringaria, Autummária, Quercinaria, Erosaria, Cinctaria, Consortata, Consonaria, Vernaria, Auroraria, Sexabrata, Variata, Ruberata, Hastata, Rubidata, Villata, Trepida, Chaonia, Rictus, Ambigua, Piniperda, Ornithopus, Moneta, Sponsa. *Desiderata.*—Gonostigma, Trifolii, Trepidaria, Glabraria, Smaragdaria, Ornata, Pictaria, Alternata, Plumaria, Achromillata, Juniperata, Implyvata, Derivata, Munitata, Vetulata, C. lignistri, Upsilon, and many others. Ova, larvæ or pupæ preferred.—*C. E. Newcham*, Ringwood.

Duplicates.—Larvæ: Gonostigma. Pupæ: Lucina, Gonostigma and Eagi (1 or 2). *Desiderata.*—Pupæ: Versicolor.—*C. Range*, "Palace," Oakley Rd., Carcsham, Reading.

Larva.—Calluna, Lubricipeda, Menthastris, etc. Pupæ.—Spinula, Crepuscularia.* *Duplicates.*—Populatiæ, Gerÿon, P. populi, etc. *Desiderata.*—Very numerous in all stages.—*Thomas Smith*, Whiston Fairs, Froghall, Stoke-on-Trent.

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CONTENTS.

Erobia epaphi n. sp. Knoch: Its Synonymy and Forms. *H. Rowland-Brown, M.A., F.E.S., continued from p. 152, 193.* Some Notes on the Collection of British Macro-Lepidoptera in the Hope Department of the Oxford University Museum. *F. C. Woodford, B.A., F.E.S., continued from p. 177, 199.* Some Macedonian Moths. *Herbert Macdonald, 201.* Notes on British Odonata, 1919. *W. J. Lucas, B.A., F.E.S., 205.*

NOTES AND OBSERVATIONS.—*Cochas edusa*, etc., in Hampshire. *Wm. Pierce, 209.* *Cochas edusa* in South Hampshire. *A. T. Postans, 209.* Note on *Pieris brassicæ*. *G. U. Wagner, 209.* *Limenitis sibylla* in Surrey. *L. Couchman, 209.* *Limenitis sibylla*, Föhn, in Surrey. *F. W. Cresson, 209.* *Parameis atalanta* in Scotland. *F. G. Whittle, 210.* *Deilephila hyornica* in Somerset. *G. B. Coney, 210.* *Deilephila hyornica*—A Vineyard Pest. *H. Rowland-Brown, 210.* *Eprinephelēctidionus ab. albida* in Isle of Wight. *Ernest Cornell, 210.* *Acronyeta alba*, Larva. *Oliver Gatty, 210.* *Catocala travin* in Kent. *J. M. Jaques, 210.* *Thaumetococcus (Halia) brunnescens* at Wicken in June. *A. P. Wickham, 210.* A Visit to Wicken, June 14th to 26th, 1920. *A. P. Wickham, 211.* *Nomonia viduata* in Sussex. *Stanley N. A. Jacobs, 211.* *Zygena hippocrepidis* in South Hampshire. *A. T. Postans, 212.* Notes on Insects in London Suburban Gardens. *W. Paskell, 212.* Large Atlas Moth from the Malay Peninsula. *J. C. Moulton (Major), 213.* *Sphæcolinxa inanis*, Flm. *Claude Morley, 213.* Odonata and Neuroptera of Lancashire and Cheshire. *213.* Études de Lepidoptérologie Comparée. *214.*

SOCIETIES.—The Entomological Society of London. *214.*

OBITUARY, *215.*

BRITISH LEPIDOPTERA, HYMENOPTERA, COLEOPTERA, DIPTERA, HEMIPTERA, NEUROPTERA, Etc.

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[No. 689



ARICIA MEDON, AB.

The above figure represents an unusual aberration of *Aricia medon* that I captured on Royston Heath on August 9th last. It was sitting on a blade of grass.—G. H. SIMPSON HAYWARD ; Stow-on-the-Wold.

THE MACRO-LEPIDOPTERA OF COUNTY TYRONE.

BY THOMAS GREER.

THIS comparatively large county has been but imperfectly explored by the entomologist.

In March, 1882, the late Mr. Wm. F. de Vismes Kane, D.L., commenced the investigation of the local lepidoptera at the fine old demesne of Favour Royal and about the wild glen of Altadiawan, on the slopes of Slieve Beagh mountain on the southern boundary of the county.

The results he obtained in this district were published in 1883,* and afterwards formed the basis for his 'Catalogue of the Lepidoptera of Ireland,' which first appeared in serial form in 'The Entomologist.' The more noteworthy of his captures here (many of which do not seem to occur elsewhere in the county) include the following: *Sarrothripa revayana*, *Acronycta megacephala*, *Xylophasia sublustris*, *X. hepatica*, *Orrhodia ligula*, *Venusia cambrica*, *Perizoma teniata*, *Eupithecia indigata*, *E. distinctaria* (*Thymus serpyllum* is unknown in the county), *E. lariciata*, *E. haworthiata*, *Lobophora halterata*, and *Eulype hastata*. My own observations are confined to the east of the county, within a nine miles radius of the town of Cookstown. I am also much indebted to Prof. J. W. Heslop Harrison, of Armstrong

* "Report on the Entomology of certain districts in Ulster," 'Proceedings of the Royal Irish Academy,' June, 1883.

College, Newcastle-on-Tyne, for much valuable information and a very complete list, with several additional records, the result of two holiday visits to this district in 1909 and 1910; the more interesting of these notes, with others, appeared in the 'The Entomologist,' vols. li and lii, under the title of "Gleanings from My Note-books."

A large area in the centre of the county, consisting of wide moorlands, studded with numerous lakes; fertile valleys, many glens clothed with native shrubby woods; dominated by the isolated mountain Mullaghearn, 1778 feet in elevation; and in the north a mountain range rising to over 2000 feet; is all practically unknown as far as the lepidoptera are concerned. Perhaps *Erebia* var. *cassiope* may some day be discovered on these mountain slopes, if the supposition is correct, viz. that this species passed from Scotland across the north-west of the country to the Mayo mountains, its only known Irish habitat.

The few lepidoptera that have been met with in this remote district are not without interest; a fine form of *Dryas niphia* with greenish white spots on the wings was found in one of the glens where the type is abundant; *Cænonympha typhon* is often plentiful on the boggy ground, and *Polyommatus icarus* is large and fine.

Of the western area bordering on the County Donegal little or nothing is known; a fine banded form of *Oporabia dilutata* is common in Baronscourt demesne.

Turning to the east, the Lough Neagh district, with its miles of low peat-bogs (fast disappearing owing to drainage and peat-cutting), is the home of some local insects; on the bogs *Callophrys rubi* frequents the birch trees, as also *Drepana falcula* and *lacertinaria*; among the heather and dwarf birches *Ptychopoda (Acidalia) inornata*, *Selidosema ericetaria* and *Perconia strigillaria* are often not uncommon, followed later by *Eueretagrotis (Agrotis) agathina*, and *Dyschorista suspecta*; *Dasychira fuscelina* is also confined to this district. On the sandy shore of the lake *Euxoa (Agrotis) vestigialis* occurs together with *Gortyna (Hydroecia) crinansis*, and in the marshy meadows *Erastria (Hydreliia) uncula* is locally abundant.

The geology of the county is very varied, the northern mountains and a considerable area thereabouts are composed of metamorphic rocks; in the centre Old Red Sandstone and Silurian; in the south Carboniferous Limestone and shales; and in the east coal measures, New Red Sandstone, Magnesian Limestone, volcanic rocks, with the Tertiary clays of Lough Neagh.

The following list includes all the records and localities quoted by Mr. Wm. F. de Vismes Kane (K.) in the 'Catalogue of the Lepidoptera of Ireland,' as also the notes and observations of Prof. J. W. Harrison (H.). Records uninitialled the writer is responsible for. Those marked thus * are unrecorded for the county in Mr. Kane's catalogue.

The arrangement and nomenclature are based on South's 'Butterflies and Moths of the British Isles.'

RHOPALOCERA.

Pierine.

Pieris brassicae, L.—Fairly abundant, but the least common of the local species of *Pieris*; as a rule single-brooded, several females with spots on fore wings almost connected by a suffusion of dark scales.

Pieris rapae, L.—Abundant generally in the cultivated districts, some of the males of the spring brood almost spotless, and many of the females of the summer emergence are yellowish, and often with spots in disc of lower wings, and upper wings suffused with dark scales up to discal spots.

Pieris napi, L.—Very abundant, the males of the spring brood varying from an immaculate form to one with well-marked discal spot; some of the females very faintly marked; others have the spots blurred into one another and the fore wings almost all suffused with grey scales, and the nerves of the hind wings strongly marked in grey. In the summer brood males with an additional spot on fore wings are frequent; many of the females have the spots and inner marginal dashes of a burnished appearance, and suffused forms are darker than in the spring brood. In both emergences pale primrose and yellow forms are not uncommon; one example of a dull ochre yellow with base of wings darker taken in the Lough Fea district, August, 1907. A dwarf form is common; smallest specimen, a female (yellow), measures 30 mm. (centre of thorax to apex \times 2).

Euchlōe cardamines, L.—Almost as abundant as the preceding species; largest example, a male, 51 mm.; a small form is also frequent, smallest specimen taken, 29 mm. Earliest date April 20th, 1918. The following aberrations have occurred locally: *sulfureovenata*, Keynes; *citrona*, Wheeler; *ochrea*, Tutt; *caulosticta*, Williams; *radiata*, Wms., and *marginata*, mihi.

Nymphalidæ.

Aglais urticae, L.—Generally abundant, banded forms approaching var. *polaris* sometimes not uncommon; one specimen with chalky-blue apex and hind wings without blue crescents, captured at Lough Neagh.

Vanessa io, L.—Abundant of late years in this district; specimens with a blue spot under the "eye" on the hind wings are common—ab. *cyanosticta*, Raynor.

Ewanessa antiopa, L.—One seen near Trillick by Rev. S. L. Brakey (K.). Some years ago I was shown an example in a collection taken at Rockdale, near Cookstown, in August, 1904.

Pyrameis cardui, L.—Not common, but specimens seen or captured in most seasons.

Pyrameis atalanta, L.—Not uncommon most years; abundant last year (1919).

**Argynnis aglaia*, L.—Observed on several occasions by Prof. J. W. H. Harrison dashing along the shore of Lough Fea; a fine female near Grange, August 28th, 1920.

Dryas paphia, L.—Locally abundant and widely spread throughout the county, as at Five-mile Town, Favour Royal (K.), Lissan, near Clare church (H.), shore of Lough Neagh, Lough Fea. The larva in this district feeds on *Rubus idæus* a *Viola canina*.

**Melitæa aurinia*, Rott.—Locally abundant, the prevailing form being *præclara*, Kane. A form of var. *scotica*, Robson, occurs on the magnesian limestone near the village of Grange; this is much darker than that figured in Mr. Kane's catalogue. Another local variety has the transverse band pale lemon colour and a black marginal band to hind wings; no pale-coloured crescents. The var. *virgata* is not uncommon, and var. *artemis*, Fb., rare; localities—near Stewartstown very abundant, Grange, near Dungannon, and on bogs at Tamnamore.

Pararge egerides, Stgr.—Abundant almost everywhere in woods and in lanes. Generally there are three emergences in the season—in April and May, July, end of August and September. The females of the spring brood often have the spots much extended; on the other hand, the males in the autumn often are very dark with only the pale spots round the apical ocelli present; one female of the autumn brood has an extra spot in each hind wing near the anal angle.

Pararge megera, L.—Locally abundant and double brooded; examples with additional spots are not uncommon.

Epinephele jurtina, L.—Very common. In the males the fulvous colour is sometimes much extended; the females also often have a broad marginal band of the same colour on hind wings, and in both sexes the apical ocellus may be double. One example has a single ocellus on one fore wing and double on the other, the ocellus varying from a minute black spot to a circle a quarter of an inch in diameter. The var. *addenda* is not uncommon on heathy ground, the number of additional spots varying from two to eight, and one male of this form has two small ocelli on upper side of hind wings near the inner margin.

Aphantopus hyperanthus, L.—Locally common in damp meadows and on roadsides; males sometimes have no ocelli on upper sides, and females with more on one side than the other. Mr. Kane reports it as abundant at Favour Royal.

Cænonympha typhon, Rott.—Generally abundant on the moorland near Lough Fea and also on the bogs at Lough Neagh. A poorly spotted form approaching var. *scotica*, Stand., is rare at

Lough Fea, whence I have a female with double apical ocelli. Recorded by Mr. Kane from the county, but no locality given.

Cænonympha pamphilus, L.—Abundant on heaths and in rough meadows; occurs on the same ground as *C. typhon*. A teratological, perhaps gynandromorphous, specimen, with wings on left side much larger than those on the right, was captured June, 1920. Many have the fringes yellowish, as noted by Mr. Kane of Sligo examples.

Lycænidæ.

**Callophrys rubi*, L.—Local in the Lough Neagh district, but much less common than formerly; also at Lurganboy, near Stewartstown; the larva feeding on *Erica tetralix*.

Chrysophanus phlæas, L.—Generally common, very abundant in 1919. The var. *cæruleopunctata* is frequent, one example combining abs. *schmidtii* and *intermedia*; a straw-coloured form taken near Favour Royal (K.); several similar to the one figured in South's 'Butterflies of the British Isles,' pl. ci, fig. 8.

Polyommatus icarus, Rott.—Although this species is very local, and does not occur in large numbers, a few interesting aberrations have been met with in this district, among others the following: a gynandromorphous example—left side male, right side female—var. *cærulea*, Coalisland, July, 1917; several teratological specimens with wings smaller on one side than the other; one with left hind wing scalloped; male of the colour as figured in 'Entomologist,' January, 1887, pl. ii, fig. 2; male with faint red marginal spots on upper side of hind wings, ab. *rufopunctatus*, Neub.; the variety with black spots on margins of hind wing, ab. *nigromaculata*, Ckll., almost as common as the type. Females varying from a bright blue form to a brown one with blue scales on basal areas; in many of the brown forms the red marginal lunules are much extended; several with discal spots on all wings, on upper side ringed with white or pale blue. The var. *icarinus*, Scriba, occurs occasionally. A curious female underside aberration has only one basal spot on left fore wing, the basal spots on hind wings very small, and the inner marginal series represented by minute white dots; captured near Lough Fea, July, 1918. Only single brooded here, from the end of June in early seasons to the beginning of September in late ones. Localities: Washing Bay and Killycolpy Wood on Lough Neagh, Coalisland, near Stewartstown, and Lough Fea.

Celastrina argiolus, L.—Rare; several examples captured some years ago among hollies growing on the edges of an oak wood (since felled) at Killymoon, near Cookstown; woods about Favour Royal, not very abundant (K.).

(To be continued.)

EREBIA EPIPHRON, KNOCH: ITS SYNONYMY AND FORMS.

BY H. ROWLAND-BROWN, M.A., F.E.S.

(Continued from p. 199.)

Herrich-Schaeffer, further ('Syst. Bearb. Schmett. Europ.,' Bd. i, Regensburg, 1843), strikes out a new line altogether in his diagnosis of *Epiphron* under Genus ix, *Erebia*.

Figs. 92, 93 and 94 on Plate xx are devoted to the male and the female, and here for the first time not only is the male adequately represented, but we find that the three black spots on the antemarginal band of the underside of the hind wings are actually white-pupilled, though the spots of the fore wings are blind. The female is shown with the same distinctive marks on all the wings, upper and underside alike. Unfortunately the male is figured only for the underside, but in the introductory note of the Group B, *Alæ, Annulis, Rubris, Circa, Ocellos* (p. 65), he says:

"The eye spots in the female sometimes partially pupilled on both sides," and in the detailed description which follows, "small white pupils on the underside at least," while he explains the models from which the figures are drawn—"I have chosen for the underside of the male an example with large spots; the female is the only one (? form) which I have seen. . . . All the examples of true *Epiphron* which I have seen were from the Harz. . . ."

I cannot help thinking, in view of subsequent observations and the testimony of later authorities, that the male figured with the white pupils was an exceptional aberration. Otherwise it is difficult to account for so marked a character having escaped all writers and observers both before and after Herrich-Schaeffer's publication. It will be noted, also, that he does not mention the Vosges as a locality for *Epiphron* (or indeed, for *Cassiope*, which he confines to the Austrian, Swiss and South of France Alps), nor is he very copious in the matter of synonymy. Stephens he does not cite; but to *Epiphron* he adds, "*Cassiope* var. ?Boisd." Commenting, also, upon the form of *Cassiope*, "nach Wood auch in Schottland," he remarks that Wood's description applies only to that species, and not to *Epiphron*. The reference, I take it, is to William Wood's 'Index Entomologus,' published in London in 1839, consisting of 1944 figures of the Lepidoptera of Great Britain. But Wood makes no mention of *Cassiope* as a Scotch species. "Mts. of Cumberland, June," is all we find here, and Herrich-Schaeffer's mistake suggests that he thought Cumberland to be a Scotch county.

The year 1844 is further memorable in the history of the

species by the publication of Edward Newman's description of the first authentic Scotch examples received from Richard Weaver. His identification of them with *Erebia melampus*, Boisduval ('Zoologist,' 1847, pp. 1730-31) was, of course, an error, and this is corrected on the high authority of Henry Doubleday in the 'Catalogue of British Lepidoptera,' published in December, 1846, by Messrs. J. R. Hawley and A. J. Guns, to which I shall refer when I deal with the circumstances of the discovery, and the records of *Cassiope* in the United Kingdom. The Weaver specimens, sent for confirmation to Boisduval, came back, as might be expected, with the opinion that they were "distinct from the *Erebia melampus* of the Continent," though the doctor does not appear to have enlightened his correspondent to the extent of identifying them with *Cassiope*, Fabr.

Seven years later the whole question of separate specific identity is examined scientifically by Meyer-Dür ('Verz. der Schmett. der Schweiz., Abtheil 1, Tagfalter, Burdorf-Zurich, 1851, pp. 151-154). When writing this work he tells us that he received from Standfuss two *Epiphron* males from the Harz, and three males of a similar *Erebia* from the Altvater in Silesian Moravia. Comparing them with the Swiss *Cassiope*, he says, "*Epiphron* belongs undoubtedly to the species under review, and is placed, therefore, under the forms of *Cassiope* in the following arrangement :

- "*Cassiope* var. (a) *Bernensis*, on the highest Bernese Alps, 7500-9000 m.
 (b) *Valesiaca* (Freyer, Taf. 20, F. 1, 2), from Mayenwand, and the Alps of the Wallis, 5800-6500 m.
 (c) *Epiphron*, Harz, from 1800-3000 m.
 (d) *Silesiana*, Altvater at 4600 m."

and these conclusions at least establish my proposition that there is no specific, or even superficial constant, difference between the males of *Cassiope* and *Epiphron*, though Meyer-Dür, having come to this decision, should have used Knoch's name in preference to that of Fabricius, which would have been the case most probably had the white-pupilled females been included in the series. It will be observed, however, that all the German examples examined by him were males, and that the ocellations were evidently without white pupils, or he would certainly have said so.

His var. *Valesiaca*, which he associates at a guess with Haworth's *Mnemon* ("die ich aus Autopsie nicht kenne"), he considers also as practically identical with *Epiphron*. It is described by Canon Favre* as "larger than the type (*Cassiope*), with numerous black spots on the rusty band, which is confluent

* 'Macro-lépidoptères der Valais,' Schaffhausen, 1899.

and uninterrupted and very distinct from the ground-colour. Localities: The Mayenwand and the southern slopes of the high Valaisian Alps, from 1700–2000 m.; at the Pierrevoir-sur-Bagnes and on the Simplon."

The var. *Bernensis* he places very near to var. *Nelamus*, Boisduval, and this being so there is no particular reason to retain the name, which, after all, is misleading as an index to the distribution of this form.

With regard to Meyer-Dür's var. *Epiphron* he concluded—"The chief localities are on the Oberharz, and between Heinrichshöhe, the Rehberge and the Rammelsberge near Goslar, in the Bodethal, and at Oderterche."

Reverting to our chronological review, the next authority of any weight is Julius Lederer, who maintains *Cassiope*, Fabr., as the type ('Verhandlungen des zool.-bot. Vereins in Wien,' Jahrg. 1852, p. 23), as hereunder:

Cassiope, Fabr., H.-Sch., 535, 538.

v. *Nelamus*, B.

v. *Epiphron*, Knoch, H.-Sch., 92–94, Freyer, 554.

Egea, Bkh., Freyer, 567.

Evidently he also was unaware that Knoch had fixed the type form prior to Fabricius, but at all events he abandons the theory of their being separate species. "*Epiphron*," he says, "I consider to be only a variety of *Cassiope*; the angle of the hind wings is more or less decided in very pronounced examples of the latter also, and the larger eyes and livelier red in so variable a species as *Cassiope* are not sufficient to establish it as a separate species."

Lederer is the first, moreover, to describe the var. *Pyrenaica*, HS. ('Pap. Europ.,' tab. cxi, figs. 535–538, *Cassiope-Pyrenaica*), for the author, though he published the figures—and very beautiful and true they are—apparently did not append an account of the Pyrenean form.

Of this variety Lederer says:

"Upper side with somewhat larger eyes; we have a closely corresponding form in the Styrian mountains." "*Nelamus*, B., from Mont Dore in Auvergne, has on the upper side very little, on the hind wings sometimes no red; on the underside the eyes are feebly marked or very nearly extinct."

However, in their treatise on the geographical distribution of the German and Swiss Lepidoptera (Leipzig, 1858), Dr. Adolf and Herr August Speyer adopt the correct method, treating *Epiphron* as the specific name for all the varieties and forms found in the Harz, Altvater, Vosges, Central Alps, the Banat of Hungary, and Britain, while drawing attention to the remarkable failure of the species in the Jura and the Black Forest (Th. 1,

pp. 195-196). A further note on the subject, included on p. 454 (*op. cit.*), is as follows :

"Since it has been proved by the establishment of a complete transitional series that the *Epiphron* of the Harz and the local varieties of the Alps are one and the same species, it follows that the previously acknowledged name *Epiphron*, Knoch, should be restored and should be made to apply at the same time to the highest developed form observed.

"*Cassiope* from the Altvater mountains should be classified as midway between the Harz and the Alps form, and in the Alps also the intermediate form, which has been described, and the development traced by Meyer-Dür is not wanting."

(To be continued.)

ENTOMOLOGY IN THE HOLY LAND.

BY CAPT. P. J. BARRAUD, F.Z.S., F.E.S.

(Continued from p. 173.)

LEPIDOPTERA, RHOPALOCERA.

The butterfly season commences in January with the earliest examples of *Doritis appolinus* and *Euchloë belemia*, gen. vern. Specimens of these were seen on Mount Carmel on the 4th of that month. Both species have a wide distribution in Palestine, chiefly along the mountain ranges, and extend to the highest summits (about 3000 ft.).

D. appolinus was seen in many localities, from Nazareth nearly as far south as Beersheba, and was on the wing until well into April.

E. belemia has a second emergence (gen. aest. *glauce*), commencing about April, and is seen everywhere.

Another universal species is *Colias edusa*, occurring all the year round, except during the worst part of the wet season.

Butterfly hunting on Mount Carmel in early spring is a never-to-be-forgotten experience. Quantities of large bright red *Anemone coronaria*, yellow and white *Narcissi*, and dwarf *Iris* of several colours fill every cranny amongst the tumbled masses of limestone. In the distance the deep blue of the Mediterranean Sea completes a picture of wonderful beauty.

In the late summer and autumn of last year, when the malaria season was at its height, I was unable, owing to pressure of work, to give any time to insects other than mosquitoes. This was unfortunate, as my district then extended from Egypt to Cilicia, and from the Mediterranean to the Euphrates. Now, owing to political changes, it is much reduced.

I find that one of the first butterflies mentioned in my notes

is *Danais chrysippus*. This was fairly plentiful amongst the sand-hills at the mouth of the river Kishon, near Haifa, in September and October. I do not remember having seen it elsewhere, but it is no doubt present in similar localities along the coast.

Pyrameis cardui is of course universally common. On January 6th I found some larvæ about to pupate in nettle leaves spun together, at Beisan (Beth Shan). These pupated four days later, and the perfect insects emerged on February 26th and 28th.

Of the genus *Pieris* I have only, so far, taken *P. rapæ* and *P. brassicæ*, both fairly commonly; also *Gonepteryx cleopatra* and a beautiful *Thais*, *cerysii deyrollei*, Obthr. (*tricaudata*).

The last named was first seen on the hills south of Hebron on March 25th at about 2300 ft. Subsequently a few were caught on the hills which stand round about Jerusalem (2500 ft.) and at Solomon's Pools, south of Bethlehem.

In the neighbourhood of Jericho, at about 1000 ft. below sea-level, *Euchloë charlonia*, gen. vern., *levillantii*, Roths, *E. ausonia egyptiaca*, Verity, and *E. belemia glauca* were taken during the first week in April, together with a few worn specimens of *Chrysophanus phleas*.

The more recent material has not yet been worked out, and will be dealt with in a subsequent article.

HETEROCERA.

At the beginning of this year I made a small moth-trap, but, owing chiefly to a rather enclosed situation, it has not been very successful.

In January a short series of *Dasycorsa* (*Dasycephala*, Stgr.) *modesta*, Stgr., were captured. These show a fair amount of variation, from an almost unicolourous light chestnut brown to a much darker shade, the deeper coloured specimens having specklings of very dark scales. Haifa, January 10th to 25th; Nazareth, February 20th; and El Afule, January 21st.

Seven specimens of another of the Geometridæ, *Zamacra flabellaria*, Heeger, came to light at Haifa between the 11th and 29th January. This moth has a very curious resting attitude; all the wings, which are rather narrow and pointed, fold longitudinally, closing like a fan. The hind wings lie along the abdomen, and the fore wings stand upwards, diverging from one another. The general coloration is grey, and the appearance suggests a piece of split bark.

One specimen of the very delicate buff and yellow Thorn moth *Eumera regina*, Stgr., was taken at light at Haifa on November 19th.

Other species caught at Haifa in that month were: *Cidaria alfacariata*, Ramb. (= *ibericata*, Stgr.)?; *Gymnoscelis pumilata*, Hb.; *Eupithecia centaureata*, Schiff. (= *oblongata*, Thnb.); *Cidaria*

obstipata, Fb. (= *fluviata*, Hb.); *Ptychopoda fractilineata*, Zell., and *Acidalia ochroleucata*, H.-S.

On November 2nd at Ludd I found *Rhodometra sacraria*, Linn., and *Eupithecia centaureata*, Schiff.

Of the Noctuidæ only a few have yet been identified, and I am obliged to Mr. George Talbot for notes upon them.

Cucullia chamomillæ, Schiff. One specimen hovering round flowers in a tent at 6 p.m., January 2nd, and one at light the same evening. "This is probably a form of *ab. calendulæ*, Tr., which may prove to be a local race."

The following were taken at light in January at Haifa :

Plusia gamma, L. "An unusually grey form, nearer in tone to the American *P. californica* than to typical *gamma*. This may be a race."

Amathes (= *Orthosia*, O. of Stgr.'s Catalogue) *kindermanni*, F. var. *pauli*, Stgr.

Eumichtis (= *Hadena*, Schrk. of Stgr.'s Catalogue) *solieri*, Boisd. "An extra rich dark form; have only seen the white stigma in this and another Syrian specimen—? racial."

Of the smaller moths I have been fortunate in finding two new species—*Alucita parca*, Meyr., sp. nov., one at Haifa, 29 : vi : '19, at rest on a tent roof; and *Platyedra cruenta*, Meyr., sp. nov., Haifa, 6 : xii : '19, at light.

(To be continued.)

CONTRIBUTIONS TO OUR KNOWLEDGE OF THE BRITISH BRACONIDÆ.

BY G. T. LYLE, F.E.S.

