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## INDEX TO VOLUME XXIII.

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### GENERAL SUBJECTS.

<p>Academy of Natural Sciences of Philadelphia. Entomological Section, 138, 237, 384</p> <p>Id., Celebration ..... 184</p> <p>American Association of Economic Entomologists ..... 470</p> <p>American Entomological Society ..... 191, 382, 482</p> <p>Americans at the International Congress of Entomology ..... 327</p> <p>Animals, Insect parasites of.. 437</p> <p>Bernard scholarship in Entomology ..... 358</p> <p>Birds, Insect parasites of, 12, 56, 359.</p> <p>Bromeliadicolous insects, 80, 413, 415.</p> <p>Brooklyn Entomological Society ..... 238</p> <p>California, Pioneer Entomologists of ..... 434</p> <p>Change of names, Reason for 329</p> <p>Cleaning Greasy Insects, Method of ..... 386</p> <p>Climatic conditions, Effect on development of insects.... 131</p> <p>Collecting in South America. 277</p> <p>Collecting in Tropical America ..... 328</p> <p>Development of insects, Effects of climatic conditions on.. 131</p> <p>Early insects, Scarcity of... 328</p> <p>Economic Entomology, Announcement of the Journal of ..... 129</p> <p>Editorials 39, 79, 128, 178, 224, 270, 324, 363, 468.</p> <p>Entomological exchange, An. 232</p>	<p>Entomological Section (see Academy of Natural Sciences of Philadelphia).</p> <p>Entomological Society of America ..... 469</p> <p>Feldman Collecting Social, 141, 286, 386.</p> <p>Formic acid, Attractiveness of ..... 131</p> <p>Identifying material, Difficulty of ..... 286</p> <p>Infantile paralysis transmitted by the stable fly ..... 451</p> <p>Injurious to man, A locustid ..... 131</p> <p>Insect collection of the American Museum of Natural History ..... 269</p> <p>Instruction and research in Biology, Station for..... 223</p> <p>International Entomological Congress, Second. 38, 180, 373</p> <p>Investigation of Okefenokee swamp ..... 327</p> <p>Lake Laboratory of Ohio State University ..... 130</p> <p>Labeling specimens ..... 473</p> <p>Length of life of <i>Thysanura</i> in confinement ..... 467</p> <p>Literature, Entomological. 40, 84, 132, 185, 233, 278, 331, 365, 425, 475.</p> <p>Literature, Recent Entomological ..... 281</p> <p>Los Angeles Entomological Club ..... 433</p> <p>Malaria, Rice growing and... 101</p> <p>Malarial parasite, Life cycle of ..... 221</p> <p>Measuring device, A new.... 83</p>
--	--

- Medical Entomology, A Senator on ..... 425  
 Mimicry ..... 192  
 Newark Entomological Society ..... 95  
 Nomenclature, Strict priority in, 181, 224, 226, 271, 300 325, 423,  
 Nomenclature, Vote on priority in ..... 300, 423  
 North American insects, Fragments on ..... 399, 464  
 Number of eggs laid by insects ..... 355  
 Obituary:  
     Blackburn, T. .... 436  
     Bland, J. H. B. .... 47  
     Bourgeois, J. .... 48  
     Fletcher, J., Memorial portrait ..... 130  
     Ganglbauer, L. .... 435  
     Grosvenor, G. H. .... 436  
     Haldeman, S. S. .... 1  
     Harrison, A. .... 48  
     Kuwayama, S. .... 288  
     McCook, H. C. (Notice of a publication)  
         In memory of ..... 138  
     Masters, G. .... 436  
     Montgomery, T. H., Jr. 239  
     Shelford, R. W. C. .... 388  
     Smith, J. B. .... 192, 193  
     Stevens, Nettie M. .... 288  
     Verrall, G. H. .... 48  
 Ohio State University, Lake Laboratory of ..... 130  
 Okefenokee Swamp, Investigation of ..... 327  
 Pacific Coast Entomological Society ..... 89  
 Parasites from a noctuid pupa ..... 467  
 Personals:  
     Brehme, H. H. .... 232  
     Comstock, J. H. .... 122  
     Horn, W. .... 125  
     Kearfott, W. D. .... 179  
     Tristan, J. F. .... 180  
     Wasmann, E. .... 122  
     Williamson, E. B. .... 177  
 Plants attacked or visited by insects:  
     *Abies* ..... 320  
     *Acacia* ..... 321  
     *Acer* ..... 73, 167, 248  
     *Aconitum* ..... 459  
     *Agave* ..... 127  
     Apple ..... 209, 482  
     *Artemisia*, 396, 397, 471  
     *Asclepias* ..... 459  
     Ash ..... 9, 209  
     Bass-wood ..... 317  
     Coffee-bean ..... 209  
     *Berlandiera* ..... 459  
     *Bidens* ..... 68  
     *Blephilia* ..... 458  
     Box Elder ..... 169  
     *Brassica* ..... 256  
     Buck bush (see *Ceanothus*).  
     *Callirhoe* ..... 459  
     *Campanula* ..... 459  
     Canna, ..... 130, 203  
     *Carpinus* ..... 168  
     *Ceanothus* ..... 81, 102  
     *Celtis* ..... 317  
     *Cerasus* ..... 256  
     Cherry (see *Prunus*).  
     *Cirsium* ..... 256  
     *Citrus* ..... 73, 74  
     *Cornus* ..... 166  
     Cotton ..... 317  
     Cowpeas ..... 317  
     *Drymocallis* ..... 446  
     Elm ..... 209  
     *Eriocaulon* ..... 457  
     *Eupatorium* ..... 176  
     Fir (see *Abies*).

- Geranium* ..... 445  
 Golden Rod ..... 318, 467  
     (See also *Solidago*.)  
 Grape ..... 209, 467  
*Grindelia* ..... 446  
*Gynandropsis* ..... 317  
*Helianthus* ..... 256  
 Hickory ..... 208  
*Hydrophyllum* ..... 458  
*Iresine* ..... 327  
 Iron Weed (see *Vernonia*).  
*Lepidagathis* ..... 176  
 Linden ..... 209  
 Locust (see *Robinia*).  
*Leersia* ..... 68  
 Maize ..... 317  
 Maple (see *Acer*).  
*Melilotus* ..... 459  
 Monkshood (see *Aconitum*).  
 Mulberry (see *Celtis*).  
 Oaks (see *Quercus*).  
*Opuntia* ..... 459  
 Orange, 317 (see also *Citrus*).  
*Ostrya* ..... 167  
*Pastinaca* ..... 459  
 Peach ..... 482  
 Pecan ..... 209  
*Pentstemon* ..... 445  
*Pisonia* ..... 174, 353  
 Plum, 209, 482 (see also *Prunus*).  
 Poplar ..... 209  
 Potato ..... 317  
*Potentilla* ..... 445  
*Prunus* ..... 3  
*Psoralea* ..... 459  
*Quercus*..... 2, 3, 164, 472  
*Ranunculus* ..... 463  
*Rhus* ..... 3  
 Rice ..... 317  
*Robinia* ..... 164, 209  
 Rose ..... 82  
*Ruellia* ..... 176  
 Sage Brush (see *Artemisia*).  
*Sagittaria* ..... 458  
*Salicornia* ..... 156  
*Salix* ..... 209, 256  
*Salsola* ..... 249  
*Solidago* ..... 446  
*Specularia* ..... 459  
*Sphacralcea* ..... 446  
*Stachytarpha* ..... 177  
 Sugar Cane ..... 317  
 Sumach (see *Rhus*).  
 Sycamore ..... 209  
 Tomato ..... 317  
 Trumpet-creeper ..... 317  
*Utricularia* ..... 457  
*Verbena* ..... 457  
*Vernonia* ..... 164  
*Viburnum* ..... 482  
 Walnut ..... 209  
 Wild Cherry ..... 318  
 Willow (see *Salix*).  
*Zermeria* ..... 447  
 Postal regulations concerning insects ..... 277  
 Puget Sound Marine Station. 214  
 Rice growing and malaria.... 101  
 School of Entomology in Central Park, N. Y. .... 417  
 South America, Collecting in. 277  
 Tropical America, Collecting in ..... 328  
 Tracheae, Splitting insect ... 422  
 Vitality of insects in cyanide jar ..... 144  
 Water Gap, Collecting at the. 171  
 Reviews:  
     Ier Congress Internationale d'Entomologie, Memoires ..... 88  
     Barnes & McDunnough's Contributions

- to the Natural History of the Lepidoptera of N. A. 88, 189, 480
- Hewitt's House flies and How They Spread Disease ..... 479
- Junk's Bibliographia Coleopterologica .... 191
- Longstaff's Butterfly-Hunting in Many Lands ..... 236
- Oberthur's Etudes de Lepidopterologie Comparee ..... 371
- Poulton's Polymorphism in a Group of Mimetic Butterflies . . . of the Genus *Pseudacraea* ..... 480
- Sanderson's Insect Pests of Farm, Garden and Orchard.... 188
- Sanderson & Jackson's Elementary Entomology ..... 432
- Seitz's Macrolepidoptera of the World.. 481
- Walker's No. American Dragon-flies of the genus *Aeshna* ..... 283
- ARACHNIDA.**
- americana*, *Misumena* ..... 248
- Argiope* ..... 248
- aleatorea*, *Rucinia* ..... 248
- cunctator*, *Xysticus* ..... 248
- Dendryphantes* ..... 248
- Eriophyes* galls ..... 176
- Ixodidae (review of in Das Tierreich) ..... 46
- labyrinthea*, *Metepeira* ..... 248
- Metepeira* ..... 248
- Misumena* ..... 248
- octavus*, *Dendryphantes* ..... 248
- Phidippus* ..... 248
- Philodromoides* ..... 248
- pratariæ*, *Philodromoides* .. 248
- Red Spider, Notes on the molting of ..... 145
- Rucinia* ..... 248
- telarius*, *Tetranychus* ..... 145
- Tetranychus* ..... 145
- texanus*, *Phidippus* ..... 248
- trifasciata*, *Argiope* ..... 248
- Xysticus* ..... 248
- COLEOPTERA.**
- abietis\**, *Tetropium* ..... 320
- acneus*, *Meloe* ..... 37
- affabilis*, *Anillus* ..... 322
- Agrabia* ..... 448
- Anatis* ..... 422
- Anillus* ..... 322
- arborea\**, *Lytta* ..... 34, 323
- Arizona, C. of ..93, 140, 286, 484
- Arkansas, New *Dicaelus* from ..... 77
- attenuata*, *Gyronycha* ..... 125
- Bamona* ..... 124
- Barids, Mexican ..... 364
- Bembidium* ..... 156
- bertrandi*, *Zonabris* ..... 30
- bicolor* var. *fuamboensis*, *Eletica* ..... 31
- bicolor*, *Rhynchites* ..... 82
- bieti\**, *Lytta* ..... 33
- blaisdelli*, *Cantharis* ..... 323
- Brachyacantha* ..... 449
- bridwelli\**, *Nemognatha* .... 37
- Bruchus* ..... 320
- brunneostictus\**, *Bruchus* ... 322
- California, C. of .....91, 94
- californicus*, *Thicanus* ..... 156
- Calospasta* ..... 37
- Cantharis* ..... 323
- caseyi\**, *Anatis* ..... 422
- Cave, C. of ..... 91
- Central American C. .... 182

Cerambycidae from Harrisburg, (Pa.), and vicinity..	308
<i>chodshentica</i> , <i>Zonabris</i> .....	30
<i>Cicindela</i> .....	156, 244, 385, 387
<i>cinerascens</i> , <i>Elaphidion</i> .....	172
<i>cinerea</i> , <i>Epicauta</i> .....	465
<i>Coccinella</i> .....	448
Coccinellidae, Studies amongst the .....	448
<i>cochisiensis*</i> , <i>Scymnillus</i> .....	451
Coition of <i>Cicindela rugifrons</i> and <i>modesta</i> .....	385
C. at <i>Ceanothus</i> in Virginia. ....	105
<i>concaus</i> , <i>Lixus</i> .....	401, 474
Courting habit of <i>Epicauta</i> ..	465
<i>Cremastocheilus</i> .....	244
<i>crux</i> var. <i>opulentus</i> , <i>Zonabris</i> . ....	30
<i>depressus*</i> , <i>Bruchus</i> .....	321
<i>Dicaelus</i> .....	77
<i>dicincta</i> , <i>Zonabris</i> .....	30
<i>discopterus</i> , <i>Bruchus</i> .....	322
<i>Eburia</i> .....	172
<i>Elaphidion</i> .....	172
<i>elegantissimus</i> var. <i>confluens</i> , <i>Zonabris</i> .....	30
<i>Eletica</i> .....	30
<i>Epicauta</i> .....	31, 465
<i>euphratica</i> , <i>Zonabris</i> .....	30
<i>falli*</i> , <i>Hyperaspis</i> .....	450
<i>fasciculata</i> , <i>Zonabris</i> .....	30
<i>fenyesi</i> , <i>Brachyacantha</i> .....	450
<i>flagellaria</i> , <i>Lytta</i> .....	32
<i>formosensis*</i> , <i>Epicauta</i> .....	31
<i>fortis</i> , <i>Anillus</i> .....	322
<i>foveolatum</i> , <i>Tyloderma</i> .....	347
<i>frigida</i> , <i>Adalia</i> .....	449
<i>frolovi</i> , <i>Zonabris</i> .....	30
<i>gigantea</i> , <i>Hornia</i> .....	260
<i>grandior*</i> , <i>Necrophorus</i> .....	307
<i>grandis</i> , <i>Anthonomus</i> .....	352
<i>guttula</i> , <i>Necrophorus</i> .....	307
<i>Gyronycha</i> , A critical study..	123
<i>Gyronychina</i> .....	125
Harrisburg (Pa.) Cerambycidae from .....	308
<i>hauseri</i> , <i>Zonabris</i> .....	30
<i>hecate?</i> , <i>Onthophagus</i> .....	244
Hibernation of <i>Cicindela senilis</i> .....	156
<i>hildebrandti</i> , <i>Lytta</i> .....	32
<i>hoppingi*</i> , <i>Lytta</i> .....	35, 323
<i>Hornia</i> .....	260
<i>humboldtiensis*</i> , <i>Coccinella</i> ..	448
<i>humerosa</i> , <i>Zonabris</i> .....	30
<i>Hydrophilus</i> , Notice of a monograph of .....	130
<i>Hyperaspis</i> .....	323, 450
<i>idae*</i> , <i>Hyperaspis</i> .....	450
<i>imperialis*</i> , <i>Calospasta</i> .....	37
<i>incomoda</i> , <i>Cantharis</i> .....	323
<i>indistincta</i> , <i>Bembidium</i> .....	156
<i>insularis</i> var. <i>montalbana*</i> , <i>Epicauta</i> .....	32
<i>intermedia</i> , <i>Zonabris</i> .....	30
<i>julianus</i> , <i>Bruchus</i> .....	320
Kansas, C. of .....	387
<i>konigi</i> , <i>Zonabris</i> .....	30
<i>lateralis</i> , <i>Hyperaspis</i> .....	450
<i>latreillei</i> , <i>Meloe</i> .....	37
<i>lengi*</i> , <i>Brachyacantha</i> .....	449
<i>Lixus</i> .....	401, 474
<i>lucens</i> , <i>Zonabris</i> .....	30
<i>lugens</i> , <i>Lytta</i> .....	323
<i>Lytta</i> .....	32, 323
<i>Lytidae</i> , New species, with notes .....	29, 92
<i>macer</i> , <i>Lixus</i> .....	474
<i>maculata</i> , <i>Megilla</i> .....	347, 350
<i>maculifrons</i> , <i>Meloe</i> .....	37
<i>major*</i> , <i>Bruchus</i> .....	321
<i>Meloe</i> .....	37
Mexican Barids, Notes on..	364
Mexico and Central America, Weevils of .....	182
<i>moerens</i> , <i>Eletica</i> .....	30
<i>mutabilis</i> , <i>Allorhina</i> .....	142
<i>mysticallis*</i> , <i>Necrophorus</i> ...	307
<i>Necrophorus</i> .....	307
<i>Nemognatha</i> .....	37
<i>nenuphar</i> , <i>Conotrachelus</i> ....	348

- New Jersey, C. of .....143, 385  
 North American species of  
*Necrophorus* ..... 307  
 Note on *Anatis 15-punctata*,  
 and *caseyi* n. sp. .... 422  
 Notes on C. .... 320  
*Nothornia* ..... 320  
*nunenmacheri\**, *Lytta* ....36, 323  
*ocellatus\**, *Dicaelus* ..... 77  
*ochreolineatus*, *Bruchus* .... 321  
*Onthophagus* ..... 244  
 Oviposition of the weevil  
*Lixus concavus* .....401, 474  
 Pennsylvania C. ....287, 308, 387  
*perforatus*, *Polypleurus* ..... 143  
*plicata*, *Chlamys* ..... 350  
*ploribunda*, *Hyperaspis* ..... 451  
*pallidipennis*, *Eletica* ..... 31  
*posthuma*, *Zonabris* ..... 30  
*pubescens*, *Stromatium* ..... 172  
*pullus*, *Bruchus* ..... 322  
*punctulata*, *Cicindela* ..... 244  
*4-geminata*, *Eburia* ..... 172  
*15-punctata*, *Anatis* ..... 422  
*reticulatum*, *Calopteron* ..... 144  
*Rhynchites* ..... 82  
*robusta*, *Bamona* ..... 124  
*rufa* var. *grandiceps\**, *Eletica*. 30  
*saucius*, *Cremastocheilus* .... 244  
*scabiosae*, *Zonabris* ..... 30  
*scaphinus*, *Exochomus* ..... 142  
*scarabaeoides*, *Sphaeridium*... 82  
*Scymnillus* ..... 451  
*sicardi\**, *Agrabia* ..... 448  
*sicardi* var. *complexa\**, *Agra-*  
*bia* ..... 448  
*simulans*, *Hyperaspis* ..... 451  
*senilis*, *Cicindela* ..... 156  
*Sphaeridium* ..... 82  
*staudingeri*, *Zonabris* ..... 30  
*Stromatium* .. ..... 172  
*stygica*, *Lytta* ..... 323  
*subsplendidula*, *Zonabris* .... 30  
*Tetropium* ..... 320  
 Texas, C. of .....140, 286, 383  
*Thicanus* ..... 156  
*tricuspis*, *Coccinella* ..... 449  
*trifasciata*, *Coccinella* ..... 449  
*Tyloderma* ..... 317  
*unicolor*, *Elaphidion* ..... 172  
*valens*, *Gyronycha* ..... 121  
*villosum*, *Elaphidion* ..... 172  
 Virginia, C. at *Ceanothus* in. 105  
*wolcotti*, *Hyperaspis* ..... 323  
*Zonabris* ..... 30

## DIPTERA.

- abdominalis*, *Arthrocnodax* .. 176  
*abdominalis*, *Trineura* ..... 356  
*aequus*, *Pipunculus* ..... 453  
*affinis*, *Pipunculus* ..... 453  
 Africa, D. of ..... 237  
*Agromyza* ..... 463  
*albipennis*, *Bibio* ..... 351  
*albofasciatus*, *Pipunculus* ... 455  
*alexanderi*, *Elliptera* ..... 418  
*amazona\**, *Gonomyia* ....418, 420  
*Amphinome* ..... 70  
*analis*, *Archytas* ..... 247  
*Aneurina* ..... 357  
*Anisopus* ..... 417  
*annulata*, *Phora* ..... 357  
*Aphiochaeta* ..... 357  
*appendipes*, *Pipunculus* ..... 456  
*Archytas* ..... 247  
*arcuata*, *Gymnophora* ..... 357  
*Arthrocnodax* ..... 176  
*Asphondylia* .....174, 353  
*Atarba* ..... 418  
*Atherix* ..... 150  
*atramontensis*, *Pipunculus* .. 455  
*aterrima*, *Trineura* ..... 356  
*atratus*, *Tabanus* ..... 246  
*badai*, *Furcomyia* ..... 69  
*Bibio* ..... 356  
*bicolor*, *Phora* ..... 357  
*binotatus*, *Telostylus* ..... 391  
*biscaynei\**, *Pipunculus* ..... 453

- Borborid from an epiphytic  
 bromeliad ..... 413  
*brevis*, *Pipunculus* ..... 453  
 Bromeliad-inhabiting crane-  
 fly ..... 415  
*bromeliadicola*\*, *Mongoma* ... 415  
*bromeliarum*\*, *Limisona* ... 414  
*Bruggmanniella* ..... 174, 354  
*brunnea*\*, *Syringogaster* ... 349  
 California, D. of ..... 433  
 Californian Indians, Flies as  
 food of ..... 159  
*Calliphora* ..... 329  
*canadensis*, *Geranomyia* ..... 67  
*Cecidomyia* ..... 472  
*Chrysops* ..... 247  
*Cincticornia* ..... 174, 353  
*coccidivora*, *Mycodiplosis* ... 175  
*constrictus*, *Pipunculus* ..... 454  
*craigheadi*\*, *Microdon* ..... 463  
*Cryptolabris* ..... 70  
*dalbergiae*, *Ulcella* ..... 353  
*davisi*\*, *Agromyza* ..... 463  
*Diploneura* ..... 357  
 D. at *Ceanothus* in Virginia.. 109  
*dohrni*, *Dorniphora* ..... 358  
*domestica*, *Musca* ..... 238, 247  
*Dorniphora* ..... 358  
 Eastern States, Pipunculidae  
 of ..... 452  
*Elliptera* ..... 418  
*Ephydra* ..... 159  
*femoratus*, *Pipunculus* ..... 454  
*fidelis*, *Rhipidia* ..... 68  
*flava*, *Phora* ..... 357  
*flava*, *Sacandaga* ..... 71  
*flavicornis*, *Phora* ..... 357  
*flavipalpis*, *Phora* ..... 357  
 Flies as food of California  
 Indians ..... 159  
*florea*, *Biblio* ..... 356  
*foliora*, *Cecidomyia* ..... 472  
*fuliginosa*, *Phora* ..... 357  
*Furcomyia* ..... 68  
*fuscipes*, *Phora* ..... 357  
*fuscus*, *Pipunculus* ..... 453  
 Generic names in Phoridae.. 356  
*Geranomyia* ..... 67  
*gladiator*, *Furcomyia* ..... 68  
*globithorax* *Furcomyia* ..... 70  
*globosus*\*, *Pipunculus* ..... 453  
*Gobrya* ..... 393  
*Gonomyia* ..... 418  
*Gymnophora* ..... 357  
*halterata*, *Furcomyia* ..... 69  
*houghi*, *Pipunculus* ..... 454  
*Hyperdiplosis* ..... 177  
*immatura*, *Amphinome* ..... 70  
*immodesta*, *Furcomyia* ..... 68  
*indigena*, *Amphinome* ..... 70  
*lactus*, *Microdon* ..... 463  
*lateralis*, *Pipunculus* ..... 454  
*Leiponeura* ..... 418  
*liberta*, *Furcomyia* ..... 69  
*Limosina* ..... 414  
 List of generic names for  
 the "Official list of Zoo-  
 logical names." ..... 229  
*longipennis*, *Furcomyia* ..... 68  
*lutea*, *Phora* ..... 357  
*maccus*, *Telostylus* ..... 391  
*Macrotoma* ..... 390  
*maculata*, *Phora* ..... 357  
*maculata*, *Rhipidia* ..... 68  
*manca*, *Gonomyia* ..... 418  
*meridionalis*\*, *Arthrocnodax*. 176  
*mexicana*, *Bruggmanniella* .. 354  
*Microdon* ..... 463  
*Mongoma* ..... 415  
*morioides*, *Furcomyia* ..... 69  
*Musca* ..... 247, 356  
*Mycodiplosis* ..... 175  
*Nerius* ..... 390  
 New Jersey, D. of..... 482  
 New Neotropical D. .... 380  
 New Tropical *Gonomyia* ... 418  
 New York, Tipulidae of .... 66  
*nigra*, *Phora* ..... 357