(Continued from p. 186.)

Microdus rufipes, Nees.*

Easily recognised by the extensive sculpture on the abdomen, segments 1, 2, and part of 3 being distinctly striolated; legs, including the coxæ, testaceous, only the hind and middle tarsi and tips of hind tibiæ being dark; terebra as long as the body without the head.

Harwood has a male taken in a Colchester garden July 24th, 1914, and in the Dale Collection is a pair from Devon. In June, 1916, I reared a pair from New Forest larvæ of *Tortrix variegana*. Two males and two females from Darenth Wood are in Fitch's Collection, and also the male bred by Elisha from *Coleophora gryphipennella*, July 31st, 1882. †

* 'Mon.', vol. i, p. 146.

† 'Trans. Entom. Soc.', 1885, p. 275.

The cocoon is white papyraceous, and so thin that the metamorphoses of the insect within are plainly visible; in my examples the cocoons were constructed within leaves rolled by the hosts.

Microdus mediator, Nees.*

Up to the present included in our British list on the strength of a single female taken by Fitch at Maldon, August 11th, 1870, and described by Marshall.† This specimen is still in good condition. The species is very close to *lugubator*, Ratry.‡; indeed, little but size seems to separate the two. Nees gives the length of *mediator* as $4\frac{1}{2}$ mm., which is far larger than any of our British examples, none of which exceed 3 mm.—a figure agreeing more closely with Ratryeburg's species. Five specimens taken by Dale (one marked "G. W.," the others without data) and erroneously named by him *cingulipes* are certainly of the same species as the insect in the Fitch Collection. I reared a female from an unknown host, July 22nd, 1908, and beat a second from Douglas Fir, in the New Forest, August 31st, 1912.

All these examples have the first segment of the abdomen somewhat coarsely striolate, second stippled, coriaceous, and third exhibiting faint indications of the same. Antennæ 28-jointed (excepting in two cases, where the number is 29), terebra slightly shorter than abdomen, valves subclavate; second cubital cell subquadrate, irregular, wings infumated (considerable variation is shown in the tint of the wings, but the age of the specimens may have something to do with this), nervures and stigma fuscous. The male, hitherto unknown, appears scarcely to differ from the female, excepting, of course, in the lack of terebra and the usual rather narrower abdomen.

Microdus rugulosus, Nees.§

The only British record is that of Curtis ('Guide,' 2nd ed., col. 116). Four specimens so named in the Dale Collection must all be referred to the genus *Earinus* (see *E. transversus*).

GENUS 4, *Earinus*, Wesm.||

Wesmael invented this genus to receive those species, previously included in *Microdus*, having the first cubital cell divided from the first discoidal by a distinct nervure. The character, rightly considered by Marshall to be of no more than sectional or specific value, is in itself unreliable, for while I have seen

* 'Mon.,' vol. i, p. 146.

† 'Trans. Entom. Soc.,' 1885, p. 276.

‡ 'Ich. de Foest.,' vol. iii, p. 45.

§ 'Mon.,' vol. i, p. 148.

|| 'Nouv. Mem. Ac. Brux.,' 1837, p. 8.

species of *Microdus* with the dividing nervure well marked, others, quite undoubtedly belonging to the genus *Earinus*, have the nervure but faintly indicated or even widely interrupted. It seems to me that the genera may be more certainly separated by the presence or absence of deep mesothoracic sutures. In *Microdus* these sutures are distinctly and deeply marked, while in *Earinus* they are entirely absent or only very feebly indicated. This character was brought to notice by Reinhard. I find also that in *Earinus* the metathorax is much smoother than in *Microdus*.

TABLE OF SPECIES.

- | | | |
|------|-------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| (10) | 1. Tubercles of first abdominal segment not prominent. | |
| (9) | 2. Third segment of abdomen smooth or at most feebly and partially striolate, and without a <i>distinct</i> curved transverse impression. | |
| (4) | 3. Mesothorax and scutellum rufous . . . | <i>nitidulus</i> var.,
<i>thoracicus</i> , Nees. |
| (3) | 4. Mesothorax and scutellum black. | |
| (8) | 5. Hind coxæ rufous; terebra as long as abdomen or thereabouts. | |
| (7) | 6. Length 7-8½ mm.; hind tibiæ white at base. | <i>nitidulus</i> , Nees. |
| (6) | 7. Length 4-4½ mm.; hind tibiæ ochreous at base | <i>ochropes</i> , Curtis. |
| (5) | 8. Hind coxæ black, terebra as long as body | <i>delusor</i> , Wesm. |
| (2) | 9. Third abdominal segment striolate and with a very noticeable curved transverse impression | <i>transversus</i> , sp. nov. |
| (I) | 10. Tubercles of first abdominal segment prominent | <i>tuberculatus</i> , Wesm. |

Earinus nitidulus, Nees.*

A large shining species with hyaline wings, the third abscissa of the radius sinuated and the terebra equal in length to the abdomen. Thomson considered this to be the same as *gloriorius* Paney†; the synonym, however, presents difficulties. All the examples I have seen agree with the original description excepting that the obtuse medial carina on the first abdominal segment is in distinct or wanting, though there is an elongate central depression, on either side of which is a carina, in some cases bifid as mentioned by Nees; these characters are variable and difficult to seize. Marshall's description in the 'Transactions of the Entomological Society' seems to imply that all the tarsi are black, but in all the specimens I have examined only the hind pair are dark. For many years the name was retained in our

* 'Mon.,' vol. i, p. 144.

† 'Faun. Ins. Germ.,' vol. ix, p. 102, t. 17.

British list on the strength of Curtis's record in his 'Guide' (2nd ed., col. 116), and it was not until May 10th, 1897, that a second British example was obtained, being taken by Bignell, at Bickleigh, Devon. In the Cambridge University Museum is a male labelled "British, before 1868, ex col. P. J. Sellby," and a female from the old Philosophical Society Collection. Dale's Collection at Oxford yields three females, one without data, the others "G. W., April 9th, 1894," and "Bournemouth, 13/4/1868" respectively. The usual length would seem to be 7 mm., with a wing expanse of 15 mm., though two of the Oxford females are $8\frac{1}{2}$ mm. in length and expand $16\frac{1}{2}$ mm. These fine examples show distinct traces of a short rudimentary nervure emitted from the middle of the outer side of the second cubital cell, as in the continental genus *Diosphrys*, Foester. Although thought by Wesmael to be distinct, *Microdus thoracicus*, Nees, which has the mesothorax and scutellum red, is now considered to be merely a female variety. Two Oxford and the one Cambridge example are of this form, which to me appears to have the terebra slightly longer and first abdominal segment somewhat smoother than in typical examples.

The variety at first sight greatly resembles *Microdus calculator*, though a glance at the hind tibiæ, which in *calculator* are deep black, will be sufficient to separate the two.

(To be continued.)

ON THE ABUNDANCE OF THE LARVÆ OF *PYRAMEIS ATALANTA*.

BY PAYMASTER-IN-CHIEF GERVASE F. MATHEW, R.N., F.L.S.,
F.E.S.

THE most noteworthy entomological feature of the present season in this neighbourhood is the extreme abundance of the larvæ of this beautiful butterfly. Almost every patch of nettles exhibits the spun-together leaves which form the tents of the larger ones. But although the larvæ are so plentiful the hibernated perfect insects were rarely seen. I noticed the first on June 14th, one June 18th, and two June 19th. On July 17th I saw a very fresh-looking example, which had probably just emerged, as some of my larvæ at that time had already become pupæ; and on July 29th saw several fresh imagines and one very much worn, and the same day found full-grown, half-grown, and larvæ only a few days old.

But of course these hibernated butterflies must have been on the wing before the date on which I first noticed them, for I was finding full-grown larvæ on July 8th, and the eggs from which they were produced must have been deposited at the end of May or early in June.

I have taken these larvæ over a large area, but they seem to prefer the neighbourhood of houses and farm-yards, and so may almost be looked upon as a domestic species. I have even found them in the centre of the town wherever a few nettles happened to be growing near a wall or upon a rubbish-heap.

Farming about here is not carried on in a very scientific manner, and there are many meadows and rough fields where nettles have been allowed to spring up in large patches, together with numerous spear and other thistles. Larvæ are to be found in all these patches, but are more plentiful in those growing near fences. They also prefer the young plants to those that are old and tall, and liable to be blown about by the wind. They are seldom seen in the beds of dusty nettles growing by the roadside.

In a large field, within five minutes' walk of my house, nettles were very numerous in the early spring, but were cut down about the middle of May. They have now grown up again, and the young and tender shoots are $1\frac{1}{2}$ ft. to 2 ft. high. At the beginning of July they were teeming with larvæ of all sizes, and on the 24th of the month in about an hour I found sixty-five full-grown larvæ and one pupa in this field, and might have taken many more. On the same day I noticed many quite small larvæ and others from a quarter- to half-grown.

The eggs are laid singly and the females take a considerable time in depositing all their ova. They have to be continually moving from place to place to find suitable plants. So many ova are laid one day, then perhaps two or three dull days may intervene, and if this happens often she may take a month or perhaps longer before she has finished laying. This accounts for pupæ and very small larvæ being found the same day.

In the 'Entomologists' Record,' xix, pp. 105-8 for 1907 I made some remarks on the hibernating habits of this species, and among other things wrote: "Some entomologists seem to think that in certain seasons this butterfly is double-brooded, but I fancy this is a mistake caused by the fact that it is a long-lived species and females deposit their ova from June until August, so that the offspring of the same parent may be living as larvæ, pupæ, or even imagines at the same times." I should have said that they commence to lay their ova according to the state of the weather—from the middle of April, in early seasons, to towards the end of July.

The young larvæ live in a little house which is formed of a single leaf, carefully turned down and fastened along its edge, and with a small opening at the point through which the larva thrusts its head and eats portions of its own home or the adjoining leaves. When very young they content themselves with nibbling little blotches into the cuticle. The full-grown larvæ construct large tents or caves, composed of several leaves

fastened down over each other. These are conspicuous objects, particularly in the young nettle beds. If the nettles happen to be in flower they will occasionally compose the cave entirely of its drooping flower or seed tassels, and then they are not quite so easy to see. Sometimes the shoot is bitten halfway through, about 4 in. or 5 in. from its tip, which causes it to droop over the lower part of the stalk, where it is formed into a cave with the aid of the adjoining leaves, which are fastened securely to the main stem. When full fed the larvæ spin a pad of silk on the roof of their cave and from it suspend themselves to change to pupæ. In confinement, where the larvæ were a good bit crowded, they often ate each other out of house and home, and then crawled on to the muslin covering of their breeding-cage, upon which they spun pads of silk and suspended themselves therefrom. A few endeavoured to surround themselves with a screen of open network, but the greater number hung perfectly free.

The bottles for containing the food, standing on the floor of the breeding-cages, were packed round with fine shavings so as to keep them steady and in position. Several larvæ managed to force themselves into the shavings and construct very comfortable-looking caves, wherein they became pupæ. Other larvæ were kept under large glass cylinders, with muslin pasted over the top. This was a capital style of breeding-cage, as the movements of the larva could be so easily watched.

On several occasions I saw the full-grown larvæ exposed on a leaf, but they were not feeding—merely resting, I fancy, before constructing a fresh tent, for they often eat themselves out of their original dwellings, and then have to construct new ones.

These larvæ do not vary very much. The typical form is grey-green, with yellowish spines. But there is one handsome variety—nearly jet-black, with a conspicuous spiracular stripe formed of large yellow blotches, and all the upper surface is thickly irrorated with little yellow dots. It is a fat, stumpy larva, and to the touch feels like a piece of india-rubber.

The larvæ of *atalanta* do not seem to suffer as much from the attacks of ichneumons, etc., as those of *Io* or *urtica*. In some of the turned-over leaves I found the shrivelled remains of small larvæ, together with a number of little white or amber-coloured cocoons of some species of ichneumon. A few of the larger ones, when suspended for change, instead of turning to pupæ became black and flaccid and much distended with fluid, and this I think was due to some form of disease caused by the wet weather.

Some of the pupæ, a short time after assuming that state, became much discoloured, and are apparently dead, but so far have not disclosed any parasites.

Up to the present time I have taken six pupæ and 355 larvæ of *atalanta*, and have bred 21 imagines, the first one emerging on July 31st.

The larvæ of *V. io* have not been as common as usual, and I have only seen eight broods. I took a few from each—about a hundred altogether—and 60 per cent. of them were ichneumoned.

Larvæ of *A. urticae* have been quite rare, and I only came across three small nests, taking a dozen from each, and they were all stung.

Dovercourt, Essex;

August 10th, 1920.

NOTES AND OBSERVATIONS.

ABERRANT BUTTERFLIES.—The following aberrations, taken by my brother and myself during this year, may be of interest: *Melanargia galatea*, male, taken July 18th, 1920, at Broadway, Gloucestershire. The black markings on the under side of the hind wings and the tip of the fore wings are replaced by a golden brown. The specimen is perfectly fresh. *Pararge megera*, female, taken August 6th, 1920, near Penzance. The whole space between the central transverse lines on the fore wings is black with the exception of a few fulvous scales at the end of the discal cell. The same area on the under side is shaded with black. The specimen is unfortunately badly damaged. *Epinephele jurtina (ianira)*, female, taken August 15th, 1920, near Penzance. The whole of the brown colour and the black eye-spot are replaced by silver-grey on the upper side, while the under side approaches this colour. The fulvous portions retain their normal colour on both sides. *E. jurtina*, female, taken August 8th, 1920, near Penzance. The usual fulvous patch on the wings is entirely replaced by white, while the brown portions retain their usual colour. The under side is slightly pale. (A number of specimens approaching this form were taken.) *E. tithonus*, male, taken August 12th, 1920, near Penzance. A very dark specimen in which the black encroaches upon the fulvous on all the wings, reducing that on the hind wings to a few scales only. On the under side of the fore wings the basal area is covered with black scales.—E. BOLTON KING; Arden Lodge, Warwick.

NOTE ON THE BLUE-SPOTTED FORM OF CHRYSOPHANUS PHLEAS.—During the summer of this year I have examined 537 specimens of *Chrysophanus phleas*, and though no striking aberration resulted, I was interested to note that, while out of 145 specimens taken on a small piece of marshy ground, so large a number as 117 showed at least traces of a row of blue spots inside the coppery bar on the hind wings, only 54 out of the remaining 392 which were taken on the dryer meadows showed any traces of blue. I noticed that the blue-spotted specimens were greatly in evidence about the water meadows on the south-eastern side of Thetford, Norfolk, while they were not to be found on the heathy ground on the south side; and bearing in mind these observations made in June, 1917, I decided to test my conclusion that in all probability the blue-spotted specimens were of a marshland variety this year, with the above results. I should be interested to know if any other readers of the 'Entomologist' have

made similar notes.—STANLEY N. A. JACOBS; High House Farm, South Common, Chailey, Sussex.

COLIAS EDUSA IN DEVONSHIRE.—I saw a male *C. edusa* near Brixham on August 3rd, and, as was to be expected after the spring immigration, *Pyrameis cardui* is now plentiful in this district.—E. D. MORGAN; 27, Sanford Crescent, Chelston, Torquay.

This species has been plentiful in this locality during the last two months.—R. H. MOORE; Heathfield, Plymstock, September 14th, 1920.

COLIAS EDUSA IN HAMPSHIRE.—On August 30th I captured, at an upper branch of Duck Hole Bog in the New Forest a very bright and fresh male *C. edusa*. On August 31st I saw a specimen on the shore at the mouth of Christchurch Harbour.—W. J. LUCAS.

COLIAS EDUSA AB. HELICE IN GLOUCESTERSHIRE.—On August 31st I took a specimen of the *helice* form of *C. edusa* in the garden here. Unfortunately one of the hind wings was damaged, otherwise it is good. With the exception of a female of *C. edusa*, taken on August 27th of the present year, I had not seen the species here since 1892.—G. H. SIMPSON HAYWARD; Icomb Place, Stow-on-the-Wold.

COLIAS EDUSA IN WEST SUSSEX.—On August 13th, a hot, sunny day, *Colias edusa* was abundant in the clover-fields and lanes near Bosham and in good condition. *P. atalanta*, *P. cardui*, *V. io*, *P. megera*, *E. ianira*, *E. tithonus*, *P. icarus* and "skippers" were also out in great numbers in the same locality. I never remember seeing so many butterflies in one, comparatively, small space before; they simply swarmed and were a beautiful sight. Of course the clover was in full bloom and the hedgerows a mass of flowers so there was everything to attract them.—(Miss) A. D. EDWARDS; Iron Latch Cottage, Selsey, Sussex; September 10th, 1920.

COLIAS EDUSA IN SOMERSET.—I saw one *C. edusa* while out shooting to-day.—WALDEGRAVE; Chewton Priory, Chewton Mendip, Somerset, September 9th, 1920.

COLIAS EDUSA IN 1920.—The following occurrences of *Colias edusa* have come to my knowledge: Sussex: One at Rogate in August. Hampshire: One seen on Petersfield Golf Course in the first week of August. Dorset: Three in the neighbourhood of Corfe Castle in the second week of August, one at Lyme Regis in September. Somerset: One seen on the railway-bank a short distance west of Templecombe Station in the first week of September. Devon: Three at Seaton in the second week of September. Wales, Glamorgan-shire: Three reported from Cowbridge in September.—HAROLD HODGE; 9, Highbury Place, N. 5, September 18th, 1920.

GONEPTERYX RHAMNI IN THE CITY.—Coming out of the Tube at Chancery Lane Station mid-day to-day I was surprised to see a male specimen of *G. rhamni*. It was flying slowly along in the direction of Kingsway, being buffeted by the traffic.—J. G. STAUBYN; September 7th, 1920.

PYRAMEIS ATALANTA IN EAST LONDON.—On August 20th I observed a fine fresh *Pyrameis atalanta* flying down Coventry Street,

Whitechapel—a somewhat unusual neighbourhood for this bright insect—and on August 24th I saw another specimen of the species in Marquess Road, Hackney. Being confined to town for business reasons this year it was refreshing to see these insects apparently enjoying a spell of sunshine as much as though they were in their natural surroundings.—ERNEST CRABBE; 52, Sarsfeld Road, Balham Park Road, S.W. 12.

PYRAMEIS ATALANTA IN THE NEW FOREST.—*P. atalanta* is very common in the Forest and apparently in beautiful condition. *Vanessa io* also occurs, but I have only seen it very occasionally.—W. J. LUCAS; Brockenhurst, September 3rd, 1920.

LIMENITIS SIBYLLA IN SURREY.—An error has crept into my note on this subject, published in the current number of 'The Entomologist.' My capture at Byfleet was made on July 16th, and not on August 16th, as incorrectly printed on p. 210.—F. W. CAMPION; 58, Ranelagh Road, Ealing, W. 5, September 7th, 1920.

POLYGONIA C-ALBUM IN WAINSTEAD PARK.—During a walk to-day in a rather unfrequented part of the above park I saw a very fresh specimen of this species at rest on a leaf with expanded wings. I know this butterfly is not uncommon in some parts of the West, Midland and Welsh counties (I used to take it near the River Wye more than forty years ago), but this is the first specimen I have seen near London.—W. PASKELL; 85, Second Avenue, Manor Park, E. 12, September 10th, 1920.

TACHINID FLY ATTACKING LARVA OF SPILOSOMA LUBRICIPEDA.—On August 25th I noticed a larva of this moth pursued by a fly, which alighted upon it several times, and each time the caterpillar appeared to try and shake it off, and ran very fast as if to escape from its enemy, finally disappearing into a crevice. I could not capture the fly, but suppose it was *Tachina caesia* (see 'Entomologist,' vol. xi, p. 78). Another larger Tachinid, with the sides of the abdomen yellow brown, is common in the garden in June and July.—W. PASKELL; 85, Second Avenue, Manor Park, E. 12, September 10th, 1920.

MANDUCA ATROPOS AND DEILEPHILA LIVORNICA IN CORNWALL.—On September 12th, 1920, a fine specimen of *M. atropos* ♂ was found in a house in the Falmouth district. *D. livornica* was found by a little girl at Maenporth, near Falmouth, during May of this year sitting on a hedge.—LEONARD B. HOPPER; Penryn, Cornwall.

BRYOPHILA MURALIS.—On July 13th I captured in North Cornwall a ♂ and ♀ *B. muralis* within a few inches of one another, which I assume had paired. The ♂ was worn and had evidently been out some time. A few days later in South Devon I again noted another specimen spoilt by a spider. On September 5th I again took a fine ♀ in Sussex. These divergent dates of capture are, I think, of sufficient interest to warrant recording.—JNO. PEED; Whittlesey.

ACRONYCTA ALNI IN STAFFS., 1917.—I took a larva of *A. alni* in 1917 upon gooseberry. Two days later I obtained another upon

beech. This species, in common with many others, was universally plentiful in the Lichfield district. Two other records of the larva will be found in the report for the year of the North Staffs. Field Club.—A. SOPWITH; Chasetown, near Walsall, Staffs.

LEUCANIA VITELLINA IN DEVONSHIRE.—On September 7th I took at sugar in my garden a fine specimen of *L. vitellina*.—R. H. MOORE; Heathfield, Plymstock.

HELIOTHIS PELTIGERA, ETC., IN SOUTH HAMPSHIRE.—During August last, while searching restharrow at night in this district, I had the good fortune to find larvæ of *H. peltigera* not uncommonly, in company with the usual *Pyrrhia umbra*, *Aspilates ochrearia*, etc. Those that I collected duly pupated, and I hope to breed the moths shortly.—A. T. POSTANS; 148, Fawcett Road, Portsmouth.

CATOCALA NUPTA, AB.—On August 31st I had brought to me a very remarkable var. of *C. nupta*. The fore wings are entirely black, with the exception of a thin, grey marginal line. Head and body jet black; hind wings normal, except that the red is a somewhat deeper shade than is usual. I do not know if this variety has previously been recorded, but it is new to me. The moth, a male, is one of a batch bred this season.—F. HOWARD LANCOM; "Fernside," Shepherd's Lane, Dartford.

THAMNONOMA BRUNNEATA IN HERTFORDSHIRE.—I have to record the capture of *Thamnonoma brunneata* at light in the college grounds at Bishop's Stortford on June 25th, 1920. There is no *Vaccinium* in the district. I took imagines of *D. irregularis* and *A. rubiginata* on August 4th this year at Tuddenham.—C. MELLOWS; The Yews, Peterborough.

A ROUGH FIELD IN THANET, AUGUST 20TH.—Possibly a list of species, especially Tortrices, taken this August in a rough, flowery field near Broadstairs may be of interest to local collectors. Wild carrot, ragwort, mugwort, milfoil, clover, teazle, etc., were the most conspicuous of the wild flowers, with a very little *Centaurea scabiosa*. The following species were common: *E. dubitana*, *E. atricapitana*, *E. erigerana*, *D. acuminatana*, *D. simpliciana*, *C. francillana*, *C. nigromaculana*, *C. smeathmanniana*, *C. perlatus*, *A. gilvaria*, *E. oblongata*. A few specimens occurred of *L. rufillana*, *E. roseana*, *L. compositella*, *H. sinuella*, *N. noctuella*, *A. promutata*, *O. clathrata*, *C. geniculeus*, and one specimen each of *L. palealis*, *P. zephyrana*, *H. binævella* and *H. ochroleuca*. The last-named was, however, found freely on the *Centaurea* in the neighbourhood, together with *C. alternana*. Outside this particular field the most interesting of my captures were *A. rusticata*, a *T. viretata* in Broadstairs itself, one specimen only of each, some fine yellow aberrations of *B. perla*, and, on the sandhills at Sandwich a good series of *O. distans*.—H. C. HAYWARD; Repton.

PHLEDES CRENANA.—As it seems to be questioned whether this species is double-brooded, it may be as well to put on record that on September 11th and 13th I bred two from larvæ obtained in Rothiemurchus Forest, Inverness-shire, in July last. *Myrmecocella ochra-*

cecella was common in the ants' nests.—FRANCIS C. WOODBRIDGE; Briar Close, Gerrard's Cross.

ÆSCHNA CYANEA IN WORCESTERSHIRE.—A friendly neighbour brought me in a fine male of this dragonfly to-day (July 14th). He had caught it resting on his raspberry-canes. Lucas ('British Dragonflies,' p. 202), does not quote many Midland records for this species, and states that it "seems to have a decidedly southern range." It is, however, fairly common in this northerly corner of Worcestershire. I have often watched it hawking here to-and-fro over the ponds in a dell locally known as the Golden Valley.—J. W. WILLIAMS, M.R.C.S., etc.; Bewdley.

RESEMBLANCE TO SURROUNDINGS IN MOTHS.—It is an interesting question which Mr. Lucas has raised with regard to moths resembling their surroundings. I think we may take it for granted that moths fully realise the importance of protecting themselves during the hours of daylight. You have only to look into a moth trap shortly before dawn to see all the moths struggling against the glass, trying to find a way out, whereas an hour before they were dancing round the lamps, or resting contentedly in the most exposed positions. As night gives place to morning the moths seem to realise that even if they escape it is too late to be of any advantage to them, and making the best of a bad job, take up the best positions in the trap they can find, *D. scabriuscula*, for instance, always choosing a place which has been painted black. Where are the vast numbers of moths in the daytime? Comparatively few are seen in exposed positions, such as tree-trunks or fences, except after a night of strong wind. They creep into crevices and wood stacks, out of reach of the most painstaking bird. But what about the few moths that are in exposed positions? I believe that these, either because they were *in cop.* or for some other reason, have been caught out too late, and sooner than risk being on the move in the daylight take up a position whereon they find themselves. I give them credit, unreasonable as it may seem, of exhibiting a good deal of ingenuity on these occasions. I came across *D. fulcataria* once on a tree-trunk: if it had rested in a horizontal position I don't think it would have deceived me, but instead of this it selected to imitate a dead birch-leaf. Its wings were perpendicular, up and down the tree-trunk, the pointed ends representing the stalk and point of the leaf. After looking at it for a second or two and thinking there was possibly a cocoon behind the leaf, I put out my hand to pull it from the trunk by the stalk, when the leaf changed into a moth and flew away.—FREDERICK GILLET; Cheriton House, Sevenoaks, July 31st, 1920.

FORMATION OF A SOUTHAMPTON ENTOMOLOGICAL SOCIETY.—A meeting of a number of gentlemen interested in entomology was held in Southampton on July 25th for the purpose of forming an entomological society in that district, and it was decided unanimously that such a society should be formed, to be called the Southampton and District Entomological Society. A discussion as to the various activities that might be entered on brought forth some useful suggestions. It was finally arranged to make an immediate start on

the formation of collections of insects and of a library of entomological books and photographs; to hold meetings on the first and third Tuesdays of each month; to hold, in addition, rambles in order to thoroughly investigate the insect fauna of the district. As regards the collections, the Lepidoptera will be in the charge of Mr. W. Fassridge, M.A., Mr. E. Hayward will supervise the collection of Coleoptera, and Mr. F. J. Killington will take charge of the Odonata, etc. As the Society grows it is hoped that others will come forward to assist. Until such time as the membership is greater it was decided to do without the usual officers, with the exception of a secretary and treasurer, and Mr. F. J. Killington, of 68, Archer's Road, Eastleigh, was elected to fill the dual office. The modest sum of 5s. was fixed as the present annual subscription. It is hoped that all keen entomologists in the district will seek membership.

SPHECOLMYA INANIS, FLU.—With reference to Mr. Morley's note on this Anthomyid fly, *antea*, p. 213, may I draw attention to my record ('Ent. Mo. Mag.,' 1905, p. 163) of two males taken July 2nd and 6th, 1903, at Aberfoyle, Perthshire? The species is also recorded by Mr. Charbonnier from two localities in Somerset ('Proc. Som. Arch. and N. H. Soc.,' vol. lxiv [1918]), and is included by Haliday in his list of Holywood Diptera. As regards its association with wasps, Prof. Newstead ('Ent. Mo. Mag.,' 1891, p. 41) found the larva in swarms in a nest of *V. germanica* on October 1st, 1889, at Ince, Cheshire, from which imagines hatched in the following July. Probably females occurred amongst these, but our other records (where the sex is noted) refer to males only.—A. E. J. CARTER; Monifieth, Forfarshire.