- North American D. .... 463  
*Nothybus* ..... 390  
*Obelosia* ..... 357  
Observations on *Ulella* .... 353  
*opaca*, *Phora* ..... 357  
*pallipes*, *Phora* ..... 357  
*pallipes*, *Pipunculus* ..... 455  
*paradoxa*, *Cryptolabis* ..... 70  
*pennipes*, *Mongoma* ..... 417  
Pennsylvania, D. of 141, 142, 143,  
144, 386, 387.  
*perparva*, *Limosina* ..... 415  
*Phora* ..... 356, 357  
*picturatus*, *Anisopus* ..... 417  
*pilicornis*\*, *Traginops* ..... 395  
Pipunculidae from the East-  
ern U. S. .... 452  
*Pipunculus* ..... 452  
*pisoniae*\*, *Bruggmanniella* ... 174  
*pisoniae*, *Ulella* ..... 354  
*pisonifolia*\*, *Ulella* ..... 353  
*pleuralis*, *Atarba* ..... 418  
*pleuralis*, *Gonomyia* ..... 419  
*producta*\*, *Hyperdiplosis* .... 177  
*pubipennis*, *Furcomyia* ..... 69  
*puella*, *Atarba* ..... 418  
*pulicaria*, *Phora* ..... 357  
*pulvinariae*\*, *Mycodiplosis* .. 175  
*pusilla*, *Phora* ..... 357  
*reipublicae*, *Pipunculus* ..... 455  
*remipes*, *Coenurgia* ..... 391  
*Rhabdomastix* ..... 71  
*Rhipidia* ..... 68  
*rostrata*, *Geranomyia* ..... 67  
*rostrifera*, *Furcomyia* ..... 68  
*rufa*, *Phora* ..... 357  
*rufa*\*, *Syringogaster* ..... 393  
*rufipennis*, *Phora* ..... 357  
*rufipes*, *Phora* ..... 357  
*Sacandaga* ..... 71  
*scapularis*, *Phora* ..... 357  
*Schizomyia* ..... 174, 353  
*simulans*, *Furcomyia* ..... 70  
*simulans*, *Gobrya* ..... 393  
*similis*, *Pipunculus* ..... 456  
*solidaginis*, *Trypeta* ..... 467  
*solitaria*, *Amphinome* ..... 70  
South American D. .... 389, 418  
*stigmata*, *Furcomyia* ..... 69  
*Stratiomyia* ..... 247  
*subvirescens*, *Pipunculus* .... 456  
*Syringogaster*\* ..... 392  
*Tabanus* ..... 246  
*Telostylus* ..... 390  
*thoracica*, *Trineura* ..... 357  
Tipulidae of Fulton County  
(N. Y.) ..... 66  
*Traginops* ..... 395  
*translatus*, *Pipunculus* ..... 456  
*Trineura* ..... 356  
*triocellata*, *Amphinome* .... 70  
*Trisometopia* ..... 357  
*tristigma*, *Amphinome* ..... 70  
*Trypeta* ..... 467  
*Ulella* ..... 353  
*urbana*, *Phora* ..... 357  
*variegata*, *Atherix* ..... 162  
*vicinia*, *Phora* ..... 357  
Virginia, D. at *Ceanothus* in. 109  
*vittatus*\*, *Telostylus* ..... 390  
*vomitorea*, *Calliphora* ..... 329  
*vulgaris*, *Phora* ..... 357  
West Indian gall midges ... 173
- HEMIPTERA.**  
(See Rhynchotha)
- HYMENOPTERA.**
- abbottii*, *Lophyrus* ..... 403  
*advena*, *Halictus* ..... 457  
*Alcidamea* ..... 444  
*Ammophila* ..... 244  
*Andrena* ..... 458  
*annulatus*, *Odynerus* .... 248, 250  
*Anthemella* ..... 297  
*Anthemus* ..... 297  
*Anthidium* ..... 256, 445  
*Anthophila* ..... 248, 259  
*Aphelinoidea* ..... 297  
*Aphelinus* ..... 82  
Aphid-infesting species of  
*Aphelinus* ..... 82  
*apicale*, *Dianthidium* ..... 445  
*arizonensis*, *Xylocopa* ..... 444  
*aureocinctum*\*, *Hypanthidium*. 444

- automatus*, *Aphelinus* ..... 83  
*bakeri*, *Panurginus* ..... 446  
*Bembex* ..... 247  
*bicolor*, *Rhodites* ..... 466  
*bidentis*, *Panurginus* ..... 447  
*bivittatum*, *Anthidium* ..... 445  
*Bombus* ..... 459  
*boylei*, *Panurginus* ..... 446  
*brevicornis*, *Colletes* ..... 459  
*caeruleum*, *Chlorion* ..... 247  
*californica*, *Hoplocampa* .... 472  
*Callirhytis* ..... 2, 465  
Chalcidid from Guatemala.. 318  
Chalcidoid parasites from a  
  noctuid pupa ..... 467  
Chalcidoidea, Notes on ..... 296  
*Chlorion* ..... 246  
*cimbicis*, *Nesomyia* ..... 82  
*Colletes* ..... 459  
*concinnum?* *Dianthidium* .... 256  
*Conura* ..... 318  
*cookei*, *Dolerus* ..... 472  
Corrections to previous pa-  
  pers in the Mymaridae .. 298  
Corrections to some papers on  
  the Chalcidoidea ..... 209  
*Crabro* ..... 248  
*cressoniellus*, *Panurginus* ... 445  
*cressoniellus*, var. *calochorti*,  
  *Panurginus* ..... 445  
*curvatum*, *Dianthidium* .... 257  
*cuscutaeformis*, *Diastrophus*. 467  
*dakotensis*, *Melitoma* ..... 258  
*Dianthidium* ..... 256, 445  
*Diastrophus* ..... 466  
*Dolerus* ..... 472  
Egg parasitism, A case of ... 81  
*Epeolus* ..... 457  
*Eustypiura* ..... 319  
*Evylaeus* ..... 458  
*Exomalopsis* ..... 447  
*flavomarginatum*, *Hypanthi-*  
  *dium* ..... 445  
*foraminatus*, *Odynerus* ..... 255  
Galls of *Rhodites bicolor* ... 466  
*geminus*, *Odynerus* ..... 253  
*gerstückeri*, *Bombus* ..... 459  
*grisella*, *Melitoma* ..... 248, 258  
Guatemala, Chalcidid from.. 318  
*Halictoides* ..... 457  
*Halictus* ..... 255, 457  
*Hoplocampa* ..... 472  
H. New records of ..... 444  
H. at *Ceanothus* in Virginia. 106  
*Hypanthidium* ..... 444  
*illinoensis*, *Panurginus* .... 446  
*innuptus*, *Panurginus* ..... 446  
*innuptus*, var. *absonus\**, *Pa-*  
  *nurginus* ..... 446  
*interruptus*, *Crabro* ..... 248  
*interruptum*, *Dianthidium* .. 257  
Kansas H., Biological Notes  
  on ..... 241  
*labrosiformis distractus\**, *Pa-*  
  *nurginus* ..... 447  
*Lophyrus* ..... 403  
*maculifrons*, *Anthidium* ..... 256  
*Megachile* ..... 257  
*Melitoma* ..... 248, 258  
*minutum*, *Trichogramma* .... 81  
*Myrmica* ..... 242  
*nebulosus*, *Diastrophus* ..... 466  
*nelumbonis*, *Evylaeus* ..... 458  
*nelumbonis*, *Halictus* ..... 457  
*neomexicanus*, *Panurginus* ... 446  
*Nesomyia* ..... 82  
*niger americanus*, *Lasius*.. 347, 350  
*nigrinus*, *Panurginus* ..... 446  
*novae-angliae*, *Halictoides* .. 457  
*occidentalis*, *Anthophila* .. 248, 259  
*occidentalis*, *Halictus* ..... 255  
*occidentalis*, *Pogonomyrmex*. 242  
*Odynerus* ..... 248, 250, 253, 255  
Oligotropic bees ..... 457  
Ophioninae, A review ..... 43  
*opuntiae*, *Colletes* ..... 459  
*orpifex*, *Xylocopa* ..... 444  
Oviposition of a hymenopter-  
  ous egg parasite ..... 329  
*panis*, *Paralleleptera* ..... 298

North American D. ....	463	South American D. ....	389, 418
<i>Nothybus</i> .....	390	<i>stigmata</i> , <i>Furcomyia</i> .....	69
<i>Obelosia</i> .....	357	<i>Stratiomyia</i> .....	247
Observations on <i>Ulella</i> .....	353	<i>subvirescens</i> , <i>Pipunculus</i> .....	456
<i>opaca</i> , <i>Phora</i> .....	357	<i>Syringogaster</i> * .....	392
<i>pallipes</i> , <i>Phora</i> .....	357	<i>Tabanus</i> .....	246
<i>pallipes</i> , <i>Pipunculus</i> .....	455	<i>Telostylus</i> .....	390
<i>paradoxa</i> , <i>Cryptolabis</i> .....	70	<i>thoracica</i> , <i>Trincura</i> .....	357
<i>pennipennis</i> , <i>Mongoma</i> .....	417	Tipulidae of Fulton County	
Pennsylvania, D. of 141, 142, 143,		(N. Y.) .....	66
144, 386, 387.		<i>Traginops</i> .....	395
<i>perparva</i> , <i>Limosina</i> .....	415	<i>translatus</i> , <i>Pipunculus</i> .....	456
<i>Phora</i> .....	356, 357	<i>Trineura</i> .....	356
<i>picturatus</i> , <i>Anisopus</i> .....	417	<i>triocellata</i> , <i>Amphinome</i> .....	70
<i>pilicornis</i> *, <i>Traginops</i> .....	395	<i>Trisometopia</i> .....	357
Pipunculidae from the East-		<i>tristigma</i> , <i>Amphinome</i> .....	70
ern U. S. ....	452	<i>Trypeta</i> .....	467
<i>Pipunculus</i> .....	452	<i>Ulella</i> .....	353
<i>pisoniae</i> *, <i>Bruggmanniella</i> ..	174	<i>urbana</i> , <i>Phora</i> .....	357
<i>pisoniae</i> , <i>Ulella</i> .....	354	<i>variegata</i> , <i>Atherix</i> .....	162
<i>pisonifolia</i> *, <i>Ulella</i> .....	353	<i>vicinia</i> , <i>Phora</i> .....	357
<i>pleuralis</i> , <i>Atarba</i> .....	418	Virginia, D. at <i>Ceanothus</i> in.	109
<i>pleuralis</i> , <i>Gonomyia</i> .....	419	<i>vittatus</i> *, <i>Telostylus</i> .....	390
<i>producta</i> *, <i>Hyperdiplosis</i> .....	177	<i>vomitorea</i> , <i>Calliphora</i> .....	329
<i>pubipennis</i> , <i>Furcomyia</i> .....	69	<i>vulgaris</i> , <i>Phora</i> .....	357
<i>puella</i> , <i>Atarba</i> .....	418	West Indian gall midges ...	173
<i>pulcaria</i> , <i>Phora</i> .....	357		
<i>pulvinariae</i> *, <i>Mycodiplosis</i> ..	175		
<i>pusilla</i> , <i>Phora</i> .....	357		
<i>republicae</i> , <i>Pipunculus</i> .....	455		
<i>remipes</i> , <i>Coenurgia</i> .....	391		
<i>Rhabdomastix</i> .....	71		
<i>Rhipidia</i> .....	68		
<i>rostrata</i> , <i>Geranomyia</i> .....	67		
<i>rostrifera</i> , <i>Furcomyia</i> .....	68		
<i>rufa</i> , <i>Phora</i> .....	357		
<i>rufa</i> *, <i>Syringogaster</i> .....	393		
<i>rufipennis</i> , <i>Phora</i> .....	357		
<i>rufipes</i> , <i>Phora</i> .....	357		
<i>Sacandaga</i> .....	71		
<i>scapularis</i> , <i>Phora</i> .....	357		
<i>Schizomyia</i> .....	174, 353		
<i>simulans</i> , <i>Furcomyia</i> .....	70		
<i>simulans</i> , <i>Gobrya</i> .....	393		
<i>similis</i> , <i>Pipunculus</i> .....	456		
<i>solidaginis</i> , <i>Trypeta</i> .....	467		
<i>solitaria</i> , <i>Amphinome</i> .....	70		
		<b>HEMIPTERA.</b>	
		(See Rhynchota)	
		<b>HYMENOPTERA.</b>	
		<i>abbottii</i> , <i>Lophyrus</i> .....	403
		<i>advena</i> , <i>Halictus</i> .....	457
		<i>Alcidamea</i> .....	444
		<i>Ammophila</i> .....	244
		<i>Andrena</i> .....	458
		<i>annulatus</i> , <i>Odynerus</i> ....	248, 250
		<i>Anthemiella</i> .....	297
		<i>Anthemus</i> .....	297
		<i>Anthidium</i> .....	256, 445
		<i>Anthophila</i> .....	248, 259
		<i>Aphelinoidea</i> .....	297
		<i>Aphelinus</i> .....	82
		Aphid-infesting species of	
		<i>Aphelinus</i> .....	82
		<i>apicale</i> , <i>Dianthidium</i> .....	445
		<i>arizonensis</i> , <i>Xylocopa</i> .....	444
		<i>aureocinctum</i> *, <i>Hypanthidium</i> .	444

- automatus*, *Aphelinus* ..... 83  
*bakeri*, *Panurginus* ..... 446  
*Bembex* ..... 247  
*bicolor*, *Rhodites* ..... 466  
*bidentis*, *Panurginus* ..... 447  
*bivittatum*, *Anthidium* ..... 445  
*Bombus* ..... 459  
*boylei*, *Panurginus* ..... 446  
*brevicornis*, *Colletes* ..... 459  
*caeruleum*, *Chlorion* ..... 247  
*californica*, *Hoplocampa* .... 472  
*Callirhytis* ..... 2, 465  
Chalcidid from Guatemala.. 318  
Chalcidoid parasites from a  
  noctuid pupa ..... 467  
Chalcidoidea, Notes on ..... 206  
*Chlorion* ..... 246  
*cimbicis*, *Nesomyia* ..... 82  
*Colletes* ..... 459  
*concinnum?* *Dianthidium* .... 256  
*Conura* ..... 318  
*cookei*, *Dolerus* ..... 472  
Corrections to previous pa-  
  pers in the Mymaridae .. 298  
Corrections to some papers on  
  the Chalcidoidea ..... 209  
*Crabro* ..... 248  
*cresoniellus*, *Panurginus* ... 445  
*cresoniellus*, var. *calochorti*,  
  *Panurginus* ..... 445  
*curvatum*, *Dianthidium* .... 257  
*cuscutaeformis*, *Diastrophus*.. 467  
*dakotensis*, *Melitoma* ..... 258  
*Dianthidium* ..... 256, 445  
*Diastrophus* ..... 466  
*Dolerus* ..... 472  
Egg parasitism, A case of ... 81  
*Epeolus* ..... 457  
*Eustypiura* ..... 319  
*Evylaeus* ..... 458  
*Exomalopsis* ..... 447  
*flavomarginatum*, *Hypanthi-*  
  *dium* ..... 445  
*foraminatus*, *Odynerus* ..... 255  
Galls of *Rhodites bicolor* ... 466  
*geminus*, *Odynerus* ..... 253  
*gerstückeri*, *Bombus* ..... 459  
*grisella*, *Melitoma* ..... 248, 258  
Guatemala, Chalcidid from.. 318  
*Halictoides* ..... 457  
*Halictus* ..... 255, 457  
*Hoplocampa* ..... 472  
H. New records of ..... 444  
H. at *Ceanothus* in Virginia. 106  
*Hypanthidium* ..... 444  
*illinoiensis*, *Panurginus* .... 446  
*innuptus*, *Panurginus* ..... 446  
*innuptus*, var. *absonus\**, *Pa-*  
  *nurginus* ..... 446  
*interruptus*, *Crabro* ..... 248  
*interruptum*, *Dianthidium* .. 257  
Kansas H., Biological Notes  
  on ..... 241  
*labrosiformis distractus\**, *Pa-*  
  *nurginus* ..... 447  
*Lophyrus* ..... 403  
*maculifrons*, *Anthidium* ..... 256  
*Megachile* ..... 257  
*Melitoma* ..... 248, 258  
*minutum*, *Trichogramma* .... 81  
*Myrmica* ..... 242  
*nebulosus*, *Diastrophus* ..... 466  
*nelumbonis*, *Evylaeus* ..... 458  
*nelumbonis*, *Halictus* ..... 457  
*neomexicanus*, *Panurginus* ... 446  
*Nesomyia* ..... 82  
*niger americanus*, *Lasius*.. 347, 350  
*nigrinus*, *Panurginus* ..... 446  
*novae-angliae*, *Halictoides* .. 457  
*occidentalis*, *Anthophila* .. 248, 259  
*occidentalis*, *Halictus* ..... 255  
*occidentalis*, *Pogonomyrmex*. 242  
*Odynerus* ..... 248, 250, 253, 255  
Oligotropic bees ..... 457  
Ophioninae, A review ..... 43  
*opuntiae*, *Colletes* ..... 459  
*orpifex*, *Xylocopa* ..... 444  
Oviposition of a hymenopter-  
  ous egg parasite ..... 329  
*panis*, *Parallelaptera* ..... 298

- Panurginus* ..... 445  
*Panurgus* ..... 446  
*Parallelaptera* ..... 297  
*pauper flavotinctus*, *Panurginus* ..... 446  
 Pennsylvania, H. of ..... 484  
*picipes*, *Panurgus* ..... 446  
*picipes*, *Panurginus* ..... 447  
*pictarsis*\*, *Panurginus* ..... 447  
*plutella*\*, *Aphelinoidea* ..... 297  
*Pogonomyrmex* ..... 242  
*Polistes* ..... 246, 255  
*pulchella*, *Exomalopsis* ..... 447  
*punctata*, *Callirhytis* ..... 2  
*reniformis*, *Odynerus* ..... 252  
*renimaculatus*, *Panurginus* .. 446  
*rex*, *Anthemiella* ..... 297  
*rex*, *Parallelaptera* ..... 298  
*Rhodites* ..... 466  
*rodriguezii*\*, *Eustypiura* ..... 319  
*rudbeckiae*, *Panurginus* ..... 446  
*sayi*, *Bembex* ..... 247  
*semifuscipennis*, *Aphelinoidea* ..... 297  
*seminator*, *Callirhytis* ..... 465  
*septidentatum*, *Anthidium* .. 257  
*simplex*, *Alcidanea* ..... 444  
*Smicra* ..... 319  
*Solenozopheria* ..... 465  
*speciosus*, *Stizus* ..... 246  
*Spilochalcis* ..... 319  
*Stizus* ..... 246  
 Synonymy of an economic species of saw fly ..... 472  
*texense*, *Trypoxylon* .... 248, 258  
*thyridopterygis*, *Habrocytus* 349  
*Trichogramma* ..... 81  
*Trypoxylon* ..... 248  
 United States, A new *Trichogrammatid* from ..... 296  
*urnaria*, *Ammophila* ..... 245  
*vaccinii*, *Solenozopheria* ..... 465  
*variatus*, *Polistes* ..... 255  
*verus*, *Panurginus* ..... 445  
 Virginia, H. at *Ceanothus* in ..... 106  
*Xylocopa* ..... 444  
*zexmeniae*\*, *Exomalopsis* ... 447
- LEPIDOPTERA.**
- abbotii*, *Sphecodina* ..... 467  
*acraea*, *Estigmene* ..... 406, 464  
*Actias* ..... 208  
*affinis*, *Thecla* ..... 3  
*Agnomonina* ..... 213  
*Agrotis nili*, *A. ypsilon* ..... 132  
*albogalleriella*, *Opostega* ... 165  
*Aletia* ..... 83, 139, 184  
*amatrix*, *Catocala* ..... 212  
*americana*, *Malacosoma* .... 401  
*amica*, *Catocala* ..... 213  
*amyntor*, *Ceratonia* ..... 9, 11  
*anilis*, *Agnomonina* ..... 213  
*Anosia* ..... 407  
*Antherea* ..... 207  
*Anthocharis belia* ..... 132  
*antiopa*, *Eurvanessa* ..... 407  
*argillacea*, *Aletia* ..... 83, 139, 184  
*atalanta Pyramcis* ..... 329, 483  
*atrens*, *Caligo* ..... 473  
*Automeris* ..... 403  
*Bandera* ..... 472  
*belfrageella*, *Gracilaria* ..... 166  
*brunsi* ab. *conjuncta*\*, *Hemileuca* ..... 97  
*cachara*, *Caligula* ..... 208  
 California, L. of ..... 89  
*californica*, *Vanessa* ..... 81  
*Caligo* ..... 473  
*Caligula* ..... 207  
*calleta*, *Callosamia* ..... 228  
*calleta*, *Eupackardia* ..... 228  
*Callosamia* ..... 228  
*Calpodes* ..... 130, 203  
*cara*, *Catocala* ..... 211  
*catalpae*, *Ceratonia* ..... 95, 407  
*Catocala* ..... 207  
*Catocalae*, Dry year's yield of 207

- catullus*, *Pholisora* ..... 253  
*Ceratomia* ..... 407  
 Chamber's species of *Tincia* 163  
*chersis*, *Sphinx* ..... 11  
*Chrysopcleia* ..... 164  
*Chrysophanus* ..... 81  
*cleopatra\**, *Givira* ..... 55  
*clytie*, *Thecla* ..... 49, 344  
*Coleophora* ..... 163  
*commixtalis*, *Loxostege* ..... 249  
*contagionis*, *Euxoa* ..... 472  
 Cossid, A new ..... 55  
*Cricula* ..... 207  
*cupidinella*, *Bandera* ..... 472  
*Datana* ..... 399  
*dunetorum*, *Thecla* ..... 3  
*electellum*, *Homocosoma* .... 472  
*electra* ab. *rickseckeri\**,  
     *Hemileuca* ..... 97  
*ephemeraeformis*, *Thyridop-*  
     *teryx* ..... 403  
*Epicallima* ..... 170  
*Erebus* ..... 81  
*Estigmene* ..... 406, 464  
*ethlius*, *Calpodus* ..... 130, 203  
*Eudamus* ..... 130  
*Eupackardia\** ..... 228  
*Eupithecia* ..... 442  
*Euvanessa* ..... 407  
*Euxoa* ..... 472  
*fieldella\**, *Thaumalopsis* .... 221  
*flexibilis*, *Catocala* ..... 208  
*franckii*, *Sphinx* ..... 9  
*frugiperda*, *Laphygma* ..... 405  
*furciferata*, *Sabulodes* ..... 53  
*Gelechia* ..... 472  
*Givira* ..... 55  
*Gracilaria* ..... 166  
*grynce*, *Catocala* ..... 212  
*habilis*, *Catocala* ..... 214  
*hebraicum*, *Polygrammate* .. 172  
*Hemileuca* ..... 97  
*Homoeosoma* ..... 472  
*Hyloicus* ..... 9  
*ilia*, *Catocala* ..... 208  
*illecta*, *Catocala* ..... 207  
*ines*, *Thecla* ..... 49, 344  
*innubens*, *Catocala* ..... 208  
*invariabilis*, *Gelechia* ..... 472  
*io*, *Automeris* ..... 403  
*jamaicensis* var. *flavitincta\**,  
     *Smerinthus* ..... 127  
*judith*, *Catocala* ..... 208  
*kalmiae*, *Sphinx* ..... 11  
*lachrymosa*, *Catocala* ..... 214  
*Laphygma* ..... 405  
*leda*, *Thecla* ..... 49, 344  
*Lemonias* ..... 81  
*Loxostege* ..... 248, 472  
*luciana*, *Catocala* ..... 214  
*lucidella\**, *Epicallima* ..... 170  
*Lycaena* ..... 81  
*magnella*, *Paltodera* ..... 472  
*Malacosoma* ..... 401  
*mariposa*, *Chrysophanus* .... 81  
*Megalopyge* ..... 464  
*Megathymus* ..... 126  
*Mesosemia* ..... 126  
 Mimicry ..... 192  
*ministra*, *Datana* ..... 399  
 Missouri, L. of St. Louis .... 203  
*mormo*, *Lemonias* ..... 81  
*multiscripta*, *Eupithecia* .... 442  
*nebulosa*, *Catocala* ..... 208  
*negundella*, *Gracilaria* ..... 169  
*neogama*, *Catocala* ..... 212  
*neumocgeni stephensi\**, *Mega-*  
     *thymus* ..... 126  
 New butterflies, Two ..... 126  
 New generic names in L. .... 228  
 New Hampshire, Tropical but-  
     terfly in ..... 473  
 New Jersey, L. of 95, 96, 144, 386,  
     483.  
 New Microlepidoptera ..... 219  
 Noctuid pupa, Number of  
     chalcidoid parasites from a 467  
*Noctuella* ..... 220

North American Saturniidae..	97	<i>Schoenobus</i> .....	220
<i>odoratus</i> , <i>Erebus</i> .....	81	<i>scintillans</i> , <i>Catocala</i> .....	213
<i>opercularis</i> , <i>Megalopyge</i> .....	464	<i>selene</i> , <i>Actias</i> .....	208
<i>Opostega</i> .....	165	<i>Sesia</i> .....	122
<i>ostryaeella</i> , <i>Gracilaria</i> .....	167	<i>shasta</i> , <i>Lycaena</i> .....	81
<i>palaeogama</i> , <i>Catocala</i> .....	213	<i>sheridani</i> , <i>Thecla</i> .....	6
<i>pallulellus*</i> , <i>Schoenobus</i> .....	220	<i>Smerinthus</i> .....	127
<i>Paltodora</i> .....	472	<i>Sphecodina</i> .....	467
<i>Papilio</i> .....	480	<i>Sphinx</i> .....	9
<i>paulina</i> , <i>Catocala</i> .....	214	Spring and summer forms of	
Pennsylvania, L. of ..140, 170, 388		<i>Sabulodes</i> .....	53
<i>perillata*</i> , <i>Eupithecia</i> .....	442	<i>sticticalis</i> , <i>Loxostege</i> 248, 251, 472	
<i>phalanga</i> , <i>Catocala</i> .....	213	<i>sulphurata</i> , <i>Sabulodes</i> .....	53
<i>Pholisora</i> .....	253	Swarming at light, A phyci-	
<i>piatrix</i> , <i>Catocala</i> .....	211	tid moth .....	472
<i>Pieris rapae</i> .....	131	<i>Thais</i> .....	207
<i>Planema</i> .....	480	<i>Thaumatopsis</i> .....	221
<i>plexippus</i> , <i>Anosia</i> .....	407	<i>Thecla</i> .....	3, 49, 344
<i>polycena</i> , <i>Thais</i> .....	207	<i>Thyridopteryx</i> .....	403
<i>Polygrammate</i> .....	172	<i>tityrus</i> , <i>Eudamus</i> .....	130
<i>Prodenia littoralis</i> .....	132	<i>trifenestrata</i> , <i>Cricula</i> .....	208
Protective attitudes of cater-		United States, L. of .....	81
pillars .....	399	<i>ultronia</i> , <i>Catocala</i> .....	213
Protective resemblance in a		<i>uranus</i> , <i>Caligo</i> .....	473
satyrid chrysalis .....	471	<i>Vanessa</i> .....	81, 131
<i>Pseudacrea</i> .....	480	<i>vernoniacella</i> , <i>Coleophora</i> ....	163
<i>puertalis*</i> , <i>Noctuelia</i> .....	220	<i>vidua</i> , <i>Catocala</i> .....	208, 213
Pupal stage of <i>Anosia plexip-</i>		<i>viduata</i> , <i>Catocala</i> .....	214
<i>pus</i> .....	407	<i>viridis</i> , <i>Thecla</i> .....	6, 8
Pupation of <i>Eucyanea antiopa</i>	407	Western U. S. L., Notes on	81
<i>purpuricella</i> , <i>Chrysopœia</i> ....	164		
<i>Pyrameis</i> .....	329		
<i>ramsdeni*</i> , <i>Mesosemia</i> .....	126		
<i>relicta</i> , <i>Catocala</i> .....	211		
<i>residua</i> , <i>Catocala</i> .....	213		
<i>retracta</i> , <i>Catocala</i> .....	208		
<i>robinsoni</i> , <i>Catocala</i> .....	214		
<i>roylei</i> , <i>Antherca</i> .....	208		
<i>rubrofascia</i> , <i>Sesia</i> .....	122		
<i>Sabulodes</i> .....	53		
St. Louis and vicinity during			
1911, L. of .....	203		
Saturniidae of the genus Hemi-			
leuca, Some .....	97		
<i>Satyris</i> .....	246, 471		

## MALLOPHAGA.

<i>acanthus</i> , <i>Docophorus</i> .....	57
<i>actophilus</i> , <i>Nirmus</i> .....	61
Alaskan birds, M. from ....	12
<i>armiferus*</i> , <i>Heterodoxus</i> ...	362
<i>baculus</i> , <i>Lipeurus</i> .....	62
<i>becki</i> , <i>Menopon</i> .....	65
<i>becki</i> , <i>Philoceanus</i> .....	62
<i>bicaudatus*</i> , <i>Gyropus</i> .....	441
<i>breviantennatus</i> , <i>Docophorus</i> .	58
<i>californicus</i> , <i>Trichodectes</i> ...	440
<i>californiensis</i> var. <i>quadripus-</i>	
<i>tulatus*</i> , <i>Docophorus</i> .....	57
<i>caracarensis*</i> , <i>Nirmus</i> .....	59

- castoris*, *Trichodectes* ..... 437  
*climax*, *Trichodectes* ..... 438  
*Colpocephalum* ..... 15, 63, 305  
*communis*, *Docophorus* ..... 12  
*complexivus*, *Nirmus* ..... 13, 61  
*concinuus*, *Lipeurus* ..... 62  
*confidens*, *Lipeurus* ..... 62  
*corporosum*, *Menopon* ..... 17  
*corpulentus\**, *Goniodes* ..... 14  
*cursor*, *Docophorus* ..... 12  
*descrepans*, *Goniodes* ..... 14  
*diffusum*, *Physostomum* ..... 65  
*dissimile*, *Menopon* ..... 65  
*diversus*, *Lipeurus* ..... 62  
*Docophorus* ..... 12, 57  
*dominicanum\**, *Colpocephalum* ..... 63  
*ductilis*, *Nirmus* ..... 61  
*euprepes*, *Nirmus* ..... 13, 59  
*Eurymctopus* ..... 63  
*faralloni*, *Lipeurus* ..... 62  
*faralloni*, *Nirmus* ..... 58  
*fasciatus* var. *arcuatus\**,  
*Physostomum* ..... 65  
*felix*, *Nirmus* ..... 61  
*flavescens*, *Colpocephalum* ... 63  
*forficula*, *Trichodectes* ..... 438  
*fuliginosus*, *Lipeurus* ..... 62  
*funebre*, *Colpocephalum* .... 63  
*fusiformus*, *Docophorus* .... 13  
*geomysidis*, *Trichodectes* ..... 437  
*Giebelia* ..... 62  
*gloriosus*, *Nirmus* ..... 58  
*Goniodes* ..... 14  
*gracilicornis*, var. *major*,  
*Lipeurus* ..... 62  
*gracilis*, *Gyropus* ..... 441  
*Gyropus* ..... 441  
*Haematopinus* ..... 468  
*Heterodoxus* ..... 360  
*iscerodes*, *Docophorus* ..... 13  
*infectus* var. *connexus*, *Nirmus* 13  
*infrequens*, *Menopon* ..... 65  
*insolitus*, *Docophorus* ..... 58  
*jenningsi*, *Menopon* ..... 442  
*lari*, *Docophorus* ..... 13, 57  
*latifasciatus*, *Nirmus* ..... 58  
*limitatus*, *Lipeurus* ..... 63  
*lineolatus* var. *atrimarginatus*,  
*Nirmus* ..... 13  
*Lipeurus* ..... 15, 62  
*lucidus\**, *Nirmus* ..... 60  
*macropus*, *Heterodoxus* ..... 361  
M. from Alaskan birds ..... 12  
M. from islands off Lower  
California ..... 56  
M. from mammals ..... 437  
*melanococcus*, *Nirmus* ..... 59  
*Menopon* .... 17, 65, 359, 361, 442  
*mephitidis*, *Trichodectes* ..... 437  
*milleri*, *Colpocephalum* ..... 63  
*minutus*, *Trichodectes* ..... 439  
*mirabilis*, *Giebelia* ..... 62  
*maritimus*, *Nirmus* ..... 61  
*montereyi*, *Docophorus* ..... 58  
*morsitans\**, *Colpocephalum* ... 15  
*nesiotes\**, *Nirmus* ..... 60  
*Nirmus* ..... 13, 58  
*ochropygus*, *Nirmus* ..... 61  
*octomaculatus\**, *Trichodectes* . 438  
*ovalis*, *Gyropus* ..... 441  
*painei\**, *Colpocephalum* ..... 305  
*parallellus*, *Trichodectes* ..... 438  
*parumpilosus*, *Trichodectes* .. 438  
*parviceps*, *Lipeurus* ..... 15  
*paululum*, *Menopon* ..... 65  
*phacochoeri*, *Haematopinus* .. 468  
*Philoceanus* ..... 62  
*Physostomum* ..... 65  
*platystomus*, *Docophorus* .... 57  
*protervus*, *Lipeurus* ..... 15  
*retusus*, *Trichodectes* ..... 439  
*scalaris*, *Trichodectes* ..... 438  
*setosus*, *Trichodectes* ..... 437  
*singularis*, *Menopon* ..... 65  
*specotyti*, *Docophorus* ..... 58  
*spiniger*, *Menopon* ..... 361  
*subhastatum*, *Physostomum* . 65  
*subpachygaster*, *Colpocephalum* 305

<i>subrostratus</i> , <i>Trichodectes</i> ..	438
<i>taurus</i> , <i>Eurymetopus</i> .....	63
<i>testaceus</i> , <i>Lipeurus</i> .....	63
<i>tigrum</i> *, <i>Colpocephalum</i> ....	64
<i>Trichodectes</i> .....	437
<i>unciferum</i> , <i>Colpocephalum</i> ..	63

**NEUROPTERA** (excl. Mallophaga  
and Odonata).

<i>alafimbriata</i> *, <i>Mystacides</i> ....	19
<i>Atomyia</i> .....	17
<i>bettenii</i> *, <i>Grammataulius</i> ....	18
<i>bromeliarum</i> , <i>Phylloicus</i> ....	80
<i>californicus</i> , <i>Peripsocus</i> .....	268
<i>Chauliodes</i> .....	172
<i>cornuta</i> , <i>Corydalid</i> .....	172
<i>Corydalid</i> .....	172
<i>elegans</i> , <i>Megaraphidia</i> .....	216
<i>exhumata</i> , <i>Raphidia</i> .....	215
<i>formosa</i> , <i>Rhyacophila</i> .....	171
Fossil <i>Raphidia</i> .....	215
<i>Glossosoma</i> .....	17
<i>Grammataulius</i> .....	18
<i>Hamitermes</i> .....	269
<i>Megaraphidia</i> .....	216
<i>mortua</i> , <i>Raphidia</i> .....	215
<i>Mystacides</i> .....	19
<i>notata</i> , <i>Raphidia</i> .....	216
Oregon Trichoptera .....	17
<i>pectinicornis</i> , <i>Chauliodes</i> ....	172
<i>Phylloicus</i> .....	80
<i>plutonid</i> , <i>Wormaldia</i> .....	172
Psychomyidae .....	17
<i>Raphidia</i> .....	215
<i>rhodopica</i> , <i>Raphidia</i> .....	216
<i>Rhyacophila</i> .....	171
<i>termitorum</i> *, <i>Vulturops</i> ....	269
Vulturopinae, a new subfamily of Psocidae .....	266
<i>Vulturops</i> *, .....	267
<i>Wormaldia</i> .....	172

**ODONATA.**

<i>Aeshna</i> .....	294
<i>Argia</i> .....	196
<i>berenicid</i> , <i>Erythrodiplax</i> .....	387

<i>charadraea</i> , <i>Somatochlora</i> ..	153
Coition of <i>Anax</i> .....	138
<i>compositus</i> , <i>Erpetogomphus</i> ..	280
<i>constricta</i> , <i>Aeshna</i> .....	294
Costa Rican O. ....	289
<i>designatus</i> , <i>Erpetogomphus</i> ..	289
<i>diadophis</i> , <i>Erpetogomphus</i> ..	294
<i>elaps</i> , <i>Erpetogomphus</i> .....	290
<i>Erpetogomphus</i> .....	290
Florida, O. of .....	387
Germany, <i>Mecistogaster</i> in ..	483
<i>Gomphus</i> .....	294
<i>Hetaerina</i> .....	98
Indian Superstition concerning a <i>Mecistogaster</i> .....	364
Indiana <i>Somatochlores</i> .....	152
<i>intruda</i> *, <i>Argia</i> .....	200
<i>linearis</i> , <i>Somatochlora</i> .....	153
<i>Mecistogaster</i> .....	304, 483
<i>moesta</i> , <i>Argia</i> .....	196
Newfoundland, O. of .....	140
New Jersey, O. of .....	484
<i>ophibolus</i> , <i>Erpetogomphus</i> ..	294
Pennsylvania, O. of .....	387, 484
<i>putrida</i> , <i>Argia</i> .....	196
<i>Somatochlora</i> .....	152
<i>tenebrosa</i> , <i>Somatochlora</i> ....	152
<i>titia</i> , <i>Hetaerina</i> .....	98
<i>tricolor</i> , <i>Hetaerina</i> .....	98
<i>tristani</i> *, <i>Erpetogomphus</i> ..	290, 384
<i>umbrosa</i> , <i>Aeshna</i> .....	294

**ORTHOPTERA.**

<i>abbreviatus</i> , <i>Gryllus</i> .....	247
African Eumastacinae .....	262
Africa, O. of Central .....	238
<i>Amblycorypha</i> .....	462
<i>angustipennis</i> , <i>Oecanthus</i> ....	460
<i>Anaxipha</i> .....	111
Atlantic Coast, New O. of ..	111
<i>Brachytypus</i> .....	262
<i>burri</i> *, <i>Brachytypus</i> .....	262
<i>Ceratites</i> .....	232
<i>Ceuthophilus</i> .....	247
<i>columbiana</i> , <i>Cyrtoxipha</i> .....	460

*curtipennis*, *Stenobothrus* .... 462  
*curvicauda*, *Scudderia* ..... 462  
*Cyrtoxipha* ..... 411, 460  
*danica*, *Locusta* ..... 355  
*delicatula*, *Cyrtoxipha* ..... 411  
*Dendrotettix* ..... 2  
*depressifrons*, *Thericles* .... 264  
*Enyaliopsis durandi* ..... 131  
*Etoblattina* ..... 228  
*exigua*, *Anaxipha* ..... 412  
*Falculula* ..... 412  
*fasciatus* var. *vittatus*, *Nemobius* ..... 461  
*gnu*, *Thericles* ..... 263  
*Gryllus* ..... 247, 461  
*hcbardi*, *Falculula* ..... 412  
Injurious to man, A Locustid 131  
*insularis*, *Brachytypus* ..... 262  
*latipennis*, *Oecanthus* ..... 461  
Locustid injurious to man .. 131  
*macropygia*\*, *Thericles* ..... 263  
*Nemobius* ..... 461  
New generic names in O. .... 232  
*nigropleuroides*\*, *Xiphidium* ..... 116, 232  
*niveus*, *Oecanthus* ..... 460  
*Oecanthus* ..... 460  
*Orocharis* ..... 460  
*pennsylvanicus*, *Gryllus* ..... 461  
*pulicaria*, *Anaxipha* ..... 412  
*quadripunctatus*, *Oecanthus* .. 461  
*quagga*, *Thericles* ..... 264  
*quercus*, *Dendrotettix* ..... 2  
*Rhabdoceratites* ..... 232  
*robusta*, *Etoblattina*? ..... 228  
*rotundifolia*, *Amblycorypha* . 462  
*saltator*, *Orocharis* ..... 460  
*Scudderia* ..... 462  
*spartinae*\*, *Xiphidium* .. 111, 232  
*Stenobothrus* ..... 462  
Stridulations of O. .... 460  
*texana*, *Etoblattina* ..... 228  
*texensis*, *Scudderia* ..... 462  
Texas, Fossil Cockroaches  
from ..... 228

*Thericles* ..... 263  
*uhleri*, *Amblycorypha* ..... 462  
*Xiphidium* ..... III, 232  
*zebra*, *Thericles* ..... 263

## SIPHONAPTERA.

(Indexed under Diptera.)

## RHYNCHOTA.

*Acanthocephala* ..... 120  
*Acrosternum* ..... 317  
*Alcaeus* ..... 23  
*annulata*, *Brochymena* ..... 352  
*Antestia* ..... 26  
*Apines* ..... 27  
*apterus*, *Pyrrhocoris* ..... 318  
*Arctocoris*a ..... 337  
*artemisiae*, *Eriococcus* ..... 396  
Australian Pentatomidae .... 21  
*bohemani*, *Corizus* ..... 219  
*Brochymena* ..... 120, 347  
*Callipterus ulmifolii* ..... 83  
*calva*, *Corixa* ..... 339  
*capito*, *Myappena* ..... 29  
*carolinensis*, *Narvesus* ..... 121  
*cederwaldi*\*, *Antestia* ..... 26  
Cicada, 17-year ..... 142, 143, 237  
*Cimex* ..... 316  
*citri*, *Aleyrodes* ..... 73  
*Commisus* ..... 22  
*consanguinea*, *Oxophora* .... 121  
*Corixa* ..... 121  
*Corizus* ..... 217  
*crassicornis*, *Corizus* ..... 219  
*crenator*, *Euschistus* ..... 120  
*Davila* ..... 121  
*davisi*, *Rihana* ..... 261  
*Diaphyta* ..... 28  
*Dysdercus* ..... 121, 327  
*edulis*, *Corixa* ..... 121  
*engellhardtii*, *Rihana* ..... 261  
*Eriococcus* ..... 396  
*Erium* ..... 396  
*Euchistus* ..... 120, 347  
*femorata*, *Acanthocephala* .. 120

- fissilis*, *Euchistus* ..... 352  
 Food plant of *Dysdercus*  
   *minus* ..... 327  
*geminata*, *Pseudapines* ..... 27  
*gillettii*\*, *Palmacorixa* ..... 337  
*haedula*, *Brochymena* ..... 120  
*hermannsburgi*, *Alcaeus* ..... 23  
*hilaris*, *Nezara* ..... 317  
*hirtus*\*, *Corizus* ..... 217  
*indentatus*, *Corizus* ..... 218  
*lateralis*, *Corizus* ..... 219  
*Leptocorisa* ..... 121  
*lichensioides*, *Erium* ..... 396  
*lyricen*, *Rihana* ..... 262  
*Meccus* ..... 121  
*melancholicus*\*, *Notius* ..... 22  
 Middle and New England  
   States, Key to *Corizus* of.. 219  
*minus*, *Dysdercus* ..... 327  
*minor*, *Commius* ..... 22  
*Myappena* ..... 29  
*Nabis* ..... 121  
*Narvesus* ..... 121  
*nercivus*, *Paramenestheus* .... 25  
 New genus of Corixidae .... 337  
 New Jersey, R. of..... 237  
*Nezara* ..... 316  
*Notius* ..... 22  
*nubifera*, *Aleyrodes* ..... 73  
*obscuratus*, *Dysdercus* ..... 121  
*Ozophora* ..... 121  
*pallida*, *Stelgidophora* ..... 21  
*Palmacorixa*\* ..... 337  
*Paramenestheus* ..... 25  
*parvicornis*, *Corizus* ..... 218  
*parvulus*, *Theseus* ..... 24  
*Pediculus* ..... 339  
*pennsylvanica*, *Nezara* ..... 317  
*persicae-niger*, *Aphis* ..... 350  
*phyllosoma*, *Meccus* ..... 121  
*Phytocoris* ..... 172  
*plana*, *Turrubulana* ..... 25  
 Poisonous nature of some R. 347,  
   349.
- Protective vapors of R.... 346  
*pruinosis*, *Phytocoris* ..... 172  
*Pseudapines* ..... 27  
*Pulvinaria* ..... 175  
*Pygolampis* ..... 121  
*pyriformis*, *Pulvinaria* ..... 175  
*Pyrrhocoris* ..... 318  
*Rihana* ..... 261  
*rosea*\*, *Diaphyta* ..... 28  
 R. at *Ceanothus* ..... 105  
*sayi* var. *australis*\*, *Rihana*... 261  
*scutatus*, *Corizus* ..... 218  
*signatus*, *Nabis* ..... 121  
*similaris*, *Rihana* ..... 262  
*spurca*, *Pygolampis* ..... 121  
*Stelgidophora* ..... 21  
 Texas, R. from Brownsville. 120  
*Theseus* ..... 24  
*tipuloides*, *Leptocorisa* ..... 121  
*tristis*, *Anasa* ..... 351  
*tuberculatus*, *Corizus* ..... 218  
*Turrubulana* ..... 25  
 United States, *Corizus* from  
   the Northwestern ..... 217  
 United States, R. from the  
   Northwestern ..... 316  
*vestimenti*, *Pediculus* ..... 339  
*viridula*, *Nezara* ..... 316  
 Wing production in Aphids.. 149
- THYSANOPTERA.**
- Aeolothrips* ..... 74  
*Aleurodothrips* ..... 73  
*aspersus*, *Lepto**thrips* ..... 73  
*fasciapennis*, *Aleurodothrips*. 73  
 Florida T. .... 73  
*Franklinothrips*\* ..... 75  
*haemorrhoidalis*, *Heliothrips*. 73  
*Heliothrips* ..... 73  
*Lepto**thrips* ..... 73  
*Scolothrips* ..... 73  
*sexmaculata*, *Scolothrips* .... 73  
*sexmaculata*, *Scolothrips* .... 73  
*vespiformis*, *Aeolothrips* .... 74

## AUTHORS.

- ABBOTT, J. F. A new genus of Corixidae .....337
- ALDRICH, J. M. Flies of the leptid genus *Atherix* used  
as food by California Indians .....159  
Strict priority in nomenclature or not? .....182
- ALEXANDER, C. P. A bromeliad-inhabiting crane-fly ....415  
Fulton County (N. Y.) Tipulidae ..... 66  
A new tropical *Gonomyia* .....418
- ALLARD, H. A. Variation in the stridulations of Orthop-  
tera .....460
- ANGELL, J. W. Two new North American species of  
*Necrophorus* .....307
- BACK, E. A. Notes on Florida Thysanoptera, with de-  
scription of a new genus ..... 73
- BANKS, N. A bromeliadiculous caddis-worm ..... 80  
At the *Ceanothus* in Virginia .....102  
Das Tierreich. Ixodidae ..... 46  
Strict priority in nomenclature, or not? .....275
- BARNES, WM. & J. McDUNNOUGH. Further remarks on  
*Thecla clytie, leda, and ines* ..... 49  
A new Cossid ..... 55  
New microlepidoptera .....219  
On the spring and summer forms of *Sabulodes sul-*  
*phurata* ..... 53
- BERGROTH, E. Notes on Australian Pentatomidae .... 21
- BERRY, L. (See Rowley, R.R.)
- BETHUNE-BAKER, G. T. Strict priority in nomenclature,  
or not? .....325
- BLAISDELL, F. E. Hibernation of *Cicindela senilis* .....156  
Minutes of the Pacific Coast Ent. Soc. .... 89
- BLATCHLEY, W. S. A new species of *Dicaelus* from Ar-  
kansas ..... 77
- BRADLEY, J. C. Strict priority in nomenclature or not?..226
- BRAUN, A. F. Notes on Chamber's species of Tineina...163