ÆSCHNA MIXTA, LATR., AT BRIGHTON.—I had the good fortune to capture, in an extremely easy manner, a fine male specimen of this uncommon dragonfly at Brighton. I was walking through the Steine Gardens on the afternoon of August 27th and espied it resting in the sunlight on the leaf of a shrub; it allowed me quietly to approach and take it in my fingers. I do not know who was the more surprised, myself or the dragonfly, for this particular insect has earned a name for great wariness.—F. J. KILLINGTON; 68, Archer's Road, Eastleigh.

NOTE ON *ERISTALIS TENAX*.—At the beginning of this month I was exploring the almost dark interior of one of the disused stone quarries at Dancing Ledge, on the rocky coast of South Dorset, when I was surprised to hear a loud buzz of insects—a noise like that heard when standing near a bee-covered clump of lavender or Michaelmas daisies, and intensified by the stone walls, roof and floor. On my eyes becoming more accustomed to the dim light I was able to discern the cause of the noise—a number of common drone-flies, as far as I could see all *Eristalis tenax*, flying about a few inches from the ceiling, now and then hovering beneath a particular spot, settling, and then moving off to a fresh one. The roof was some 12 ft. from the floor, and there was no means of examining the movements of the flies more closely, but they appeared to be sucking up something from the stone. The quarries, used for obtaining Purbeck stone, are cut into the side of the sea cliff, and are nearly always damp inside.

Eristalis tenax is, under ordinary circumstances, a nectar feeder, so is there some sweet substance which exudes from the roof, soaked through from the stone above, to attract these sun-loving flies into such a dismal place? Perhaps a reader of the 'Entomologist' can explain the phenomenon.—W. J. ARKELL; Redlands Court, High-worth, Wilts, September 16th, 1920.

SOCIETIES.

LONDON NATURAL HISTORY SOCIETY.—*May 4th.*—Mr. R. W. Robbins, President, in the Chair.—Messrs. H. J. Davies and H. S. Stowell were elected Members of the Society.—Dr. Cockayne read a paper on "Fluorescence in Lepidoptera," which was followed by an interesting discussion.

June 1st.—The President in the Chair.—Rev. H. J. Gamble was elected a Member of the Society.—Among the entomological exhibits were: *Aricia medon* and its varieties *salmacis* and *artaxerxes* from Scotland (Mr. H. B. Williams); *Euchloe cardamines*, a series (Mr. C. H. Williams); galls of *Andricus circulans* on *Quercus cerris* from near Hounslow; *Neuroterus tricolor* on *Quercus pedunculata* from which the flies were emerging.—H. J. BURKILL, *Minuting Sec.*

THE SOUTH LONDON ENTOMOLOGICAL SOCIETY.—*June 24th, 1920*—Mr. K. G. Blair, B.Sc., F.E.S., President, in the Chair.—Exhibition and discussion of *Hydriomena furcata*, Thun. (*elutata*).—Messrs. Turner, Barnett, etc., exhibited series. The first-named showed a copy of Thunberg's 'Dissertationes,' 1784, containing the original figure and description of the species, and read notes on the lines of variation and pointed out the named forms. In Mr. Barnett's series was a very fine example of the *infuscata* form.—Mr. S. Ashby, specimens of the rare beetle *Lema erichsoni* taken by Mr. Ashby and himself near Rye in April last.—Mr. Bunnett, series of the Rhyncophorous beetle *Attelabus nitens (curculionoides)* with leaves of oak rolled by the larvæ, and also larvæ and pupæ of *Ledra aurita* (Hemip.).

July 8th, 1920.—The President in the Chair.—Mr. Newman exhibited living larvæ of *Phryxus livornica* from ova laid by a female captured in Dorset in May, and made remarks on their habits.—Mr. Withycombe, a larva on hawthorn of *Saturnia pyri* from a batch of ova from S. France.—Mr. Dunster, a series of *Melitæa aurinia* taken in Somerset in May, and of *Epinephele tithonus* showing additional spots on the fore wings.—Mr. Carr, series of *Brenthis euphrosyne* from Crockham Hill.—Mr. K. G. Blair, bred specimens of the bee *Colletes daviesana* from Shanklin, with five species of inquilines and parasites; also living examples of *Cicindela germanica* bred from larvæ found May 4th.

July 22nd.—Mr. K. G. Blair, B.Sc., F.E.S., President, in the Chair.—The President exhibited *Cimex pipistrellus*, a Hemipteron infesting the bat.—Mr. Turner, a box of Lepidoptera collected by Mr. Grosvenor, chiefly at Bangalore, India.—Mr. Priske recorded that in five or six traps set in Richmond Park for Coleoptera, five

species of *Necrophorus* were caught, a different species in each trap; the sixth trap contained two species of *Silpha*.—Mr. Newman reported non-success in getting the larvæ of *Phryxus livornica* to pupate, abundance of *Argynnis aglaia*, fair numbers of *Plebeius ægon*, the apparent disappearance of *Melanargia galathea* from West Kent, and that nearly everything in captivity was making a second brood.

August 12th.—The President in the Chair.—The death of Mr. W. West, of Greenwich, on July 30th was announced. He was one of the original members of the Society in 1872, and the Honorary Curator from the beginning.—Mr. H. Main exhibited from the South of France larvæ of *Ascalaphus* sp., *Euvanessa antiopa*, *Papilio alexanor*, *P. podalirius* and *Myrmelion* sp., with ova of *Parnassius apollo* and *Mantis religiosa*; with parasites of the latter.—Mr. Priske, the cockroach *Ectobia perspicillaris* with its egg-cases, and the larva of *Microdon* sp. (Dip.), from an ant's nest.—Mr. B. S. Williams, *Pyrameis atalanta*, having the lowest subapical blotch absent.—Mr. Step, living specimens of *Dorcas parallelopipedus* (Col.), from Wimbledon Park.—Mr. Sich, pupal cases of *Aphelostetia (Elachista) cerusella*, and the larval mines in a leaf of *Phragmites communis*, gathered at Byfleet during the Society's Field Meeting in July; and also the three British species of the genus *Ochsenheimeria*.—Mr. Bunnet, *Selenia tetralunaria* from Farnborough, Kent.—HY. J. TURNER, Hon. Editor of Proceedings.

BRADFIELD COLLEGE SCIENTIFIC SOCIETY.—The following observations made by members of the above Society may be of interest to readers of the 'Entomologist.' *Euvanessa antiopa*.—A lady tells me that while out for a walk on July 20th, she observed two large dark butterflies with white borders to the wings, which settled on the path before her. She pointed them out to her sister who was with her, and both ladies gave the same description, and were quite certain as to its accuracy. This is of course a doubtful record, but it would be interesting to know whether any other specimens of *E. antiopa* have been seen in Berkshire this year. *Apatura iris*.—A female was seen ovipositing on sallow. The insect was not captured, but the ovum was obtained. A male was also seen flying over the oaks. This is the first seen at Bradfield for some years. *Pararge egeria* var. *egerides*.—One was taken here on July 24th. This is the first Bradfield example that I have heard of. Annual Exhibition.—The annual exhibition of the year's work was held on Sunday, July 18th. Among others we noticed the following: One *Hamearis lucina*, as against four in 1919. Long series of *Chattendenia w-album*, several ab. *butlowskii*, Kroul., and ab. *obsoleta*, Tutt. I have never seen *w-album* so abundant as it was this year. *Hemaris tityus* more numerous than *fuciformis*, only one specimen of the latter being exhibited. A pale straw-coloured xanthic example of *Pararge negeera* which has probably been named long since, but for which I have used the ms. name *bradanfelda*, n. ab., and a pale pink specimen of *Hipocrita jacobæ* (= ab. *roseæ*), the green colour being olive grey tinged with green. *Melanargia galathea* appeared in some numbers this year, which is most unusual, only single specimens having been noticed in 1918 and 1919.—JOHN E. W. BLACKIE, Hon. Sec.

EXCHANGE.

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Duplicates. - *Peronia cristana* and forms. *Subvittana*, *Albomgrana*, *Chantana*, *Ruficostana*, *Rufigrana*, *Cristulana*, *Subfulvovittana*, *Provittana*, *Bentleyana*, *Semivittana*, *Striana*, *Nigrana*, *Merlana*, *Atrana*, *Destotina*, *Consimilana*, *Spadiciana*, *Vittana*, and others. *Desiderata.* *Lifauriana*, *Diversana*, *Semialbana*, *Dumetana*, *Oetomaclana*, *Penziana*, *Colquhounana*, *Argentana*, etc. - *R. South*, 4, *Mapesbury Court, London, N.W. 2.*

Desiderata. *Prunaria*, *Luridata*, *Lichenaria*, *Obscurata*, *Assoseta*, *Populata* (Scot. & Heb.), *Cesrata*, *Flavicinctata*. Fine specimens to improve series. - *Richard South*, 4, *Mapesbury Court, London, N.W. 2.*

Duplicates. - *Adippe*, *Aglana*, *Selene*, *Io*, *Atalanta*, *Actaeon*, *S. Populi*, *Eipenor*, *Sidicus*, *P. populi*, *Fayona*, *Trepida*, *Prunaria*, *Prosoparia*, *Quercinaria*, *Vernaria*, *Variata*, *Obeliscaria*, *Ruberata*, *Rubidata*, *Vittata*, *Ambigua*, *Pimperda*, *Moneta*, *Glandifera*. *Desiderata.* - *Z. Trifolii*, *Trepidaria*, *Ornata*, *Pictaria*, *Alternata*, *Alchemillata*, *Impluvata*, *Derivata*, *Upsilon*, and many others. Ova, larvæ or pupæ preferred. - *C. E. Newham, Ringwood.*

Ova. - *Chi*, *Testata*, etc. *Larvæ.* - *Quercus* (*Callimag*), *Imago.* - *T. rubi*, *P. populi*, *Munda*, etc., and many others. *Desiderata.* - Very numerous in all stages. - *Thomas South*, *Whiston Estate, Froghall, Stokely Trent.*

Duplicates. - *Bludina*, *Porecella*, *Lobripoda* var. *fasciata*, *Merscha*, *Chi* and abs., *Fida*, *Straminea*, *Fulva*, *Citrage*, *Lutea*, *Fedana* (type and melana), *Multi-striata* (type and melana), var. *Doubledayana*, *Lencophana* *Z.*, *Aurantaria* (good forms), *Boreata*, *Alchemillata*, *Tersata*, *Japunctaria*, *Atrata*, *Venosata*, *Pulchellata*, *Absinthiata*, *Narata*, *Cistaceæ*, *S. Muralis*, *Kuhmella*, *Conchitella* *Z.*, *Quercinaria* (Regent's Park forms). *Desiderata.* - Very numerous to end of Tortricide. - *H. D. Smart, Shillay, Huddersfield.*

Duplicates. - *Smipis* (dew), *Valentina*, *T. Betula*, *Polychloros*, *Trifolii* (vars.), *Villica*, *Deplurifine* (vars.), *Camola*, *Albata*, *Burretii* (few), *Anomala*, *Cimex*, *Absinthii*, *Ophogramma*, *Empyret*, *Advena*, *Oenita*, *Rectilinea*, *Socia*, *Tincta*, *Abietaria*, *Cinctaria*, *Ruberata*, *Hastata*, *Hispidaria*, *Lapponia* (dew), *Rhinaria*, *Silacata*, *Lobulata*, etc., etc. *Desiderata.* - Numerous for extension and renewal. - *L. E. Burris*, 3, *Connaught Road, N. E. 1, Portsmouth.*

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CONTENTS.

- Arctia melior*, Ab., G. H. Simpson Hayward, 217. The Macro-Lepidoptera of County Tyrone. Thomas Greer, 217. *Erebia epiphron*, Knoch: Its Synonymy and Form. H. Rowland-Brown, M.A., F.E.S., continued from p. 199, 222. Entomology in the Holy Land. Capt. P. J. Barrand, F.Z.S., F.E.S., continued from p. 173, 225. Contributions to our Knowledge of the British Braconidae. G. T. Lyle, F.E.S., continued from p. 186, 227. On the Abundance of the Larvæ of *Pyramis atalanta*, *Pagmaster-in-Chief Gerrase F. Mathew, R.N., F.L.S., F.E.S.*, 230.
- NOTES AND OBSERVATIONS.—Aberrent Butterflies. *E. Bolton King*, 233. Note on the Blue-Spotted Form of *Chrysothamnus plbeas*, *Stanley N. A. Jacob*, 233. *Colias edusa* in Devonshire. *E. D. Morgan*, 234. *R. H. Moore*, 234. *Colias edusa* in Hampshire. *W. J. Lucas*, 234. *Colias edusa* ab. *helicæ* in Gloucestershire. *G. H. Simpson Hayward*, 234. *Colias edusa* in West Sussex. *Miss A. D. Edwards*, 234. *Colias edusa* in Somerset. *Waldegrave*, 234. *Colias edusa* in 1920. *Harold Hodge*, 234. *Gonepteryx rhamni* in the City. *J. G. St. Angelo*, 234. *Pyramis atalanta* in East London. *Ernest Crabbe*, 234. *Pyramis atalanta* in the New Forest. *W. J. Lucas*, 235. *Lonicitis sibylla* in Surrey. *F. W. Campion*, 235. *Polygonia e-album* in Wanstead Park. *W. Paskell*, 235. Tachinid Fly attacking Larvæ of *Spilosoma lubricipeda*. *W. Paskell*, 235. *Manduca atropos* and *Dellephila livernica* in Cornwall. *Leonard B. Hopper*, 235. *Bryophila murahs*, *Jno. Peed*, 235. *Aeronycta albi* in Staffs., 1917. *J. Sopwith*, 235. *Leucania vitellina* in Devonshire. *R. H. Moore*, 236. *Heliothis peltigera*, etc., in South Hampshire. *A. T. Postans*, 236. *Catocala nupta*, ab., *F. Howard Lancum*, 236. *Thaumocopa brunneata* in Hertfordshire. *C. Mellows*, 236. A Rough Field in Thanet, August 20th. *H. C. Hayward*, 236. *Phlades eronata*. *Francis C. Woodbridge*, 236. *Eischia cyanea* in Worcester-shire. *J. W. Williams*, 237. Resemblance to Surroundings in Moths. *Frederick Gillett*, 237. Formation of a South Chapter. Entomological Society, 237. *Spheco lmya* *hæc*. *Flu. A. E. F. Carter*, 238. *E-china mixta*, Latr., at Brighton. *F. J. Killington*, 238. Note on *Enisthis tenax*. *W. J. Arkell*, 238.
- SOCIETIES.—London Natural History Society, 239. The South London Entomological Society, 239. Bradfield College Scientific Society, 240.

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[No. 690

DESCRIPTIONS OF TWO MOTHS FROM FORMOSA.

BY A. E. WILEMAN, F.E.S.

Spilosoma solitaria.

♂. Antennæ bipectinated, black; head and thorax black, the latter with an orange yellow dot in front and jet black lines above; abdomen orange yellow with seven black rings, the seventh twice as wide as the others. Wings blackish, black markings as in the female. Underside fuliginous.

Expanse 36 mm.

The male specimen now described was received for identification from Dr. Shiraki, of Taihoku, Formosa, labelled as follows: "Formosa, Koshun, 1918, iv, 25-v, 25, J. Sonan, K. Miyake, M. Yoshino."

Although differing greatly in size and colour from the female, it agrees exactly in markings of thorax and very closely with those on the wings and abdomen. Unfortunately the wings are considerably abraded. The female was described as *Diacrisia solitaria* in 1910 ('Entom.,' vol. xliii, p. 245).

Gandaritis postalba, sp. n.

♂. Head and thorax yellowish mixed with purplish brown, abdomen greyish brown. Fore wings yellow, mottled with pale purplish brown, basal area purplish brown; antemedial line angled below costa and indented before dorsum, discal mark blackish; postmedial dark purplish, rather wavy, outwardly oblique to vein 4, thence inwardly oblique to dorsum, subterminal line purplish brown, wavy, most distinct towards costa; a dark purplish line from apex of the wing unites with the postmedial by a bar along vein 5; the enclosed space is clearer yellow than rest of the wing; terminal area below the line from apex purplish, except at tornus; fringes dark purplish brown. Hindwings white, terminal area yellow, inwardly bordered with purplish; fringes dark purplish. Underside similar to above, but fore wings without purplish brown mottling.

Expanse 62 mm.

The male specimen described, which is not in very good condition, was received for identification from Dr. Shiraki, of Taihoku, Formosa, labelled as follows:

"Horisha. 18. v. viii, H. Kawamura."

EREBIA EPIPHRON, KNOCH: ITS SYNONYMY AND FORMS.

BY H. ROWLAND-BROWN, M.A., F.E.S.

(Continued from p. 225.)

Probably H. von Heinemann (and H. F. Wocke) had already completed the first volume of 'Die Schmetterlinge Deutschlands unter der Schweiz,' published at Brunswick in 1859, when the brothers Speyer's book was issued. At all events *Cassiope* (36) and *Epiphron* (37) still rank as species, though the distinguishing characters are no longer defined as the eye-spots, but extend to the shape of the fore wings noted by Lederer, which are described as rounded at the apex in the case of the former and sharply angled in the case of the latter. His opinion of their specific identity, however, is not omitted.

The tradition of the double species, indeed, was destined to die hard, and was perpetuated by many other authors both at home and abroad during the "fifties" and "sixties" and even in the "nineties." In England, Henry Doubleday makes *Cassiope*, Fab., the type of the genus "*Erebia*, Boisd., *Oreina*,* Westw.," with *Mnemon*, Haw., and *Melampus*, Newm., var., as synonyms (*cp.* 'Synonymic List of British Lepidoptera,' 1850). In 1852 or 1853 Dr. J. C. Kayser ('Deutschlands Schmetterlinge,' Leipzig), without figuring them, separates *Epiphron*, Knoch, from *Cassiope*, and repeats without discrimination of sex the "oft gekernten Augen." But as he announces August the month for the perfect insect in each case, it may be suggested that he, too, derived his knowledge of this *Erebia* in a state of Nature secondhand. A few years later, again, Ménétriés ('Lepidoptera Diurna,' St. Petersburg, 1855), anticipating von Heinemann, puts the cart before the horse with "687 *Cassiope*, 688 *Epiphron*." H. T. Stainton also ('Manual of British Butterflies,' vol. i, pp. 29-31) gives *Cassiope* specific rank without the author's name appended. But Stainton does not recognise apparently even the most pronounced variations from the type as to be treated separately, much less awarded varietal names.

Werneburg, too, maintains the type form and the variety as separate species in 1864 ('Beitrag zur Schmetterlingskunde,' p. 21). But Berce ('Faune Entomologique Française, Papillons [Lépidoptères], vol. i, pp. 86-87, Paris, 1867) appreciates their true relationship and writes :

"Cette espèce habite les montagnes du nord de l'Allemagne, et si nous la mentionnons ici, c'est que nous avons pris sur les hauts sommets des Vosges avec la var. *Cassiope* des individus qui ne diffèrent en rien de ceux que nous possédons du nord de l'Allemagne."

* "Some . . . have been separated generically under the name of *Oreina*, Westw., but I can find no character which justifies their separation from *Erebia*, and even if there were the name is pre-occupied" (Elwes, 'Trans. Ent. Soc. London,' 1898, p. 184).

Of *Cassiope* he says :

“ Les individus des Vosges sont plus noirs, la bande ferrugineuse plus vive, et les points noirs mieux marqués que ceux des Alps, et de l’Auvergne.”

A little later Edward Newman (London, 1874; his work on the British Butterflies bears no date), recognises *Epiphron* as the type, and adds that “ in accordance with the usage of science the earliest name only is retained.” But the next German writer, Gustave Ramann, ignoring all previous authorities, including the famous 1871 Catalog of Staudinger, drops *Cassiope* altogether (‘ Die Schmetterlinge Deutschlands und der angrenzenden Lander,’ Arnstadt, 1872–1875). A figure of *Epiphron* is shown on the somewhat rough chromolithographic quarto plate xi, fig. 254, but fig. 255, referred to in the legend as *Melampus*, is decidedly more like it.

Next, following Newman, comes the Rev. F. O. Morris’s more ambitious but far less practical ‘ British Butterflies and Moths ’ (1876), which includes a number of coloured illustrations rather above the average in quality for the time. It cannot, however, be regarded as a serious contribution to the then knowledge of our insular insect fauna, being in most cases obviously little more than a compilation from preceding authors. But I mention it because, although the writer speaks in the text (p. 53) of “ the small black dots with obscure pupils ” on the wings of *Hipparchia cassiope* (no allusion is made to *Epiphron*), the accompanying plate shows an underside of the male and an upperside of the female in both of which figures the eye-spots are pupilled with white. I think the artist probably took Knoch’s original female figure for his model, and got over the difficulty of figuring the male with the suppositious white-pupilled ocellations by inventing an underside which might square with the ambiguous wording of Knoch’s description.

Although the published works on the western palæarctic Lepidoptera, other than special monographs and catalogues, for the next five and twenty years are neither many nor remarkable, the correct style of nomenclature for our species becomes established, or nearly so. In 1884, after several years’ publication in separate parts, Dr. H. C. Lang’s ‘ *Rhopalocera Europæ* ’ appeared in book form, and is still the only complete work on the western palæarctic butterflies in the language with coloured illustrations. Here *Erebia epiphron*, Kutz. (*sic*), is properly recognised as the type, and vars. (*a*) *Cassiope*, Fab., etc., (*b*) *Nelamus*, Boisid., and (*c*) *Pyrenaica*—no author cited—follow.

In 1889, however, “ with the object of making the butterflies of the palæarctic fauna better known to English entomologists,” having already reviewed the genera *Colias*, and *Parnassius*, Mr. H. J. Elwes, F.R.S., published his “ Notes on the Genus *Erebia* ” (‘ Trans. Ent. Soc. London,’ 1889, pp. 317–342), and in

the accompanying synopsis, omitting the greater part of the synonyms and references given by Staudinger, we find our subject treated as follows :

1. *I. epiphron*, Knoch. *Hartz, Siles., Blk. Forest, Vosges.*
 Var. *pyrenaica*, H.-S. (inconstans, nomen vix conservandum, transitus ad *cassiope* in partem). *Pyr. or.*
 Var. *cassiope*, Fab., etc. (inconstans, formæ intermediæ adsunt). *Alps, Pyr., Hung. mont, Scot.*
 Ab. *nelamus*, Boisd. (ab. vix fasciata et fere ocellata).
 ? Var. *kefersteini*, Ev. (forma dubia mihi natura ignota). *Sib. cent. mont.*

and nine years later, in the same author's 'Revision of the Genus *Erebia*,' this arrangement is repeated with the proper omission of *Kefersteini* ('Trans. Ent. Soc. London,' 1898, p. 174).

It will be observed that Mr. Elwes is disinclined even to separate *Cassiope* from the type, for he continues (*loc. cit.*, 1889, p. 332)—"*E. epiphron* : After examining a very large number of specimens, I can only say that, though the form *Cassiope*, which represents the species in the Alps," meaning thereby, I conjecture, the Central Alps, "is very different in typical examples from *Epiphron* of the Hartz mountains and Silesia, yet it is so variable that in the Pyrenees especially and also in Scotland it cannot be looked upon as constant. The varieties *Vogesiaca* * and *Pyrenaica* connect it with *Epiphron*, and the form *Nelamus* is an extreme variety or aberration in which the ocelli have almost or entirely disappeared. In the Balkans and Carpathians, from whence, however, I have seen but few specimens, the type is rather of *Epiphron* than *Cassiope*."

The volume of Barrett's 'Lepidoptera of the British Islands,' which contains the butterflies, bears date 1893. *Erebia epiphron* from Scotland is figured side by side with *Cassiope* on Plate xxix, figs. 1, 1a and 1b, but it is clear from the text (p. 210) that Barratt was not acquainted with Knoch's typical female in nature :

"In the form originally described under the name of *Epiphron*," he writes, "the black dots are enlarged, and commonly contain white centres or pupils. . . . I am not familiar with this form, but Dr. Buchanan White states that specimens from Perthshire possess this character in the female. This certainly is not universal even in that district, since in a long series . . . I find no trace of the white centres to the black spots in either sex."

In 1895 Mr. Edward Meyrick, F.R.S., in his 'Handbook of

* Mr. Elwes appears to have invented this name for the specimens in the British Museum Collection from the Vosges. They were at one time distinguished by a label bearing the legend *Vogesiaca*, Christ, but this name of Christ's having been bestowed on the Vosges form of *Manto*, it was afterwards removed at my suggestion to its proper place under that species.

the British Lepidoptera,' enumerates on p. 340 "*Erebia epiphron* (*Cassiope*, F.)," thus. It is all the more surprising, therefore, to find Fritz Rühl in the same year reverting to the discarded classification of the German writers in his work, "Die palæarktischen Gross-schmetterlinge" (Bd. i, Tagfalter, pp. 474-475).

But he gives his reasons for so doing, inconclusive though they may appear, as being based almost entirely on superficial characters, which, as we have seen over and over again, vary indefinitely in the intermediate forms between the type and *Cassiope*, and this is his arrangement of the type and its varieties :

Epiphron, Knoch.

Var. *Pyrenaica*, H.-S., *Melia*, Kaden.

Cassiope, F.

Var. *Nelamus*, Boisd.

Var. *Valesiaca*, Meyer-Dür.

and to justify these conclusions he adds : "Schmetterling ebenso gross wie *Epiphron*, zu welcher Art *Cassiope* häufig als Varietät gestellt wird, jedoch habe ich nach Verleichen des mir vorliegenden umfassenden Materials die Ueberzeugung gewonnen, dass *Cassiope* als eigene Art zu betrachten."

In the following year, 1896, J. W. Tutt, under the title of *Melampias epiphron*, Knoch, accepts and incorporates ('British Butterflies,' pp. 425-430) the classification, and the several varieties adopted by Mr. Meyrick and Edward Newman, and finally by Dr. Fras. J. Buckell in his paper on "*Erebia epiphron* and its Named Varieties—A Study in Synonymy," published July 15th, 1894, in the 'Entomologist's Record,' v, pp. 161-165, adding on his own account :

N. ab. *obsoleta*, "with the fulvous bands entirely absent, the upper surface unicolorous blackish-brown."

Simultaneously the late Mr. W. F. Kirby, in 'A Hand-Book of the Order Lepidoptera,' pt. 1, i, p. 23), as if there were still a doubt as to the specific identity, makes the curious remark under *Erebia epiphron*, var. *E. cassiope* (*sic*), "In the allied form *E. epiphron*, Knoch, which many writers consider to be the same species, but is very doubtfully British, the eyes are ocellated."

The figure of *Epiphron* (plate viii, fig. 1) in Prof. Ernst Hofmann's 'Die Gross-schmetterlinge Europas,' 1894, is a daub. It is intended apparently to represent a female of the type, and displays an insect with large white ocellations to the spots in a continuous series of rusty bands on the fore and hind wings alike. The text is as uninformative. But both description and figures are much improved in Dr. Arnold Spuler's third edition of the same work, published at Stuttgart in 1903, where the classification is varied as follows :

"ab. *nelamus*, constituting the transition to the ab. *mnemon*.

ab. *pyrenaica*."

In 1906 the Editor of the 'Entomologist,' Mr. Richard South, continues the arrangement already recognised by his contemporaries in 'The Butterflies of the British Isles,' treating *Cassiope* as a variety, and concluding that all the British examples of the "small mountain ringlet" examined by him are referable to the form known as *Cassiope*.