BREHME, H. H. Minutes of the Newark Ent. Soc. . . . .	95
BRIMLEY, C. S. Strict priority in nomenclature, or not? . . . . .	275
BURGESS, A. F. Announcement of the Journal of Economic Entomology . . . . .	129
BUSCK, A. A new microlepidopter of the genus <i>Epicallima</i> , from Pennsylvania . . . . .	170
CALVERT, P. P. Studies on Costa Rican Odonata, IV. Erpetogomphus in Costa Rica, with description of a new species having complex structural mating adaptations . . . . .	289
Editorials . . . . .	224, 324, 421, 468
Dr. Nettie M. Stevens . . . . .	288
Sanderson & Jackson's Elementary Entomology . . . . .	432
Second Internat. Entom. Congress . . . . .	373
Walker's N. Amer. Dragonflies of the genus <i>Aeshna</i> . . . . .	283
CAUDELL, A. N. Strict priority in nomenclature, or not? . . . . .	182
CHAMPION, G. C. Notes on Mexican Barids . . . . .	364
Weevils of Mexico and Central America . . . . .	182
COCKERELL, T. D. A. Food plants of <i>Dysdercus mimus</i> . . . . .	327
Fossil cockroaches from Texas . . . . .	228
A new Chalcidid from Guatemala . . . . .	318
A new generic name for <i>Callosamia calleta</i> Westw. . . . .	228
New records of bees . . . . .	444
A Phycitid moth swarming at light . . . . .	472
Recent entomological literature . . . . .	281
<i>Rhynchites bicolor</i> . . . . .	82
<i>Sphaeridium scarabaeoides</i> . . . . .	82
Strict priority in nomenclature, or not? . . . . .	226
CRAWFORD, J. C. Strict priority in nomenclature, or not? . . . . .	273
CRESSON, E. T., JR. Descriptions of several new neotropical Acalyprate Diptera . . . . .	389
Editorial . . . . .	179
Studies of some Pipunculidae from the eastern U. S. . . . .	452
Minutes of Entom. Section, Acad. Nat. Sci., Phila. . . . .	385
DAVIS, WM. T. An injurious grasshopper at Ridgeway, N. J. . . . .	1
A new variety of <i>Rihana sayi</i> . . . . .	261
Dow, R. P. Minutes of Brooklyn Ent. Soc. . . . .	238

- EWING, H. E. Notes on the molting process of our common red spider (*Tetranychus telarius*) .....145
- FALL, H. C. A new Tetropium, two new Bruchids, with brief notes on other Coleoptera .....320
- FELT, E. P. New West Indian gall midges .....173  
Observations on *Uleella Rubs* .....353
- FENYES, A. *Gyronycha* (Staphylinidae), a critical study.123
- FISHER, W. S. & H. B. KIRK. Cerambycidae from Harrisburg, Penna., and vicinity, with notes .....308
- FOX, H. Two apparently hitherto undescribed species of *Xiphidium* from the salt marshes of the Atlantic Coast of the U. S. ....111  
Types of *Xiphidium spartinae* and *nigropleuroides* ....232
- GIRAULT, A. A. A case either of secondary or double egg parasitism ..... 81  
A few experiments with the effects of the protective vapors of Heteroptera on other insects .....346  
Fragments on North American insects .....399, 464  
Notes on *Pediculus vestimenti*, the body louse of man..339  
Notes on the Hymenoptera Chalcidoidea .....296  
Standards of the number of eggs laid by insects—X. ..355  
Yellow aphid-infesting species of *Aphelinus* Dalm. .... 82
- GREENE, G. M. Minutes of Feldman Collecting Social,  
141, 286, 386
- GRINNELL, F., JR. An example of protective resemblance in a Satyrid chrysalid .....471  
Minutes of Entom. Club, Los Angeles, Cal. ....433  
Oberthur's Etudes de Lepidopterologie Comparee ....371  
On labeling specimens. A suggestion .....473  
(See also Haskin, J. R.)
- HASKIN, J. R., and GRINNELL, F., JR. *Thecla clytie, leda,* and *ines* .....344  
*Thecla dumetorum* and *affinis*, a study ..... 3
- HEBARD, M. (See Rehn, J. A. G.)
- HILL-GRIFFIN, A. L. New Oregon Trichoptera ..... 17
- HOLLAND, W. J. Strict priority in nomenclature, or not?.273
- HOLLOWAY, T. E. An experiment on the oviposition of a hymenopterous egg parasite .....329

- HOOKER, C. W. The occurrence of *Cecidomyia foliora* . . . 472
- HUNGERFORD, H. B. & F. X. WILLIAMS. Biological notes  
on some Kansas Hymenoptera . . . . . 241
- JONES, F. M. The female of *Sesia rubrofascia* . . . . . 122
- KELLOGG, V. L. & W. M. MANN. Mallophaga from islands  
off Lower California . . . . . 56
- A third collection of Mallophaga from Alaskan birds. . 12
- KIRK, H. B. (See Fisher, W. S.)
- KNAB, F. Strict priority in nomenclature, or not? . . . . . 271
- KNAB, F. & J. R. MALLOCH. A borborid from an epi-  
phytic bromeliad . . . . . 413
- KNETZLER, A. Observations on the Lepidoptera of St.  
Louis, Mo., and vicinity during 1911 . . . . . 203
- MCGREGOR, E. A. A new Mallophagan . . . . . 305
- MALLOCH, J. R. Certain generic names in Phoridae . . . . 356  
(See also Knab, F.)
- MANN, W. M. (See V. L. Kellogg.)
- MCDUNNOUGH, J. (See Barnes, W.)
- MUTKOWSKI, R. A. *Aletia argillacea* . . . . . 83
- NEEDHAM, J. G. Strict priority in nomenclature, or not? 271
- NEILS, J. D. Wing production in Aphids. . . . . 149
- NEWCOMER, E. J. Notes on Western U. S. Lepidoptera . 81
- NIXON, S. B. Description of a new variety of *Smerinthus*  
*jamaicensis* . . . . . 127
- NUNENMACHER, F. W. Studies amongst the Coccinellidae 448
- PAINE, J. H. The Mallophagan genus *Heterodoxus*. . . . 359  
Notes on a miscellaneous collection of Mallophaga from  
mammals . . . . . 437  
Synonymical Note on *Haematopinus phacochoeri* En-  
derlein . . . . . 468
- PATCH, E. M. Shigeru Kuwayama . . . . . 288
- PEARSALL, R. F. Eupithecias that appear to be unde-  
scribed . . . . . 442
- PORTER, A. F. Collecting in Tropical America . . . . . 328
- REHN, J. A. G. On the genus *Anaxipha* . . . . . 411  
Two new species of African Eumastacinae . . . . . 262
- REHN, J. A. G. & M. HEBARD. A new name in Orthoptera 232

REIFF, W. An entomological exchange .....	232
ROBERTSON, C. Oligotropic bees .....	457
ROHWER, S. A. One reason for the change of names....	329
The synonymy of an economic species of saw fly .....	472
ROWLEY, R. R. & L. BERRY. A dry year's yield of Cato- calae, 1911 .....	207
SASSCER, E. R. <i>Erium lichensioides</i> Ckll. vs. <i>Eriococcus</i> <i>artemisiae</i> Kuw. ....	396
SCHWARZ, E. <i>Calpodus ethlius</i> .....	130
SKINNER, H. A senator on medical entomology .....	425
Two new butterflies .....	126
Barnes & McDunnough on N. Amer. Lepidoptera, 88, 189, 480	
Editorial .....	39
Hewitt's, House-flies and how they spread disease....	479
Longstaff's Butterfly-Hunting in many Lands .....	236
Minutes of American Entomological Society ....	191, 382
Minutes of Entom. Section, Acad. Nat. Sci., Phila., 138, 237, 384	
Poulton's Polymorphism in a Group of Mimetic But- terflies .....	480
Sanderson's Insect Pests of Farm, Garden and Orchard.	188
Seitz's Macrolepidoptera of the World .....	481
SLOSSON, A. T. Collecting at the Water Gap .....	171
SMYTH, E. A. Description of the larva and first bred specimens of <i>Sphinx (Hyloicus) franckii</i> .....	9
SOULE, C. G. A tropical butterfly in New Hampshire ...	473
STILES, C. W. Fourth list of generic names for the "Offi- cial List of Zoological Names" provided for by the Graz Congress (Diptera) .....	229
STRYKE, A. C. The life-cycle of the malarial parasite ..	221
THOMAS, W. W. The splitting of insect tracheae .....	422
DE LA TORRE BUENO, J. R. A new <i>Corizus</i> from the Northwestern U. S. ....	217
<i>Nezara viridula</i> , an hemipteron new to the Northeast- ern U. S. ....	316
Records of Heteroptera from Brownsville (Tex.) .....	120
F. W. Terry .....	47

TOWNSEND, C. H. T. Strict priority throughout taxonomic nomenclature .....	423
Vulturopinae, a new subfamily of Psocidae .....	266
TRISTÁN, J. F. A Costa Rican Indian superstition concerning a Mecistogaster dragonfly .....	364
VIERECK, H. L. Ophioninae—a review .....	43
WALTON, W. R. New North American Diptera .....	463
WATSON, J. H. Some new forms of North American Saturnidae, genus <i>Hemileuca</i> .....	97
WEBSTER, F. M. Oviposition of <i>Lixus concavus</i> .....	474
Strict priority in nomenclature, or not? .....	181
WELLMAN, C. New species of Lyttidae, with notes on described species .....	29
WESTCOTT, O. S. Note on <i>Anatis 15-punctata</i> and <i>A. caseyi</i> n. sp. ....	422
Scarcity of early insects .....	328
WICKHAM, H. F. <i>Aletia argillacea</i> .....	184
WILLIAMS, F. X. (See Hungerford, H. B.)	
WILLIAMSON, E. B. The dragon-fly <i>Argia moesta</i> and a new species .....	196
<i>Hetaerina titia</i> and <i>tricolor</i> .....	98
The known Indiana Somatochloras .....	152
Strict priority in nomenclature, or not? .....	272
WOODWORTH, C. W. A new measuring device .....	83

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# ENTOMOLOGICAL NEWS

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*S. S. Haldeman 1868.*

PHILIP P. CALVERT, Ph.D., Editor.  
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HENRY SKINNER, M.D., Sc.D., Editor Emeritus.

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# ENTOMOLOGICAL NEWS

AND

## PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

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### CONTENTS:

Portrait—Professor S. S. Haldeman....	1	Bergroth—Notes on Australian Pentatomidae (Rhynch.).....	21
Davis—An Injurious Grasshopper at Ridgeway, N. J. (Orthop.).....	2	Wellman—New Species of Lyttidae, with notes on described species (Coleop.)....	29
Haskin and Grinnell—Thecla dumentorum and T. affinis; a Study (Lepid.)	3	Editorial.....	39
Smyth—Description of the Larva and first bred specimens of Sphinx (Hyloicus) franckii Neum. (Lepid)....	9	Entomological Literature.....	40
Kellogg and Mann—A Third Collection of Mallophaga from Alaskan Birds	12	Obituary—James H. B. Bland.....	47
Hill-Griffin—New Oregon Trichoptera	17	F. W. Terry.....	47
		George Henry Verrall.....	48
		Albert Harrison.....	48
		Jules Bourgeois.....	48

## Professor S. S. Haldeman.

(Portrait, Plate 1.)

Following the plan adopted for 1911, of placing on the covers of the NEWS the portrait of one of the older American Entomologists, we present for 1912 the portrait of Prof. S. S. Haldeman, adding the following biographical sketch.

SAMUEL STEHMAN HALDEMAN was born August 12, 1812, at Locust Grove, Pennsylvania, and died at Chickies in the same State, September 10, 1880. He spent two years as a student in Dickinson College, Pa., but the rest of his education was self-directed. He was Professor of Natural History in the University of Pennsylvania 1851-1855, Professor of Comparative Philology in the same 1869-1880, and Professor of Natural History in Delaware College in 1855. "acting also as Professor of Geology and Chemistry to the State Agricultural College." The Royal Society's *Catalogue of Scientific Papers* lists 61 titles on geological and zoological subjects from his pen between 1839 and 1881, 30 of them being entomological (chiefly on Coleoptera). "Failing eye-sight compelled him eventually to give up his studies in Zoology, and to devote his whole time to Linguistics." A biographical notice, by Dr. D. G. Brinton, with quotations from Dr. J. L. Le Conte, was published in the *Proceedings of the American Philosophical Society*, Volume XIX, pages 279-285.

## An Injurious Grasshopper at Ridgeway, New Jersey (Orth.).

By W. M. T. DAVIS, New Brighton, Staten Island, N. Y.

In the last list of the Insects of New Jersey the grasshopper *Dendrotettix quercus* Riley is reported from Bamber, collected by Mr. Daecke, August 17th. This is said to be the only record of the species in the Eastern United States.

*Dendrotettix* did damage to the oak trees at Ridgeway, N. J., in 1910. A few were found on August 16, 1910, about a mile west of Lakewood, and last year they were very common on the oaks about Ridgeway and north to where the road to Lakewood crosses Toms River. A single specimen was discovered on a post oak at Lakelhurst on August 15, 1911, so the known range of the insect is from Bamber to Lakewood, a distance of about twelve miles, and westward for a few miles. The damage has been so great that the many defoliated trees near Ridgeway are noticeable from the windows of a moving train. The gayly colored grasshoppers are more common on the white oaks, though they eat the foliage of scarlet oaks and other members of the red oak group. Some of the scarlet oaks near Ridgeway have been hard pressed by enemies. They support many large woody galls of *Callirhytis punctata* on their limbs; they have had thousands of eggs of the seventeen-year cicada laid in their branches, which have caused the ends of many of them to break off and die, and lastly the trees have been defoliated by the grasshoppers.

Mr. W. DeW. Miller, of the American Museum, and I, counted on the trunks of some trees, as many as forty grasshoppers, usually slowly making their way up to what remained of the foliage, and the excrement of the grasshoppers on the limbs fell with a rain-like patter on to the dry leaves beneath. Some of the grasshoppers were fully winged and others were apterous. Individuals between these two states were not common. We have before noticed this in other Orthopterous insects. Nature either prepares them for flight or the reverse; there is hardly a half way condition. In addition

to the oaks the grasshoppers when pressed for food will eat other plants, and we observed where several had devoured parts of the leaves of a sumach, *Rhus copallina*. They did not seem to like wild cherry, *Prunus scrotina*.

It is evident that if the seasons continue favorable, this grasshopper may become a serious pest in New Jersey, as it has been in Missouri and Texas, according to the writings of Dr. Riley and Prof. Bruner.

---

### **Thecla dumetorum and T. affinis; a Study (Lepid.).**

By J. R. HASKIN, Los Angeles, Cal., and F. GRINNELL, JR., Pasadena, Cal.

Although *Thecla dumetorum* was described in 1852 and *affinis* in 1862, very little has been written about them. Apparently no effort has been made to check the descriptions in spite of the fact that Western collectors have long felt that they did not correctly describe the common green *Thecla* of the Western States.

It seems to have become generally understood that *dumetorum* should have a row of white spots across both wings, on under side, while *affinis* should be spotless. When, therefore, it is found that the majority of specimens follow neither of these extremes, but have a number of spots on secondaries only, their proper classification gives rise to the question, just what did Boisduval and Edwards have in mind when they wrote their descriptions.

#### T. DUMETORUM.

Boisduval was the first to describe our green *Thecla* from material collected by Lorquin in the early fifties. In his *Lepidopteres de la Californie*, 1852, p. 19, he wrote:

"22 *Thecla Dumetorum*."

"Ce *Thecla* ressemble tout a fait a notre *Rubi*, et pourrait bien etre une simple variete locale de cette espece.

"Il lui ressemble en dessus, sauf que les ailes inferieures sont moins denticulies, et que la palette anale est a peu pres nulle; en dessous, la ligne de points blancs est plus marquee, et le disque des ailes super-

ieures est beaucoup plus largement roussatre, ce que fait que le vert domine moins."

A free translation into English is as follows:

"This *Thecla* quite resembles our *Rubi* and may well be considered a simple local variety of that species. It resembles it on upper side, except that the secondaries are less denticulated and the anal palette nearly void; on under side, the line of white spots is more marked and the surface of the primaries is much more russet colored, which makes the green less predominant."

Thus we see that Boisduval describes *dumetorum* as quite like *T. rubi*, although with some minor points of difference. We must therefore obtain some information concerning *rubi*, especially its correct description.

From Meyrick's Handbook of British Lepidoptera, 1895 P. 343:

"*T. rubi*. L. 25-31 mm. fore wings and hind wings rather dark fuscous, ochreous tinged; hind wings with termen waved. Wings beneath rather metallic green, fore wings becoming fuscous dorsally sometimes with white postmedian line; hind wings sometimes with postmedian white line or series of dots.

Britain to Ross, Ireland, common; Europe, N. and W. C. Asia, Japan, N. Africa; 5, 6. Larva green; dorsal line lighter, darker edged; subdorsal series of oblique subconfluent streaks, edged beneath with dark green; spiracular line yellow; head pale brown; on *Genista*, *Cytisus*, *Ulex*, and *Vaccinium*; 6, 7. Pupa subterranean."

With this description before us, we see that *dumetorum*, being quite like *rubi*, has "fore wings \* \* \* sometimes with postmedian white line; hind wings sometimes with postmedian white line or series of dots." An English collector has written Mr. E. J. Newcomer, of Palo Alto, Cal.: "It has been noticed that in some northern localities there is an inclination to develop the white markings into a series of dots across all the wings. The spotless form seems more noticeable in the South."

It is very evident then that specimens of our common green *Thecla* with well marked spots were received by Boisduval and named *dumetorum*.

*Dumetorum* was probably named from a limited or moderate series of specimens. A careful study of a long series and a close comparison with specimens of *T. rubi* has brought out a

number of points that are decidedly at variance with Boisduval's description. We have in our combined collections 149 specimens of *dumetorum*, collected at Santa Barbara, Newhall, Burbank, Los Angeles and vicinity, Pasadena and vicinity, and San Diego. Mr. Newcomer, of Palo Alto, has also kindly written us concerning the spots on twenty-nine specimens in his collection, taken at Palo Alto, San Luis Obispo and Lake Tahoe. Also, Mr. Grinnell fortunately has three good specimens of *rubi*, from England, in his collection.

Our 149 specimens, when assembled for study, were found to consist of 110 ♂ and 39 ♀. When these were separated and arranged in convenient rows, the first thing noticed was the great variation in general appearance between the fresh and the worn specimens. This was particularly noticeable with regard to the upper surface color, fringes, denticulations and general outline. We therefore divided the set about equally into good and poor series and have used the good set to draw up a new description of *dumetorum*.

**T. dumetorum.**—Expanse 25-30 mm. ♂ above uniformly plumbeous without the decided fuscous tint of *rubi*. Under a certain glancing light a brownish luster can be noticed. ♀ above the centers of both wings reddish fulvous, surrounded by the plumbeous color of the ♂. This fulvous varies greatly in different specimens, being predominant in some and slight in others. All the ♀, however, have it to some degree, while all the ♂ have a noticeably different, uniform plumbeous color. On the best specimens a pale gray or whitish fringe is noticeable, being especially clear and broad towards the rear of secondaries. The denticulations and anal palettes are as clearly defined as in the European *T. rubi*.<sup>1</sup>

On under side the prevailing color is a bright metallic green but the posterior part of the primaries is broadly tan color, shading to gray towards the inner margin. With the wings closely folded the secondaries nearly cover the tan and gray of the primaries so that the insect appears to be uniformly bright green on under side.<sup>2</sup>

<sup>1</sup>These latter features are naturally not so noticeable on worn or even slightly worn specimens, as the edges of the wings wear out rapidly. This would easily account for Boisduval's exceptions on these points.

<sup>2</sup>In *T. rubi* the green covers fully two-thirds of the surface of the primaries, leaving a comparatively narrow strip of tan and gray along the inner margin.

Concerning the white spots on the under side—on our three specimens of *rubi*, from Cornwall and Dartmoor, England, the spots are clear white on the green background. In *dumetorum* the white spots are heavily bordered inwardly with brown. This brown border is very clearly shown in *T. sheridani*, which is much like *dumetorum* except that it has a broad white line, complete in some and slightly broken in other specimens, clear across both wings.

In *dumetorum* the most noticeable and persistent spots are two in number on the secondary, one being midway on the costa, the other nearly in the center of the wing between the second and third median nervules. These are frequently strengthened by other smaller spots tending to form an irregular postmedian line. On the 149 in our collections and the 29 in Mr. Newcomer's, one or the other of these spots persists in all but ten specimens which are spotless even when viewed through a low power glass. One specimen has a faint dot on costa of one wing only, while another specimen has a faint dot in center of one secondary. Two have only the costal spots on both secondaries, and fourteen have only the center spots, some clear and others faint. The predominant form has two spots, there being 108 of these. There are thirty others with two spots on the secondaries, but with faint brown markings on the primaries also; some of these are strengthened by traces of white spots.

Two have three spots on secondaries; two have three on secondaries and traces on primaries; three have three on secondaries and a distinct row of white spots on primaries; two have four spots on secondaries and a row of spots on primaries; finally, three have an irregular row of five spots on secondaries, the costal and central being large and predominant. Summing up in percentages, about 21 per cent. have spots on both wings, 73½ per cent. on secondaries only, 5½ per cent. on neither wing.

#### T. AFFINIS.

Mr. Edwards published *T. affinis* and its companion, *T. viridis* in 1862, from material sent him by Mr. C. Drexler and Dr.

H. Behr. We believe that if he had studied the green *Theclas* from an abundance of material and had given more thought to Boisduval's position, he would never have presented these two names, but would simply have amplified Boisduval's *dumetorum*.

*Thecla affinis* Edwards.—(From Proc. Acad. Nat. Sci. Phila., 1862, 223.)

Expands 1.1 inch.

Both sexes glossy red brown; brightest in female; the male has a smooth oval spot on disc of primaries; costa of primaries and base of both wings, blackish brown; whole hind margin edged with same color; fringe white; underside uniform apple green, except on inner margin of primaries, where it is pale brownish grey; both wings immaculate; costal edge of primaries grey; hind margin of secondaries with crenations.

Utah, from Mr. C. Drexler.

Both *viridis* and *affinis* are allied to *T. rubi* and to *T. dumetorum* of Boisduval. The latter, I have not seen, but it is chiefly described as being "entirely like *rubi*, and to be considered a local variety of that species," a description which does not apply to either of the above-named species. *Affinis* approaches most nearly to *rubi* in color below, but the upper side is much brighter and the white spots of underside are wanting. *Viridis* has similar spots to *rubi*, but the color of both sides is different, as is that of the antennae, edge of costa and fringe.

*Thecla viridis* Edwards.

Expands 1.2 inch.

Upper side of both sexes blackish; the male has a smooth oval spot on disc of primaries; hind margin of secondaries a little crenated toward anal angle; fringe whitish, at anal angle, brown. Under side uniform deep green, except on inner margin of primaries, where it is brownish grey; costal edge of primaries fulvous; across the green shade runs a common sinuous band of elongated, clear white spots; fringe of secondaries brown at the extremities of the nervures; antennae white; club dark brown.

It has been generally accepted that *viridis* is a synonym of *dumetorum*. We note in this description of *viridis* that the upper side is incorrectly given and the spots on under side relate to one of the unusual forms of *dumetorum*.

The so-called *affinis* types came from Utah, where both *dumetorum* and *sheridani* are found.<sup>3</sup>

<sup>3</sup> Vide Bruce, Ent. News, 8,134, 1897. Barnes, Ent. News, 11,330, 1900. Snyder, Ent. News, 12,302, 1901.

Edwards' types of *affinis* consist of 1 ♂ and 1 ♀ with an equal number of cotypes. Dr. Holland writes that the ♀ cotype has a minute spot on the costa of one secondary. We have one specimen in our *dumetorum* series marked similarly to this. The description of the upper surface color was taken from a limited number of specimens and is doubtless as misleading as was *viridis* Edwards, and *dumetorum* Boisduval. The under side represents another uncommon form of *dumetorum*, *viridis* and *affinis* representing the two extremes.

The net result of our investigation shows that there is a green *Thecla* in California which varies widely in the white markings on the under side. The range of this *Thecla* extends east to Utah and Colorado. Boisduval first described it but without a great degree of accuracy. Edwards followed with his descriptions of *viridis* from California and *affinis* from Utah, both descriptions following certain forms only.

From the above study, we believe our readers will agree with us that the correct synonymy of the butterfly under discussion is:

*T. dumetorum* Bd.,  
Syn. *affinis* Edw.,  
Syn. *viridis* Edw.

In conclusion, we wish to lay stress upon the importance of having an abundance of fresh and perfect material when studying specimens which very closely resemble already named species. Such men as Mr. Edwards, and there are some living in this year of our Lord, who have done so much magnificent work with the Lepidoptera, have names to conjure with and any inaccuracies in their writings are liable to create a condition of doubt and uncertainty which may take years to overcome.

Before closing, we desire to express our thanks to Dr. Holland, Dr. Skinner and Mr. Newcomer for valuable information which they have so kindly furnished one or the other of the authors.





1.



2.

SPHINX (HYLOICUS) FRANCKII-SMYTH.

1, MALE.

2, FEMALE.

## Description of the Larva and first bred specimens of *Sphinx (Hyloicus) franckii* Neum. (Lepid.).

By ELLISON A. SMYTH, JR., Blacksburg, Virginia.

(Plate II.)

A half mile avenue of young ash trees on the Experiment farm lands of the Virginia Polytechnic Institute at Blacksburg, Virginia, has for some years yielded me larvae of *Ceratomyia undulosa* and *Sphinx (Hyloicus) chersis*, whenever sought for in season; at times, *Protoparce rustica* in numbers, and at intervals *Chlaenogramma jasmincarum*; with the larvae of these species I have been intimate for years, and know them apart in any instar.

On the 25th of last August (1910), one of the boys, Mr. Barringer, hunting with me for *Protoparce rustica* in the ash avenue, brought me six full grown larvæ, of the general type of *chersis*, all from one ash tree, which larvæ were altogether new to me. By elimination, I concluded that they were either *canadensis* or *franckii*, with the chances largely in favor of the latter. Although lacking the anterior fleshy protuberances of *Ceratomyia amyntor*, a pair of dorsolateral, tuberculated lines, strongly suggested the dorsal serrated ridge of that species. I sent a specimen at once to Dr. Beutenmuller, which reached him ready to pupate, and unfortunately died before he could have it figured. He agreed with me that it could be only *canadensis* or *franckii*. Of my remaining five larvæ, two died, one pupated on the surface of the breeding cage, and two went under earth before I could photograph or make a colored sketch. Fortunately, as a preliminary step to a water-color sketch, I had taken a careful description the afternoon they were brought to me, intending to paint in the morning.

The following is the description of these larvae, full grown, and at the end of their last instar:

Full length,  $3\frac{1}{4}$  inches; pea-green dorsally and dorso-laterally, darker green laterally and ventrally; two dorsal longitudinal lines  $\frac{1}{4}$  inch apart, green dorsad, edged with yellowish white laterad, and armed, on first three segments, with rather prominent, yellowish, pointed tu-

bercles, with whitish tubercles for rest of length, and suggestive of amyntor's central, dorsal, serrate line; these two lines fade out on the 10th segment. A lateral, whitish line from 4th to 11th segment, across which, dorso-caudad, the 7 oblique bands barely pass and abruptly end. Seven oblique, lateral stripes, each green cephalad, yellowish caudad; 7th most prominent and ending at base of caudal horn. Dorsal anal flap edged with yellow. Caudal horn apple-green, minutely punctulated with same color. Head apple-green, with two faint yellow lines. Thoracic legs pink. Stigmata cream-pink edged with brown. Three or four punctules over each proleg, parallel to oblique, lateral bands. Jaws black.

The pupa is almost identical in color, size, and shape with that of *chersis*, with the short, free "tongue case" of the latter, which is 3.5 mm. long on its under free surface.

The proof of an anticipated identity was yielded on May 3, 1911, when the surface pupa yielded a perfect and beautiful male *Sphinx franckii* (this is in Fig. 1, Plate II), and on May 11th one of the subterranean pupae disclosed a perfect female. (Fig. 2). The importance of testing the specific validity of this supposed hybrid sphinx, as well as the desire to obtain more specimens, urged upon me the duty of tying out this female for egg results, but the cold spring had so retarded everything that no hawk-moths had been seen on the wing as yet, and moreover, the ash trees were not in foliage, and the lilac barely out; with reluctance therefore, I killed the female also, and thus graced my collection with a perfect pair, the first ever bred, and the female, the only one in existence, as far as I know, of this rare species (?)

My male agrees fairly well with the colored figure given by Rothschild and Jordan, in their Monograph of the Sphingidae in Wytzman's "Genera Insectorum," though the black outer border of hind wings is even and continuous in my specimen, and not sagittate as in their figure, and the fore costal area is more evenly grey. Neumogen's original description of the then unique type, a male, in Ent. News, Vol. IV., p. 133, agrees fairly well with my specimen, though mine is 2 mm. longer than the type, in alar expanse.

The female is larger than the male, being 118 mm. in alar

expanse, while my male is 107 mm.; with more rounded wings than the male, and is much darker in color, the pink being much overclouded with a darker brown, and it is a handsomer insect. The photograph brings out fairly well the differences, even though in black and white.

Dr. Beutenmuller has written me that Mr. Schneider, of Baltimore, some time ago took an unknown larva from ash, which he described to Mr. Beutenmuller in a letter, though I believe this description was never published. It is thought by Dr. Beutenmuller to agree with the specimen I sent him. Unfortunately, Mr. Schneider's pupa was destroyed during the winter by accident. It may be noted that the original description as published by Mr. Neumogen, as well as the Catalogues of Drs. Smith and Dyar, give the name of the Sphinx as "franckii;" whereas Rothschild and Jordan, in the "Genera Insectorum" and also in their "Revision of the Sphingidae," Vol. I, p. 135, follow the custom of writing the name "francki."

As to the biologically important part of the matter, the specific validity of the insect; the constancy of coloring and characters in the three known examples, of both sexes, (one female and two males), might argue against hybridism, although among birds, for instance *Helminthophila leucobronchialis*, a supposed hybrid between *H. pinus* and *H. chrysoptera*, among our native warblers, there is much constancy in the markings of the known specimens. I cannot, however, agree that *Sphinx kalmiae* plays any part in the parentage, for the larva shows no resemblance to this species, whereas, as before suggested, there is more than a suggestiveness of the larva of *amyntor*, though *chersis* is the nearest; *amyntor* could contribute the cream-pink to the wings of *franckii* as well as could *kalmiae*. On the other hand, if *amyntor* and *chersis* are really in separate genera, as seems to be the case, it might be doubtful if they would interbreed; the general scheme of thoracic and wing markings of *franckii* are about as near *amyntor* as they are to *kalmiac*, though the abdominal spots are more similar to *kalmiac* and *chersis*. *Sphinx chersis* is abundant here, *Ceratomia amyntor* occurs at times and I have

several times found its larva on birch and elm; *Sphinx kalmiae* has been taken here only three times to my knowledge, and only once have I ever found its larva. The extreme rarity of *franckii* would seem to indicate hybridism, unless it be a rare "sport," or possibly it is a mutant. Without any real proof, I must confess that I believe in the specific validity of *Sphinx franckii*.

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### A Third Collection of Mallophaga from Alaskan Birds.

By V. L. KELLOGG and W. M. MANN, Stanford University, California.

In 1900 a small collection of Mallophaga, collected by Mr. E. A. McIlhenny from birds shot by him at Pt. Barrow, Alaska, was described by Kellogg and Kuwana (Proc. Acad. Nat. Sci. Phil. v. 23, pp. 151-159, Pl. VII, 1900). Five new Mallophagan species were described and fourteen old species recognized in this paper. In a paper of 1902 on "Mallophaga from Birds of the Pacific Coast of North America" (Jour. N. Y. Entomological Soc. v. 10, pp. 20-28, Pl. III, 1902) Kellogg and Chapman recognized twelve known Mallophagan species from birds from Kodiak Island, Alaska, and described one new species from the same place. The present small collection of Mallophaga is composed of specimens taken from birds shot by the well known ornithologist, R. C. McGregor, at Norton Sound, Alaska, in 1900. The birds were determined by Mr. McGregor and the parasites were taken from the fresh host specimens. Fifteen host species are included in the list and seventeen parasite species, of which two are herewith described as new. In addition one new variety is recognized.

#### *Docophorus communis* Nitzsch.

Two specimens from *Melospiza cinerea*, Amaknak Is., Unalaska; four specimens from *Perisorius canadensis fuscifrons*, Norton Sound.

#### *Docophorus cursor* Nitzsch.

Two specimens from *Surnia ululu caparoch*, Norton Sound.

**Docophorus fusiformis** Denny.

One male from *Tringa ptilocnemis*, Norton Sound. This specimen agrees with those of Denny and Piaget in having the clypeus emarginate. There are few records of this species, in spite of its apparently wide distribution.

**Docophorus icterodes** Nitzsch.

Four specimens from *Arctonetta fischeri*, Duck-egg Island.

**Docophorus lari** Denny.

Five specimens from *Rissa tridactyla pollicaris*, no locality; one from *Tringa ptilocnemis*, Dexter Golofnin Bay, Norton Sound.

**Docophorus** sp. juv.

A specimen belonging to the *platyclypeatus* group, but too young to be specifically determined, from *Lagopus lagopus*, Norton Sound.

**Nirmus complexivus** Kellogg and Chapman.

Numerous specimens from *Tringa ptilocnemis*, one from *Tringa maculata*, Norton Sound; also a single specimen, probably a straggler, from *Perisorius canadensis*, same locality.

**Nirmis eaprepes** Kellogg and Chapman.

Seven specimens from *Arenaria interpres*, Norton Sound.

**Nirmus lineolatus** var. **atrimarginatus** Kellogg.

One specimen from *Rissa tridactyla pollicaris*, Norton Sound.

**Nirmus infectus** Kellogg and Kawana var. **connexus** var. nov.

Two males and two females from *Phalaropus lobatus*, Norton Sound. Differs from typical *infectus* in its relatively longer head, concolorous legs, and large dorsal blotches. The length of the head is .40 mm., width .24 mm. *Nirmus infectus*, known only from a single female from *Crymophilus fulicarius*, (Pt. Barrow, Alaska) is very close to *interruptus* of Piaget, from *Phalacrocorax carbo*, and may prove to be only a variety of this species.

**Goniodes discrepans** Kellogg and Paine.

One specimen from *Lagopus lagopus*, and two from *Tringa ptilocnemis*, Norton Sound.

**Goniodes corpulentus** sp. nov. (Figs. 1 and 2).

Four males, five females and one young, taken on *Canachites canadensis*, and two females and a young (undoubtedly stragglers) from *Tringa maculata*. Both hosts were shot on Norton Sound. This species is close to *damicornis*.

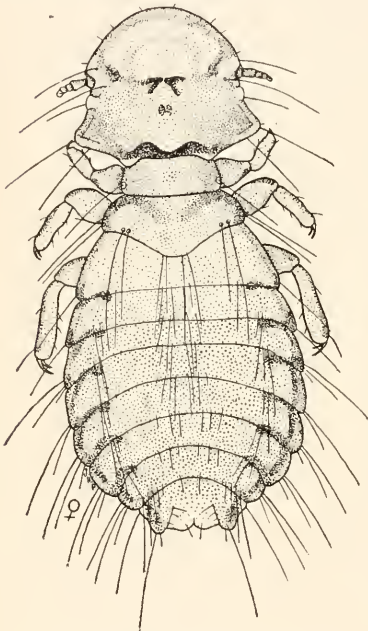


FIG. 1.—*Goniodes corpulentus* n. sp., female, from *Canachites canadensis*.



FIG. 2.—*Goniodes corpulentus*, n. sp., antenna of male above, of female below.

*Description of the male.* Body, length 2 mm.; width .97 mm.; golden brown, with darker markings; short robust body. Head, length .64 mm.; width .64 mm.; front flatly convex, with a rather broad colorless border, and with eight very fine hairs on margin and a longer hair in front of each antenna; temporal region distinctly angulate, slightly expanded, the angle with one very long hair and a shorter one; occipital margin shallowly concave; occipital band strongly sinuous; antennal bands straight, diverging to angle of front; antennal

fossae large; antenna with first segment more than half as broad as long, appendage of third segment longer than last segment; eye large, convex; color pale golden brown, antennal and occipital bands, mandibles and a blotch on signature, darker.

Prothorax at base one-half as broad as head, sides nearly straight, diverging from front to rear, a strong bristle at posterior angles, posterior margin rounded; color light, golden brown, darker at sides, coxae showing through as darker blotches. Metathorax short, dorsum not longer than prothorax, sides strongly rounded, margin with two long, pustulated hairs at one-third distance from apex, posterior margin obtusely angled; color same as prothorax. Legs concolorous with body, femora thick.

Abdomen about equal in length to rest of body, broadly truncate, at apex, segments 3, 4 and 5 broadest; lateral margin of first segment nearly twice as long as that of second segment; marginal angle of the first two segments with a single long hair, of segments 3, 4 and 5 with two, of segments 6 and 7 with three; dorsum with scattered fine, long hairs; color pale golden brown, a longitudinal dorsal darker blotch, and each segment with a well-marked light marginal blotch which curves strongly inward in the anterior part of segment.

*Female.* Body—length 2.40 mm.; width 1.1 mm.; head, length .72 mm.; width .86 mm.; abdomen longer in proportion to rest of body than in male; the markings are similar to those of the male, but more pronounced.

***Lipeurus protervus* Kellogg.**

A female of this curious species, taken on *Lagopus lagopus*, Norton Sound.

***Lipeurus parviceps* Piaget.**

Two specimens referable to this species from the eider duck, *Arctonetta fischeri*, Duck Egg Island. *Lipeurus parviceps* has been recorded hitherto only from *Sterna*. Our specimens differ from Piaget's figure, in having larger pustules in the dorsal blotches, and only one dark spot on the metathoracic margin. Probably our specimens should be considered to be a variety.

***Colpocephalum morsitans* sp. nov. (Fig. 3).**

One male from *Tringa maculata*, Norton Sound. This species is close to *bicolor* of Piaget from *Strepsilas interpres*. It can be distinguished from that species by the abdominal

markings, the presence of four rows of minutely pustulated hairs on each abdominal segment; and by the markings of the head. The dark abdomen, with still darker transverse blotches, is characteristic of *morsitans*. The prothorax of the specimen is damaged and can not be fully described.

*Description of male.* Length of body 1.60 mm.; width .57 mm.; dark brown in color with well defined darker markings.

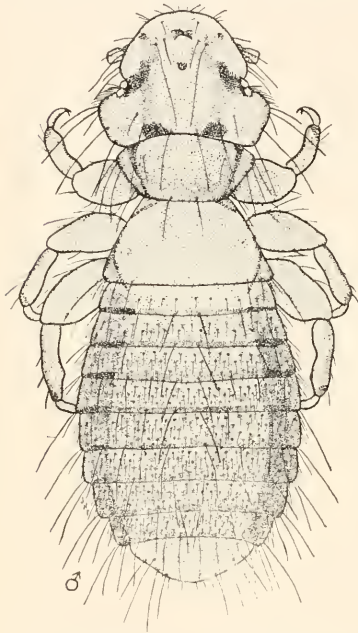


FIG. 3.—*Colpocephalum morsitans* n. sp., male, from *Tringa maculata*, Norton Sound, Alaska.

Head, length .37 mm.; width .41 mm.; noticeably broader than long; front broadly and flatly rounded, with short hairs on each side and two longer hairs in front of ocular emargination; temples produced squarely with three long hairs and several shorter ones on outer margin; occipital margin strongly concave with two pustulated hairs near the middle and one on each side of these a little inward from the margin; ocular emargination broad, not deep, with distinct fringe; eye deeply emarginate; head brown a little lighter than abdomen; ocular flecks, mandibles and bases of occipital bands piceous.

Prothorax small, sides rounded; brown with coxae showing through faintly as blotches. Metathorax about one and one-half times as long as prothorax, sides almost straight, diverging strongly posteriorly; truncate at apex, one strong hair at posterior angle and a few hairs on posterior margin; uniformly brown in color; darker than head; coxae showing through faintly as blotches. Legs concolorous with head, tibiae with small darker spot at apex, femora thick.

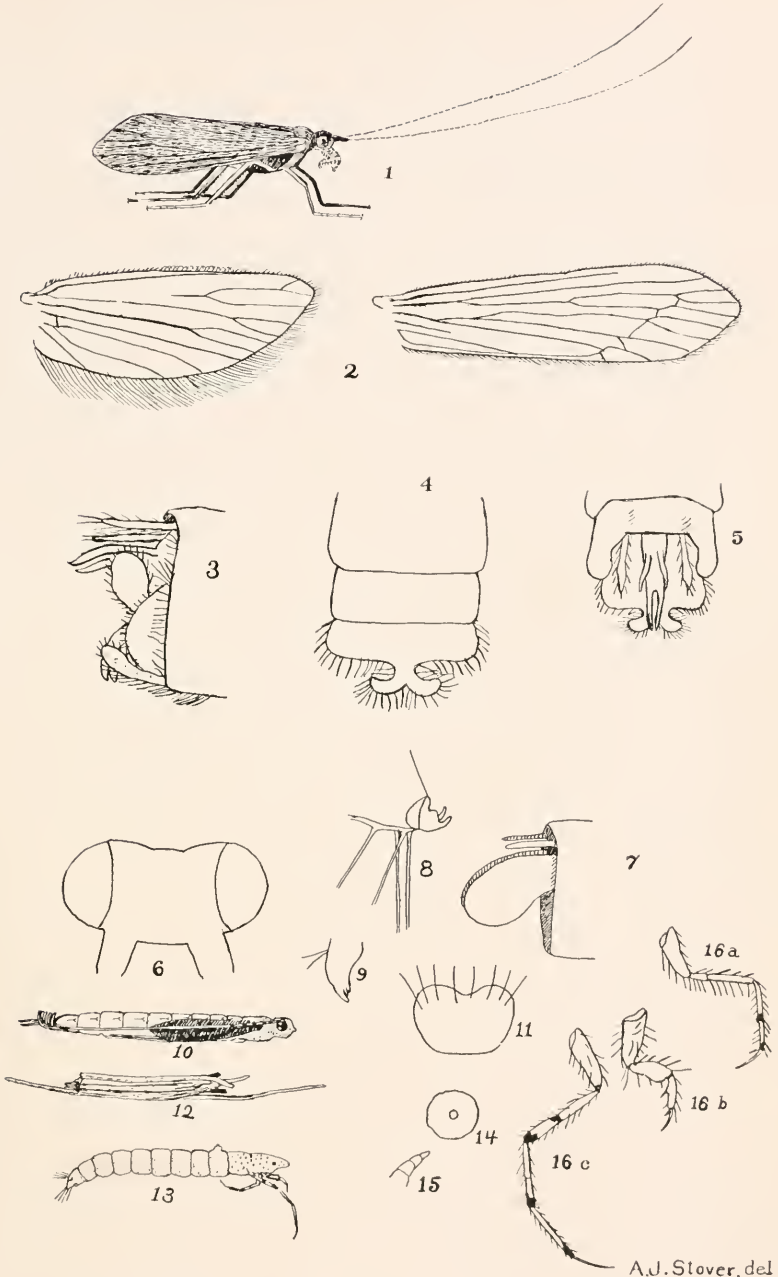
Abdomen ovate, first and penultimate segments approximately equal in width; broadest at segments 3, 4 and 5; each segment with a series of one strong and several finer hairs at the margin, and four alternating rows of finely pustulated hairs on dorsal surface; color brown with broad darker margin, and each segment with complete darker





A. J. Storer del.

GRAMMATAULIUS BETTENII—HILL-GRIFFIN.



A.J. Stover, del

MYSTACIDES ALAFIMBRIATA—HILL-GRIFFIN.



transverse blotch. Last segment lighter, without markings, posterior margin with three short hairs on each side of the middle; scattered hairs of variable size on dorsum.

**Menopon corporosum** Kellogg and Kuwana.

One specimen from *Arcnaria interpres*, Norton Island, and two from *Phalaropus lobatus*; same locality. The last two are undoubtedly stragglers.

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## New Oregon Trichoptera.

By ANNIE LAURA HILL-GRIFFIN, Payette, Idaho.

(Plates III and IV.)

In preparing a thesis on the biology of certain Trichoptera, completed June, 1911, I sent a number of specimens to Dr. C. Betten, of Lake Forest, Illinois, to be identified.

Six of the species submitted to Dr. Betten turned out to be new or probably new. One represented a new genus. It has been a great disappointment, that of four of these new species, there was not enough material to describe, in some cases only one imperfect specimen being in the collection. This was the case with the Psychomyid which represents the new genus. This was collected by myself, in October, 1908, at Crystal Lake, with five others of different species.

The list of new Trichoptera is as follows:

Limnophilidae. *Grammataulius bettenii*, n. sp.

Sericostomatidae. *Atomyia*, n. sp.

Leptoceridae. *Mystacides alafimbriata*, n. sp.

Psychomyidae. n. g. n. sp.

Rhyacophilidae. *Glossosoma*, n. sp. *Glossosoma*, probably new.

The collection contained enough specimens of two of these species so that descriptions could be made. The first one, a *Grammataulius*, I have given the name of *bettenii* in recognition of the kind assistance given me in the determination of specimens by Dr. Cornelius Betten. The second, a Leptocerid, has been given the descriptive name *alafimbriata* because of the long, soft black fringe upon the outer and inner margins of the hind wings.

**Grammataulius bettenii**, n. sp. (Pl. III).

Ocraceous, with brighter colored hairs, and dark markings. Head, yellowish, hairy. Antennae, testaceous, with short, black appressed hairs; underside of basal joint clothed with longer black hairs, and a thin tuft of black hair under each antenna; basal joint about twice as long as wide. Palpi yellow. Thorax with hairy yellow band divided by a naked medial line, and having a triangular, black pilose patch on either side. Legs yellowish, with black spines. Abdomen yellowish, sparsely provided with short, pale hairs; sometimes of a grayish hue.

A dorsal view, with folded wings showing an extremely long and narrow isosceles triangle with its point half-way back along the wings. It is formed by the dark edge of one wing which folds slightly over the other, for a part of the distance.

Anterior wing narrow, obliquely truncate, inner margin concave. Yellowish hyaline, marked with brown and scantily clothed with pale yellow hairs. Vandyke brown streak through center of wing, extending through thyridial area and the fourth apical cell. Other dark streaks consisting of irregular patches of color, occupy discoidal and thyridial cells, and many scattered irregular spots are distributed promiscuously throughout interneural areas. Venation pale. Solid streak of Vandyke brown extending from near arculus to the anal angle, with brown irrorations beneath. Costal area immaculate except for a faint irregular cloudiness near the base. Thyridium and arculus hyaline. Pterostigma absent. Discoidal cell slightly longer than its pedicel and very narrow.

Posterior wings slightly shorter than the anterior, but at least twice as wide toward the base, hyaline, the apical portion scantily clothed with short pale hairs. Venation light yellow. No markings except the very characteristic brown streak between and partly within the third and fourth apical cells. It covers the vein until near the end, when it curves upward, and the vein downward. Scanty long hairs near attachment of wing, extending along the two lowest veins and the margin.

Length of body, from 13 to 17 mm. Alar expanse, 41 mm.

*Case*: Composed of bits of straw arranged longitudinally in such a manner as to form a cylinder. The straws usually, though not always, form a spiral having  $1\frac{1}{2}$  to 5 or 6 turns. Occasionally, the straws are cut as long as the entire case, which then has no spiral effect. In this instance, no indication is given of the earlier stage of the case, and I suspect this occurs only when the larva has been deprived when nearly grown, of its case, and has then made it to suit its own size and has not had to enlarge it subsequently. Sometimes the narrow blades of a sort of watergrass are fastened together to make what appears to be

a short piece of a very wide blade of grass, and then this piece is fastened into the case just as are the others which are not "pieced together."