But if, at the close of the nineteenth century, there existed any reasonable doubt of the identity of the two butterflies, it should have been dispelled by the structural researches instituted by Dr. T. A. Chapman ('Transactions of the Entomological Society of London,' 1898, pp. 209-239). In "A Review of the Genus *Erebia*, based on an Examination of the Male Appendages," read before the Society on February 16th, 1898, he says, *passim* (p. 213) :

"These 'Grass Erebias' are those that puzzle one in the field and even in the cabinet perhaps, more than any others. It is therefore very satisfactory to find that the forms of the clasp are quite distinct in the nine species, and especially that they are most markedly so in precisely those species that are most frequently confused, or likely to be so. Thus . . . *E. epiphron* and *E. christi* might be confounded, but the clasp is very different." And, a little further on (p. 218), examining in detail the genital armature of the first mentioned, he continues—" *E. epiphron* (plate viii, fig. 7) : The clasp of the species with which *Cassiope*, *Nelamus*, and the other named forms agree, has a slight fulness preceding the neck. The neck and head are rather less than a third of the total length of the clasp, the styles being numerous, very small, and of tolerably uniform size. In *Nelamus* the clasp is slightly shorter and the basal styles more frequently somewhat longer."*

It is, of course, incontestable that, in the words of M. Oberthür ('Lépid. Comparée,' fasc. vii, p. 208), "deux espèces différentes par d'autres caractères peuvent avoir une même armature genitale," but enough has been written already to identify *Epiphron* and *Cassiope* specifically on other grounds, their habits and bionomics in all their stages, though I believe no one has yet reported having bred the two forms from the same batch of ova or larvæ, as years ago Buckler settled the identity of *Aricia medon* and its vars. *Artaxerxes* and *Salmacis*.

With the weight of Dr. Chapman's authority behind him, and with the record of excellent work done by other British and continental lepidopterists, it is melancholy to find in Dr. Adalbert Seitz's 'Die Gross-schmetterlinge der Erde,' Stuttgart, 1909, that Herr von G. Eiffinger has made a regular hash of so many of the Erebias. Apparently he is ignorant of, or has not taken the trouble to refer to, the several papers in the 'Transactions'

* Plate vii, fig. 7.—*E. epiphron* : *c*, clasp (Chamonix) ; *d*, clasp (Germany). Var. *Cassiope* (Sau Alpe) : *a*, tegumen ; *b*, clasp somewhat flattened. Var. *Nelamus* (Campher, Engadine) : *e*, tegumen ; *f*, clasp ; *g*, clasp.

of the Entomological Society of London and the magazines which I have cited, and where, to give a single instance, convincing proofs are furnished of the specific difference of *Erebia melas* and *Erebia lefebvrei*. He is, however, better advised in the matter of *Epiphron*, retaining as varieties *Cassiope*, *Nelamus*, *Valesiaca* and *Mnemon* (which he assigns oddly to Hewitson), with ab. *Obsoleta*, Tutt. Nor is there much in his diagnosis of typical *Epiphron* to which objection can be taken, save in so far that he seems to infer that the type *only* occurs in the Hartz. But once again the artist has played the author false. On plate xxxvi(a) the typical female does not show the famous white pupils, while the eighth figure in the row, named *Nelamus*, is, in fact, the very *Obsoleta* which he describes as the form devoid of bands and spots alike on the upper side of the wings.

To sum up, then, the synonymic history of the species, it is well to have noted that, almost without exception from the days of Knoch onwards, those writers who have made *Cassiope* a variety of *Epiphron*, or given it rank as a species, base their conclusions upon the absence of the white-pupilled ocellations in the female, and that seldom, if ever, is this character definitely attributed to the male of the type form. Possibly white-pupilled males are occasionally taken with the similarly marked females; but these are so rare that, in default of any better evidence to the contrary than is furnished by Knoch's original description, we are justified in the conclusion that practically no characteristic distinction by means of the eye-spots only is to be found as between the majority of male *Epiphron* and the so-called male *Cassiope*. *Epiphron* to the modern collector is that form of the male in which the eye-spots are most amply developed irrespective of white markings; male *Cassiope* includes all forms of the male between the type and the "almost eyeless" *Nelamus*. Where the line is to be drawn between the type and *Cassiope* proper it is impossible to determine. Perhaps it will be most convenient to retain as *Epiphron* only those in which the rusty bands, plus a full complement of ocellations thereon, are developed on all the wings on the upper side; as *Cassiope* the forms in which the band is more or less broken up, and the ocellations—never white-pupilled—are less in number. And by this arrangement we shall arrive at a reasonable basis for classification of the principal and distinctive named forms as follows, practically identical as far as it goes with Mr. H. J. Elwes's arrangement of the *Epiphron* group, and endorsing also the opinion of Dr. Fraser Buckell ('Entomologist's Record,' *loc. cit.*, p. 165), that, "so far as recognised named varieties are concerned" (other, in my own view, than var. [*et ab.*?] *Pyrenaica*—for *Pyrenaica* is reported by Lederer from Styria), "they should be regarded, if retained, rather as sub-varieties of *Cassiope*."

Erebia epiphron, Knoch, ante-marginal bands complete.

var. (*et ab.*?) *pyrenaica*, H.-S.

var. *cassiope*, Fab. (? ♀ only), ante-marginal bands broken up or obsolescent.

ab. *nelamus*, Bsdv., with reduced ocellations, but bands more or less present.

ab. *obsoleta*, Tutt, with neither bands nor ocellations.

to which later may perhaps have to be added some of the forms recently described from isolated regions—the Carpathians, Balkans, etc.—which I hope to examine in detail later.

CONTRIBUTIONS TO OUR KNOWLEDGE OF THE BRITISH BRACONIDÆ.

BY G. T. LYLE, F.E.S.

(Continued from p. 230.)

Earinus ochropes, Curtis.

Black; legs rufo-testaceous, tibiæ paler, hind coxæ sometimes darker at base, hind tibiæ ochreous with the apex fuscous and faint indications of a dark ring before the base; hind tarsi, and occasionally middle tarsi also, dark. Antennæ dark, apex of second joint and base of third rufo-testaceous, 34–35-jointed. Orbits immaculate; squamulæ dull rufo-testaceous; wings hyaline, slightly clouded towards apex, nervures fuscous, sometimes paler, stigma fuscous. First cubital cell separated from first discoidal by a not very distinct nervure; second cubital cell triangular, third abscissa of the radius almost straight, second abscissa nearly obsolete. Mesothorax smooth with the sutures barely indicated; metathorax almost smooth, with two central, longitudinal, parallel carinæ, between which is a narrow, more or less punctate space. Abdomen with the first segment margined, longitudinally striolate, and two carinæ reaching the middle; second segment feebly irregularly striolate, with indications of a transverse curved impression and fovæ at the basal angles; third smooth, though in the females faint traces of striolation and a transverse impression may often be detected. Terebra slightly longer than the abdomen. Length $4\frac{1}{2}$ mm., expands 10 mm.

Probably Curtis's description of this species was never published, and so far as I can learn at the moment his MS. is with his collections in Australia. The Rev. J. Waterston, of the British Museum, has most kindly looked-up Dale's copy of Curtis's 'Guide to an Arrangement of British Insects,' which is now in the possession of the Museum, and finds no MS. notes opposite *ochropes*, though it appears as a *nomen nudem*. In the first edition of the 'Guide' *ochropes* is cited as follows:

105.

Bassus. B.E. 73.

Microdus, Nees.

† 3 × *ochropes*, Curt.

The number 105 refers to the column of the 'Guide,' 3 is the number of *ochropes* in the species listed, † signifies that Curtis and Dale were the first to discover the species in Britain, and Mr. Waterston thinks that × probably indicates that the specimens are in Dale's Collection. I have been much interested to find nine ancient examples in this collection without data, but all under the name of *ochropes*, Curt. In all probability these specimens were named by Curtis and came from Dorset, as in his 'History of Glanvilles Wootton' C. W. Dale records the species as common; the collection also contains a female from Shetland (1890), and a male labelled "G. W., 1898." The only example I have taken myself, a female, was swept from low bushes in a lane at Hunstanton, Norfolk, May 31st, 1918. In Fitch's Collection is a female ticketed "*delusor*?"

This species differs from *tuberculatus*, Wesm., in having the radius straight, second cubital areolet subtriangular and not quadrate, and tubercles of first abdominal segment not prominent, from *gloratorius*, Panz, in the much smaller size and colour of hind tibiæ, and from *delusor*, Wesm., in the colour of hind coxæ etc., and length of terebra.

Earinus delusor, Wesm.*

Considered by Marshall to be the same as *Bassus gloratorius*, Panz, † though that species has a length of 7 mm. while *delusor* attains only 5 mm. Later writers have again separated the two so that we can no longer retain *gloratorius* in the British list. *Delusor* has the hind coxæ black, hind tibiæ whitish, with the apex and a ring before the base black, and terebra somewhat shorter than the body (as long as the body without the head, according to Marshall).

Four males in Marshall's Collection in the British Museum are the only examples I have seen and these I have not examined carefully. Mr. Waterston tells me that a female (not a Marshall specimen) which accompanies them is wrongly placed, being apparently a *Microdus*.

Earinus transversus, sp. nov.

Black, shining; mouth piceous, mandibles usually lighter, palpi pale; antennæ dark, with extreme apex of second joint and base of third rufous; orbits immaculate; legs testaceous, hind coxæ and femora rufous; hind tibiæ whitish, apically black, and with a faint trace of a dark band before the base; hind tarsi black. Wings hyaline, first cubital cell very distinctly separated from the first discoidal, second cubital cell subquadrate, usually externally incomplete; squamulæ testaceous, stigma and nervures fuscous. Antennæ 37-jointed in both sexes. Mesothorax smooth, feebly

* 'Nouv. Mem. Acad. Sc. Belg.,' vol. x, p. 12.

† 'Faun. Ins. Germ.,' vol. ix, p. 102, t. 17.

punctulate, with very faint traces of the sutures; metathorax punctulate, pubescent, with two central, parallel, longitudinal carinæ, between which is a narrow depression; mesopleuræ smooth and shining. Segment 1 of the abdomen laterally longitudinally striolate with two carinæ which disappear before the middle, the space between smooth (in the males the carinæ are somewhat indistinct). Segment 2 irregularly striolate with a curved transverse impression. Segment 3 *with a similar curved transverse impression*, striolate at base but apically smooth; other segments smooth and shining. Terebra rather more than half as long as abdomen. Length $5\frac{1}{2}$ mm., expands $10\frac{1}{2}$ mm.

(To be continued.)

ON SOME VARIATIONS OF *APHANTOPUS* *HYPERANTHUS*.

BY THE REV. H. D. FORD, M.A.

A. hyperanthus is common in many parts of this district, and in two or three restricted localities those variations of the underside, known as *arete* and *cæca*, are, comparatively speaking, not rare. During the past four years my son and I have given considerable attention to these forms; altogether we have captured and examined between 120 and 140 specimens, and as we estimate that these variations are in the proportion of about 4 or 5 per cent. to the typical form, the task has involved the capture and examination of about 3000 insects.

But these variations are almost endless; hardly any two specimens are alike; they merge almost imperceptibly from the typical into the *arete* or *cæca* form, and, further, these two forms are combined together in a number of sub-variations which constitute a most interesting study. And accordingly, after much consideration, we have, for our own convenience, divided the series in our collection into five main groups.

These may be described as follows: A. type + *arete*; B. type + *cæca*; C. *arete*; D. *arete* + *cæca*; E. *cæca*. It is a short description of these different groups which is to form the subject of this paper.

The typical underside of *A. hyperanthus* is, of course, well known. On each side of the insect eight ocelli are to be found, which are divided into three groups: the first, on the fore wing, consists of three ocelli; the second, on the hind wing, of two ocelli; the third, also on the hind wing, of three ocelli. These ocelli follow the marginal outline of the wings, though the second group, consisting of two ocelli, Nos. 4 and 5, is set a little further inwards from the outer margin than are the other two groups.

But even in the typical form there is a tendency towards the diminution in the size of the ocelli, which ultimately finds

expression in the variety *arete*; ocellus No. 4 is almost always conjoined with No. 5, and is frequently small and of the *arete* form, while ocellus No. 8 is almost invariably of *arete* form, though it stands quite apart from its predecessor, No. 7, being sharply separated from it by the lowest median nervure, and when we come to the variations it is in these two ocelli, as may be expected, that the differences from type are first seen; it is these ocelli which tend to become obsolete more frequently than the rest, or, in the *arete* forms, they are apt to degenerate into mere *cæca* points.

We find that the insects in which the typical is combined with the *arete* or *cæca* form are exceedingly rare. However, of the forms type + *arete* (group A), and type + *cæca* (group B), we have several examples. In these insects it is the ocelli on the upper wing which remain typical, and almost invariably they are ocelli Nos. 1 and 2 which keep the typical form; ocellus No. 3 is either *arete* or *cæca* in form, or else obsolete; but we have one interesting example in which the first three ocelli (those on the fore wing) are boldly typical, while all those on the hind wing are particularly minute *cæca* points. It should be noted, however, that ocellus No. 3 is more prone to obsolescence than any other; in every variation of the insect, as well as in the two groups just noted, it is the first to disappear.

We now come to the true *arete* variation, which we have ventured to designate as group C. In it the size of the ocelli are much reduced throughout; on the fore wing ocellus No. 2 tends to stand out most boldly and to approximate most closely to the typical size and form, while on the hind wing ocellus No. 6, the first of the last group, persists most strongly, closely followed, in this respect, by ocellus No. 5.

Group D, in which the *arete* and *cæca* characteristics are conjoined, affords many most interesting variations. As may be expected from what has been already said, ocelli Nos. 1 and 2 on the fore wing usually persist as *arete* when the remaining ocelli have passed into *cæca* points. We also find that in these examples ocellus No. 3 has completely disappeared, as has ocellus No. 4, while ocellus No. 8 has, in most instances, become either obsolete, or else is reduced to a mere microscopic point.

Finally we come to group E, the true *cæca* variation. In this form the fore wing is almost invariably obsolete, although we possess one or two specimens in which ocelli Nos. 1 and 2 remain as almost indistinguishable points. In the hind wing we generally find that only three ocelli are represented by *cæca* points, these being Nos. 5, 6 and 7, the last of the first group and the first two of the second group upon this wing. We have never met with complete obsolescence (var. *obsoleta*); we possess two or three specimens closely approaching this form, but in all of them the three *cæca* points, already mentioned, still remain quite clear, although exceedingly minute.

Asymmetry enters largely into these variations, forming a feature in about 33 per cent. of our specimens.

With regard to the upper side of this insect variation is much less common; we have, however, several specimens in which the ocelli on the upper side are almost as clear and as brightly ringed as those upon the lower side, and among these are two especially interesting varieties. The first approximates closely, on the under side, to var. *lanceolata*, all the ocelli being slightly enlarged and somewhat oval, with the exception of ocellus No. 3, which is present in the *arete* form on the right fore wing, and as a *cæca* spot upon the left. The upper side of the insect is especially striking; the ocelli are as clear and bold as any on a typical under wing, with one interesting exception. Ocellus No. 3 and ocelli Nos. 4, 5 and 8 are entirely obsolete, there thus being only four bright ocelli on each side of the insect. The second variation is even more interesting; each upper wing is typical, but upon each lower wing are three bright and clearly defined *cæca* points, representing ocelli Nos. 5, 6 and 7.

Finally we have endeavoured to arrive at the cause of these variations, but without much success. First we were inclined to consider them due to malnutrition, but quite half, both of our *arete* and *cæca* varieties, are full-sized, well-grown insects, though others are perceptibly small. It seems, therefore, an open question whether nutrition, or the want of it, enters to any great extent as an active cause in the formation of these very interesting varieties.

Thursby Vicarage,
Carlisle.

DURATION OF STAGES OF *PYRAMEIS ATALANTA*.

By F. W. FROHAWK, M.B.O.U., F.E.S.

I HAVE read Mr. Gervase F. Mathew's remarks on *Pyrameis atalanta* in the October number of this Journal, which do not agree with observations I have from time to time noted down. There is not the slightest doubt that the abundance of this species in this country in certain years is due to immigration in the spring, as is the case during the present year, when they first appeared in Essex on May 14th last, as recorded in the July number of the 'Entomologist.' Specimens occurring in Britain before may in all probability have hibernated in this country, but only a comparatively few appear to survive hibernation with us; it may be noticed that *atalanta* is always somewhat a rarity in early spring as compared with other hibernated butterflies. As a rule it does not make its appearance in any numbers (and then only in certain seasons) until the latter half of May or early in June, when the eggs are usually deposited which produce the first summer emergence about the end of July.

Mr. Mathew states—"The females take a considerable time in depositing all their ova . . . she may take a month or perhaps longer before she has finished laying." He also doubts this species being double-brooded, and that the eggs are laid from the middle of April, in early seasons, to towards the end of July.

There cannot be any doubt that a succession of broods of *atalanta* occur during favourable seasons, as I think the following notes will show, otherwise how can we account for small larvæ occurring at the end of September and even as late as well into October. These cannot be the result of spring parents, especially when the egg state lasts from five to ten days according to temperature.

The complete transformations of the summer emergence occupy from about forty-five to fifty days. Of one brood reared, the eggs hatched on the ninth day (rather longer than usual owing to temperature), larval stage twenty-three days and pupal stage seventeen days, total forty-nine days.

June 14th, 1894 (the first warm, bright day for the past two months), a captive female deposited 100 eggs and died a few days after.

June 27th, 1903, I observed a wild female depositing. She flew from one plant to another in quick succession, only resting about five seconds each time to deposit an egg—only one on a plant, each being laid on the upper surface of one of the smaller terminal leaves. These hatched on July 2nd—only five days in the egg state. Another also seen depositing in the same manner June 29th, 1903.

Mr. Mathew also states—"These larvæ do not vary very much." This surely is a mistake, as the whole colouring is liable to great variation in different individuals. September 17th, 1905, I found thirty-six larvæ on a small bed of nettles at Romney Marsh, Kent, in various stages from after the second moult to fully grown; the latter were of various colours, from almost entirely pale ochreous-whitish, to wholly black. The first one pupated September 22nd, and emerged October 12th; others emerged until the end of November. September 30th, 1908, found four larvæ at Thundersley, Essex; three fully grown, one moulted last time October 1st and pupated October 8th; imago emerged October 19th. In the Scilly Islands I found many larvæ in different stages, some quite small, during October, 1912; there produced imagines in November.

In these islands (Scilly) *atalanta* occurs on the wing throughout the winter during suitable weather. The late Lord Proprietor, T. A. Dorrien-Smith, told me that it was quite usual to see *atalanta* flying about the Tresco Gardens at Christmas-time. In such warm districts as South Cornwall and the Scillies this species has no true hibernating period, and merely retires for rest during rough, unsuitable weather.

At the present time *atalanta* larvæ in different stages are still to be found in this neighbourhood and probably elsewhere throughout the country.

Thundersley, Essex ;
October 5th, 1920.

NOTES ON BRITISH NEUROPTERA IN 1919.

By W. J. LUCAS, B.A., F.E.S.

ALDER FLIES (*Sialidæ*). My first capture of the common species, *Sialis lutaria*, Linn., was one with damaged wings taken, 24 May, on a sports' ground in Kingston-on-Thames. Both sexes were captured at the Mill Pond, Leatherhead, on 31 May. Several Cheshire examples were sent for examination by G. A. Dunlop:—Runcorn, 19 May; Stretton Moss, 9 June; Moss side, Acton Grange, 14 June; Appleton Reservoir, 24 May. From Stretton Moss on 9 June came also a specimen which I take to be *Sialis fuliginosa*, Pict. Unfortunately one of the clearest tests failed, the transverse nervure in the sub-costal area being missing in both forewings.

SNAKE FLIES (*Raphidiidæ*). Both sexes of *Raphidia maculicollis*, Steph. were taken by beating at Boxhill, Surrey, on 31 May. *R. xanthostigma*, Schum. was reported (F. W. Fordham) from the Selby District of Yorkshire, in which county it is not an uncommon insect.

BROWN LACEWINGS (*Hemerobiidæ*). An example of *Hemerobius humuli*, Linn. was obtained by beating oak on 30 Aug., near Highland Water in the New Forest. One, which turned out to be *H. orotypus*, Walleng. was taken on the occasion of the S. London Society's Excursion to Boxhill on May 31. On the same occasion two cocoons of the genus *Hemerobius*, Linn. were obtained. One was constructed in the axil of a twig on a small branch of dead wood, the material being a very thin whitish lace-work of silk within a still finer lace-like web. The inner cocoon was elliptical, about 5 mm. long and about 2.5 mm. wide. From this a somewhat small imago of *H. quadrifasciatus*, Reuter was bred on the 6th (or 5th) of June. The other cocoon (which was attached to a pine needle), though made of a somewhat open lacework of silk, was less transparent and of a yellower tint. It was elliptical, or perhaps slightly pear-shaped, about 7 mm. long and 3.5 mm. wide. It produced an imago of *H. concinnus*, Steph. on 8 June. In each case the pupa left the cocoon at one end, and was free from it before disclosing the imago.

GREEN LACEWINGS (*Chrysopidæ*). One *Chrysopa flava*, Scop. was found on a tree-trunk at Netley Heath, Surrey, on 5 July (but it was not immaculate on the prothorax). *C. prasina*, Ramb.

(= *aspersa*, Wesm.), active for a *Chrysopa*, was taken by the side of Oberwater in the New Forest on 1 Aug. Of *C. vulgaris*, Sch. one was beaten from oak, on 30 Aug., by the side of Highland Water in the New Forest. On 7 June a *C. septempunctata*, Wesm. was taken from a fence in Fassett Road, Kingston-on-Thames, and another, apparently of the same species was found flying in the same road, but so teneral that the spots were not fully developed. *C. perla*, Linn. was met with at Boxhill on 31 May. A number of the same species were noticed on nettles in Princes' Coverts near Oxshott on 28 June, while rather large Lady-bird larvæ and pupæ were seen on the same bed of nettles—apparently some prey to their liking were attractive to both. *Nothochrysa capitata*, Fabr. was taken in the Selby District of Yorkshire (Fordham)—a not uncommon insect in the county.

SCORPION FLIES (*Panorpidæ*). *Panorpas* of the two common species were frequently seen in 1919. Though in several cases but one insect is mentioned, often others were seen, a specimen being taken as a sample. The first of the season was a male *P. communis*, Linn., taken near Horsley on 25 May; a male was secured near Leatherhead on 7 June; a male near Claygate on 10 June; a female at Effingham Common on 14 June; near Boldermere on 21 June, the occasion being an excursion of the S. London Society. All these were in Surrey. A male was secured in good condition by Blackwater in the New Forest on 30 July, while the same species was taken higher up the river on 1 Aug. G. T. Lyle captured a female at Gog Magog Hills on 3 Aug. My last capture was made at Rhinefield in the New Forest on 31 August. I first met with *P. germanica*, Linn., a male and a female the latter being teneral at Boxhill on 31 May; a female was taken near Claygate on 10 June; a female on Effingham Common on 14 June; near Boldermere on 21 June; and at Dames Slough in the New Forest on 1 August.

In connection with the var. *unifasciata* of *P. communis*, which I described in 'Entom.' 1919, p. 58, M. Lestage calls my attention to the fact that Klapalek had already used the term for a form of *P. communis*. It was not unifasciate by any means, while the Marlborough examples were. The variety, however, turns out to be one of the forms of Lacroix' var. *aperta*; so a new name is not necessary.

Kingston-on-Thames,
19 Aug. 1920.

NEW AND RARE BRITISH ALEURODIDÆ.

By J. W. HESLOP HARRISON, D.Sc.

As usual, during the present season, my friend Bagnall and myself have devoted our leisure time to increasing our knowledge of the British Zoocecidia—a pursuit, fortunately enough,

lending itself very readily to the accumulation of facts concerning the less studied insect orders. The records listed here are those of the *Aleurodidae*, and whilst mainly the results of my own work, they embody the notes on the same group made by Mr. Bagnall. Working as we do to suit one another it is impossible in many cases to dissociate our captures.

Advantage is taken of this opportunity to indicate the correct generic position of several of the species, which, up to the present, have all been lumped under *Aleurodes*.

Aleurochiton aceris, Geoffroy. Found very abundantly by me on *Acer pseudoplatanus* in the Swallowship Woods near Hexham, Northumberland. The only previous northern record was my own from *Acer campestre* at Gunnergate, N. Yorks.

Aleurodes quercus, Signoret. The only previous occurrence of this species in Britain with which I am acquainted is that of the specimen I captured at Corbridge, Northumberland, in 1918. This year I obtained it quite commonly from *Quercus* near Birtley, Durham.

Aleurodes spirææ, Douglas. Seen by Mr. Bagnall in Surrey, but detected by me for the first time in the northern counties at Waldridge, Co. Durham. I took both imagines and ova from *Ulmaria pentapetala* (*Spiræa ulmaria*).

Tetralicia ericæ, Harrison. Still, as far as I am concerned, curiously localised in its old station, near Chester Moor, Co. Durham, although a new colony has just been noted across the burn. Recently taken and recorded by G. B. Walsh from Skipwith Common in S. Yorks.

Tetralicia vaccinii, Konow. New to the British fauna. An imago boxed by myself and pupæ cases noted by A. D. Peacock on *Vaccinium myrtillus* at Chopwell form the sole Durham records, whilst the occurrence of larvæ on *Vaccinium oxycoccus* at Prestwick Carr to Mr. Bagnall provides the complementary Northumberland locality.

Asterochiton avellanæ, Signoret. First noted by Mr. Bagnall at Ovingham, Northumberland, and almost simultaneously by myself. Subsequently we both found it ubiquitous on hazel in the Derwent Valley, Co. Durham, whilst I detected it on the same shrub at Bishopton, S. Durham. Larvæ were common on *Corylus avellana* at Chopwell on August 24th, 1920. New to the north.

Asterochiton carpini, Koch. I encountered this snowy fly both in the perfect and in the egg state on *Carpinus betula* at Chopwell, Co. Durham; likewise new to the north.

Asterochiton Bagnalli, sp. n. Quite common ovipositing on beech at Ovingham. Very like *A. avellanæ*, but a little larger and duller in colour. I reserve fuller descriptions until early stages, other than ova, are available.

Asterochiton, sp. Also resembles *A. avellanæ*, but not more

so than any two species of the genus *Aleurodes* approach one another. I do not venture to describe this until larvæ and pupæ are before me. Precisely as in the case of the most *Aleurodidae* neither the imago-nor ovum offer sufficiently strong characters for differentiation. Quite common, with the usual egg batches laid in a blue waxy bloom, on *Ulmus campestris* at Chopwell, Co. Durham.

Aleurodidarum, sp. A species noted by Mr. Bagnall in great numbers on *Scrophularia nodosa*, but as he was not then studying the group he neglected to secure examples. Since then prolonged searches on the same lot of plants have been fruitless—a very common experience to the Aleurodid hunter; his motto must be "*Carpe diem.*"

SOME NOTES ON THE COLLECTION OF BRITISH MACRO-LEPIDOPTERA IN THE HOPE DEPARTMENT OF THE OXFORD UNIVERSITY MUSEUM.

BY F. C. WOODFORDE, B.A., F.E.S.

(Continued from p. 201.)

SPHINGIDÆ.

Dilina (*Mimas*) (*Smerinthus*) *tiliæ*.—Series of over 70, showing a great range of variation both in marking and coloration. In marking the variation lies chiefly in the central dark marks in the centre of the fore wing. In some specimens these are united to form an unbroken band, in others this band is broken up into three separate blotches, in others reduced to two, and in a few to one blotch, this lying in the central portion of the wing. Four specimens are asymmetric in marking. The coloration ranges from a greyish pink to almost white in the ground-colour of the central portion of the fore wing in the males, and over many shades of red-brown in the same part of the wing in the females. In two males from Reading, one taken wild, one bred in 1894, the ground-colour is almost white.