*Habits and Occurrence:* Found in small ponds along the C. & E. R. R., Corvallis, Oregon, and in ponds formed by the widening of slow-flowing streams. Also in various slow streams flowing through meadows. The earliest species to emerge in the laboratory, and probably one of the first to do so outside, since the larvae are far in advance of the most of the others, being nearly ready to pupate in the latter part of January and first weeks of February, varying slightly from year to year. Pupation occurs in February and the first of March, and I have records of emergence of adults March 12, 14, 15, 20, 21 and 30, and April 10. All the adults in the collection, however, bear dates of September, October and November, which suggests two broods, or a very long adult life.

The larvae seem to be restricted as to locality, but quite abundant when found at all. The adults are moderately plentiful, for caddisflies. This is one of the four largest species in the collection of the Oregon Agricultural College at Corvallis. Larvae are difficult to rear inside. They feed on water plants, dead and decaying leaves, manure and filth which may happen to be in the meadow streams where they live.

Eggs and oviposition unknown to me.

***Mystacides alafimbriata*, n. sp. (Pl. IV).**

Small, black, delicate and graceful, clothed with short black hair. Head black, shining, with a few hairs between and below the antennae, which are long and filiform; basal fourth annulated with buff; basal segment very large in proportion to the antennae, surrounded with black hair. Palpi very bristly with black hair. Thorax black and shining. Legs grayish-yellow with few small black spines. Abdomen dark gray.

Anterior wing long, rather narrow, rounded at apex, dusky, clothed with short black hairs. The costal area is darker than the remainder. Venation brown. Thyridium and arculus hyaline. Pterostigma present. Discoidal cell about the same length as its pedicel. The first apical cell is not very long; not so long as the second, in fact. All interneural areas extremely long and narrow.

Posterior wing slightly lighter in color than the anterior; approximate shape, half an ellipse cut longitudinally. Venation, yellow-brown, the median vein being very strong and thick. Costa extremely strong, with hamuli extending from the center of the costa about half-way to the apex. Cross-veins entirely absent except for a small one near the base. Both outer and inner margins fringed with long soft, black hair which increases in length to the base of the wing, where it is fully as wide as the attachment itself.

Length of body, 6 mm. Alar expanse, 17 mm.

Collected at Permelia Lake, Mt. Jefferson, Oregon, July 16, 1908, by Prof. J. C. Bridwell.

In the latter part of June, just after the preceding was written, a few specimens of this same species were captured by Mr. A. J. Stover, at Colorado Lake, an arm of the Willamette, near Corvallis. After making sure of its identity with *M. alafimbriata*, an attempt was made to find larvae and pupae. A number of small, slender pupal cases were suspected and rearing proved them to be undoubtedly the new species. Larvae were also found.

The adults at Colorado Lake appear about 5 or 6 o'clock in the evening, in swarms, and dance and hover above the water with dizzying pertinacity. Except accidentally, they do not seem to alight, nor to touch one another. They hover directly above where the larvae and pupae are found, but could not be detected in the act of oviposition.

*Pupa*: The pupal cases are found attached to floating logs or snags in Colorado Lake. They resemble the larval cases. The well-developed pupa has extremely long antennae like the adult. These curve back above the eye, slant across the black wing and down to the posterior end of the abdomen, where their surplus length is coiled into a curl, through which the tips finally project backwards. Length of pupa 8 mm.

*Larva*: The larva is a very small, slender, but extremely active creature with comically long hind legs. These it places in advance of the middle pair, in walking, making it appear as though the middle legs were longer than the hind legs. Upon close inspection, however, the latter are seen crossing

the middle legs. When removed from the case, they move about with quick, jerky movements, actually jumping, like a flea, at times. They feed on grass and various water plants. Length of a larva, probably nearly full-grown, 6 mm.

*Case*: A small, slender cylinder of long bits of reed, straw, sticks, etc., placed lengthwise. Usually one straw about twice the length of the case is attached to it dorsally, or two very long ones, laterally. Occasionally, a part of the case is constructed of grains of sand and tiny bits of miscellaneous material.

*Eggs*: not observed.

#### EXPLANATION OF PLATES.

##### PLATE III.

###### *Grammataulius bettenii*, n. sp.

Fig. 1, Adult; 2, Larva; 3, Wings; 4, Maxilla of larva; 5, Larval case; 6, End of Pupal case and detail of net in end; 7a, Labrum and 7b, Mandible of Larva; 8, 9 and 10, Dorsal, lateral and ventral views respectively of the male genitalia; 11, Head of imago, dorsal view; 12, Dragging hook of larva; 13a, 13b, First and third legs of larva; 14, Mandibles of pupa.

##### PLATE IV.

###### *Mystacides alafimbriata*, n. sp.

Fig. 1, Adult; 2, Wings of male; 3, 4 and 5, Lateral, ventral and dorsal views respectively of the male genitalia; 6, Head of adult, dorsal view; 7, Lateral view of the female genitalia; 8, Dragging hook of larva; 9, Mandible of larva; 10, Pupa; 11, Labrum of larva; 12, Ventral view of larval case; 13, Larva; 14, End of pupal case; 15, Maxilla of larva; 16a, 16b and 16c, Middle, front and hind legs respectively of larva.

## Notes on Australian Pentatomidae (Rhynch.).

By E. BERGROTH, Turtola, Finland.

### *Stelgidophora pallida* V. Duz.

This insect was described as doubtfully belonging to *Dictyotus* Dall. and was later placed by Van Duzee in the genus *Eurynannus* Bergr. It is allied to *Eurynannus*, but so distinct that a *new genus Stelgidophora* must be founded upon it. As described by me in Proc. Zool. Soc. Lond., 1905, II, pp. 153-154, the head of *Eurynannus* is unique in the Pentatomidae in

having the sides of the whole basal half of the antecular part very broadly convex, continuously merged in the antenniferous tubercles which are convergent; the eyes are shortly stylated and so small that the vertex is about seven times broader than an eye; the ocelli are situated twice as far from each other as from the eyes; the bucculæ are low and straight; the sides of the pronotum are convexly rounded, sinuated only immediately behind the apical angles; the scutellum is about as long as broad; the veins of the membrane are simple and few in number. In *Stelgidophora* the convex antecular part of the lateral margin of the head is not longer than the eye itself; the antenniferous tubercles are well separated from the lateral margin of the head and not convergent; the eyes are larger and not stylated; the ocelli are four times farther from each other than from the eyes; the bucculæ are lobed both anteriorly and posteriorly, the anterior lobe being rounded and deflected, the posterior lobe subacute and directed backward; the sides of the pronotum are deeply sinuated; the scutellum is much longer than broad; the membranal veins are densely reticulated. I have seen the type of *pallida* in the American Museum of Natural History, New York.

**Commius minor** Bergr.

The type specimen is somewhat immature. In specimens with the colors fully developed the two large basal spots to the pronotum and the ground color of the corium are dark brassy bluish green, not fuscous as in the type. This insect seems to be much more common than the typical species, *C. elegans* Don. It occurs in the whole eastern part of Australia and I have seen it in several collections.

**Notius melancholicus** n. sp.

Oblong, black, four small upper basal spots to head, narrow lateral margins of head, of pronotum and of basal half of corium, bucculæ, rostrum (except apical joint), basal ring of the two last antennal joints, narrow margin of acetabula, coxæ, trochanters, base of femora, a median ring to tibiæ, basal joint of tarsi, and a spot on the external apical genital lobe of female yellow. The last three antennal joints subequal in length, second joint distinctly shorter than third. Hemelytra dis-

tinctly passing apex of abdomen, corium reaching base of last connexival segment. Abdomen but little broader than the closed hemelytra, which cover the greatest part of the connexivum. Puncturation as in *N. depressus*. Length, ♀ 13 mm.

#### Tasmania.

Closely allied to *N. depressus* Dall., but the connexivum and lateral border of the venter are entirely unspotted, the third antennal joint and hemelytra are longer, and the abdomen is more narrowed posteriorly. In *depressus* the third antennal joint is distinctly shorter than the second, the hemelytra do not pass the apex of the abdomen, the corium barely passes the middle of the penultimate connexival segment, and the abdomen is broader behind the middle, leaving the greatest part of the connexivum exposed.

#### *Alcaeus hermannsburgi* Dist.

On this species Distant founded the genus *Muritha*, which is a synonym of *Alcaeus* Dall. Distant says that it differs from *Alcaeus* in having the second antennal joint "not about half the length of the first, but nearly twice as long." This is correct, but the length of the second joint in *A. hermannsburgi* is due to the fact that the second and third joints are fused into one long joint, being separated only by a constriction, not by a real articulation. In consequence of this the third joint, as described by Distant, corresponds to the fourth joint in the other species. The second joint is, as Distant correctly says, "flattened and roundly ampliate at base;" this flattened basal part of the joint corresponds to the whole second joint in the other described species, this joint being compressed in all species, as correctly stated by Dallas. The fourth (apical) joint (corresponding to the fifth in the typical species), which was lacking in Distant's type, is only half the length of the preceding joint, black with the base narrowly yellow. There are several species of this Australian genus, only four of which have been described; they are extremely similar in color, much confused in the collections and sorely in need of a revision, impossible to undertake without examination of the types of the described species. They are separable principally by the structure of the

antenna and orificia and, above all, the male genital segment. The transitions between species with five-jointed and four-jointed antennæ are quite gradual. In some species the suture between the second and third joints is fairly distinct, in others it is hardly perceptible, sometimes disappearing only on the inner side of the joint or vanishing altogether as in *A. hermannsburgi*. In no species I have seen a quite normal articulation with free mobility between these segments. We find a quite analogous structure of the antennæ in the allied genera *Eumecopus* Dall. and *Poecilometis* Dall. In both these genera there are species with five-jointed and with four-jointed antennæ, owing to the second and third joints being either more or less distinctly separated or fused together. Kirkaldy (Cat. Hem. I, p. 189) founded the "subgenus, if not genus" *Euronotias* on the species of *Poecilometis* with five-jointed antennæ. Why he did not make the same subdivision in the genus *Eumecopus* is hard to understand. *Euronotias* is quite unnatural and untenable even as a subgenus, as both in *Poecilometis* and *Eumecopus* some species with four-jointed antennæ are much more closely allied to certain species with five-jointed antennæ than to each other.

#### ***Theseus parvulus* Westw.**

In his revision of the Pentatomidae described by Westwood in the "Hope Catalogue," Distant places *Halys parvula* Westw. in the genus *Spudaeus* Dall., but from the figure he gives of the type it is clear that it belongs to *Theseus* Stal.

Kirkaldy proposed the new name *Austromalaya* for *Spudaeus*, which is said to be preoccupied by Gistel. From what I have gathered about that monstrous literary product "Naturgeschichte des Thierreichs für höhere Schulen bearbeitet von J. Gistel" few of his very numerous new names are properly founded. They seem to be *nomina nuda* massed together in the 16 pages forming the introduction to the book and mostly proposed quite arbitrarily without real grounds for old, well-known genera. I believe that most of these names have been undeservedly included in Waterhouse's "Index zoologicus."

Until we learn whether the name *Spudaeus* Gistel has a show of legitimacy, if ever so little, I think there is no reason to abandon the name *Spudaeus* Dall. (Of the names proposed by Gistel in Hemiptera one at most can be used: *Eupheno* for the preoccupied name *Macrops* Burm. in the Reduviidæ).

**Paramenestheus nercivus** Dall.

*Sciocoris nercivus* Dall., placed in our catalogues in the genus *Menestheus* Stål, ought to be transferred to *Paramenestheus* Bredd. It is true that Stål cited *nercivus* as the type of *Menestheus*, but from the information which Distant in Ann. and Mag. of Nat. Hist. (8) VI. p. 469, gives of Dallas's type it is clear that Stål had wrongly identified *nercivus*, with which his description of the head and antennæ does not at all agree. *Menestheus* was probably founded on a still undescribed species allied to *M. cuneatus* Dist. Judging from the description it is probable that *M. doddi* Dist. belongs to neither of these genera.

**Turrubulana plana** Dist.

Distant has totally misunderstood the systematic position of this insect, placing it in the Halyinae near the African genus *Atlocera* Lap. It pertains to the true Pentatominae and is closely allied to the Australian genus *Lubentius* Stål, from which it differs principally by the longer and narrower, laterally bisinuated and apically not rounded head, by the second antennal joint not reaching the apex of the head, the longer second rostral joint (reaching the middle coxæ), the slightly elevated, more deeply sinuate apical pronotal margin, the longer frena, and by having the tips of the membranal veins united by a more or less continuous transverse vein parallel to the margin of the membrane. The membrane is described as "black" with "the apex paler," but it is subhyaline with brown veins. It appears to be black on account of the underlying black dorsal surface. The ground color of the upper side is normally reddish ochraceous. I have another allied new genus which will be described in a forthcoming paper on Hemiptera from Central Australia.

***Antestia cederwaldi* n. sp.**

Above green with the corium glaucous, beneath pale flavous tinged with orange and with a broad sublateral green vitta extending from the anterior margin of the propleura to the apex of the abdomen. Head above with the basal margin, an intraocular oblong spot confluent with the base, two median vittæ and a broad jugal vitta black. The whole margin of the pronotum, base of exocorium, epipleura, and an elongate smooth callous vitta in the exterior submedian part of the mesocorium orange; a line running from the apical margin of the pronotum to near the apex of the scutellum, the suture of the endocorium, and a line at the outer margin of the mesocorial callous vitta whitish. Tergum of abdomen black, connexivum orange, each segment with a basal subtriangular blackish spot which does not touch the outer margin, last ventral segment with a median piceous spot of variable size.

Head as long as the pronotum in the middle and distinctly broader than long, finely and rather sparingly punctured above, smooth beneath; juga transversely wrinkled, anterior ocular orbita smooth and elevated, prolonged obliquely inward and backward in the shape of a short ridge; rostrum green, apical joint piceous; antennæ green, second joint a little longer than third, fourth joint light brown, almost twice longer than third (fifth joint wanting).

Pronotum almost three times broader than its length in the middle, rather thickly punctured with pale fuscous, the whole apical margin and the straight antero-lateral margins smooth, callously elevated, lateral angles rounded, not prominent. Scutellum punctured as the pronotum. Pleuræ irregularly punctured with very pale fuscous, anterior margin of propleuræ elevated, evaporative area of metapleura extended over the posterior half of mesopleura. Corium more strongly and darkly punctured than pronotum and scutellum, the callous vitta of the mesocorium posteriorly obliquely continued to the interior apical angle (membrane mutilated). Wings slightly infuscated, iridescent.

Abdomen beneath remotely and very finely punctulate, more distinctly punctured towards the sides, last ventral segment (♀) in the middle a little longer than the preceding segment.

Legs green. Length, ♀ 7.8—8 mm.

New South Wales (Richmond River, C. Cederwald).

Very distinct from the two described Australian species of the genus. Dedicated to the memory of my dear friend, Carl Cederwald, from Stockholm, who many years ago collected insects for me in New South Wales, and who fell as a volunteer in the Boer War.

**Pseudapines geminata** V. Duz.

This insect seems to be widely distributed. The types came from New South Wales and I have received it both from South Australia and West Australia. It was described as an *Apines*, but I cannot share Van Duzee's opinion that "this species agrees in all generic characters with *Apines concinna* Dallas." It differs in so many points from the Indian *concinna* as described and figured by Dallas and Distant, that a new genus, *Pseudapines*, must be founded upon it. The differential characters appear from the comparative diagnoses given below. The pale submarginal scutellar vittæ are often broadly interrupted by black in the middle.

**Apines** Dall.

Head about as broad as long, narrowing from the anteocular sinus to the rounded apex.

Antennæ more than half the length of the body.

First joint of rostrum reaching base of head, third joint shorter than the fourth, which is almost as long as the second.

Pronotum in the middle much longer than the head, not strongly transverse, moderately narrowed toward the apex.

Mesosternum sulcated in the middle.

Orificia prolonged in a rather long, gradually tapering sulcus directed obliquely forward.

Hemelytra barely reaching the apex of the abdomen, corium not reaching penultimate connexival segment.

Legs long, femora reaching much over the lateral margins of the body, basal and apical joint of tarsi subequal in length.

**Pseudapines** nov. gen.

Head broader than long, subparallel from the anteocular sinus to the broadly subrotundately truncate apex.

Antennæ less than half the length of the body.

First joint of rostrum not reaching base of head, third joint longer than the fourth, which is scarcely longer than half the second joint.

Pronotum in the middle as long as the head, strongly transverse and strongly narrowed toward the apex.

Mesosternum carinated in the middle.

Orificia prolonged in a short, suddenly discontinued sulcus directed straight outward.

Hemelytra considerably passing apex of abdomen, corium reaching the middle of last connexival segment.

Legs very short, femora not reaching the lateral margins of the body, basal joint of tarsi shorter than apical joint.

In the figure given by Van Duzee the femora are represented as reaching over the sides of the body, but this is wrong. The Philippine *A. grisea* Banks is apparently a true *Apines*.

***Diaphyta rosea* n. sp.**

Obovate, pink-colored, basal border of pronotum and apex of scutellum broadly tinged with whitish; second and third ventral segments whitish from near the middle to near the spiracles, rostrum and antennæ testaceous, fourth and fifth antennal joints (except at base), posterior lateral margins of tylus, a point at the base of the fore and middle acetabula, and the apical angles of the abdominal segments black; spiracles placed in a small whitish callus.

Head a little broader than long and a little shorter than the pronotum, slightly sinuate in front of the eyes, beneath very finely and sparingly punctured, above transversely rugulose; apical half of juga very thickly and finely punctulate, ocellar areas smooth with a single slightly curved row of fine punctures on each side a little inside the ocelli; rostrum slightly passing the middle of the third ventral segment; antennæ rather stout, third joint distinctly shorter than the second and as long as the fifth, fourth joint as long as the second.

Pronotum strongly but rather sparingly and irregularly punctured with fuscous, with smaller points intermixed, all points becoming black on the basal area, the transverse discal impression interrupted in the middle, anterior lateral margins straight, narrowly elevated, lateral angles obtuse, not prominent, posterior lateral margins and basal margin broadly and slightly sinuate. Scutellum strongly but remotely punctured with fuscous, more thickly so on the sides behind the middle, the punctures blackened on the apical area. Acetabula and posterior border of propleuræ and metapleuræ punctured with fuscous, sternal lamina in front of the fore coxæ roundedly narrowing, bent upward, being contiguous to the sternum, not freely prominent. Hemelytra somewhat passing apex of abdomen, corium reaching base of last connexival segment, rather strongly and thickly concolorously punctured, the punctures becoming fuscous toward the inner part, membrane glossy, infuscated.

Abdomen beneath strongly concolorously punctured, smooth along the centre, apical angles of the segments acutely prominent, last male ventral segment in the middle longer than the two preceding segments combined, male genital segment broadly sinuate at apex.

Legs pink, femora with very small sanguineous points, upper side of tibiæ strongly punctured with black. Length, ♂ 8.5 mm.

West Australia.

Less elongate than *D. pulchra* Westw. (of which *fulvescens* Dall. is possibly only a variety), quite differently colored and

with several structural differences. It more resembles a *Cuspicona*, but the generic characters are those of *Diaphyta*.

**Myappena capito** Dist.

Distant says that "this genus appertains to the group of genera distinguished as *Platycoraria* Bergr.," but in the description he writes: "Abdominal segments 1-5 with a transverse strigose vitta *behind the spiracles*" (the italics are mine). I have not seen this insect, but it can certainly not belong to the *Platycoraria*, as in this group the strigose ventral vitta is situated far *inward* from the spiracles, forming an uninterrupted curve from the first to the third segment. The "strigose vittæ" in *Myappena* Dist. are certainly not homologous with the stridulatory vittæ in the *Platycoraria*. As the rostrum is described as only passing the anterior coxæ *Myappena* cannot even belong to the Halyinae. Its position will remain enigmatical until it has been re-examined and redescribed by a hemipterist having access to the type.

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## New Species of Lyttidae, with notes on Described Species (Coleop.).

By CREIGHTON WELLMAN, M.D., F.E.S.

(Studies from the Laboratory of Tropical Medicine and Hygiene, under the direction of Creighton Wellman, Tulane University of Louisiana, No. 2).

The writer has for several years been interested in the Lyttidae (Meloidae auctt.) on account of their parasitic habits and the bearing of the facts regarding their habits on the general question of parasitism, and also because of the employment by African and Oriental natives of substances prepared from these insects as medicines, aphrodisiacs, poisons for suicide and murder, etc.

In the course of an examination of large amounts of material from the British, Berlin and Indian Museums, the Pusa collection of Bengal, several private collections and my own cabinet, I have accumulated a number of notes which do not

bear on my work which is to appear in the Fauna of British India or on any other special investigation now in hand. These are brought together in the present paper with the object of adding to the still somewhat scanty knowledge we possess of this important and interesting group of insects.

#### Genus ZONABRIS Har.

The following notices of species are from examination of types or authentic specimens:

*Zonabris hauseri* and *Z. lucens* are distinct species; *lucens* can be told from *hauseri* by its longer fourth article of the antenna and its dark elytral apex.

*Z. crux* var. *opulentus*. This form should be considered as a variety of *lucens* and not of *crux*.

*Z. elegantissimus* var. *confluens*. This is merely a slight color variation.

*Z. fasciculata* Esch. This is a good species, near *maculata*, '01.

*Z. subsplendidula* Rtt. and *Z. staudingeri* Hdn. are both varieties of *Z. splendidula* Pall.

*Z. frolovi*, *Z. intermedia* and *Z. königi* are color variations of the same species.

*Z. humerosa*, *Z. chodshentica*, *Z. scabiosae* and *Z. euphratica* are all varieties of the same species based on differences of the elytral pattern.

*Z. bertrandi* Cast. = *Z. ustulata* Reiche.

*Z. dicincta* Bert. = *Z. bisonata* Gerst.

*Z. (Caryna) posthuma* Mars. is a variety of *M. (C.) mixta* Mars.

#### Genus ELETICA F.

*Eletica maerens* Pér. = *E. rufa* F. var.

**E. rufa** F. var. **grandiceps** n. var.

Brown, smaller than typical forms, structural characters as in *rufa* except that the head is proportionately very much larger than in normal specimens.

"Africa."

There is a specimen in the British Museum.

**Eletica bicolor** Champ. var. **fuamboensis** n. var.

Differs from *bicolor* in having the head proportionately smaller, the eyes rufous and more convex and the head less canaliculated at vertex. The coloring is as in *bicolor* except that the thorax is black.

"Fuambo, Brit. Cent. Africa, '95-1."

British Museum.

This insect may represent a new species, but the extraordinary variability in the genus makes it impossible to announce it as such until more material appears.

*E. pallidipennis* Fairm. = *E. rufa* F.

Genus **EPICAUTA** Redt.**Epicauta formosensis** sp. n.

Black, with red head, *clypeus* infuscate; back and sides of pronotum, suture, margin and apices of elytra, edges of ventral segments, episterna and mesosterna all edged with white pubescence; *form* large, robust, elongate, somewhat cylindrical; *head* large, subquadrate, strongly rounded, a median impressed line on the occiput, pustules back of bases of antennae small, punctuation sparse, but uniform and coarse, punctures on frons a little finer than rest of head, pubescence heavier and larger at back and sides; *labrum* poorly obcordate, transverse, sides more strongly punctured than disc, pubescence heavier at anterior angles, labro-clypeal suture distinct; *clypeus* rounded behind, almost straight in front, transverse, very much more coarsely punctured than head, pubescence stronger at sides; *maxillary palpi* long, somewhat slender, art. 2 and 4 about equal in length, art. 3 a little shorter than others and a little broader than 2, art. 4 broader than 3, bluntly rounded and flattened; pubescence sparse; *antennae* long and robust, art. I the stoutest, 2 about 2-3 as long as 1, 3 about 1½ as long as 1, 4 a little longer than 2 and gradually increasing and tapering to 10, 11 a trifle longer than 10 and bluntly sharpened; *eyes* small, narrow, reniform.