Smerinthus (*Amorpha*) *populi*.—A very fine varied series of 60. A remarkable series of 8 was bred by Mr. A. H. Hann in 1900 from ova deposited by a female which was brought to the Museum in June. The larvæ fed up very quickly, and the moths emerged as a second brood between July 25th and July 30th. They are small. Six are of a very pale whitish-grey colour, with very faint markings. Two are almost unicolorous pale buff.

S. ocellatus.—A series of 42 without any remarkable aberration. There are 5 hybrids, *populi-ocellatus*. One is from the Hope Collection, two from the Spilsbury, all three without data. Two were bred in Kent by Mr. J. W. Newman in 1917,

the male parent *S. populi*, the female parent *S. ocellatus*. All five are remarkably similar in colour and marking.

Acherontia (Manduca) atropos.—A fine series of 22, with full data.

Sphinx convolvuli.—Series of 29.

S. pinastri.—Three specimens, one from the Hope Collection, rather worn, without data, two from the Chitty Collection, labelled "Ex Coll. Haslehurst."

Phryxus (Deilephila) livornica.—Five specimens, one from the Spilsbury Collection, labelled "From Coll: of late Hugh Harrison of Bowden. Said to have been taken near Manchester, bought by me through Mr. Hodgkinson fr: Mr. Brockhoules' Coll: 1875. F.M.S." One from Reading, taken July 24th, 1870, by Prof. Poulton. One from the Sellon Collection, labelled "Fr: Burnell's Coll: This specimen was caught at Fifield, Berkshire, June 1884 by Mr. Micklem." One from the Meldola Collection, labelled "Dorset 1906. Canford Cliffs. June 4. 1906." One from the Spilsbury Collection, without data.

Hippotion (Cherocampa) celerio.—Four specimens. One from the Spilsbury Collection, labelled "Taken at Wakefield. fr: Coll: of Mr. Harrison, next of Mr. Brockhoules', thro' Mr. Hodgkinson." It is in perfect condition. One from the Meldola Collection, labelled, "In house: Hurstpierpoint, Sussex. Sept. 12th 1885. Given to Wm. Mitten and by latter to W. G. Wallace 1885. To R. Meldola from latter in 1914. (Jan. 11th)." In perfect condition. One from the Hope Collection—a mere fragment—without data. Another specimen from the Spilsbury Collection; much damaged.

Deilephila euphorbiae.—Four specimens. Two from the Hope Collection, one of them being labelled "Wells Coll." Two from the Spilsbury Collection, one of them labelled "Euphorbia fr: coll: of Mr. Harrison, bt: fr: late Peter Bouchard Esq. who had it fr: Coastguard's man. Then in Colln: of Mr. Brockhoules, bt: by Mr. Hodgkinson fr: him."

D. galii.—Eleven specimens. Three from the Hope Collection, labelled "Wells Brit. Coll." Two from the Spilsbury Collection without data. Three from the Sellon Collection, labelled "Vaughan's Coll." On one a further label has "S. J. Capper. 1876." A fourth specimen from the Sellon Collection is labelled "Bennett's Coll." and a fifth "Burnell's Coll."

Daphnis (Cherocampa) nerii.—Two specimens. One from the Hope Collection, a female, very old and faded, but otherwise perfect. One from the Chitty Collection, both without data.

Metopsilus (Cherocampa) porcellus and *Cherocampa elpenor*.—Long series of each species, but without any noteworthy aberration.

Macroglossa stellatarum.—Long series. Two from Chitty Collection, with dark brown hind wings, with no data.

Hemaris fuciformis and *tityus*.—Long series without aberration. Three specimens of *fuciformis*, freshly emerged, show many scales on the wings.

Dicranura bicuspis.—Series of 25. Nine from Tilgate Forest, Sussex, 9 from North Staffs. taken by myself, 1 from Shifnal, Salop, 5 unlabelled from Spilsbury Collection, 1 unlabelled from Hope Collection.

Stauropus fagi.—Series of 31. Five specimens taken in 1892 were originally melanic, but are now faded to very dark brown. This also applies to a remarkably fine female labelled "Marlow," bred by the late Canon Barnard Smith.

Drymonia trimacula and *chaonia*.—Fine series of both species. One specimen of the latter from the Pogson Smith Collection, bred from a larva taken in Bagley Wood, has the central band entirely filled up with the dark ground-colour, and the white lines bounding it are very indistinct.

Notodonta phæbe = *tritophus*.—There are two specimens without data from the Hope Collection. Both are in perfect condition.

Lophopteryx cuculla.—Series of 16. Ten labelled "Marlow," eight of which are from the Sellon Collection.

Odontosia carmelita.—Series of 17. Seven from the Sellon Collection, labelled "Sussex." One from the Champion Collection, bred April 17th, 1910, from a larva taken at Chobham in September, 1909.

Ptilophora plumigera.—Series of 27. Only six with data, three of which are from Bucks, three from Kent.

THYATIRIDÆ.

Palimpsestis duplaris.—A long series from various localities. Eleven melanic specimens from Staffs.

Polyploca ridens.—A specimen without data from the Spilsbury Collection has the basal and outer portions of the fore wing white.

(To be continued.)

NOTES AND OBSERVATIONS.

COLIAS EDUSA IN BUCKS.—*C. edusa* has been quite plentiful on the Bucks Chilterns this year, the last one seen being a perfect female at Casdene on September 26th. *C. hyale* has not come to my notice, but in addition to the ab. *helice* I recorded last month, my brother has caught one very large specimen at Ventnor, and seen several others. It is quite remarkable the numbers of *P. atalanta* there are still to be seen in this district.—WALTER PIERCE; Queen's Road, High Wycombe.

COLIAS EDUSA IN DEVONSHIRE.—I have seen about twenty *edusa* and one *helice* in this district since writing my last note (*antea*, p. 234).—E. D. MORGAN; 27, Sanford Crescent, Chelston, Torquay, October, 4th, 1920.

COLIAS EDUSA AND HYALE IN HANTS.—We have had another *edusa* year in this neighbourhood, the last having been in 1917. The first specimen seen was on August 5th, but as this was at some distance from its headquarters I imagine it was out before that date. This was a month earlier than in 1917, when the first seen was on September 3rd. They were mostly taken on the Portsdown Hills, though four were seen along the roadside near the town. Well over 100 specimens were seen altogether, though not more than twenty at the outside were females. Not a single ab. *helice* was noticed, nor any *hyale*. A couple of boys, however, from the neighbourhood took four of the latter species on the same hills and saw a fifth. The last specimens of *edusa* seen was on September 13th. After that we had dull or wet weather. The 23rd, however, was very warm and sunny, but though I made another expedition to the Downs not a single specimen was to be seen. In 1917 they continued till October 2nd.—(Rev.) J. E. TARBAT; Fareham, Hants.

COLIAS EDUSA IN KENT.—During the early part of August *Colias edusa* was not uncommon in one restricted locality near Orpington, North Kent, flying over the rough slopes of a hillside. I took specimens on August 8th and 15th, and must have seen nearly a dozen on the latter date. Although in the locality each week-end until the middle of September I never saw the species again after August 15th. Perhaps the sharp ground frosts experienced towards the end of that month accounted for its disappearance.—G. B. HODGSON; 3, Bassett Road, North Kensington, London, W.

COLIAS HYALE AND C. EDUSA IN KENT.—I spent a short holiday at Deal with the idea of catching *Colias hyale*. During my stay I visited Dover, St. Margaret's Bay, Folkestone, Sandwich, Ramsgate, Margate, Broadstairs and Birchington, but saw no *hyale* at any of these places. On September 8th, however, I was very pleased to catch, within three miles of Deal, four specimens, three of which were in perfect condition. *Colias edusa* was very scarce and worn, but *Pyrameis cardui* was abundant and in good condition.—H. O. WELLS; Inchiquin, Epsom.

COLIAS EDUSA IN MIDDLESEX.—I took a worn male at Enfield on August 14th. I have not seen the species here since the last great *edusa* year.—H. M. EDELSTEN; Forty Hill, Enfield.

COLIAS EDUSA IN SUSSEX.—I captured a female specimen at Slindon on June 5th.—H. M. EDELSTEN; Forty Hill, Enfield.

COLIAS EDUSA AB. HELICE IN SUSSEX.—A specimen of *Colias helice* was captured by a young nephew of mine, aged seven, at Bognor towards the end of August last. Considering the age of its fortunate captor it is in excellent condition.—B. W. NEAVE; Lyndhurst, 95, Queen's Road, Brownswood Park, N. 4.

COLIAS EDUSA AT CHICHESTER.—*Colias edusa* has not been uncommon in this locality this season. My first record of its appearance is on June 9th, when it was seen flying in the garden of our neighbours and friends, Mr. and Mrs. Humphry.—JOSEPH ANDERSON; Chichester.

PLUSIA MONETA AT CHICHESTER.—This moth was taken by Mr. Humphry on a window-curtain in their house on June 16th, and an empty cocoon in our garden.—JOSEPH ANDERSON; Chichester.

BUTTERFLIES IN BUCKINGHAMSHIRE.—*Dryas paphia*: I took a perfectly fresh ♂ near Princes Risboro' on August 16th. *Argynnis aglaia* was also very common there and in fine condition. *Agriades corydon* was not out in this locality on August 8th. I went again on August 16th, but only saw 2 ♂ and 1 ♀. I did not go again so do not know if it appeared later. I presume the wet season had killed off the larvæ.—H. M. EDELSTEN; Forty Hill, Enfield.

PYRAMEIS ATALANTA IN FORFARSHIRE.—It may be of interest, in view of the notes which have appeared in the 'Entomologist' suggesting an unusual immigration of *Pyrameis atalanta* this year, to record the occurrence of the species in my garden here. A specimen was seen flying about on one or two of the fine days we had about the middle of September. On the 26th two were seen, both in good condition, and on October 3rd a very fine large example was under close observation as it sunned itself on various flowers. It had a distinct white spot on the red band of each fore wing, the spot being in a line with the row of white spots towards the apex of the wing. In my experience *atalanta* is uncommon in Scotland, this being the third occasion only on which I have seen it during the last thirty years.—A. E. J. CARTER; Monifirth, Forfarshire.

PYRAMEIS ATALANTA IN ARGYLL.—On September 22nd I saw a specimen of *Pyrameis atalanta* at Tarbert, Loch Fyne, in Argyll. It was a bright, sunny day, and the butterfly seemed to be in fairly good condition. This is the only *Pyrameis* I have seen during a stay of two months in the Clyde district, although *Aglais urticae* has been quite common.—A. STEVEN CORBET; 72, Union Street, Greenock.

ZEPHYRUS BETULÆ AT LIGHT IN N. DEVON.—On August 16th at 11.15 p.m. (summer time) I had occasion to enter an upper room, taking with me a candle. Two or three minutes afterwards I noticed what at first I took to be *Selenia bilunaria* walking up the glass of the window. On closer examination I discovered it to be a male *Z. betulæ*. On going to open the window it flew on to the sill. I then boxed it.—B. G. ADAMS; 15, Fernshaw Road, Chelsea, S.W. 10.

LATE EMERGENCE OF LYCÆNA ARION.—On July 11th I found a larva of *L. arion*, about half grown. It fed until about the 24th, and changed to a pupa on the 28th, emerging on August 29th.—B. G. ADAMS; 15, Fernshaw Road, Chelsea, S.W. 10.

MANDUCA (ACHERONTIA) ATROPOS IN SUSSEX.—On September 13th, 1920, a specimen of this moth was taken on the beach at Bexhill-on-Sea by a friend of mine (not a collector), who took it to the curator of the local museum, who kindly identified and chloroformed it. The moth was sent to me on September 19th. The upper wings, which are unusually dark, are a little rubbed, but otherwise the moth is in very fair condition. I understand a specimen of this moth has not been found in the district for several years.—A. M. LONGHURST; Arto, St. James's Avenue, Hampton Hill.

MANDUCA ATROPOS IN WALES.—I beg to record the capture of *Manduca atropos* near Carnarvon on September 9th. It was resting under the eaves of a house and squeaked loudly on being disturbed. This is my second record for this county. A female came to light in August, 1914, and was brought to me in good condition.—G. B. MAULY; Shenstone, Church Street, Malvern.

PHRYXUS (DEILEPHILA) LIVORNICA.—This was abundant in the Kalamaria district of Salonica in 1918 at the flowers of the rose of Sharon at early dusk. A few came to light.—GEO. S. ROBERTSON, M.D.; Bronllys, 72, Thurlow Park Road, Dulwich, S.E. 21, September 24th.

ON REARING DEILEPHILA LIVORNICA.—With further reference to my rearing this species (*antea*, p. 190), I very much regret to say the attempt proved a complete failure. When I last wrote about 100 were fine healthy larvæ quite full grown, and some few had gone under the moss. The weather turned very cold and dysentery set in, killing off the whole brood. The few that went down died before turning, with the exception of one; this pupa went black and rotten.—L. W. NEWMAN; Bexley, Kent.

HERSE (SPHINX) CONVOLVULI IN CORNWALL.—I found a fine specimen of *H. convolvuli* sitting on my garage door on October 5th.—LEONARD B. STOPPER; Penryn, Cornwall.

LATE APPEARANCE OF SPILOSOMA MENTHASTRI.—On the evening of October 4th I took under an electric lamp in this town a specimen of *Spilosoma menthastri* in very good condition. I have never known of such a late occurrence of this species before. Can it possibly be a case of a second brood—though I have never heard of such? On the same evening I saw a specimen of *Bryophila perla*, which is rather late.—(Rev.) J. E. TARBAT; Fareham, Hants.

ZYGÆNA HIPPOCREPIDIS IN SOUTH HAMPSHIRE.—I was much interested in reading Mr. Postans' experience of this insect (*antea*, p. 212). I found it rather scarce in the Netley district in the grounds of the Royal Victoria Hospital in 1917; there were very few *Z. filipendula* on the same ground later, but several flourishing colonies of *Z. trifolii* in the immediate neighbourhood.—GEO. S. ROBERTSON, M.D.; Bronllys, 72, Thurlow Park Road, Dulwich, S.E. 21.

NOTE ON MELIANEA FLAMMEA.—In Chippenham Fen in June this year females of this species were noticed in some numbers ovipositing in the dead flower-heads of the reeds of the previous year. Previously in the Norfolk Broads I had noticed them ovipositing in the sheathing leaves of dead reed stems; in the latter case the egg is flattened by the pressure and is coin-shaped, while in the former it is round. It struck us as rather unusual that they should select the old flower-heads, as most of the Wainscots prefer the sheathing leaves to place their eggs in. Probably as they hatch the same year they do not require so much protection as those which do not hatch until the following spring.—H. M. EDELSTEN; Forty Hill, Enfield.

LEUCANIA VITELLINA AND L. UNIPUNCTA, ETC., IN CORNWALL.—On September 6th I took *L. vitellina* on valerian here in my garden, a second on October 7th, and a third on October 14th—the last much

worn. These two were on sugar. On September 27th and October 1st I took two *L. extranea* (*unipuncta*) on sugared foliage, both on the same bush. They seemed so thoroughly to enjoy the sweets that they had to be pushed into the box with the finger. Both were beneath the leaf on which they were feeding. With the second I boxed a rather worn specimen of *L. albipuncta*. The common autumnal moths, with the exception of *A. nigra* and *P. flavicincta*, have been very scarce.—LEONARD B. STOPPER; Penryn, Cornwall.

THAMNONOMA BRUNNEATA IN THE NORFOLK BROADS.—The recent captures of this insect in Staffordshire, Wicken Fen and Bishops Stortford, as recorded in the August, September and October numbers of the 'Entomologist,' are interesting, and it is evident that it is not confined to the North. While staying at Horning with Mr. E. A. Bowles in 1905 he captured a specimen which he knocked out of a willow bush by day. Is it not possible that it is a willow feeder where *vaccinium* does not grow?—H. M. EDELSTEN; Forty Hill, Enfield.

LEPIDOPTERA IN SICILY.—During a fortnight's stay at Taormina, between Messina and Catania, Sicily, from May 6th to 20th of this year, I secured the following: *P. podalirius*, *P. machaon*, *P. brassicæ*, *P. rapæ*, *P. daphidice*, *L. sinapis* (1), *E. cardamines*, *E. ausonia*, *G. rhamni* (1), *G. cleopatra*, *L. camilla* (1), *P. cardui*, *A. pandora* (1), *M. cinxia* (3), *M. didyma* (2), *S. semele*, *P. megæra*, *P. egeria*, *E. janira*, *E. ida* (2), *C. pamphilus*, *T. w-album* (1), *P. phlæas*, *L. bætica* (2), *L. astrarche*, *L. icarus*, *L. cyllarus* (2), *S. alceæ* (1), *H. thauwas*, *H. actæon*, *H. sao* (1). The species which were most scarce are shown with brackets after them, the numbers given being the total taken, and no others of these species were seen. In Sicily the season this year was early, with dry and sunny weather throughout my visit. Entomological pursuits were only secondary in my case, or the above list of thirty-one species would undoubtedly have been longer. In the 1897, 1912 and 1914 volumes of the 'Entomologist' various notes and articles on Sicilian butterflies were published, the number of species therein recorded for the island being sixty-one, including all mine above except *T. w-album*. (In Malta, within eighty miles of Sicily, only sixteen species are found.) The writer of one of the articles stated that Taormina, although noted for its beautiful surroundings, was a poor place from the collector's point of view. During my visit no day-flying moths were common except *Syntomis phegea*; at night numbers of small moths were attracted by an arc-lamp facing open country just at the end of the town, but these were devoured by half a dozen or more bats that continually circled about the lamp. It was noticeable that any moths which settled on the lamp-column, walls or ground remained untouched. The largest moths I saw attracted were *Deilephila livornica*, which seemed able to withstand several attacks from the bats, but finally fell to the ground stunned, where the bats left them unmolested.—H. F. HUNT; Senglea, Malta, September 14th, 1920.

SPHECOLYMA INANIS.—Having been on the look-out for this species for some years now, I can feelingly congratulate Mr. Morley (p. 213) on his capture. Mine, I hope, is to come. I presume he is aware of Dr. Newstead's record ('Ent. Mo. Mag.,' 1891, p. 41) of the larvæ as

swarming in a nest of *Vespa germanica* in October, 1889, at Ince, Cheshire, from which he bred flies in July, 1890. He also found larvæ of *Homalomyia vesparum* in the same nest, but bred only two flies from them. Probably this note about *inanis* was the evidence on which Dr. Meade made the statement Mr. Morley quotes.—C. NICHOLSON; 35, The Avenue, Hale End, E. 4, September 26th, 1920.

METÆCUS PARADOXUS AND SPHECOPHAGA VESPARUM.—It will doubtless interest Mr. Morley and others to know that these two species have been bred by an acquaintance of mine from nests of *V. vulgaris* taken in the vicinity of Chingford, and I have portions of a comb containing three cocoons of the ichneumon, as well as one of the flies and three of the beetles, the latter all males. I have been hoping for these species from local nests for some time, but have not met with them myself up to the present.—C. NICHOLSON; 35, The Avenue, Hale End, E. 4.

SCARCITY OF VESPA.—Wasps are extremely scarce in this district this year. I know of one nest only—a strong *germanica*, which I hope to take at the first opportunity—but I have seen *vulgaris* about in one or two places and in small numbers. It would be interesting to know whether the scarcity is general all over the country. At Eastbourne (last three weeks in July) I saw very few wasps, a few each of *vulgaris*, *germanica* and *sylvestris* being the sum total, and the weather was, on the whole, not bad there at the time, but the last week was cool and rather showery. No doubt the cold snap in April killed off a lot of queens.—C. NICHOLSON; 35, The Avenue, Hale End, E. 4.

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL SOCIETY.—August 26th.—The President in the Chair.—Mr. H. Main exhibited the early stage of *Mantis religiosa* from Southern France, and several spiders, and gave notes on their habits as observed by him.—Mr. Bowman, a male *Parasemia plantaginis* in which the hind right wing was suffused. It was of a brood of which fifty-five out of sixty pupæ emerged in four days.—Mr. Barnet, series of *Hydriomena furcata*, including green, light-banded, variegated and very dark forms from South Devon, very yellow forms of *Ematurga atomaria* from Limpsfield, and a *Plebeius ægon* from Oxshott with an unusually wide white submarginal band on the underside.—Mr. Sich gave details of the habits of the newly-hatched larvæ of *Coleophora ibipennella*.—Mr. Edwards and Mr. Grosvenor, many forms of the polymorphic species *Papilio memnon* from the Indo-Malay region.—Mr. Edwards then read a series of notes on the species.—HY. J. TURNER, *Hon. Editor of Proceedings*.

OBITUARY.

WE regret to hear that Mr. E. Anquetil, of The Burroughs, Hendon, died on September 22nd last.

EXCHANGE

The publication of Notices of Exchange, or of Advertisements, in the 'Entomologist' is in no way a guarantee for the British nationality, authenticity, or good condition of the Specimens. This Notice is not given to throw doubt on the bona fides of Exchangers or Advertisers, but to advise the Editor from responsibility, in case the liberty allowed should be abused. *Marked * are bred.*

NOTICES OF EXCHANGE should be received by the 15th of each Month to insure insertion. Not more than SIX LINES can be allowed for each.

Duplicates. Sibylla, Corydon, Grossulariata (dark), Lucerna, Simulans (pyrophila), 2 A-hworthii, Braetia (type). *Joseph Anderson, Abingdon, Chichester, Sussex.*

Duplicates. Artemis, Cinxia, Blinidna (dark), Artaxerxes (dark), 2 Achilles (dark), Plantaginis, Monacha, Robus, Sattusa, Gothica, Instabilis, Stabilis, Gracilis, Mimosa, Chi, Serena, Neustria, Exoeta, Funicata, Cartharina. *Desiderata.*—Numerous, including Deltoids. *L. G. Esson, Rossall, G. Bessilmont Avenue, Abbeclon, A. B.*

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Duplicates. Adippe, Aglata, Selene, Io, Atalanta, Actio, S. populi, Elpenor, Sabel, Mendica, P. populi, Pavonia, Teubia, Trimalia, Prosapiaria, Quercuaria, Vermina, Variata, Obeliscata, Ruberata, Ambigua, Moneta, Glandifera. *Desiderata.* L. trifolii, Tripidaria, Ornata, Vitrinata, Alchemillata, Impluviata, Derivata, Upsilon and many others. Ova, larva or pupa. — *C. E. Newhall, Knapton.*

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Descriptions of Two Moths from Formosa, *A. E. Wileman, F.E.S.*, 241. *Erebia epipharon*, Knoch: Its Synonymy and Forms, *H. Rowland-Brown, M.A., F.E.S.* (continued from p. 225), 242. Contributions to our Knowledge of the British Bracónida; *G. T. Lyle, F.E.S.* (continued from p. 230), 248. On Some Variations of *Aphantopus hyperanthus*, *Rev. H. D. Ford*, 250. Duration of Stages of *Pyrameis atalanta*, *F. W. Frohawk, M.B.O.U., F.E.S.*, 252. Notes on British Neuroptera in 1919, *W. J. Lucas, B.A., F.E.S.*, 254. New and Rare British Aleurodida, *J. W. Heslop Harrison, D.Sc.*, 255. Some Notes on the Collection of British Macro-Lepidoptera in the Hope Department of the Oxford University Museum, *F. C. Woodforde, B.A., F.E.S.* (continued from p. 201), 257.

NOTES AND OBSERVATIONS.—*Colias edusa* in Bucks, *Walter Pirce*, 259. *Colias edusa* in Devonshire, *E. D. Morgan*, 259. *Colias edusa* and *hyale* in Hants, (*Rev.*) *J. E. Tarbat*, 260. *Colias edusa* in Kent, *G. B. Hodgson*, 260. *Colias hyale* and *C. edusa* in Kent, *H. O. Wells*, 260. *Colias edusa* in Middlesex, *H. M. Edelsten*, 260. *Colias edusa* in Sussex, *H. M. Edelsten*, 260. *Colias edusa* ab. *helice* in Sussex, *B. W. Neary*, 260. *Colias edusa* at Chichester, *Joseph Anderson*, 260. *Plusia unoneta* at Chichester, *Joseph Anderson*, 261. Butterflies in Buckinghamshire, *H. M. Edelsten*, 261. *Pyrameis atalanta* in Forfarshire, *A. E. J. Carter*, 261. *Pyrameis atalanta* in Argyll, *A. Steen Corbet*, 261. *Zephyrus betulae* at light in N. Devon, *B. G. Adams*, 261. Late emergence of *Lycaena arion*, *B. G. Adams*, 261. *Manduca (Acherontia) atropis* in Sussex, *A. M. Loughurst*, 261. *Manduca atropis* in Worcestershire, *G. B. Mauly*, 262. *Phryxus (Deilephila) hibernica*, *Geo. S. Robertson, M.D.*, 262. On Rearing *Deilephila livornica*, *L. W. Newman*, 262. Hese (*Sphinx*) *convolvuli* in Cornwall, *Leonard B. Stopper*, 262. Late appearance of *Spilosoma menthastris*, (*Rev.*) *J. E. Tarbat*, 262. *Zygena hippocrepidis* in South Hampshire, *Geo. S. Robertson, M.D.*, 262. Note on *Melanea flammica*, *H. M. Edelsten*, 262. *Leucania vitellina* and *L. impuncta*, etc., in Cornwall, *Leonard B. Stopper*, 262. *Thamnomia brunnata* in the Norfolk Broads, *H. M. Edelsten*, 263. Lepidoptera in Sicily, *H. F. Hunt*, 263. *Sphæcolyma mamis*, *C. Nicholson*, 263. *Metacrus paradoxus* and *Sphæcophaga vesparina*, *C. Nicholson*, 264. Scarcity of *Vespa*, *C. Nicholson*, 264.

SOCIETIES.—The South London Entomological Society, 264.

OBITUARY, 264.

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THE ENTOMOLOGIST.

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NOTES ON THE VARIATION OF *PERONEA CRISTANA*,
FAB., WITH DESCRIPTIONS OF SIX NEW FORMS,
AND THE REASONS FOR SINKING THE NAMES
AT PRESENT IN USE OF SIX OTHERS.

BY W. G. SHELDON, F.Z.S., F.E.S.

Soon after my paper on this species in the 'Entomologist,' vol. 1, was written, I became aware that numerous points in the varietal nomenclature were doubtful, and required clearing up.

Further study convinced me that the solution of most of these problems could only be obtained by an inspection of the series of the late Sidney Webb, which was the only one in Britain, so far as I knew, that could be considered a fairly complete one. I made arrangements to visit Mr. Webb early last year, but unfortunately at the appointed time he was seized by what proved to be a fatal illness, and my visit became impossible; the whole series, however, passed into my hands in April last, and thus I have been able to study the material which I desired to see.

The series is undoubtedly the most complete that was ever got together, for Webb purchased the whole, or practically the whole of the series of the late J. A. Clark, including all his types; and also that of the late Dr. P. B. Mason; further, it includes all the specimens which were in the collection of the late Fred Bond—not a few in number, and extensive purchases from the following amongst other collections: H. Burney, Howard Vaughan, S. Stevens, A. F. Sheppard, F. O. Standish and P. Harper, all of whom made a special effort to acquire *cristana* forms. In all there were over 1200 specimens, and representatives of every form that has ever been named.

Most of the specimens are in excellent condition, but many of them are old: quite a number in fact are set on the old round-headed pins that generally went out of use about the year 1850. The great bulk, however, are set on white or gilt pins of the form now used, and they would thus date—or most of them would—from 1850 to 1880. The remainder, of which I think the great majority came from Clark, are set on black pins, and would thus date from, say, 1880 to 1910, after which I do not think any additions were made. Of course these dates are approximate, and those given for the specimens on black pins

would not apply to all the specimens, because many collectors still use gilt or white pins.

The consequence of the antiquity of the specimens is, that with an insect like *cristana*, which for a small moth greases very badly, there is a great amount of verdigris apparent, which will make it necessary to re-pin and reset practically the whole.