*Pronotum* short, subquadrate, a little narrow behind, strongly constricted in front, margin distinctly everted, a slight median depression posteriorly, another at middle of disc; punctuation not quite as strong as head but very thick and close, pubescence very short and rather heavier at sides; *scutellum* rather rounded triangle, medium, somewhat smooth; *elytra* parallel separately, rounded at apices, ora distinct, nervure indistinct, evenly and finely punctured, granulose, pubescence short, close lying; *ventral surface* a little more heavily punctured than elytra; *legs* large, long, robust, femora and tibiae a little more finely and thickly punctured than abdomen, pubescence pale;

posterior tibial spurs somewhat spoonshaped, the inner the longer and the outer the heavier; *tarsi*, long and stout; *claws*, long and robust.

Type in British Museum. Type locality, Formosa.

Distribution. Formosa, Japan (Rev. H. Loomis): C. Formosa, '94; Formosa (Bowring), '63; British Museum (3); Wellman Coll. (1).

Waterhouse (Trans. Ent. Soc. 1891, III, p. 407) referred this species to *assamensis* with a query. It is perfectly distinct, however, and may be told by the larger size, white marginal pubescence, the entire lack of long black hair on the sternum, and the heavier and sparser punctuation of the head. The specimen in my collection, labeled *chinensis* Cast., is not quite typical, being smaller, with a larger smooth area on the frons.

**Epicauta insularis** Haag-Rut. var. **montalbana** n. var.

Differs from typical specimens by having the pronotum uniformly dark red instead of black. Although the essential characters are identical with *insularis* the color difference is so striking that any one would at first glance pronounce it a new species.

This pretty variety was sent me by Mr. Charles S. Banks, Entomologist of the Bureau of Science, Manila, who writes concerning it as follows: "Those numbered 11,059 were found by Mr. W. Schultze, my assistant, very abundant at Montalban, about 30 kilometers from Manila. They were taken on the 6th of June, 1909, and were present in thousands. Mr. Schultze says that wherever they touched his hand they caused tiny blisters."

I have in my collection typical specimens of *insularis*, also taken by Mr. Banks, and there is another series in the United States National Museum, from Benguet, '03, and Manila, '09, sent by the same collector, who also reports in a letter to the writer the following other Philippine captures: Gen. *Cissistes cephalotes* '01. Manila, Sept., '03 (*R. E. Brown*, S. J.), *Horia testacea* F., Negros Is., P. I., '02 (Banks).

#### Genus LYTTA F.

*Lytta signifrons* Fabr. = *L. coelestina* Haag.

*L. hildebrandti* Haag. = *L. vittipennis* Klbe.

*L. flagellaria* Er. is a *Macrobasis*.

**Lytta bieti** n. sp.

*Color* metallic, bluish purple, a yellow spot on the vertex, elytra with a yellow vitta extending obliquely from the basal margin over the humeral callus to the apex and ending nearer the suture than the margin; *form* medium, robust, depressed, slightly wider posteriorly; *head* large, triangular, slightly rounded angles, a slight vertical median impressed line, an impression at base of antenna on each side, another impression at the anterior end of the light spot on vertex, coarsely and very sparsely punctured, becoming a little denser at frons; pubescence short, sparse and mixed dark and lighter at back and under head; *labrum* strongly obcordate, a median smooth space, finely and sparsely punctured, pubescence pale, sparse, labro-clypeal suture distinct; *clypeus* very short, transverse, narrowed in front, posterior border convex, a foveate impression on either side, finely and thickly punctured, pubescence sparse; *maxillary palpi* long and medium, art. 2 medium, slightly obconical, art. 3 short, obconical, last article the longest of all, slightly ovoid; *antennae* art. 1 short, strongly swollen, art. 2 small, beadlike.

*Pronotum* short, transverse, narrowed behind, strongly gibbous at sides, suddenly constricted into neck, a median longitudinal impressed line to near posterior margin ending in a large impression, reflexed posterior margin strong at middle weakening at sides, a large, round, shallow fovea on either side of disk, disk around these foveae smooth, impunctate, and in front of these it is sparsely and coarsely punctured, a little coarser than head, pubescence short, sparse, dark; *scutellum* large, rounded, a large deep fovea taking in nearly all of it; *elytra* less than three times as large as joint width, ora and nervures distinct, evenly, mediumly, coarsely and rugosely punctured, light and dark areas punctured the same, pubescence sparse and very short, slightly dehiscent and separately rounded at apices; *ventral surface* of mesosternum finely, thickly and rugosely punctured, pubescence mediumly short, ventrals of abdomen finely, sparsely and transversely aciculate punctured, pubescence mediumly short, sparse and confined more to sternum; *legs* medium long and stout, femora and tibiae punctured about like ventrals but not aciculate, posterior tibial spurs, outer with slight tendency to being trumpet-shaped, inner sharp and curved; *tarsi* long and slender; *claws* short and stout.

Length 13, width 3.5 mm.

Type in B. Museum. Type locality, Thibet.

Distribution. Thibet, Tatsienlou (Mgr. F. Biet.). British Museum (3 specimens).

This can readily be told at a glance from *thibctana* by its more gibbous pronotum, color, by its much coarser elytral sculpture, and by the oblique direction of the elytral vitta, in *thibe-*

*tana* the vitta is reflected upward at its apex, in *bieti* it is reflected downward.

***Lytta arborea* n. sp.**

*Color* metallic, dark blue, a small red dot on vertex, pubescence very short, sparse and mixed light and dark; *form* small, oblong; *head* subquadrate, strongly rounded angles, sparsely but very coarsely punctured, punctuation closest at frons and vertex; *labrum* short, strongly emarginate in front, sides rounded, punctured very finely and sparsely, labro-clypeal suture not distinct; *clypeus* short, transverse oblong, strongly rounded angles, sparsely and finely punctured; *maxillary palpi* long and slender, art. 2 long, very slender, cylindrical, 3 is  $\frac{1}{2}$  as long as 2, and a little thicker, last not quite as long as 2 but much thicker and truncate; *antennae* medium, art. 1 short and swollen, 2 very small and beadlike, 3 a little longer than 1, cylindrical, 4-10 subequal, slightly increasing in diameter, last longer than 10, strongly pointed; *eyes* small, flat, far apart, entire.

*Pronotum* roughly hexagonal, a slight median impressed line, a large fovea on either side of line, on disk, feebly everted at posterior margin, more strongly at middle, punctured like head, but very much sparser and scattering; *scutellum* short and squarish, almost impunctate; *elytra*  $2\frac{1}{2}$  times as long as joint width, ora prominent nervures slightly visible, uniformly rugose, jointly rounded behind; *ventral surface* very faintly and sparsely punctured; *legs* medium, femora and tibiae a little more closely punctured than ventrals; *tarsi* long and slender; *claws* long and stout; ♂ *antennae* long and delicate, last ventral deeply notched; ♀ *antennae* very short, stouter, last ventral shallowly notched.

Length 8 mm., width 2.5 mm.

Type in my collection. Type locality, Humboldt County, California.

Distribution Weitchpec, Humboldt Co., V. 20, 11, near Hamburg, Siskyou Co., VI. 2, 11 (F. W. Nunenmacher).

This rare insect was found by beating trees (? dogwood) along the river. It is very scarce, but of great interest on account of its unusual habits. None of our other indigenous blister beetles, except the genus *Pomphopoea* (and possibly *Macrobasis unicolor* Kby. which is occasionally taken on small bushes) are arboreal in habits. The present species is the first of the present genus known to live on trees. Structurally, it is not very close to any described form.

*Lytta hoppingi* n. sp.

*Color* black, prothorax bright reddish testaceous with a black longitudinal dorsal median broad stripe which is the full width of the neck in front, ending behind at the base of the pronotum in a point, very sparsely clothed throughout with short, black very sparse pubescence; *form* slender, graceful, somewhat depressed, strongly widened behind; *head* small, subglobose, slightly depressed, with a very faint median impressed line at the occiput, a faint smooth pustule on vertex, thickly and moderately coarsely punctured, the punctures being thicker around the pustule on vertex, becoming sparser toward sides and back of head; *labrum* short, broad, feebly emarginate in front, strongly rounded corners narrowed behind, thickly and finely punctured, labroclypeal suture distinct; *clypeus* short, transverse, slightly rounded in front, straight behind, punctured a little more sparsely than labrum; *maxillary palpi* short and slender, arts. 2 and 3 subequal, cylindrical, last a little longer, slightly flattened and truncate; *antennae* long and stout, art. 1 short and strongly swollen, 2 is  $\frac{1}{2}$  as long as first, head-shaped, 3 a little longer than 1 and subequal from 3 to 10, last a little longer than 10 and strongly pencil-sharpened; *eyes* large, wide apart, slightly convex, entire.

*Pronotum* long, slender, subcylindrical, gently and slowly narrowed in front, feebly narrowed behind, posterior margin very feebly everted, a very slight median fovea near the posterior margin, punctured a little more finely than head, the dark areas punctured a little more thickly than the light; *scutellum* small, triangular, point rounded, finely and thickly punctured; *elytra*  $2\frac{1}{2}$  times as long as joint width, ora distinct, very finely and vermiculately rugose, jointly rounded at apices; *ventral surface* very finely and evenly punctured; *legs* medium, femora and tibiae punctured like ventrals; *tarsi* long and mediumly strong.

♂. Articles of antennae much longer than those of ♀, the last two ventral segments much more strongly notched than ♀, posterior tibial spurs long and slender, smooth pustule on vertex well marked.

♀. Articles of antennae stouter, last ventral segments slightly notched, posterior tibial spurs shorter and stouter, pustule on vertex feebly marked.

Length 15 mm., width 4 mm.

Type in my collection. Type locality Fresno County, California.

Distribution. Coalinga, Fresno County, California, V. 8. (R. Hopping).

This graceful species is not very closely allied to any other now known. At a glance it somewhat resembles in form and color *Pyrotrichus vitticollis* Lec.

***Lytta nunenmacheri*** n. sp.

*Color* black, a small red spot on vertex, uniformly clothed with short, very sparse, black, erect pubescence; *form* rather short and robust; *head* subquadrate, a slight median impressed line on occiput, vertex transversely somewhat impressed, sparsely and mediumly coarsely punctured, the punctures being thickest just at vertex; *labrum* obcordate; the anterior half rather thickly and coarsely punctured, the posterior half impunctate, labro-clypeal suture distinct; *clypeus* short, transverse oblong, anterior 1-3 impunctate, posterior 2-3 punctured like labrum; *maxillary palpi* short and stout, art. 2 long, 3 short, last a little longer than 2, strongly flattened, truncate; *antennae* medium in length, stout, art. 1 short, strongly swollen, 2 very small, beadlike, 3 longer than 1, 4 as long as 1, 4-10 subequal in length but gradually increasing in diameter, last longer than 10 and strongly pencil-sharpened; *eyes* small, far apart, slightly convex, very slightly notched.

*Pronotum* subquadrate, sharply contracted in front, rather strongly narrowed behind, posterior margin strongly everted, a deep longitudinal median impression extending almost its entire length, sparsely punctured, the punctures like those of head; *scutellum* small, rounded, finely and thickly punctured; *elytra*  $2\frac{1}{2}$  times as long as joint width, slightly widened posteriorly, ora distinct, 2 middle nervures visible, finely and vermiculately rugose, a little more strongly marked toward apices, separately rounded behind; *ventral surface* sparsely and finely punctured; *legs* long and stout; femora and tibiae punctured like ventrals but a little thicker; *tarsi* long and stout; *claws* long and stout.

♂. Antennae longer and slenderer than ♀, pronotum convex and not rugose, posterior tibial spurs long and slender, slightly trumpet-shaped.

♀. Antennae shorter and stouter, pronotum slightly depressed and slightly rugose, posterior tibial spurs shorter and stouter and strongly trumpet-shaped.

Length 12-22 mm., width 3-3.8 mm.

Type in my collection. Type locality Humboldt County, California.

Distribution. Orleans Bar, Humboldt County, California, V. 22, 11 (F. W. Nunenmacher).

*Nunenmacheri* can be told from *blaisdelli* by its sulcate pronotum, by its much thicker (twice as thickly) punctured head, by its rugose pronotum and by the posterior tibial spurs being very trumpet-shaped (they are only grooved in *blaisdelli*) and by the much duller texture of the head and thorax and elytra.

## Genus CALOSPASTA Lec.

**Calospasta imperialis** n. sp.

*Color* piceous, head and thorax testaceous, elytra and legs stramineous, antennæ varying from piceous to testaceous, pubescence sparse and short throughout; *form* small, slender and delicate, subparallel; *head* small, subglobose, sparsely and very minutely punctured, with a small shallow depression at frons; *labrum* short, transverse, oblong, finely and thickly punctured in the middle, labro-clypeal suture very distinct; *clypeus* short, transverse, with anterior angles rounded, punctured like head; *maxillary palpi* medium, slender, last article truncate; *antennae* medium, robust, article 1 short, slightly swollen, 2 bead-like, 3 almost equal to 1 and 2, cylindrical, 4-10 subequal, short cylindrical, 11 a little longer and somewhat fusiform; *eyes* large, far apart, almost entire.

*Pronotum* long, somewhat cone-shaped, very strongly contracted in front and slightly narrowed behind, posterior margin reflexed, a V-shaped depression posteriorly at the middle, punctuation as that of head; *scutellum* small, V-shaped, almost impunctate; *elytra* slightly widened behind, ora and nervures distinct, somewhat coarsely, irregularly and rugosely punctured, separately and bluntly rounded behind; *ventral surface* very finely but distinctly punctured; *legs* long and slender, femora and tibiae punctured like ventrals, posterior tibial spurs short and weak, the inner sharp, the outer blunt; *tarsi* long and slender; *claws* long and weak.

Length 6 mm., width 2 mm.

Type in Wellman coll. Type locality Meloland, Imperial Valley, California.

Distribution. Imperial Valley, May, 1911, on wild hollyhock (J. C. Bridwell, 9 specimens).

This species is very distinct from anything in the genus yet described.

## Genus MELOE L.

*Meloe latreillei* Mars. = *M. purpurascens* Germ.

*M. acneus* Cast. = *M. purpurascens* Germ.

*M. maculifrons* Luc. = *M. majalis* L. var.

## Genus NEMOGNATHA Illig.

**Nemognatha bridwelli** n. sp.

*Color* yellowish testaceous, antennæ and last 3 articles of tarsi piceous, pubescence medium in length, light yellow and very thick and close, covering the entire insect; *head* subtriangular, closely,

thickly and finely punctured, a median vertical smooth, raised line on the frons and vertex; *labrum* short, transverse, with strongly rounded anterior angles, punctuation that of head, labro-clypeal suture very distinct; *clypeus* transverse oblong, punctured like head; *maxillary palpi* long, mediumly robust; articles subequal, last article feebly flattened and truncate; *antennae* long, mediumly robust, article 1 short and swollen, 2 not quite as long as 1, cylindrical, 3-10 subequal, moniliform, becoming gradually thinner and slightly flattened on the under side towards the end, 11 about equal to preceding and bluntly pointed; *eyes* large, narrow, strongly uniform and far apart.

*Pronotum* transverse oblong, sharply and shortly contracted in front, sides parallel, posterior margin slightly reflexed, a very small posterior median depression, punctured like head, but more sparsely; *scutellum* large, triangular with rounded apex, excavated in middle, feebly and thickly punctured; *elytra* slightly narrowed behind, ora and nervures not distinct; very thickly, finely and rugosely punctured, uniformly and separately rounded behind; *ventral surface* punctured like elytra but more sparsely; *legs* medium and robust, femora and tibiae punctured like ventrals but a little more closely, posterior tibial spurs the inner slender and pointed, the outer thick and grooved; *tarsi* long and mediumly robust; *claws* short and stout.

Length 9 mm., width 4 mm.

Type in Wellman collection. Type locality, Imperial Valley, California.

Distribution, Meloland, Imperial Valley, May 11, on arrowweed, (J. C. B.) 3 specimens.

This species may be placed near *punctipennis* Lec. and *immaculata* Say., but is easily told from either by its very thick pubescence.

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SECOND INTERNATIONAL CONGRESS OF ENTOMOLOGY.—The Second International Congress of Entomology will be held at Oxford, England, from August 5 to 10, 1912. Further particulars will be announced shortly.

The Executive Committee proposes to find for members of the Congress lodgings in the town, or in rooms in one of the Colleges at a moderate charge; rooms in the Colleges will be available only for men. The Executive Committee invites an early provisional notice of intention to join the Congress, in order to be able to make the arrangements for the necessary accommodation.

The Proceedings of the First Congress are in the press and will be published shortly.

All communications and inquiries should be addressed to the General Secretary of the Executive Committee, Dr. Malcolm Burr, care of the Entomological Society of London, 11 Cavendish Square, London, W., England.

# ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

TO CONTRIBUTORS.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, four weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form and without covers, will be given free, when they are wanted; if more than twenty-five copies are desired, this should be stated on the MS. The receipt of all papers will be acknowledged. Proof will be sent to authors for correction only when specially requested.—Ed.

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PHILADELPHIA, PA., JANUARY, 1912.

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The Second International Entomological Congress will be held in Oxford, England, next summer. Owing to the distance of the place of meeting from this country, those persons thinking of attending will probably wish to consider ways and means and make their plans at an early date. The meeting will be held August 5th to 10th, the first Congress in Brussels, Belgium, having been held from the 1st to the 6th of August. The First Congress was a decided success, and from present indications the Second Congress will prove even more important. The attendance from America at the First Congress was small as might have been expected, on account of the distance and expense of the journey. Americans should take a greater interest in the coming Congress and see that this great continent is well represented. All those interested in the study are eligible for membership and we hope to see a much larger attendance from this side of the Atlantic this year. It will be possible to see the great collections of England under very favorable circumstances and to make the acquaintance of our fellow workers of Europe. Make up your mind to go. You will have a fine time, an intellectual treat and a warm welcome at Oxford. The expense need not be great. It will be possible to attend the Congress for about \$150, or as much more as you care to expend if you travel further while abroad.—H. S.

## Entomological Literature.

COMPILED BY E. T. CRESSON, JR., AND J. A. G. REHN.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), excluding Arachnida and Myriapoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species, will be recorded. The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published, and are all dated the current year unless otherwise noted. This (\*) following a record, denotes that the paper in question contains description of a new North American form.

For record of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington.

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3. The American Naturalist.—4. The Canadian Entomologist.—5. Psyche, Cambridge, Mass.—7. U. S. Department of Agriculture, Bureau of Entomology.—8. The Entomologist's Monthly Magazine, London.—9. The Entomologist, London.—10. Nature, London.—11. Annals and Magazine of Natural History, London.—13. Comptes Rendus, Societe de Biologie, Paris.—14. Proceedings, Zoological Society of London.—18. Ottawa Naturalist.—22. Zoologischer Anzeiger, Leipzig.—24. Berliner Entomologische Zeitschrift.—35. Annales, Societe Entomologique de Belgique.—38. Wiener Entomologische Zeitung.—40. Societas Entomologica, Zurich.—43. La Cellule.—44. Verhandlungen, K. k. zoologisch-botanischen Gesellschaft in Wien.—84. Entomologische Rundschau.—86. Annales, Societe Entomologique de France, Paris.—89. Zoologische Jahrbucher, Jena.—92. Zeitschrift fur wissenschaftliche Insekten-biologie.—123. Bulletin, Wisconsin Natural History Society, Milwaukee.—166. Internationale Entomologische Zeitschrift, Guben.—184. Journal of Experimental Zoology, Philadelphia.—186. Journal of Economic Biology, London.—193. Entomologische Blatter, Nurnberg.—216. Entomologische Zeitschrift, Stuttgart.—218. Mikrokosmos. Zeitschrift fur die praktische Betatigung aller Naturfreunde, Stuttgart.—290. Biological Series, Michigan Geological and Biological Survey, Lansing.—293. Spolia Zeylanica, Colombo, Ceylon.—313. Bulletin of Entomological Research, London.—324. Journal of Animal Behavior, Cambridge, Mass.—341. Archiv fur Rassen- u. Gesellschafts-Biologie, Leipzig.—346. Fauna Exotica, Mitteilungen aus dem Gebiete der exotischen Insektenwelt, Frankfurt am Main.—350. Bulletin from the Labo-

ratory of Natural History of the State University of Iowa, Iowa City.—**351**. Zeitschrift für Allgemeine Physiologie, Herausgegeben von Max Verworm, Jena.—**352**. Revue Critique de Paleozoologie, Organe Trimestrel, Paris.—**353**. Arbeiten aus den Zoologischen Instituten der Universität Wien.

**GENERAL SUBJECTS.**—**Gregory, J. W.** The scientific misappropriation of popular terms, **10**, 1911, 7.—**Hoffman, F.** Noctambulas entomologicus, **216**, 1911, 175-176.—**Manders, N.** An investigation into the validity of Mullerian and other forms of mimicry, with special reference to the islands of Bourbon, Mauritius, and Ceylon, **14**, 1911, 696-749.—**Meunier, F.** Paleozoologie Insectes (Reviews). Fossil insects and crustaceans from Florissant, Colorado, by T. D. A. Cockerell, **352**, 1911, 210-212.—**Sasse, E.** Zur physiologie des nervensystems der insekten (Nach versuchen an der larve des hirschkafer [Lucanus cervus]), **351**, xiii, 69-104.—**Simpson, J. J.** Entomological research in British West Africa. Hints for collectors, **313**, ii, 187-240.—**Stiles, C. W.** The article 30 (g) of the international rules of zoological nomenclature, **38**, xxx, 202.—**Turner, C. H.** Literature for 1910 on the behavior of spiders and insects other than ants, **324**, 1911, 401-412.—**White, J. C. E.** On the killing of flies, bees, &c., by wasps, **8**, 1911, 260.

**APTERA AND NEUROPTERA.**—**Anon.** Von ameisenlowen, **218**, v, 164-166.—**Hoffman, R. W.** Ueber bau und funktion der dorsalkeule von *Corynephorja jacobsoni*, **22**, 1911, 382-391.—**Lozinski, P.** Ueber die malpighischen gefasse der Myrmeleonidenlarven als Spindrusen, **22**, 1911, 401-417.—**Meissner, O.** Ameisen und ameisenlowen, **40**, xxvi, 59-60.—**Muttkowski, R. A.** Studies in Tetragoneuria (Odonata), **123**, 1911, 91-34 (\*) (cont.).—**Shull & Carriker.** A biological survey of the sand dune region on the south shore of Saginaw Bay, Michigan. Thysanoptera, Mallophaga, **290**, iv, 177-216, 233-242 (\*)—**Wasmann & Holmgren.** Tabelle der Termitophya- und der Xenogaster-Arten, **22**, 1911, 428-429.

**ORTHOPTERA.**—**Kheil, N. M.** Die Finot'sche Orthopteren-sammlung in Paris, **166**, 1911, 203-204, 213-215.—**Meissner, O.** Biologische beobachtungen an *Dixippus morosus*, Nachtrag, **216**, xxv, 185-186 (cont.).—**Shull, A. F.** A biological survey of the sand dune region on the south shore of Saginaw Bay, Michigan, **290**, iv, 217-231.

**HEMIPTERA.**—**Collinge, W. E.** On the locomotion and length of life of the young of *Pulvinaria vitis* var., *ribesiae*, **186**, vi, 139-142.