Unfortunately they are very inadequately labelled. In his earlier years Webb put small circular labels on the pins, with the name of the collection from which they were derived written thereon; all the Bond specimens are so labelled, and some of the Mason and Burney specimens also; but those derived from Clark are almost entirely without data, with the exception of the types, all of which have a special label. Clark scarcely did any labelling, and the others none at all.

Sidney Webb acquired most of his specimens late in life, when his eyesight, probably never very good, judging from the fact that he habitually used glasses comparatively early, was manifestly unequal to the task of discriminating between the various aberrations of this protean species, and although he had grouped his specimens according to the known aberrational names, many of them were wrongly named, and some of the series grouped under one name consisted of examples of two or even three forms.

After he acquired Clark's *cristana* Webb wrote a paper on them in the 'Entomologist,' vol. xliii, pp. 198 and 265, and vol. xlv, pp. 289 and 308, presumably to correct certain errors in Clark's monograph to be found in the 'Ent. Record,' xiii.

This paper is an interesting one, valuable in recording facts respecting certain forms, of which possibly he alone of all men living was aware. Unfortunately in addition to defective eyesight, leading him to make numerous mistakes, he had a very superficial knowledge of the subject, whilst of the law governing scientific nomenclature he does not seem to have known even the elements; the result is that he made more mistakes than those which he corrected.

One obvious source of misconception of the named forms of *cristana* is the coloured plate in Clark's paper (*loc. cit.*) of the types of his named forms. It is known that Clark was very dissatisfied with this plate; he had good reason to be so, for it is a very inferior one, and the figures are quite unreliable. This is only fully apparent when one compares it with the actual types. I have the following observations to make on these figures:

Fig. 1, ab. *nigrocristana*. Clark says: "The difference between this aberration and typical *cristana* is very marked, the form having a black button instead of a white one." In the figure the button is of a rather lighter brown than the surrounding portions of the wing.

Fig. 10, ab. *fuscana*. Clark's description of this aberration applies to a form as typical *cristana*, but with "a large self-coloured button." The button in the figure is considerably lighter in colour than the surrounding areas of the wings. Webb says (*loc. cit.*, p. 265) of Clark's type-specimen that it "does not agree with his named series; the central tuft, instead of being large, is almost wanting, whilst a red line from the tuft to the costa near the apex is very noticeable; not one of his series of six shows this red line, and the disc of their wings is in each case unicolorous light brown, vitta pure white, and the central tuft large and rust coloured. This new name had better be dropped."

There is something to be said for not giving names to aberrations of the type form of *cristana*, which both *nigrocristana* and *fuscana* are, for the colour of the button only, for this varies from pure white in the type, light cream to dark cream, light brown to dark brown, and brownish-black. But there is no difficulty with ordinary eyesight in locating examples of ab. *fuscana*. There can be no doubt that Webb saw something in Clark's type that does not exist, and did not see something that does exist. I have this type before me, labelled as such; it most certainly *has* a large button, and there is not a vestige of the red line that Webb refers to as being present.

Turning to the series of abs. *nigrocristana* and *fuscana* in Webb's Collection, I find there are twenty-six examples in all, six of which are labelled *fuscana* and twenty *nigrocristana*. As the specimens labelled *fuscana* agree in number with Webb's description of the number of Clark's series, one would presume they were all in the collection of the latter as *fuscana*, but on examination they are found to be three of *fuscana* and an equal number of *nigrocristana*.

Turning to the specimens labelled *nigrocristana*, one finds seven of them to be this form, and thirteen *fuscana*, and amongst these so-called *nigrocristana* I find also Clark's labelled type of *fuscana*! Amongst Webb's series of *nigrocristana* are five examples of *fuscana* which are unlabelled, but which probably came from Clark's Collection; it looks as if these included the three missing examples which Webb says were in Clark's series of this aberration, for which the former had unwittingly substituted examples of *nigrocristana*. But on referring to the catalogue of Clark's sale one finds that there were eight examples of *fuscana* in addition to the type; and therefore it may be that all these five specimens were in the Clark Collection.

I have dwelt upon Webb's connection with these two aberrations in detail because it is very typical of his series as a whole, and his paper. It does not, I think, take much discernment to diagnose what has happened: evidently after the Clark specimens left Stevens' Rooms, and before they were put in the places they

finally occupied in Webb's Collection, there must have been a general mix-up, and his eyesight did not suffice to correct the errors then made.

Fig. 4, ab. *nigrosubruttana*. I have dealt with an error in the 'Entomologist,' vol. 1, p. 271, and I have only further to add that Clark's description is correct, and the figure, which has the superiors dark brown with the button slightly lighter, is wrong; both Clark's type and his other specimens, five in number, have the ground-colour and button black.

This figure more nearly portrays ab. *lichenana*, Curtis.

In my paper (*loc. cit.*) I make the statement that Mr. South has a number of this form (ab. *lichenana*) in his collection. I have since found that this statement, for which I alone am responsible, is an error; the specimens in question are without "the large patch at the base of the inner margin white" which is included in Curtis's description of that form.

Ab. *lichenana* is apparently an exceedingly rare form: the only examples of it I have seen are two, which are in the Webb Collection, but there were half a dozen catalogued in the Clark sale; one wonders what became of them.

Fig. 12, ab. *transversana*. In this figure the vitta is much lighter in colour than it is in the type, and also in the other three examples of the series, in which it is almost unicolorous with the disc of the superiors.

Fig. 16, ab. *charlottana*. This is the most misleading figure in the plate. Clark's description agrees with the type, but the figure does not in the following details: (1) The white triangular basal blotch in the figure is outlined in red on the outer as well as on the inner margin; there is no trace of this colour on the outer margin in the type, nor does Clark allude to it in his description. (2) In the figure the white discal spot immediately follows the button; in the type and in Clark's description, between the button and the blotch the red streak is continued. In the type the length of the continuation of this red streak is about 1.5 mm. (3) The light striations between the white blotch and the hind margin are in the figure much too pronounced, and the ground-colour of this area is too light. (4) If the figure is examined with a lens it is seen to have a considerable amount of red dotting which is not apparent in the type.

Webb suggests that *charlottana*, Clark, may equal ab. *curtisana*, Desvignes, of which the latter says: "Similar to the last (*subcapucina*), varying in having a very faint fulvous streak extending from the base to the button, which is of the same colour." If one omits from this description the words "very faint" it exactly fits in with the type of *charlottana*, and as the lightness of the red or fulvous line depends upon the condition of the specimen there does not seem any reason to doubt but that this view is correct.

There are three examples in the Webb series, two of which are mounted on the old round-headed pins, and thus they almost certainly date back to before 1850, or to the period in which Desvignes wrote his paper (1845). The red in these examples is distinctly less bright than in the very beautiful type, which was taken in Folkestone Warren in 1898 by Mr. Purdey.

One of these specimens was labelled by Webb "Dr. Mason's Colln.," and in the catalogue of Mason's sale what is almost certainly this specimen is named *ab. curtisana*. This sale was held in 1905, and as Clark's paper was written in 1901, Mason, who had adopted Clark's names, evidently did not identify his specimen as *charlottana*, Clark; and if he had, as is most probable, not seen the actual type and judged by the figure, there is no reason why he should have done so. I think in naming his specimen *curtisana* he was correct, that the two forms are one, and that *charlottana*, Clark, should fall before *curtisana*, Dsvgs. It is not improbable that Mason's specimen was Desvignes' type, but of course there is no means now of proving this. Webb mentions that examples of *curtisana* are "lost to knowledge unless *charlottana* be identified with it." Certainly I have not seen one, though there is an example in the National Collection which purports to be it; this, however, is obviously *ab. tolana*, Dsvgs.

Fig. 19, *ab. nigrana*. The colour of this figure is very dark brown. Clark's description does not mention any dark brown tint, nor does his type show any; it has only different depths of pure black.

I will now deal with some further points in Webb's paper (*loc. cit.*) which require correction.

On p. 267, vol. xliii, he writes of *ab. rufinigrana*, Clark: "A distinction without a difference" (from *nigrana*). "Of this form Clark remarks (*loc. cit.*), the chocolate-coloured margin which is totally absent in *nigrana* constitutes the difference. Possessing both the type (quite unlike the figure) and his series we are forced to say there is no chocolate line whatever as described." "The name *rufinigrana*, as one of non-importance, should be dropped altogether." This is one of the most erring statements in Webb's paper. *Ab. rufinigrana*, and Clark's type of it, is an exceedingly distinct form, and it was only Webb's defective eyesight that led him into the error. As I have pointed out in my paper (*loc. cit.*), it is a dark purple-brown form and has no resemblance to the pure black *ab. nigrana*.

Abs. nigrocostana, Clark (not *nigroruficostana*, as written by Webb—Clark never used this name), and *albonigrana*, Clark. Webb's incorrect remark that these figures appear to have been transposed arose through his getting hold of a reprint of Clark's paper, in all or some copies of which I am informed the figures actually were transposed. In the original figure ('Ent.

Record,' vol. xiii, plate 8) they are not transposed, therefore Webb's use of the names transposed is not correct.

Ab. sericana, Hub. Of this form Webb says: "Similar to *desfontainana*, but no central tuft; or if it is present at all it is extremely small." Here, again, Webb falls into an error, into which he was probably led by Desvignes, who writes of this form "the same (as *desfontainana*) without a button." But Hübner's fig. 83 has a very distinct orange button, and the ground-colour of the superiors is much darker than that of *desfontainana*, Fab. Later on I have something further to say anent *ab. sericana*, Hüb.

Ab. intermediana, Clark. Webb speaks of most of Clark's series as being *ab. vittana*, and suggests that the varietal name is therefore of little value. Most of Clark's series may have been *vittana*, though I much doubt this statement, but whether they were or not does not matter one iota; his type agrees with his description, and it certainly is not *ab. vittana*. The two forms are as distinct as many others, and they are readily distinguishable.

Ab. flavostriana, Webb. This name was given by Webb (*loc. cit.*, vol. xlv, p. 291) to specimens of which he says: "In Bond's cabinet are three, in Clark's one, and I have seen others; of lightly mottled specimens easily distinguishable from the last (*provittana*, Desvgs.) the vitta is distinct and white, tinged along the middle with faintest yellow, head and thorax pale cream. I propose for this variety the above name, which was written on the ticket placed by Bond below the specimens."

We are here in face of a decided muddle! It is to be noted Webb does not give the slightest hint of the colour of the superior's disc, or of the button, and for this reason it is quite impossible to grasp what his specimens actually were like, from the description. Turning to the actual specimens in the series I find they are six in number. There are the three Bond specimens, labelled as such by Webb, the one from Clark similarly labelled, and two others, both unlabelled, which one presumes are the "others" mentioned by Webb. Two of the Bond specimens and the two unlabelled ones are of one form, with reddish-brown discs, dark button, and what I should call a cream-coloured vitta, head and thorax. That is to say they had a less yellow vitta, head and thorax than one finds in the bulk of those known as *fulvostriana*, Desvignes, but otherwise they are not distinguishable from it. The third Bond specimen is of quite another type and does not belong to this group at all, but it resembles a lightly blotched form of *ab. semiustana*, Curt., except that the head, thorax and vitta are cream coloured. The Clark specimen has the disc of a dark mouse colour, quite different from the other examples in all respects with the exception of the cream vitta, head and thorax. This specimen was placed by Webb, not amongst the others, but amongst one of his series of *ab. fulvostriana*, Desvignes!

It will be seen that we have under this name three forms, all widely apart, and as there is no indication in the shape of a label which of them Webb took as his type, and his description is not sufficiently in detail to indicate his meaning, it is plain *flavostriana*, Webb, is not established, and that therefore it must fall.

(To be continued.)

NEW SPECIES OF NOCTUIDÆ FROM THE PHILIPPINES.

BY A. E. WILEMAN AND RICHARD SOUTH.

(Continued from p. 124.)

Trachea discisignata, sp. n.

♂. Head and thorax pale brown mixed with reddish, crown of head reddish brown; abdomen pale brown. Fore wings pale brown, powdered with darker, dotted with black, and barred with brown on costa; subbasal line indicated by a black linear mark on the costa; antemedial line blackish, interrupted, preceded on costa by a brown, elongate mark, indented and more clearly defined towards dorsum; reniform and orbicular stigmata outlined in black, the former enclosing a dark brown lunule, and filled in with whitish; a dark brown spot under the median nervure, its outer and lower edge limited by a black line which runs to base of wing; post-medial line dark brown, originating in fifth black dot on the costa, sinuous, excurved about middle; subterminal line sinuous, brown, outwardly edged with paler; fringes brown, darker at ends of veins, a pale line at base. Hind wings pale brown, darker on terminal area. Underside pale brown, all the wings with darker discal lunule and two almost parallel lines beyond.

Expanse, 36 mm.

Four male specimens from Haight's Place, Pauai, subprov. Benguet, Luzon (7000 ft.), January 12th, 1912. One of the specimens is rather greyish in the tone of ground-colour.

Comes nearest to *T. dinavana*, Hampson.

Stictoptera (?) *apicalis*, sp. n.

♀. Head, thorax and abdomen dark chocolate brown; fore wings dark chocolate brown; antemedial line black, indistinct, edged on each side with pale brown, slightly curved, terminating in a pale ochreous mark on dorsum; orbicular stigma black, elongate, faintly edged with pale brown; reniform stigma pale brown, partly outlined in black; postmedial line pale brown, indistinctly edged with black, crenulate and sinuous, terminating in a pale ochreous mark on dorsum; subterminal line indicated by a sinuous series of pale brown dots, becoming linear towards dorsum; a pale ochreous apical mark, outwardly diffuse and inwardly edged with black; terminal dots pale ochreous; fringes dark chocolate brown, dotted with pale ochreous

at base. Hind wings fuliginous brown, fringes paler at tips. Underside fuliginous brown, apical mark on fore wings as above, some pale ochreous striae on outer third of costa.

Expanse, 42 mm.

A female specimen from Haight's Place, Pauai, subprov. Benguet, Luzon (7000 ft.), November 15th, 1912.

Nigramma lignea, sp. n.

♂. Head and thorax pale ochreous brown, collar deep brown. Fore wings ochreous brown slightly tinged with reddish, outer fourth clouded with brown; orbicular and reniform stigmata paler; brown marks on outer half of costa and a brown mark between the stigmata; subterminal line greyish, indistinct, obtusely angled below costa, thence inwardly oblique to dorsum, preceded by a transverse series of four blackish-brown dots; a blackish-brown oblong mark about middle of dorsum and blackish dots on termen; fringes of the ground-colour mottled with darker. Hind wings pale fuscous brown, darker on margins. Underside fuscous brown, some pale dots on costa of fore wings towards apex.

♀. Similar to the male, but with a large brownish cloud at base of costal area of the fore wings, the terminal area more heavily clouded with brown.

Expanse, 30 mm.

A specimen of each sex from Haight's Place, Pauai, subprov. Benguet, Luzon (7000 ft.), captured in 1912, the male taken on December 1st, and the female on November 11th.

Comes nearest to *N. lapidaria*, Walk.

Sinna poweri, sp. n.

♀. Head white, thorax white, marked with crimson, abdomen white. Fore wings white, marked with tawny brown; subbasal line broad, oblique postmedial line rather broad, sinuous, oblique; post-medial line incurved below middle, where it edges a tawny brown cloud; subterminal line outwardly oblique from costa to the termen just above dorsum; the transverse lines are united by longitudinal bars of the same colour, thus giving a spotted effect to ground-colour; a black mark at apex preceded by three black marks forming a curve from costa to termen; fringes white, towards tornus marked with black at base. Hind wings white, silky. Underside tawny brown on fore wings, white on hind wings.

Expanse, 34 mm.

A female specimen from Baguio, subprov. Benguet, Luzon (5000 ft.), March, 1913.

Comes near *S. calospila*, Walker.

Aiteta olivana, sp. n.

♂. Head and thorax olive brown, abdomen greyish. Fore wings greyish, tinged with pink on central half and powdered with olive on

dorsal half; a large olive-brown cone-like patch on middle of costa not extending to dorsum, outlined in white; subterminal line olive brown, only distinct towards costa; terminal area dusky. Hind wings fuscous, darker on terminal area. Fringes of all wings dark grey. Underside of fore wings dark fuscous, costa brown; of hind wings pale fuscous, darker towards termen.

Expanse, 36 mm.

A male from Haight's Place, Pauai, subprov. Benguet, Luzon (7000 ft.), January 12th, 1912.

Carea cuprea, sp. n.

♂. Head and thorax red brown, abdomen greyish brown. Forewings cupreous, suffused with grey brown, costa whitish; antemedial line brown, slender and oblique; postmedial line brown, slender, slightly indented below costa and before dorsum; subterminal line brown, slightly sinuous; discoidal dot black, a dusky line from its lower edge, not extended to dorsum; fringes rufous, tipped with white towards dorsum. Hind wings copper-red, inner area greyish; a pale line at the base of the copper-red fringes. Underside rufous, whitish on dorsal area towards base of fore wings.

Expanse, 42 mm.

A male from Haight's Place, Pauai, subprov. Benguet, Luzon (7000 ft.), November 30th, 1912.

Allied to *C. leucocraspis*, Hampson.

Parallelia mediifascia, sp. n.

♂. Head and thorax rufous brown, abdomen greyish brown. Fore wings rufous brown; antemedial line dark brown, slender, outwardly oblique; medial line blackish, inwardly oblique and edged with violet grey, followed by a dusky parallel line, area beyond and up to the dusky and serrated postmedial line tinged with violet grey; some obscure, ochreous clouds between the postmedial and subterminal lines, subterminal line blackish, diffuse, curved from apex to tornus, area enclosed violet grey; terminal line brown, preceded by black dots between the veins; fringes whitish, brown tinged towards base. Hind wings dark fuscous, medial band and fringes whitish. Underside fuscous; all wings have a blackish discoidal dot and traces of a line beyond; terminal area of fore wings as above.

Expanse, 58 mm.

A male from Haight's Place, Pauai, subprov. Benguet, Luzon (7000 ft.), November 8th, 1912.

Comes nearest to *P. duplexa*, Moore.

Lyncestis albisigna, sp. n.

♂. Head and thorax grey, the latter with a black line in front; abdomen grey, tinged with brown towards basal and anal extremities. Fore wings grey with brownish marks on basal two-thirds of costa, blackish on middle of dorsum; antemedial and postmedial lines

brownish, the former indistinct below median vein, the latter excurved round cell; reniform stigma represented by a dark grey lunule with two black specks at its lower end, placed on the inner edge of a pale spot; terminal area clouded with darker clouds, forming an irregular, curved band extending from apex to dorsum one-fourth from tornus; fringes dark grey. Hind wings white, terminal border black, tapered towards the anal angle; fringes white. Underside white, black bands towards termen of all wings, fringes as above.

♀. Similar to the male, but the blackish on dorsum is rather broader, and extends from postmedial line almost up to base of wing.

Expanse, ♂ 45 mm., ♀ 42 mm.

The male type from Manila, prov. Rizal, Luzon, taken at sea-level, July 12th, 1912; the female type from Los Baños, Luzon, 1912 (Ledyard).

Allied to *L. melanoschista*, Meyrick.

THE MACRO-LEPIDOPTERA OF COUNTY TYRONE.

BY THOMAS GREER.

(Continued from p. 221.)

HETEROCERA.

Sphingidæ.

Amorpha populi, L.—Abundant, larvæ on willow, poplar and poplar; the red-spotted form of larva not unfrequent.

**Smerinthus ocellatus*, L.—Larvæ abundant on willows in the bogs; also in similar situations near Cookstown (H.); over thirty larvæ found on a small willow bush near Stewartstown, the female observed on several occasions flying late at night over willows.

Manduca atropos, L.—Caledon (K.), a fine specimen at rest in a barn near Newmills.

Sphinx convolvuli, L.—Caledon (K.); a number appeared in gardens at Cookstown, September, 1917, and I received a battered example from a friend taken in the town.

Eumorpha elpenor, L.—Very abundant in the county; have seen it in great numbers at *Iris pseud-acorus* at Lough Neagh.

**Macroglossa stellatarum*, L.—Not common, but abundant in the autumn of 1899.

Hemaris tityus, L.—Common in the county; often abundant in mountain glens.

Notodontidæ.

Cerura furcula, L.—A number bred from larvæ on willow near Stewartstown and at Lissan; several larvæ near Cookstown (H.) and at Favour Royal (K.).

Dicranura vinula, L.—Abundant and widely distributed; have taken the larvæ on sallows above 1000 ft. on the mountains.

**Pheosia tremula*, L.—Larvæ locally abundant on poplars near Stewartstown, Loch Fea, and near Cookstown; imago at light at Lissan.

Pheosia dictæoides, Esp.—Larvæ not uncommon on birch (but rarer than the preceding species) at Lissan and in the Lough Neagh district, also near Favour Royal (K.).

Notodonta ziczac, L.—Abundant and widely spread; larval on willow, sallow and poplar.

Notodonta dromedarius, L.—Larvæ abundant on alder and birch, imago at light; also abundant at Favour Royal (K.).

Lophopteryx camelina, L.—Abundant generally in the county; the local form of a dark reddish brown.

Pterostoma palpina, L.—Rare; Altadiawan (K.).

Phalera bucephala, L.—Larvæ abundant almost everywhere; imago much less common.

Pygæra pigra, Hüfn.—Larvæ common on sallows near Lissan, and in abundance on dwarf sallows on the margin of Lough Fea (H.) and at Favour Royal (K.).

Thyatiridæ.

Habrosyne derasa, L.—Fairly abundant at Favour Royal (K.), also in this district at sugar and grasses.

Thyatira batis, L.—Abundant in woodlands; the form without the pink tinge on the spots not uncommon.

Palimpsestis duplaris, L.—Not uncommon at Favour Royal and abundant at Altadiawan (K.); not rare near Cookstown and at Lough Neagh; the local form var. *argentea*, Tutt.

**Polyplocia flavicornis*, L.—Several bred from larvæ found near Tamnamore, Lough Neagh.

Lymantridæ.

**Orgyia antiqua*, L.—Not uncommon locally in September and October, and larvæ often abundant on birch and heather.

**Dasychira fascelina*, L.—Larvæ not rare on heather near Tamnamore, Lough Neagh, but nearly always stung. I took a female at rest June, 1915.

Pæcilocampa populi, L.—Kane states that this species is abundant at Favour Royal; not uncommon in this district at light, November and December.

Lasiocampa quercus, L., var. *callunæ*.—Abundant on moorlands and bogs.

Macrothylacia rubi, L.—Abundant almost everywhere; larvæ often very numerous on the moorlands.

Cosmotriche potatoaria, L.—Locally common at Favour Royal (K.), also in the Lough Neagh district.

Saturniidae.

Saturnia pavonia, L.—Very common and widely spread; larvæ on heather, sallow and meadow-sweet.

Drepanidae.

Drepana falcataria, L.—Favour Royal, rare (K.); not uncommon near Tamnamore; several pale forms approaching the white Rannock variety.

Drepana lacertinaria, L.—Locally abundant at Favour Royal and Altadiawan (K.); near Stewartstown and Lough Neagh larvæ very plentiful on birch bushes.

Cilix glaucata, Schiff.—Not uncommon in this district and at Favour Royal (K.).

Nolidae.

Nola confusalis, Hr. S.—Not common at Favour Royal (K.); several near Lissan, Cookstown.

Chlœophoridae.

Hylophila prasinana, L.—Common and widely distributed.

Sarrothripinæ.

Sarrothripa revayana, Tr.—Not common; near Favour Royal (K.); larva on sallow and imago at ragwort, near Stewartstown.

Arctiidae.

Spilosoma menthastri, Esp.—Very abundant, and var. *ochracea* not uncommon; some examples very dark.

Spilosoma lubricipeda, Esp.—Abundant generally.

**Diaphora mendica*, var. *rustica*, Hb.—Common and widely distributed in this district (E. Tyrone), the males varying from pure white, through buff, to a pale smoke-colour; one example with discal area white and margin of fore wings smoke-colour; females often with only the dot at base of fore wings indicated.

**Phragmatobia juliginosa*, L.—Not uncommon on heathery ground, and the var. *borealis*, Stand., rarely.

Parasemia plantaginis, L.—Locally abundant on moorlands and bogs.

Arctia caia, L.—Abundant; the larvæ very common on roadsides and hedge banks in the spring; a fine female bred very similar to that figured in South's 'British Moths,' pl. 84, fig. 1, but with the hind wings tinted with orange and the spots very small.

Hipocrita jacobæe, L.—Very abundant; a form occurs locally with the usual upper marginal spot on the fore wings, divided into two small twin spots; larvæ on *Senecio vulgaris*, as well as *S. jacobæa* (H.).

Lithosiinae.

**Atolmis rubricollis*, L.—Not common; beaten from Scot's fir, Lissan, and at rest on bracken fronds near Tamnamore.

**Lithosia deplana*, L.—Rare; near Tamnamore.

(To be continued.)

AUGUST BUTTERFLIES IN THE LANNION DISTRICT: CÔTES DU NORD, BRITTANY.

BY JOHN E. H. BLACKIE.

BRITTANY is once more becoming a popular province in which to spend an August holiday, and for this reason I think a short account of the butterflies to be found there during this month may be of interest to readers of the 'Entomologist.' Mr. Rowland-Brown tells me that the greater part of Brittany has been explored by M. Charles Oberthür and his collectors, but that his work was confined chiefly to the departments of Morbihon, Finistère and Ille-et-Vilaine. Cotes-du-Nord is therefore a rather unworked country. I do not pretend to have made a systematic search of the department, but I hope that my notes may serve as a guide as to what one may expect in this part of the province.

My headquarters were Trestrignel in the commune of Perros-Guirec, a small village on the coast, about seven miles north of Lannion. From here my observations extended to Tonquédec and Kerfons, the site of an ancient ruined château, six miles south of Lannion; to Ploumannach and Trégastel, three and a half miles west of Trestrignel; to Louanec, two miles east of Perros-Guirec; and to Tréguier—a cathedral city—twelve miles east of Trestrignel.

The Lepidoptera were interesting, but not anything out of the way, and this was probably due to the wind-swept and woodless type of country on the coast and the lateness of the season. Inland, towards Lannion, there were large chestnut woods where *D. paphia* was fairly common, but all along the coast were heaths and bracken, less prolific in butterflies than might be expected, although *L. quercus* careered up and down them in large numbers. *C. quadripunctaria* was fairly common, both the typical form and ab. *lutescens*. My chief object was the collecting of butterflies, but I also took or noticed the following moths: *M. stellatarum*, *A. secalis*, *P. gamma*, *A. viridaria*, *C. immanata* and *Z. trifolii*.

Adopœa flava.—Common at La Clarté (near Trestrignel), but only occasionally at Trestrignel. Rather pale forms.

Thymelicus actœon.—Common during the earlier part of August at Trestrignel. Fond of sitting on thistle-heads in sheltered spots.

Aricia medon.—One at Trestrignel. Not common.

Polyommatus icarus.—Common everywhere. Females inclining to ab. *brunnea*; very few ab. *cærulea*. No interesting variation. *Zephyrus quercus*.—One ♀ late in the month at Trestrignel. *Chrysophanus phlæas*.—Fairly common. One ab. *cæruleo-punctata*. No other variation whatever.

C. dorilis.—Fairly common everywhere. ♂♂ and ♀♀ about equally divided.

Pieris brassicæ, *P. rapæ* and *P. napi* were all quite common everywhere. The forms appeared to be identical with the English ones, except that *rapæ* and *napi* had rather fainter black markings than is usual in our *gen. æst.*

Colias edusa.—Occasionally on the coast, and becoming much commoner further inland, especially towards Tréguier. Just outside this city I saw, but failed to take, an ab. *helice*.

Papilio machaon.—One at Trestrignel. I understand that this butterfly is generally fairly common on the channel coast, especially in Normandy, so that it was perhaps strange that I did not see more.

Dryas paphia.—Fairly common in the woods. ♂♂ much more abundant than ♀♀. I noticed it at Tonquédec, Louanec, and Trestrignel.

Argynnis cydippe.—One worn specimen near Trestraou (commune of Perros). Probably common earlier.

Brenthis euphrosyne.—One in a marsh at Louanec. Rather a small example. It is generally double-brooded all over France.

Pyrameis cardui.—Occasionally during the earlier part of August. *P. atalanta*.—Common everywhere.

Vanessa io.—Fairly common. Very fine and large.

Aglais urticæ.—A few; not common.

Eugonia polychloros.—I saw one or two, and my cousin, Mr. Ronald Blackie, took one at the beginning of the month.

Hipparchia semele.—Common everywhere during the earlier part of the month. The "Rock" and "Heath" Graylings were both common.

Pararge egeria.—Two forms. The English form *egerides* appeared occasionally; *intermedia* was common everywhere. I took two specimens with basal spots yellow and outer spots white. *P. megæra*.—Common everywhere. A few pale specimens.

Epinephele jurtina.—Common everywhere. The ♀♀ exhibited a very interesting variation in the colour of the apical patch. I took a fine series, which I have tabulated as follows: (1) Apical patch tawny-orange. Common: *jurtina*. (2) Apical patch creamy yellow. Rare: ab. *intermedia*, n. ab. (3) Apical patch, upper half yellow, lower half white. Not common: ab. *semialba*, n. ab. (4) Apical patch very pale yellow, almost white. Not common: ab. *tincta*, n. ab. (5) Apical patch completely white. Fairly common: ab. *alba*, n. ab. *E. tithonus*.—In thousands everywhere. A few pale examples.

Cænonympha pamphilus.—Very common. One or two fine ab. *lyllus*, and several with eye-spots reduced to points.

NOTES AND OBSERVATIONS.

CHANGE OF GENUS-NAME.—I propose the name *Charixena* in place of *Philpottia*, Meyrick, applied to a genus of *Glyphipterygidae* in 1916 ('Trans. N. Zeal. Inst.', vol. xlviii, p. 416), finding that the latter name had been used by Capt. Brown for a genus of Coleoptera in the preceding year.—E. MEYRICK; Thornhanger, Marlborough.

XYLINA LAMBDA IN CAMBRIDGESHIRE.—I had the good fortune to secure a fine male specimen of this rare insect on October 7th last. I did not identify it until to-day when I took it off the setting-board. As I have only recently taken up collecting again after an interval of over thirty years, I distrusted my luck until I had my identification confirmed by two more experienced collectors, Mr. W. Farren and the Rev. C. E. Raven, Dean of Emmanuel College. The insect was beaten out of ivy in the neighbourhood of Cambridge about 11 p.m. on October 7th, and was in such perfect condition that it was probably very recently emerged. The wing expanse is 36.6 mm. ($1\frac{1}{2}$ in.) and the marking agrees closely with the description in Barrett (vol. vi, pp. 34-36), but the beautiful dark lambda mark on the fore wings is much clearer than in the figures given by South and Barrett.—SIDNEY E. CAMPBELL; The Bursary, Christ's College, Cambridge.

SCARCITY OF LYCÆNA ARION, ETC., IN CORNWALL.—After an absence of nine years I again visited the Cornish locality for *Lycæna arion* for a few weeks' stay in June and July last. I was immediately struck by the changed appearance of the ground. When I first visited the district twenty years ago one could get about any of the hills in fair comfort, but now most of the ground is so overgrown with dense masses of gorse, bracken, bramble and heather that it is impossible and too painful a proceeding to wade through in many places. Nor is this to the advantage of *arion*, as with this larger growth the ground plants, thyme, etc., have been choked out to a great extent. Consequently I was not surprised to find the species in greatly diminished numbers—certainly not more than 20 per cent. of what it was even ten years ago. It has almost gone from the large coombe which used to be its headquarters, but here the trouble is due to fire and cultivation, the hill slope having been accidentally burnt out a few years ago, and the top of the hill—the old breeding-ground—being now under the plough. I tried this coombe on several occasions and from it secured only five good specimens altogether. Another steep bank (inland) where several specimens used to be taken was a complete failure, not one putting in an appearance. I experienced several days during my stay when not even a single *arion* was to be seen, although the whole of the regular haunts were looked over, and this notwithstanding the fact that I had the ground to myself for the greater part of the time. I do not put the scarcity down to over-collecting altogether,

but rather to a natural cause—the usual disappearance of a species from a locality no longer able to support it. Here and there about the coombs there still remain patches where the growth is much as it used to be, and it was only round about such places that *arion* was to be taken. I have to thank this circumstance for my good fortune in turning up *arion* larvæ and pupæ in early July. By a lucky chance I was led to examine an ant's nest which was built up against an upright slab of rock; by pulling this away it left a clean-cut section of the nest, and then exposed to view in the galleries were four pupæ, the lowest of them being about 4 in. below the crown of the nest. The imago of this one would have had 6 or 7 in. of gallery to crawl through before reaching the open air. From this situation one can quite understand the rubbed thorax and bases of wings so often seen in specimens otherwise perfect. Feeling greatly cheered after this find I procured a garden trowel, and following the hint contained in the first nest turned over several others. Most were blanks, but fifteen pupæ were secured altogether, and two full-fed larvæ, which pupated on July 7th and 15th, the imagines emerging on August 3rd and 10th—rather late dates it may be thought, but Mr. B. G. Adams, in last month's 'Entomologist,' records an emergence even later. One of the specimens from larva has dark grey fringes—a form I have not previously seen. One nest had contained six pupæ; three of them had already emerged when turned up; the remaining three produced dwarfs—clear enough evidence that dwarf specimens are caused by "short rations." Not only *L. arion* but also other noted Lepidoptera of the district have suffered a like diminution. Of *Leptosia (Leucophasia) sinapis* I saw but three specimens; *Dianthæcia luteago* v. *ficklini*, nine in a fortnight (a lot of the food-plant, *Silene maritima*, has been buried by falls of cliff, and the remaining portion has most of its flowers destroyed by large black slugs). *Eupithecia constrictata*, three imagines and one larva. *Polia nigrocincta*, extremely scarce, larvæ in ones only. *Toxocampa cracca* has maintained itself the best of all, but even so it is not in half its old numbers; its food-plant has also considerably lessened. *Melitæa artemis* appears to have gone completely: not one was to be found, although several suitable marshes are still there. Doubtless the scarcity is partly due to the poor season, but after the war-time respite—particularly in the case of the moths—a much better result should have been seen.—G. B. OLIVER; High Wycombe.

ONEPTERYX RHAMNI IN CHESHIRE.—On October 2nd I took a ♂ *Gonepteryx rhamni* in Pettypool Park, Delamere. This butterfly is very rare in Cheshire. Day's list gives only six records for the county, the most recent being in 1902.—A. H. THOMPSON; 54, Church Road, Northwich.

COLIAS HYALE IN HAMPSHIRE: A CORRECTION.—Since writing a note which appeared in the November number of the 'Entomologist' on the occurrence of *Colias hyale* on Portsdown, I have been informed by Mr. Postans, of Portsmouth, who has been there, that the four insects taken by the boys referred to are really specimens of *C. edusa*, var. *helice*, and not *hyale*. I suggested to the boys

at the time I met them that they had caught *helice*, but they were so positive that it was not so and that they knew the variety quite well that I accepted their statement as correct. I am sorry for the mistake, and hasten to correct it.—(Rev.) J. E. TARBAT; Fareham, Hants.

COLIAS EDUSA AND PYRAMEIS ATALANTA, ETC., IN BRIGHTON DISTRICT.—*C. edusa* was recorded near Brighton in early June, and others seen between Shoreham and Arundel. I took a ♀ flying on the Patcham Downs on June 6th, but although it remained alive ten days no ova were deposited. I examined this specimen closely. It was not freshly emerged; a chalky whitish stain appeared on the upper wings, probably caused by damp when hibernating, much resembling the stain I have seen on some of the spring-flying *Gonepteryx rhamni*. During August and up to the middle of September *edusa* was seen at Angmering, Goring, Worthing, Lancing, Shoreham, Hove, Brighton streets, Dyke Valley, Roedean, Falmer, Glynde and Lewes. I took them in half-dozens at some of these places—among which were three *C. hyale*. A collector friend of mine took between six and seven dozen, but he stated he walked sixty miles to obtain them. The unsettled weather experienced during August and September was all against taking a quantity. On September 28th I knocked down a ♀ *edusa* with my cap; it was flying very slowly and low over the stones on the Brighton Beach, otherwise I could not have captured it. It was a very fine specimen as if just emerged from pupa. It may be she formed one of the numerous parties of butterflies, mostly *P. atalanta*, which for the last two months have been observed by occupants of boats at sea, flying towards the coast of Sussex. During this pleasant summerlike weather I revisit some of the likely spots to see if a fresh brood is about. I have read in Newman's book on butterflies of a collector who took several hundred *edusa* in October and November, and history has a way of repeating itself. To-day (October 11th) I found several larvæ and pupæ of *P. atalanta* on nettles on my allotment at Brighton. These will all probably mature this year if kept warm, but what if the weather turned cold and inclement for a long period? It might properly be assumed the pupæ would probably lay over to the spring before emerging. Five years ago I took some pupæ in October, and to my surprise they came out on Christmas Day. The usual crimson bordering on the lower wing in some of these was of a light brick colour. All butterflies usually taken here have been abundant this year.—F. G. S. BRAMWELL; Brighton.

COLIAS EDUSA IN MIDDLESEX.—I have not come across *C. edusa* in Middlesex this year under my own observation, but a friend informs me that he saw an example flying on the railway-bank just outside Uxbridge Metropolitan station on a fine day in the first week of October.—H. ROWLAND-BROWN; Harrow Weald, October 23rd, 1920.

COLIAS EDUSA IN SURREY.—I saw two specimens of *C. edusa* flying over a field of lucerne at Horley, but caught neither.—D. G. SEVASTOPULO; Colvin House, Haileybury, Herts.

COLIAS EDUSA REARED FROM OVA.—This has not been a real *edusa* year in Sussex. From the first week in August to the end of the month there were a good many about but they were never really thick. I went out for them on a good many days, and the most I took was ten on one day. The proportion of females to males was about 1 to 4 out of a total of thirty-six taken. I took one var. *pallida* on August 30th, but no specimens of *C. hyale* were seen. I never saw one *C. edusa* more than a mile from the sea, and I am convinced they are all immigrants. I saw most by far within 100 yards of the sea, and all appeared to come from south and to have a tendency to fly north. From a small batch of eggs laid by a damaged female about August 20th I got six larvæ hatched September 4th. They pupated October 14th to 19th. Imagines emerged on November 11th, including one ab. *pallida* (*helice*). The larvæ were fed on young large-leaved clover grown up since the field was mowed for cattle-feed, and they did well on it. Others of the same batch were fed on lucerne. The larvæ are quite unenterprising creatures, and will hardly take the trouble to move from the stale food to fresh. They progress by a jerky glide, each little jerk taking them about $\frac{1}{32}$ inch. They can be kept quite safely on a bunch of clover in water without being in any way confined. Last week I was playing golf at Rye on the 12th, and I saw a couple of *C. edusa*. I went on the 13th with a net, and in about two hours' sunshine I noted about thirty flying on the sandhills just above high-water mark and took seven perfect ones, all small males. I think they are late arrivals, or unmated males which have survived. No females were observed. I saw one *Polyommatus icarus*, four *Chrysophanus phlæas*, and a good many *Plusia gamma*, otherwise the *C. edusa* had the dunes to themselves. They were feeding on a common yellow flower I do not know the name of.—A. BINGHAM CRABBE (Major); Grand Avenue Mansions, Hove.

POLYGONIA C-ALBUM, ETC., IN SOMERSET.—I took one *P. c-album* in the garden here on September 11th and saw one *C. edusa* on September 19th. Throughout September *P. atalanta* was very numerous and in fine condition. Very few *Vanessa io* or *Aglais urticæ* seen and no *Pyrameis cardui*.—WALDEGRAVE; Chewton Priory, Chewton-Mendip, Somerset.

POLYGONIA C-ALBUM.—Mr. Paskell's note of this species at Wanstead Park (*antea*, p. 235) reminds me that it used to occur at Enfield. I have two specimens in my collection which my father took here in 1872. He often told me that he had noticed it in some numbers as a young man. I have not seen the species here during my lifetime.—H. M. EDELSTEN; Forty Hill, Enfield.

NOTE ON *AGLAIS URTICÆ*.—While in my dressing-room on August 14th, about 4 p.m., a specimen came in through the open window, fluttered round the room and into a cupboard, where it at once took up a position on the ceiling. It is still there, and has shown no inclination to go out again, however fine the weather has been. Is this not rather an early date to commence hibernation?—H. M. EDELSTEN; Forty Hill, Enfield, October 12th, 1920.

PYRAMEIS ATALANTA AT ENFIELD AND IN THE CITY.—This insect has been exceptionally common here this autumn. I counted no less than fifteen on one *Buddleia* bush. It is still about in the garden to-day (October 12th). I may add that I saw a specimen at Liverpool Street Station on October 8th. I presume it had "arrived by train."—H. M. EDELSTEN; Forty Hill, Enfield.

PYRAMEIS ATALANTA IN MAY.—In the July number of the 'Entomologist' (No. 686), Mr. W. M. Christy and Lieut.-Comm. R. A. Dickson, R.N., record the occurrence of *Pyrameis atalanta* in May. It will doubtless be of some interest to mention that a specimen of this butterfly was brought to me on May 15th, which was taken by Miss Gertie Purchase flying over a hedge at Petersfield. It has been abundant over flowers in the garden, and generally here, during September particularly. I first noticed *Cyaniris argioides* on April 6th and *Pieris brassicæ* on May 7th.—JOSEPH ANDERSON; Chichester.

PYRAMEIS ATALANTA IN BERKSHIRE.—In view of the interest attached to *Pyrameis atalanta* this year additional records may be of interest. During October, 1920, this species has been very much in evidence along the banks of the river Kennet, near Reading. I have only seen one *Vanessa io*, and that on October 5th.—A. STEVEN CORBET; 32, Hamilton Road, Reading.

PYRAMEIS ATALANTA, AB.—From a number of larvæ of *P. atalanta* gathered at Folkestone in September last I have bred a couple of specimens having the bands on all wings of an orange yellow tint.—G. B. OLIVER.

PYRAMEIS ATALANTA, AB.—I caught a specimen of *P. atalanta* with four subapical spots; unlike the one in the Hope Collection the second spot is missing. I caught it on a scabious at Horley, Surrey.—D. G. SEVASTOPULO; Colvin House, Haileybury, Herts.

AGRIADES CORYDON IN BUCKS, 1920.—With reference to Mr. Edelsten's note on the late appearance of *Agriades corydon* at Princes Risboro' last August (*antea*, p. 261), it may be of some interest to record that I found the species fully out and abundant on the hills round Hambleton, South Bucks, on August 1st, the only day I visited the locality.—S. B. HODGSON; 3, Bassett Road, North Kensington, London, W.

AGRIADES CORYDON IN BUCKS, 1920.—Your correspondent, Mr. H. M. Edelsten (*antea*, p. 261), is mistaken in supposing that *Agriades corydon* was almost absent from the Princes Risboro' Hills this last season. I found it in great profusion from the end of July to the end of August. I saw one specimen early in July, which, curiously enough, was very badly worn! This seems rather extraordinary.—WALTER PIERCE; Queen's Road, High Wycombe.

AGRIADES CORYDON VAR. SYNGRAPHA.—I regret to have to record the practical extinction of *Agriades corydon* on what was the "ab. *syngrapha*" ground in the Bucks Chilterns. I was there from

July 23rd till August 8th last and saw only two males. Another collector I met reported one, and Mr. H. A. Leeds, who spent nine days there in mid-August, met with another. These four males, as far as I am aware, are the only four native-born *corydon* seen there this year. Not only the "*syngrapha*" ground but also the "all-type" ground some little way off has suffered a like fate. Here, where the species in '17 and '18 simply swarmed, this year I saw under thirty specimens, six being females. Mr. Spiller reports the butterfly very scarce in the Oxon Chilterns, whilst on the Hertfordshire side Mr. L. Goodson, of Tring, says it has been quite abundant, but with no special variety beyond *semi-syngrapha*. From Royston, where I went on August 9th, I sent Mr. Leeds over 500 live females with a sprinkling of a few males. These he very kindly put out on the old *syngrapha* ground in the hope that they would mate with any possible straggler of the local race, and so, perhaps, eventually re-establish the colony, or shall I put it a colony, as the re-entrance of *syngrapha* appears to be very remote. The disappearance of *A. corydon*, I think, is due to two main causes. Firstly, parasites: In 1917 *corydon* was fairly plentiful, though not swarming (I am alluding now to the *syngrapha* colony). In 1918 its numbers had lessened by half, one portion of the ground being quite blank. 1919 saw the butterfly absolutely scarce. I gathered seventy larvæ in that July which produced six butterflies only, the remainder, with the exception of a few diseased larvæ, being stung. Some few threw out dipterous grubs when full-fed, but the majority pupated and from the pupæ emerged a species of Hymenoptera. Secondly, disease: I believe it is generally agreed that variation, excepting striation, is due to disease or weakness, also that gynandromorphism denotes degeneration. I don't think there was ever a colony of *A. corydon* which produced more varieties per thousand specimens than did the *syngrapha* strain! One day in August last year I saw less than fifty *corydon* out of which three were varieties, one *syngrapha* and two *obsoleta* (one whitish, and one of the complete form with merely faint traces of the lunules). Mr. H. Rowland-Brown reported ('Entom.,' vol. 1, p. 236) the finding of one var. *syngrapha* at another locality some miles from its regular ground. In 1917 and the following year I put out a fair number of the variety on another ground which his description fits, but personally did not see any result from it. The species was scarce there last year as in other parts, but I did not visit the place this year so cannot say how it has fared.—G. B. OLIVER; Stocksbridge, September, 1920.

CHRYSOPHANUS PHLEAS AB. CÆRULEO-PUNCTATA.—Mr. Jacobs' note (*antea*, p. 233) indicates that the blue-spot form of *C. phleas* is a native of marshy places. On September 18th of this year I took six specimens at Quarndon (near Derby) on a patch of dry heathy ground, where was also an abundance of gorse and thistles. Of these butterflies four were of the blue-spot form. The following Saturday I took six more, and of these five were blue-spotted forms. I also captured a large number on some very marshy ground near Duffield, but none of these bore any trace of the blue marking, nor, indeed,

was there any appreciable variation from the ordinary form in any of them. These results seem to contradict the conclusion arrived at by Mr. Jacobs. The point raised is a very interesting one and in my opinion is well worth further investigation.—N. BLACKWELL WOOD; 114, Arthur Street, Derby.

CHRYSOPHANUS PHLEAS AB. CÆRULEO-PUNCTATA.—Mr. Jacobs' notes on the blue-spotted form of *Chrysophanus phleas* reminds me that the one spot where I can always find this aberration is a very marshy spot near Winchester. The other specimens on the dry ground near by were not so noticeably variable.—WALTER PIERCE; High Wycombe.

MANDUCA ATROPOS IN SUSSEX.—Two specimens were taken in September, one at Lancing and the other in Frances Street, Brighton.—F. G. S. BRAMWELL; Brighton.

PHRYXUS LIVORNICA IN SUSSEX.—A larva of *P. livornica* was taken by a lad, who found it feeding on bedstraw growing on the Patcham railway-bank, Brighton, in August last.—F. G. S. BRAMWELL; Brighton.

PHRYXUS LIVORNICA BRED IN ENGLAND.—A caterpillar was found on some allotments at Dover on June 24th, and was taken to Mr. Mannering by a man named Brown. Mr. Mannering brought it to me on the 26th and asked me to breed it for him. It went to earth the same day. It spun a cocoon on the top very fragile, and which eventually it fell out of. It changed to a pupa a week later, and the perfect insect emerged on September 28th at 7 o'clock p.m., and was fully developed at 9.10 p.m.—F. P. ABBOTT; Dover Museum.

HIPPOTION (CHÆROCAMPA) CELERIO, L., IN NORFOLK.—An example of this hawk moth was taken by Mr. Edward N. Mennell at Burnham Overy, King's Lynn, on October 10th. It was flying round a lamp, and was secured in perfect condition. I have seen an excellent coloured figure of the insect drawn by Mr. Mennell, which leaves no doubt as to its identification.—A. D. IMMS, D.Sc.; Rothamsted Experimental Station, Harpenden.

RARITIES IN THE PLYMOUTH DISTRICT.—*Leucania vitellina*: With further reference to my note (*antea*, p. 236) I have pleasure in recording the capture in my garden of three more specimens, all perfect, viz. two on September 25th and one on October 5th. My friend Mr. H. H. May, of Plymouth, also took six specimens during the week ending October 9th on the north coast of Cornwall. *Laphygma exigua*: A single male specimen in my garden at sugar on September 29th. Mr. May also took one, a female, on October 7th on the north coast of Cornwall. *L. unipuncta (extranea)*: A splendid specimen of this rare species at sugar in my garden on October 1st. *Sphinx convolvuli*: Two females on October 7th, one male October 13th in my garden. Several others seen about the *Nicotiana affinis*. It would appear from the above records, and the fact that such species as *edusa*, *atalanta*, *gamma*, etc., have been plentiful, that the early part of this year must have been exceptionally favourable to immigration, and it is of interest to determine what were the particular

conditions that led to this result. It is also to be hoped that other observers will record any captures of the above-named moths which may have come under their notice, so that some idea may be formed as to the area of distribution in this year of these immigrant species.—R. H. MOORE; Heathfield, Plymstock.

LEUCANIA VITELLINA IN DEVON.—I took perfectly fresh *Leucania vitellina* at ivy on October 11th in this district.—E. D. MORGAN; 27, Sanford Crescent, Chelston, Torquay.

LEUCANIA VITELLINA IN KENT.—On October 5th last a specimen of *L. vitellina* was captured at sugar in my garden on the edge of the cliffs at Kingsgate. September is given as the best month. Unfortunately I was away with Mr. Mellows in September, but will make a note for next year.—R. STANWAY PARRIS; "Beachleigh," Kingsgate, Kent, October 13th, 1920.

PACHYGASTRIA TRIFOLII.—Larvæ of this species taken late in June this year attained the imago stage from August 28th to September 28th, the last-named date being unusual. One female measuring 74 mm. in expanse is the largest I have yet bred, though another in my collection measures 72 mm. The sizes given in Tutt's 'British Lepidoptera,' vol. iii, p. 9, namely 46 mm. to 67.5 mm. for females would appear to be small.—B. W. ADKIN; 8, Hope Park, Bromley, Kent.

XANTHORHOË SOCIATA, AB.—I should like to record the capture, on June 7th last, on Cannock Chase, of a remarkable aberration of *Xanthorhoë (Cidaria) sociata*. The normal dark central fascia of the fore wing is wanting, the entire central portion of the wing being white except for three small black spots. The inner of these three spots corresponds in position with the normal discal spot; the other two, one above and one below it, seems to correspond with the points of the two angles in the outer edge of the normal dark band. Barrett (vol. viii, p. 103) describes a somewhat similar specimen in the late Mr. S. Webb's collection.—F. C. WOODFORDE; 19, Friar's Entry, Oxford.

EMUS HIRTUS, LINN. (COLEOPTERA).—On October 6th last E. A. C. Stowell sent me an insect which, he said, he could not properly place. As he jokingly remarked, "It looks like a cross between a grasshopper and a bumble-bee"! As a matter of fact it was an example of that scarce and curious brachelytrous beetle, *Emus hirtus*, Linn. Stowell tells me that he took it on August 21st near the sea at Studland Heath upon a sandhill bearing scattered tufts of heather and grass. It was flying, or rather "buzzing," for short distances near the ground. The day was tolerably warm as days went last August. He saw two more earlier in the day amongst heather and short bracken near the margin of the larger pond farther inland. These "buzzed" so ferociously and looked so yellow that he skipped aside, thinking he was about to step on the nest of some large wasp (or possibly hornet). They, however, flew but a yard or two and then disappeared in the heather. Later in the day he heard the same sound, and captured the "musician" instantly—the one he sent to me. He does not think it could be

obtained at will, for he spent two other days on the Heath (one much warmer) without seeing any. With the resemblance of this beetle to a humble-bee the least imaginative of naturalists is bound to be struck, and he could not help speculating on the method by which it was brought about. When we add to this fact that it has learnt to "buzz" somewhat like a humble-bee also, the problem becomes doubly fascinating. Though Stowell certainly noticed some resemblance to a rove-beetle, he did not take the creature to be coleopterous, and the fact that it could deceive so experienced a naturalist shows that the beetle's attempt at "mimicry" was a decided success. This example of *Emus hirtus* is about 22 mm. in length, while its greatest width—across the elytra—is about 8.5 mm., so that, when examined at all closely, it is seen to be proportionately more slender than a humble-bee. The groundwork of its colouring is apparently entirely black, but in great part this is disguised by a profuse clothing of long hair. This is bright golden brown on hind part of abdomen, on thorax, and on the bulky head, while on the distal two-thirds of the elytra it is grey. The rest of the animal is left densely covered with black hairs, which are interspersed with brown on antennæ and legs. The formidable mandibles are black. The antennæ remind one of those of a large humble-bee.—W. J. LUCAS.

ORTHOPTERA IN R.H.S. GARDENS, 1920.—Mr. G. Fox-Wilson, F.E.S., has shown me a few Orthoptera taken during 1920 in the Royal Horticultural Society's Gardens at Wisley in Surrey. Of the Forficulodea he has only *Forficula auricularia*, Linn.; but amongst the number var. *forcipata*, Steph., occurred. *F. lesnei*, Finot, will no doubt turn up ultimately, if not *Apterygida albipennis*, Meg., also. None of the native Blattodea had been taken, but *Periplaneta australasiae*, Fabr., *P. americana*, Linn., in the nymph and imaginal stages, and *Blatta orientalis*, Linn., had been found. The Locustodea were represented by *Leptophyes punctatissima*, Bosc, *Meconema thalassinum*, De Geer, and *Metrioptera brachyptera*, Linn. Of the Acridiodea there were *Tetrix bipunctatus*, Linn., *Stauroderus bicolor*, Charp., *Chorthippus parallelus*, Zett., and *Gomphocerus maculatus*, Thunb. No doubt a considerable number of other species remain to be discovered, especially amongst the Locustodea and Acridiodea.—W. J. LUCAS.

HIPPARCHIA SEMELE, LINN. (LEPIDOPTERA).—As was no doubt to be expected, the wholesale felling of the Scotch firs on Esher Common, Surrey, brought about considerable changes in the ordinary vegetation of the district, but I was somewhat surprised to meet with Graylings about a hill near the Black Pond on July 29th last. I have for years visited the Common so frequently that I feel certain this butterfly was not present in the district before the felling of the timber.—W. J. LUCAS.

OBSERVATIONS ON THE LARVAL HABITS OF DIMORPHA (ENDROMIS) VERSICOLORA, L.—Mr. Morris asks me to make the following correction: *antea* p. 187, line 9 from bottom, there should be a full stop after "thus"; the next sentence will then read—"After the purge they turn pink," etc.—H. R.-B.

RECENT LITERATURE.

A Naturalist in Himalaya. By R. W. G. HINGSTON. Pp. xii + 300.
London: H. F. & G. Witherley.

FROM the fact that rather more than two-thirds of this work are devoted to entomological matters one is led to suppose that the author is primarily an entomologist; but he ranges beyond insects. All living creatures excite his interest, and from all he tries to wrest their secrets. He shows a wonderful store of patience, of careful observation, and draws his conclusions cautiously and logically, knowing full well what tricks Nature can play the unwary. And as a result he has given us a book such as few who care for the study of natural history could read and not get thoroughly interested in. The chapters on Harvesting and Carnivorous Ants and on Spiders will probably prove the best reading, as here the author seems really to have done his very best, and as a result perhaps some of the later chapters seem a trifle tame—not that they are not full of interesting facts, but rather because the author does not seem to have drawn so fully on his notes and observations.

With most of the conclusions the author arrives at one has to agree. Some are debatable certainly, but that he has tried his utmost to shed light on the psychology of instinct and on the reputed intelligence of some of the really very highly specialised forms of insect life there can be no doubt.

The work is well illustrated throughout, and succeeds in presenting a very excellent picture of life in a Himalayan valley, to which the occasional references to scenery and the concluding geological sketch contribute in no small degree.

N. D. R.

Beautiful Butterflies of the Tropics. By ARTHUR TWIDLE. Pp. x + 102, 13 plates. London: The Religious Tract Society, 1920.

THIS recent addition to entomological literature is lavishly got up on heavily-glazed paper, and is apparently designed as a guide to those whose aim in collecting exotic Lepidoptera is primarily amusement. That it is impossible to overrate the beauty of many species which, unfortunately for us, only occur in warmer climates than ours, none will deny; that there can be any justification for the capture—by means of the golden net—and exhibition of these in such a manner as to give a “restful colour effect in the arrangement,” or, by the use of “a background of green-black velvet,” to exhibit them to perfection, few would care to maintain.

However, the book may, by inspiring in some at first a desire merely to possess some of these beautiful creatures, ultimately lead them to the formation of collections from which, provided only they are fully labelled according to modern needs, it may be possible to learn something.

The volume contains many interesting notes and facts on collectors and collecting, and touches on points in connection with some species which are often forgotten. The plates are curious; the colouring of the species figured on them is accurate, but the confusion of perspectives gives some of them a most remarkable effect.

N. D. R.

CONTENTS.

Notes on the Variations of *Peronea cristana*, Fab., with Descriptions of Six New Forms, and the Reasons for Sinking the Names at Present in Use of Six Others, *W. G. Shields*, F.Z.S., F.E.S., 265. New Species of Noctuidæ from the Philippines, *A. F. Wilman and Richard South* (continued from p. 124), 271. The Macro-Lepidoptera of County Tyrone, *Thomas Greer* (continued from p. 221), 274. August Butterflies in the Lannion District: Côte du Nord, Brittany, *John F. H. Blackie*, 277.

NOTES AND OBSERVATIONS.—Change of Genus-Name, *E. Meyrick*, 279. *Xylina lambda* in Cambridgeshire, *Subley E. Campbell*, 279. Scarcity of *Lycena arion*, etc., in Cornwall, *G. B. Oliver*, 279. *Gonepteryx rhamni* in Cheshire, *A. H. Thompson*, 280. *Colias hyale* in Hampshire: A Correction, (*Rev.*) *J. E. Tarbat*, 280. *Colias edusa* and *Pyrameis atalanta*, etc., in Brighton District, *F. G. S. Bramwell*, 281. *Colias edusa* in Middlesex, *H. Rowland-Brown*, 281. *Colias edusa* in Surrey, *D. G. Scastopulo*, 281. *Colias edusa* reared from Ova, *A. Bingham Crabbe* (*Major*), 282. *Polygonia e-album*, etc., in Somerset, *Waldegrave*, 282. *Polygonia e-album*, *H. M. Edelsten*, 282. Note on *Aglais urticae*, *H. M. Edelsten*, 282. *Pyrameis atalanta* at Enfield and in the City, *H. M. Edelsten*, 283. *Pyrameis atalanta* in May, *Joseph Anderson*, 283. *Pyrameis atalanta* in Berkshire, *A. Steen Corbet*, 283. *Pyrameis atalanta*, ab., *G. B. Oliver*, 283. *Pyrameis atalanta*, ab., *D. G. Scastopulo*, 283. *Agriades corydon* in Bucks., 1920, *S. B. Holyson*, 283. *Agriades corydon* in Bucks., 1920, *Walter Pierce*, 283. *Agriades corydon* var. *syngrapha*, *G. B. Oliver*, 283. *Chrysothamnus phileas* ab. caeruleo-punctata, *N. Blackwell Wood*, 284. *Chrysothamnus phileas* ab. caeruleo-punctata, *Walter Pierce*, 285. *Manduca atropis* in Sussex, *F. G. S. Bramwell*, 295. *Deilephila livornica* in Sussex, *F. G. S. Bramwell*, 285. *Phryxus livornica* bred in England, *F. P. Abbott*, 285. *Hippotion charocampa celerio*, L., in Norfolk, *A. D. Inms*, 285. Rarities in the Plymouth District, *R. H. Moore*, 285. *Leucania vitellina* in Devon, *E. D. Morgan*, 286. *Leucania vitellina* in Kent, *R. Stanway Parris*, 286. *Pachygastris triboli*, *B. W. Adkin*, 286. *Xanthorhoe sociata*, ab., *F. C. Woodford*, 286. *Emus latus*, Linn. (Coleoptera), *W. J. Lucas*, 286. Orthoptera in R.H.S. Gardens, 1920, *W. J. Lucas*, 287. *Hipparchia semele*, Linn. (Lepidoptera), *W. J. Lucas*, 287. Observations on the Larval Habits of *Dinorpha* (*Endromis*) *versicolora*, L., *H. R. B.*, 287.

RECENT LITERATURE.—A Naturalist in Hindalaya, 288. Beautiful Butterflies of the Tropics, 288.

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 Exhibition Cases for Insects, glazed front, cork bottom, stained, polished mahogany colour, 10 x 8", 7/-; 16 x 10", 10/9; 18 x 14, 14/9.

Whitewood Travelling Setting Houses, 16 x 12 x 4 $\frac{1}{2}$ ", hinged ends, 13/6.
 Pine Breeding Cages for low-feeding Larvæ, 16 x 12 x 7 $\frac{1}{2}$ ", 7/6; better quality, 10/6.
 Pine Larvæ Breeding Cage, with glass door, 16 x 12 x 12", 25/- each.
 Superior Oval or Flat Cork Setting Boards. $\frac{1}{2}$ ", 6d.; $\frac{3}{4}$ ", 7 $\frac{1}{2}$ d.; 1", 1/-; 1 $\frac{1}{2}$ ", 1/3; 1 $\frac{3}{4}$ ", 1/4; 2", 1/6; 2 $\frac{1}{2}$ ", 1/9; 3", 2/-; 3 $\frac{1}{2}$ ", 2/3; 4", 3/-.
 Cork Sheets. 19 $\frac{1}{2}$ x 19 $\frac{1}{2}$ x $\frac{3}{16}$ ", 2/- per sheet; 11 $\frac{1}{2}$ x 3 $\frac{1}{2}$ x $\frac{1}{8}$ ", 2/6 doz. sheets; 11 $\frac{1}{2}$ x 3 $\frac{1}{2}$ x $\frac{1}{16}$ ", 3/6 doz. sheets; 11 $\frac{1}{2}$ x 3 $\frac{1}{2}$ x $\frac{1}{4}$ ", 4/6 doz. sheets.

Peat Sheets. 10 x 4 $\frac{1}{2}$ x $\frac{1}{4}$ ", 4/- doz. sheets. Deal Breeding Cages, 6/-.
 Round Chipette Boxes, very strong. 1 $\frac{1}{2}$ x 1 $\frac{1}{2}$ ", 8d.; 1 $\frac{3}{4}$ x 1 $\frac{3}{4}$ ", 10d.; 2 x 1 $\frac{1}{2}$ ", 1/2 doz.
 Round Chipette Boxes, with Transparent Bottoms for Collecting, 1 $\frac{1}{2}$ x 1 $\frac{1}{2}$ " 1/6; 1 $\frac{3}{4}$ x 1 $\frac{3}{4}$ ", 2/-; 2 x 1 $\frac{1}{2}$ ", 2/6 doz. Sample Set in Round Tin Box, post free, 1/-.
 Round Cardboard Boxes, 1 x $\frac{3}{4}$ ", 6d. doz. Square ditto, 1 $\frac{1}{2}$ x $\frac{3}{4}$ ", 6d. doz.
 Purple-Shouldered Cardboard Boxes, 1 $\frac{1}{2}$ x 1 $\frac{1}{2}$ ", 1/6; 1 $\frac{1}{2}$ x 1", 1/3; 1 x $\frac{3}{4}$ ", 9d. doz.
 Round Glass-Top Cardboard Boxes, 5 x 2 $\frac{1}{2}$ ", 1/-; 4 x 2", 9d.; 3 $\frac{1}{2}$ x 1 $\frac{3}{4}$ ", 8d.; 2 $\frac{3}{4}$ x 1 $\frac{1}{2}$ ", 6d.; 2 $\frac{1}{2}$ x 1 $\frac{3}{8}$ ", 5d.; 2 $\frac{1}{2}$ x 1 $\frac{1}{4}$ ", 4d.; 1 $\frac{7}{8}$ x 1", 3 $\frac{1}{2}$ d.; 1 $\frac{1}{4}$ x $\frac{3}{4}$ ", 2 $\frac{1}{2}$ d. each.
 Ditto. 1 $\frac{7}{8}$ x 1", 3d.; 2 $\frac{1}{2}$ x 1", 5d.; 2 $\frac{1}{2}$ x 1", 6d.; 3 x 1 $\frac{1}{2}$ ", 7d.
 Rectangular Glass-Top Boxes, 4 $\frac{1}{2}$ x 4 x 1 $\frac{3}{8}$ ", 9d. each.
 Round White Metal Boxes. 1 $\frac{1}{4}$ x $\frac{3}{4}$ ", 6d.; 2 x $\frac{3}{4}$ ", 7 $\frac{1}{2}$ d.; 2 $\frac{3}{4}$ x 1 $\frac{1}{2}$ ", 1/3; 3 x 2", 1/9 doz.

Glass Top Metal Boxes	{	3/4	2/11	3/11	4/6	8/9 per doz.
		3/d.	3/d.	4/d.	5d.	9d. each.

Jointed Kite Net (large) for collecting abroad, complete with bag net, 8/6.
 Folding Brass Adjustable Pocket Net, 8/6 complete. Frames only 6/9.
 Ditto complete with Green Bretonne Net, 11/6. Net only, 4/9.
 Large Leno Bag Nets, in Green or Brown, 1/6; 2 $\frac{1}{2}$ " Leno for same 6d. yd.
 Folding Steel French Net, screw top, cane in 2 pieces, silk net, complete, 9/-.
 4 Brass-jointed Folding Cane Butterfly Net, complete with sq. brass nozzle Y, 5/-.
 Ditto, better quality, 6/6. Frames only, 3/6 and 5/-.
 Cane Butterfly Net, complete with square brass nozzle Y, 3/-.
 For Making Butterfly Nets. Tin Y, 2d. Brass Y, 1/2 each, round ends.
 Oval Zinc Pocket Collecting Boxes. 5 x 2 $\frac{1}{2}$ " corked, single 1/4; double 2/-.
 Ditto. 6 x 3 $\frac{1}{2}$ ", 2/6; 7 x 4", 3/9. Oval Zinc Larvæ Collecting Box. 5 $\frac{1}{2}$ x 2 $\frac{3}{4}$ ", 1/4.
 Zinc Larvæ Breeding Cage. Glass front, 9 x 6 $\frac{1}{2}$ x 4 $\frac{3}{8}$ ", 6/-.
 Strong Canvas Bag for Larvæ Collecting, Sallows, etc. 17 x 30", 2/- each.
 Bignell's Beating Tray for Larvæ Collecting, etc., 13/6; with case 15/-.
 Folding Iron Frame Sweep Net, screw top, complete with canvas bag, 10/6.
 Powdered Naphthalene, 6d. lb. Pulpato for Larvæ to pupate in, 10d. 7 lb. pel.
 Strong Glass Killing Jars, fitted with cork, 2/- each; larger size, 2/6 each.
 Zinc Killing Boxes, 3 x 2", 1/6; 3 $\frac{1}{2}$ x 2 $\frac{1}{2}$ ", 2/-.
 Zinc Relax Boxes, 7 x 4", 3/6.
 Zinc Double Larvæ Boxes, 6 $\frac{3}{4}$ x 3 $\frac{3}{4}$ ", 2/-.
 Stout Flint Glass Cyanite Killing Bottles, 5 x 2 $\frac{1}{2}$ ", charged ready for use, 5/6.
 Coleoptera Collecting Bottles, 2/6. Cards for mounting same, 1/10 set.

	Size	1	3	5	8	9	10
Kirby Beard's	White	1/3	1/3	2/-	2/9	3/3	3/9 per oz.
Entomological Pins.	Black	2/6	2/6	3/3	3/9	4/6	5/- " "

Entomological Labels, 6/- 1000. Sample gratis on application.
 Long Black Steel Pins for High Setting. Fine, 3, 4 $\frac{1}{2}$; medium, 1/9; stout, 1/9 $\frac{1}{2}$ oz.
 Curved Plated Steel Forceps, 3/6 each; steel, 2/- each. Straight Forceps, 1/-.
 Steel Glass-headed Pins, 1 $\frac{1}{2}$ " long, for setting, 6 $\frac{1}{2}$ d. box of 4 doz. pins.
 Living Pupæ: S. tilia, 2/-; S. populi, 1/6; S. ligustri, 2/6 per $\frac{1}{2}$ doz.

G. A. BENTALL,

NATURALIST.

F.Z.S.,

DUDLEY HOUSE,
SOUTHAMPTON STREET
(OPPOSITE HOTEL CECIL,
STRAND, W.C. 2.

Morphos in Papers, ♂

	I	II		I	II		I	II
Achilles	4/-	2/-	Cyprus	—	8/6	Metellus	25/-	—
Achillæna	7/6	—	Deidamia	6/-	3/-	Nestira	8/-	—
Achillæna	5/- ♂	10/- ♀	Diadema	7/6	—	Occidenti	10/-	—
Adonis	7/6	—	Didius	5/6	3/6	Peleides	8/-	—
Æga	10/-	—	Godarti	12/-	—	Perseus	25/-	—
Amathonte	8/-	4/-	Hector	10/-	—	Phokylides	7/6	—
Amazonicus	7/6	—	Hecuba	21/-	—	Polyphemus	8/-	—
Anaxibia	10/-	—	Hercules	8/-	—	Portis	8/-	—
Argentiferus	12/-	—	Hydorima	10/-	—	Rhetenor	14/-	—
Briseis	7/6	—	Tenniliimbata	15/-	—	Theseus	12/6	—
Catewarius	5/-	—	Laertes	4/-	—	Trojana	1/6	—
Cisseis	40/-	—	Leonte	7/6	—	Urania ripheus	5/6	4/-
Cœlestis	12/-	—	Menelaus	7/6	4/-	Vitrea	7/6	—

Palæarctic Colias.

	♂	♀		♂	♀
Palæno schelderi	2/-	—	Erate	1/-	1/6
reducta	—	1/6	pallida	—	1/6
ochracea	—	7/6	chrysodona	3/-	5/6
eupomene	1/6	2/-	maculata	3/-	—
herrichi	—	2/6	chryseis	5/6	—
orientalis	—	5/-	Erschoffi	18/-	30/-
fair	1/6	—	Arida	10/6	—
Nastes werdandi	2/-	3/-	Regia	10/6	27/-
sulphurea	2/-	—	Eogene	3/6	10/6
immaculata	2/-	—	elissa	4/-	—
Cocandica	2/-	5/-	leechi	10/6	27/6
tatarica	5/6	8/-	Thisoa æolides	3/-	4/6
griseoviridis	3/6	—	arum-gis	—	10/6
maja	10/-	20/-	Myrmidone	—	—
circumiens	8/-	7/6	balcanica	3/-	5/6
impunctata	10/6	—	rebeli	8/-	—
aurantia-tata	8/-	12/-	Staudingeri	4/-	5/-
brunneo-dis	10/6	—	viridis	5/-	—
galba	—	10/6	good	8/-	—
galba auran-tata	—	16/-	impunctata	6/-	—
Melinos	5/6	8/-	emivittata	5/6	—
herzi	10/6	—	aphrodite	8/-	—
Phicomone oberthuri	1/6	2/-	cærulea	8/-	—
Montium	10/-	12/-	flavolimbata	—	12/6
Alpherakii	9/-	21/-	carnea	—	20/-
Sifanica	12/6	30/-	eogenei	—	16/-
Christophi	15/-	30/-	large	—	18/6
Hyale v. flava	—	1/6	maureri	7/6	10/6
nana	1/6	—	pamira	5/-	10/6
pyxa-us v. alba	—	3/-	very red	7/6	14/6

African Colias.

Electo 4d. ♂ 6d. ♀

American Colias.

	♂	♀		♂	♀		♂	♀
Philodice	1/6	2/-	Vautieri	6d.	1/-	Meads erephyle	1/6	3/-
Alexandra	2/6	—	Meads	4/-	—	euxanthe	1/9	—
Edwardsii	1/6	2/-	keewaydin	1/6	2/-	Dimeræ	6d.	—
Behri	4/-	—						

Indo-Australian Colias.

	♂	♀		♂	♀		♂	♀
Glicia	2/-	2/3	Nilagiriensis	3/-	4/-	Fieldi edusina	1/-	—
Lativitti	2/-	—	Fieldi	1/6	2/-			

The above Colias and Morphos are not all in stock to-day, as many have been sold out in advance. We shall be pleased to book orders from a fresh consignment expected shortly.

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 10-drawer ditto, drawers 17 x 14½", glass panel door, £21. 40-drawer ditto, £42.
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 Carton Store Boxes, 15½ x 10½ x 21½", wood sides, hinged lids, cork bottom, 3/9 each.
 Ditto. Double 10 x 7½", wood sides, hinged lids, lined top and bottom cork, 6/-.
 Postal or Store Box, 7½ x 12", wood sides, cork bottom, lined white, 1/4.
 Pine Store Boxes. 13 x 9", 7/-; 14 x 10", 8/-; 16 x 11", 10/-; 17 x 12", 11/-.
 Book Pine Store Boxes, covered green cloth, 13 x 9½ x 2½", 12/6; 16 x 11½ x 3½", 17/6.
 Whitewood Store Boxes. 14 x 12 x 3", 9/6; 17 x 12 x 3", 11/-.
 Whitewood Travelling Setting Houses, 16 x 12 x 4½", hinged ends, 13/6.
 Pine Breeding Cages for low-feeding Larvæ, 16 x 12 x 7½", 7/6; better quality, 10/6.
 Pine Larvæ Breeding Cage, with glass door, 16 x 12 x 12", 25/- each.
 Superior Oval or Flat Cork Setting Boards. ½", 6d.; ¾", 7½d.; 1", 1/-; 1½", 1/3; 1¾", 1/4; 2", 1/6; 2½", 2/-; 3", 2/3; 3½", 2/6; 4", 3/-.
 Cork Sheets. 19½ x 19½ x ⅜", 2/- per sheet; 11½ x 3½ x ⅜", 2/6 doz. sheets; 11½ x 3½ x ¼", 4/6 doz. sheets.
 Peat Sheets. 10 x 4½ x ¼", 4/- doz. sheets. Willow Chip Boxes, 2½ x 2", 2/- doz.
 Round Chipette Boxes, very strong. 1½ x 1½", 8d.; 1¾ x 1¾", 10d.; 2 x 1½", 1/2 doz.
 Round Chipette Boxes, with Transparent Bottoms for Collecting, 1½ x 1½", 1/6; 1¾ x 1¾", 2/-; 2 x 1½", 2/6 doz. Sample Set in Round Tin Box, post free, 1/-.
 Round Cardboard Boxes, 1 x ¾", 6d. doz. Square ditto, 1½ x ¾", 6d. doz.
 Purple-Shouldered Cardboard Boxes, 1½ x 1½", 1/6; 1½ x 1", 1/3; 1 x ¾", 9d. doz.
 Round Glass-Top Cardboard Boxes, 5 x 2½", 1/-; 4 x 2", 9d.; 3½ x 1¾", 8d.; 2½ x 1½", 6d.; 2½ x 1½", 5d.; 2½ x 1", 4d.; 1½ x 1", 3½d.; 1¼ x ¾", 2½d. each.
 Ditto. 1½ x 1", 3d.; 2½ x 1", 5d.; 2½ x 1", 6d.; 3 x 1½", 7d.
 Rectangular Glass-Top Boxes, 4½ x 4 x 1½", 9d. each.
 Round White Metal Boxes. 1½ x ¾", 6d.; 2 x ¾", 7½d.; 2½ x 1½", 1/3; 3 x 2", 1/9 doz.
 Glass Top Metal Boxes { 1½" 2½" 3" 3½"
 { 3/4 2/11 5/- 4/6 8/9 per doz.
 { 3½d. 3d. 5½d. 5d. 9d. each.
 Jointed Kite Net (large) for collecting abroad, complete with bag net, 8/6.
 Folding Brass Adjustable Pocket Net, 8/6 complete. Frames only 6/9.
 Ditto complete with Green Bretonne Net, 11/6. Net only, 4/9.
 Large Leno Bag Nets, in Green or Brown, 1/6; 24" Leno for same 6d. yd.
 Folding Steel French Net, screw top, cane in 2 pieces, silk net, complete, 9/-.
 4 Brass-jointed Folding Cane Butterfly Net, complete with sq. brass nozzle Y, 5/-.
 Ditto, better quality, 6/6. Frames only, 3/6 and 5/-.
 For Making Butterfly Nets. Tin Y, 2d. Brass Y, 1/- each, large square nozzle.
 Oval Zinc Pocket Collecting Boxes. 5 x 2½" corked, single 1/4; double 2/-.
 Ditto. 6 x 3½", 2/6; 7 x 4", 3/9. Oval Zinc Larvæ Collecting Box. 5½ x 2¾", 1/4.
 Zinc Larvæ Breeding Cage. Glass front, 9 x 6½ x 4¾", 6/-.
 Strong Canvas Bag for Larvæ Collecting, Sallows, etc. 17 x 30", 2/- each.
 Bignell's Beating Tray for Larvæ Collecting, etc., 13/6; with case 15/-.
 Folding Iron Frame Sweep Net, screw top, complete with canvas bag, 10/6.
 Powdered Naphthalene, 6d. lb. Pulpato for Larvæ to pupate in, 10½d. 7 lb. pcl.
 Strong Glass Killing Jars, fitted with cork, 2/- each; larger size, 2/6 each.
 Stout Flint Glass Cyanite Killing Bottles, 5 x 2¼", charged ready for use, 5/6.
 Coleoptera Collecting Bottles, 2/6. Cards for mounting same, 1/10 set.
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- | | | | | | | | | |
|-------------------|---------|--------|---------|---------|--------|---------|----------|----------|
| 1½ x ¾" | 1½ x ¾" | 2 x 1" | 2½ x ¾" | 3½ x ¾" | 4 x ¾" | 4½ x ¾" | 5½ x 1¼" | 6½ x 1¼" |
| 2/- | 2/6 | 1/- | 2/3 | 3/6 | 5/6 | 6/- | — | — |
| 2½d. | 3d. | 1½d. | 2½d. | 4d. | 6d. | 6½d. | 2/- | 1/6 each |
| Size 1 3 5 8 9 10 | | | | | | | | |
- Kirby Beard's White 1/3 1/3 2/- 2/9 3/3 3/9 per oz.
 Entomological Pins. Black 2/6 2/6 3/3 3/9 4/6 5/- "
 Entomological Labels, 6/- 1000. Sample gratis on application.
 Long Black Steel Pins for High Setting. Fine, 3/4½; medium, 1/9; stout, 1/9 ½ oz.
 Curved Plated Steel Forceps, 3/6 each; steel, 2/- each. Straight Forceps, 1/-.
 Steel Setting Needle, with ivory handle, 3d. each.

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Adonis, 7/6	Cypris, 17/6	Hecuba, £1 1s.	Occendeni, 10/-	Trojana, 1/6
Amathonte, 7/6	Deidamia, 5/6	Menelaus, 4/-	Perseus, £1 5s.	Nestira, 6/-

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Alta	♂ 3d.	♀ 8d.	Erate	♂ 2/-	♀ —	Helice	♂ 1/-	♀ —	Philcomone	♂ 4d.	♀ 8d.
Balcanica	♂ 1/6	♀ —	Europomene	♂ 1/-	♀ —	Maculata	♂ 1/-	♀ 3/-	Sulitelma	♂ 2/-	♀ —
Chrysodona	♂ 2/-	♀ 2/-	Fieldii	♂ 1/6	♀ 2/-	Myrmidone	♂ 1/-	♀ —	Siberica	♂ 3/-	♀ —
Croceus (Edusa)	♂ 3d.	♀ 4d.	Flava	♂ —	♀ 1/-	Poliographus	♂ 1/6	♀ 2/6	Werdandi	♂ 3/-	♀ —

Indo-Australian Colias.

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American Colias.

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Atella phalantha,	Melanitis leda,	„ elgiva,
Catacroptera cloanthe,	Mylecales safitza,	Polyommatus boeticus,
Colias electra,	Mylothris agathina,	Phrissura phoebe,
Danais chrysippus,	Neptis saclava,	Tarucas telicanus,
„ klugii dorippus,	„ agatha,	Terias brigitta,
„ limniace,	Pyrameis cardui,	Zizeeria gaika.

East African specimens of above, Pyrameis cardui, 5d.; Danais chrysippus, 6d. each.

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Albulus	♂ 6d.	♀ 6d.	Delphius	♂ 3/6	♀ —	Marginata	♂ 5/6	♀ —
Actius	♂ 2/6	♀ 6/-	Discobolus	♂ 3d.	♀ 9d.	Namanganus	♂ 7/6	♀ —
Actinobolus	♂ 4/6	♀ 7/6	Epaphus	♂ 8/6	♀ —	Princeps	♂ 10/-	♀ 17/6
Apollo	♂ 2d.	♀ —	Eversmanni	♂ 18/-	♀ 40/-	Romanovi	♂ 2/6	♀ 4/-
Apollonius	♂ 9d.	♀ 2/-	Felderi	♂ 6/6	♀ —	Rubicundus	♂ 2/6	♀ —
Bremeri	♂ 2/6	♀ —	Gigantea	♂ 6d.	♀ 1/6	Sibiricus	♂ 3/-	♀ —
Bœttgeri	♂ 4/6	♀ —	Hardwickii	♂ 4/-	♀ —	Sikkimensis	♂ 10/-	♀ 20/-
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Charino	♂ —	♀ 6/6	Illustris	♂ 4/6	♀ —	Stubbendorfi	♂ 1/-	♀ —
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Delius	♂ 6d.	♀ —	Mnemosyne	♂ 2d.	♀ 2d.			

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ENTOMOLOGICAL SOCIETY OF LONDON, 11, Chandos Street, Cavendish Square, W. 1.—April 7th at 8 p.m.

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge, S.E. 1.—*Ordinary Meetings, Thursdays, April 8th and 22nd, at 7 p.m.*—Hon. Sec., STANLEY EDWARDS, F.L.S., etc., 15, St. German's Place, Blackheath, S.E. 3.

LONDON NATURAL HISTORY SOCIETY (Hall 20, Salisbury House, Finsbury Circus, E.C.).—The first and third *Tuesdays* in the month, at 7 p.m.—J. Ross, 18, Queen's Grove, Chingford, N.E., Hon. Sec.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—Meetings at the Royal Institution, Colquitt Street, Liverpool, the 3rd *Monday* in each month, *October to April.*—Hon. Sec., WM. MANSBRIDGE, "Dunraven," Church Road, Wavertree, Liverpool.

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2 =	2 6	1 =	2 3	3 6	5/6	6 =	—	— dozen
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 Pine Breeding Cages for low-feeding Larvæ, 16 x 12 x 7 $\frac{1}{2}$ ", 7/6; better quality, 10/6.
 Pine Larvæ Breeding Cage, with glass door, 16 x 12 x 12", 25/-; 9 x 8 $\frac{1}{2}$ x 5", 6/-.
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Hypodermic Killing Syringe for large bodied Moths, complete in case, 2/6.
 Larvæ Preserving Apparatus, nickel plated collapsible stove with lamp stand, spring tongs for holding Larvæ and thick copper plate; complete with rubber blower, 25/-.

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