**LEPIDOPTERA.**—**Ashworth, J. H.** Zoology at the British As-

sociation. Mimicry in African butterflies and moths. The scent patches of Lepidoptera, **10**, 1911, 26-27.—**Barnes & McDunnough**. On certain *Olene* species, **5**, xviii, 157-159 (\*).—**Bohm, L. K.** Die antennalen sinnesorgane der Lepidopteren, **353**, xix, 219-246.—**Chittenden, F. H.** The fig moth (*Ephestia cantella*), **7**, Bull. No. 104, 1-40.—**Dognin, P.** *Heteroceres* nouveaux de l'Amérique du Sud, Fasc. III, 66 pp.—**Fassl, A. H.** Die vertikale verbreitung der Lepidopteren in der Columbischen Central-Cordillere, **346**, i, 24-26 (cont.).—**Gibson, A.** Fauna Ottawaensis. Order Lepidoptera: subfamily Geometroidea, **18**, 1911, 105-112.—**Green, E. E.** On the occasional luminosity of the beetle "*Harmatelia bilinea*, **293**, vii, 212-214.—**de Meijere, J. C. H.** Ueber getrennte vererbung der geschlechter, **341**, viii, 553-603.—**Michael, O.** Beobachtungen ueber vorkommen und lebensweise der Aguasarten des Amazonasgebietes, **346**, i, 21-23.—**Mitterberger, K.** Zur biologie von *Depressaria heydenii*, **92**, vii, 285-287. Abnormalitäten in der begattung einiger microlepidopteren, **166**, 1911, 204-206.—**Rau, P.** Fluffy *Cecropia cocoons*, **5**, xviii, 168-170.—**Reiff, W.** Experimente an ueberwinternden Lepidoptera-puppen, **92**, vii, 267-270 (cont.).—**Schaus, W.** New species of *Heterocera* from Costa Rica.—**XI**, **11**, viii, 577-602.—**Schulze, P.** Die nackengabel der Papilionidenraupen, **89**, xxxii, 181-244.—**Smyth, E. G.** Report on the fig moth in Smyrna, **7**, Bull. No. 104, 41-65.—**Srdinko, J.** Ueber die lebensweise und die zucht von *Agrotis candelisequa*, **166**, 1911, 217-219.—**Wolley Dod, F. H.** Further notes on Alberta Lepidoptera, **4**, 1911, 361-369 (cont.).

**DIPTERA.**—**Alexeieff, A.** Sur les cercomonadines intestinales de *Calliphora erythrocephala* et de *Lucilia* sp., **13**, 1911, 379-382.—**Bolsius, H.** Sur la structure spiralee ou discoide de l'elemente chromatique dans les glandes salivaires des larves de *Chironomus*, **43**, xxvii, 77-86.—**Doane, R. W.** *Tipula fallax* and others, **5**, xviii, 160-166 (\*).—**Morgan, T. H.** An attempt to analyze the constitution of the chromosomes on the basis of sex limited inheritance in *Drosophila*, **184**, 1911, 365-412.—**Patterson, T. L.** Notes on a Sarcophagid found in a turtle, **5**, xviii, 173-174.

**COLEOPTERA.**—**Bickhardt, H.** Neue Histeriden aus Afrika und Sudamerika, **193**, vii, 206-217.—**Bowditch, F. C.** Further notes on *Diabrotica*. No. II, **4**, 1911, 386-389 (cont.).—**Champlain, A. B.** Notes on Coleoptera from Connecticut, **5**, xviii, 170-173.—**Collins, J.** Notes on the early stages of *Haemonia appendiculata*, **8**, 1911, 248-250.—**Gahan, C. J.** On some recent attempts to classify the Coleoptera in accordance with their phylogeny, **9**, 1911, 348-351.—**Gounelle, E.** Liste des Cerambycides de la region de Jatahy, Etat

de Goyaz, Brasil, **86**, 1911, 1-150.—**Heikertinger, F.** Zur praxis des kaferfanges mit dem katscher, **38**, xxx, 227-233.—**Kerremans, C.** Remarques synonymiques sur quelques especes du genre *Cyphogastra*, **35**, 1911, 294-297.—**Kleine, R.** Biologisches uber den schwarzen Aaskafer (*Phosphuga atrata*), **193**, vii, 193-199.—**Lund, E. J.** On the structure, physiology and use of photogenic organs, with special reference to the Lampyridae, **184**, 1911, 415-468.—**Mangan, J.** The occurrence of *Necrobia* and *Dermestes* in cotton bales, **186**, vi, 133-138.—**Netolitsky, F.** Die parameren und das system der Adephega (*Caraboides*), **44**, 1911, 221-239.—**Norton, A. H.** The potato beetle (*Doryphora decemlineata*) eating the eggs of its kind, **4**, 1911, 385.—**Nusslin, O.** Phylogenie und system der borkenkafer, **92**, vii, 271-278 (cont.).—**Ohaus, F.** Neue gattungen und arten der Dynastidengruppe Phileurini, **84**, 1911, 169-171.—**Rungius, H.** Ueber die physiologische bedeutung des kaumagens von *Dytiscus marginalis*, **22**, 1911, 442-446.—**Santschi, F.** Une nouvelle espece d'Eciton, **24**, lvi, 113.—**Strohmeyer, H.** Die familie der Platypopiden und ihre einteilung, **193**, vii, 217-218.—**Wickham, H. F.** A list of the Coleoptera of Iowa, **350**, vi, No. 2, 1-40.

**HYMENOPTERA.**—**Allard, H. A.** Some experimental observations concerning the behavior of various bees in their visits to cotton blossoms. II, **3**, 1911, 668-685.—**Cockerell, T. D. A.** Records of bees, **4**, 1911, 389-391 (\*). Descriptions and records of bees.—XXXIX, **11**, viii, 660-673 (\*).—**Cushman, B. A.** Notes on the peach and plum slug (*Caliroa amygdalina*), **7**, Bull. No. 97, pt. V.—**Girault, A. A.** Miscellaneous notes on the Hymenoptera Chalcidoidea: The genera *Arthrolytus*, *Horismenus*, *Microgaster*, **4**, 1911, 370-377 (\*).—**Hormuzaki, F.** Die systematische und morphologische stellung der bukowiner foremen von *Melitaea aethalia*, und *aurelia*, **92**, vii, 261-267.—**Schmidt, A.** Neue Aphodiinen und eine synonymische bemerkung, **40**, 1911, 55-56.—**Schmiedeknecht, O.** Opuscula Ichneumonologica. Fasc. XXIX, pp. 2241-2322.—**Schulz, W. A.** Grabwespen-Typen *Tourniers*, *Brulles*, *Lepeletiers* und *Schencks*, **40**, xxvi, 57-59 (cont.).—**Turner, R. E.** Notes on fossorial Hymenoptera.—V., **11**, viii, 602-624.—**Wheeler, W. M.** Pseudoscorpions in ant nests, **5**, xviii, 166-168. Literature for 1910 on the behavior of ants, their guests and parasites, **324**, 1911, 413-429.

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**OPHIONINAE.**—A REVIEW.—In one of the latest fascicles of the *Genera Insectorum*, namely Fascicule 114me, received at the Smithsonian Institution, October 12, 1911, and containing 100 pages and 2 plates, Mr. Gy. V. Szepligeti treats of the group of Ophioninae which in his

opinion have a spindle shaped abdomen and for which he proposes to use Foerster's term Mesochoroidae.

Of the Ashmeadian groups Mr. Szepligeti treats the Plectiscini, (omitting the available genera *Hambergiella* Roman, *Mischoxorides* Ashmead, *Clepticus* Haliday, *Symphylus* Foerster, *Acroblapticus* Schmiedeknecht, *Campothreptus* Foerster, *Zarhynchus* Ashmead, *Rhynchothyrus* Ashmead, and *Grypocentrus* Ruthe); the Mesochorini, (omitting *Thymaris* Foerster, which he probably holds with others as belonging to the Tryphoninae and *Edrisa* Cameron); the Campoplegini excepting the genera with compressed abdomen, (omitting *Phobocampa* Thomson, *Paurolexis* Cameron, *Enytus* Cameron, *Neobosmina* Cameron, and *Dusona* Cameron); the Banchini, which he would place in the Pimplinae near Lissonotini, (omitting *Agathilla* Westwood and *Narvaia* Ashmead); the Paniscini, which he says belongs to the Tryphoninae, (omitting *Bucheckerius* Schulz and *Paropheltes* Cameron); the Hellwigini (omitting *Diamon* Gistel); the Nesomesochorini which he persistently misspells as Neomeschorinae and which he holds belongs to the Tryphoninae, (in this view the writer cannot concur as the *Nesomesochorus* Ashmead is almost morphologically identical with *Nonnus* Cresson and should be placed near *Zachresta* Foerster according to present day classifications); and the Megacerinae a group not in Ashmead's classification and held by Szepligeti to belong to the Tryphoninae.

No attempt is made in the work under consideration to bring up to date the first part of the Ophioninae published by the same author, so the available genera omitted from that part are not accounted for—these genera are *Odontagrypon* Cameron in the Anomalini, *Ophiononeura* Cameron, *Enicospilus* Stephens and *Genophion* Felt in the Ophionini and *Hiatensor* Brues and *Protoheltwigia* Brues of the Ophioninae.

The chief feature of this classification is the attempt to treat the Ophioninae with a more or less fusiform abdomen and usually round propodeal spiracles as a separate group from those having a compressed abdomen and with the propodeal spiracles usually elongate. In effect this is to apply Foerster's division of the Campoplegini to the whole Ophioninae. Inasmuch as these characters are of doubtful value as a means to a definite end even in the Campoplegini, and owing to the fact that there are numerous examples of intermediates between completely compressed abdomen and fusiformly compressed abdomen and between round and elongate propodeal spiracles, the reviewer is of the opinion that the present classification does not clear up the situation, but makes the classification more unsatisfactory than ever. Are not the difficulties attendant on separating Ichneumonidae into groups through the use of the depression or compression of the abdomen great enough without

again dividing the compressiventres into groups on the degree of compression! To pursue such a course it would seem is to bring on distraction.

In the "Limmerinae" the customary neglect of the Foerster collection is manifest and as usual no reason is given for this procedure. Granting that the Foerster collection of Campoplegini is still in existence our European colleagues could do a great service by consulting it and reconciling the species on which the genera without geno-types were based with the latest facts, to the end that Foerster's genera without species would have species placed in them. It is greatly to be regretted that this latest classification still leaves us in the dark with reference to the genera of Foerster without a species.

The zoogeographical arrangement of the species is convenient and helpful as in other parts done by Mr. Szepliget. It were well if this arrangement were adhered to throughout the Genera Insectorum. For example the Chalcididae part would have been made useful had the species been divided into zoogeographical regions.

Some corrections and changes are called for—to wit:—page 11, *Biolysa* should read *Biolysia*; page 12, *Canidia* Holmgren is certainly preoccupied in the Coleoptera as correctly held by Ashmead; page 13, the genotype of *Hyposoter* is *H. parorgyiae* Viereck and of *Horogenes* the type is *H. discoocellellae* Viereck. Both of these genera may be distinguished from *Casinaria* by the shorter propodeum which hardly extends beyond the base of hind coxae and does certainly not surpass the basal third of the hind coxae; there are other differences, but this we hold to be the most important—hence we are opposed to *Horogenes* and *Hyposoter* as being synonymous with *Casinaria*. As the genotypes of *Horogenes* and *Hyposoter* were not published until 1910 they probably were not known to Szepliget before he finished his paper; page 15, the genotype of *Limmeria* Holmgren cannot be a species congeneric with *Eulimneria* Schmiedeknecht so the reviewer in order to make as little confusion as possible chooses (*Ichneumon*) *Limmeria longipes* (Muller) Gravenhorst Thomson, as type of *Limmeria*; the type chosen for *Olesicampe* Foerster is *Ichneumon longipes* Muller, thus *Limmeria* and *Olesicampe* are isogenotypic and *Olesicampe* becomes the name to be used in place of the preoccupied *Limmeria*, making *Limmerium* unnecessary. *Eulimneria* is not congeneric with *Olesicampe* and should not be placed as synonymous with the same; page 21, as the genotype of *Phaedroctonus* Foerster is not included, its being a synonym of *Nemeritis* Holmgren is questioned; page 30, *Tranosema* is preoccupied by the *Tranosema* (Foerster) Thomson, and therefore may be called *Zatranosema* new name; page 33, the synonymy being correct *Eriborus* must replace *Anilastus*; page 38, *Nythobia* and *Diadegma*

have had species placed to their credit; page 39, *Anempheres* had a species assigned to it early last year (1911), *Idechthis* is misspelled; page 40, *Asinamora* is misspelled; page 42, *Campoletis* had a species assigned to it early last year (1911), *Amelcoctonus* had a species assigned to it by Ashmead in the 1900 edition of the New Jersey List of Insects; page 55, *Aperileptus* is misspelled; page 65, *Aniseres pallipes* is misspelled; page 68, the type of *Helictes* Haliday is the same as that of *Myriarthrus* Foerster, these genera are therefore synonymous, but not the same as *Megastylus* Schiodte, *Helictes* being the older genus replaces *Myriarthrus* Foerster; page 70, *Nesomesochorini* and *Nesomesochorus* are misspelled; *Cidaphus* Foerster and *Plesiophthalmus* Foerster are isogenotypic, therefore *Cidaphus* replaces *Plesiophthalmus* Foerster which is preoccupied, Ashmead's *Plesiophthalmus* is very likely not congeneric with *Cidaphus* Foerster; page 76, *Parabates* (Foerster) Szepligeti is preoccupied by *Parabates* (Foerster) Dalla Torre and should be replaced by *Opheltoideus* Ashmead; page 84, *Ceratogastra* is misspelled; page 85, *Xenoschesis* and *Polycinctus* are misspelled.

The author is to be congratulated upon having finished the Ophioninæ and it is to be hoped that in a supplementary part he will reconcile the Foerster collections in this subfamily at least with his work as it now stands.—H. L. VIERECK, U. S. National Museum, Washington, D. C.

DAS TIERREICH, 26 Lieferung—IXODIDAE, 169 pp., 1911, by L. G. Neumann. Dr. Neumann's long-deferred part on the ticks has just been issued. It was prepared in 1907 and does not contain species published since the early part of 1908. Yet it will be of the greatest value to the systematist as a summary of the author's well-known "Revision de la famille des Ixodides," and the "Notes." The family is divided into two sub-families, Ixodinæ and Spelæorhynchidæ, the latter for a peculiar mite which is probably more related to Gamasidæ. The Ixodinæ is divided into two sections, Ixodini and Argatini, the latter the Argasidæ of many writers. The genera of Ixodini are arranged in three tribes; Ixodaria (the same as my Ixodini), the Rhipicephalaria (the same as my Rhipicephalini, plus the exotic genus *Hyalomma*), and the Amblyommataria, which includes *Amblyomma*, *Haemaphysalis* and *Dermacentor*. The author correctly places *Boophilus* as a synonym of *Margaropus*, and *Rhipiceptor* as a *Rhipicephalus*, widely separated from *Dermacentor*. *Aponomma* is retained as a valid genus. *Ceratixodes* and *Eschatocephalus* are put as subgenera of *Ixodes*. Our chicken tick, *A. gas munitatus*, is put as a sub-species of *A. persicus*. Altogether 207 species and 40 sub-species are held as valid. In the back is a useful host-list.—N. BANKS, East Falls Church, Virginia.





JAMES H. B. BLAND.

**OBITUARY.****JAMES H. B. BLAND.**

(Portrait, Plate V.)

James H. B. Bland died in Philadelphia, November 12, 1911, in his seventy-ninth year. He was born in North Carolina but, removing to Philadelphia, became one of the organization members of the Entomological Society of Philadelphia, on February 22, 1859. He took an active interest in the Society, serving as Vice-President for two years, 1861-1862, as President for three years, 1863-1865, and was seldom absent from the meetings during the first decade of the Society's existence. His entomological activities were largely aided by Dr. Thomas B. Wilson, that great friend and patron of science in the fifties and early sixties, whose relations to this Society have been recently told in Mr. E. T. Cresson's History of the American Entomological Society.

Bland published seven papers on Coleoptera, all in the *Proceedings of the Entomological Society of Philadelphia*, Vols. i-iv.

A reference to Bland's collecting during these years was recently made in this journal (*ENTOMOLOGICAL NEWS*, October, 1911, p. 354) by Dr. Skinner.

For the last forty years Bland's entomological interests were more spasmodic, although he was an organization member of the Feldman Collecting Social, in December, 1887, and first President. Part of an anniversary address which he delivered to the Social, December 26, 1889, and his portrait were published in a booklet, issued in 1907, in commemoration of the twentieth anniversary of the Social, and to the Social we are indebted for the privilege of reproducing the portrait here.

F. W. TERRY.—Again it is my sad task to advise you of the untimely cutting off of another Entomologist. Mr. F. W. Terry, of the Hawaiian Sugar Planters' Experiment Station, of Honolulu, died in New York, on November 8, 1911, and his body was sent to England by an aunt, Mrs. M. L. Edmondson. He arrived in New York, on October 19th, on his way from his English home to Honolulu, after a vacation taken for the restoration of his health, undermined by a long residence in the tropics. He was quite ill on the steamer com-

ing over, and on his arrival at his hotel his weakness was of so serious a nature that his aunt put him in charge of a physician and a nurse, but a few days later the alarming nature of his case made his removal to a hospital necessary. He was therefore taken to Roosevelt Hospital, where he was attacked by pleuro-pneumonia, and in his enfeebled condition his heart failed rapidly. All efforts to strengthen it were unavailing, and he passed away far from his native land.

Owing to my slight acquaintance with Mr. Terry, I am unable to furnish any biographical data.—J. R. DE LA TORRE BUENO.

---

GEORGE HENRY VERRALL, eminent British Dipterist, died September 16, 1911. He was born February 7, 1848, was a member of the "well known firm of race-course managers and bankers, Messrs. Pratt & Co., and was concerned as auctioneer with the sale of many famous race horses," and member of Parliament for East Cambridgeshire in 1910. He served as President of the Entomological Society of London in 1899. He had planned a series of volumes on the *British Flies*, but lived to complete only two of them, Vol. VIII. Syrphidae, etc. (1901), and Vol V. Stratiomyidae, etc. (1909). Notices of his life are given in the English entomological journals, portraits accompanying those in the *Entomologist* and *The Entomologist's Monthly Magazine* for November.

---

ALBERT HARRISON, whose death on August 28, 1911, is also announced by our English contemporaries, was known for his breeding experiments on Lepidoptera. He was born in 1860.

---

JULES BOURGEOIS, the chief authority on Cantharidae, died in Markirch, Alsace, on July 18, 1911, aged 65 years. On February 22nd last he had been elected an honorary member of the Entomological Society of France.

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ENTOMOLOGICAL NEWS for December, 1911, was mailed November 29, 1911,

# JOURNAL OF ECONOMIC ENTOMOLOGY

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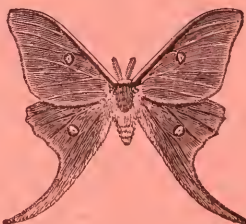
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Vol. XXIII.

No. 2



*S. S. Haldeman 1868.*

PHILIP P. CALVERT, Ph.D., Editor.  
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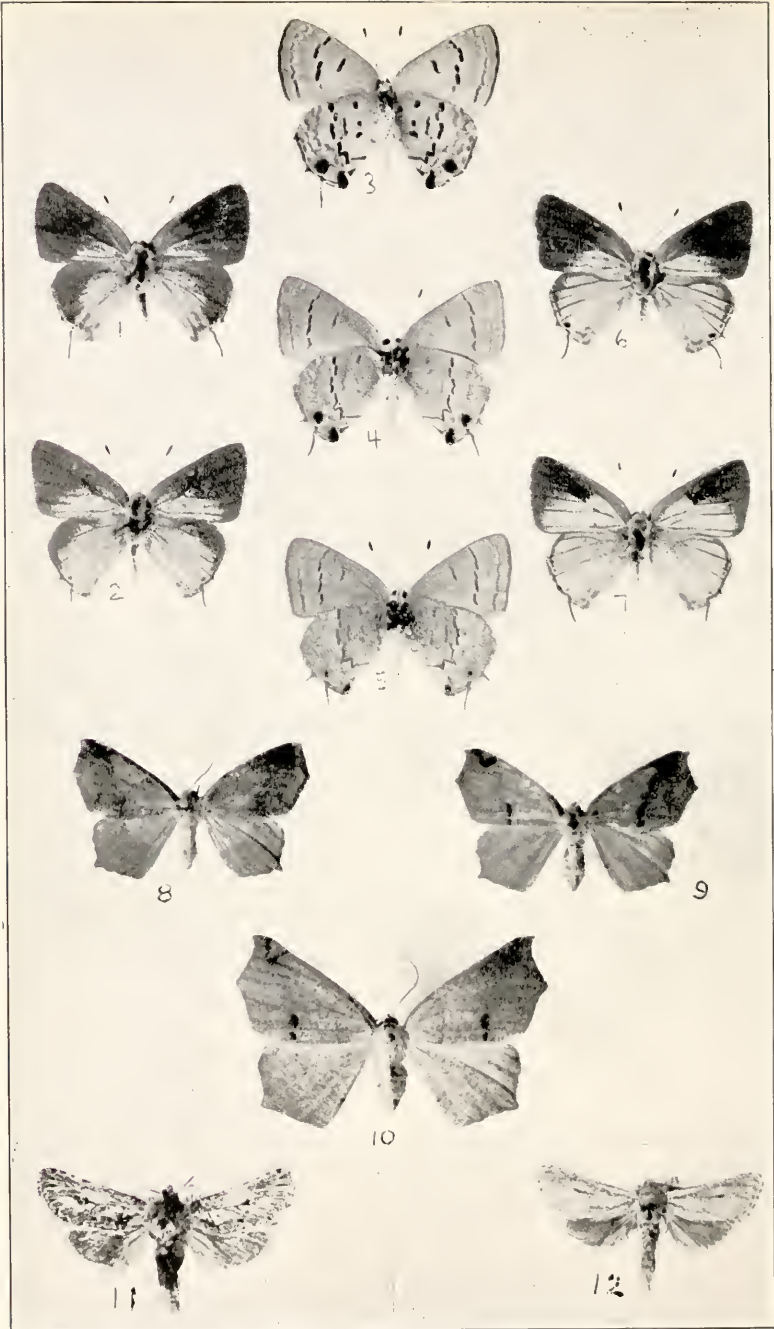
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BARNES AND McDUNNOUGH.

Figs. 1, 4, 6.—*Thecla leda* Edw., ♂, ♂, ♀.  
 Figs. 2, 5, 7.—*Thecla ines* Edw., ♂, ♀, ♀.  
 Fig. 3.—*Thecla clytie* Edw., ♀.  
 Figs. 8, 9.—*Sabulodes sulphurata* Pack., ♂, ♀.

Fig. 10.—*S. sulphurata* form. vern. *fusciferata* Pack.  
 Fig. 11 — *Givira cleopatra* n. sp.  
 Fig. 12.—*G. ethela* N. and D.

# ENTOMOLOGICAL NEWS

AND

## PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XXIII.

FEBRUARY, 1912.

No. 2.

### CONTENTS:

Barnes and McDunnough—Further Remarks on <i>Thecla clytie</i> , <i>leda</i> and <i>ines</i> (Lepid.).....	49	Alexander—Fulton Co. (New York), Tipulidae (Dipt.)—II.....	66
Barnes and McDunnough—On the Spring and Summer Forms of <i>Sabulodes sulphurata</i> Pack. (Lepid.)..	53	Back—Notes on Florida Thysanoptera, with description of a new genus...	73
Barnes and McDunnough—A New <i>Cosid</i> (Lepid.) .....	55	Blatchley—A new species of <i>Dicaelus</i> from Arkansas (Coleop.).....	77
Kellogg and Mann—Mallophaga from Islands off Lower California.....	56	Editorial .....	79
		Notes and News .....	80
		Entomological Literature .....	84
		Doings of Societies .....	89

## Further Remarks on *Thecla clytie*, *leda* and *ines* (Lepid.).

By WM. BARNES, M.D., and J. MCDUNNOUGH, Ph.D.,  
Decatur, Ill.

(Plates VI, figs. 1-7)

In the July number of the ENTOMOLOGICAL NEWS for 1911, p. 293, we are treated to another of those "lumping" articles for which certain of our Californian confreres are becoming quite famous. This time it is three species from the genus *Thecla* which are the objects of attention, and after four pages of comparative tables and three pages of ordinary reading matter, Messrs. Haskin and Grinnell, Jr., arrive, in the final paragraph, at the conclusion that *Thecla clytie* Edw., *leda* Edw., and *ines* Edw. are one and the same species, and that any differences between them are "really so minute" that they consider "even form names a superfluity."

A study of the material in Coll. Barnes has brought us to a slightly different conclusion, viz. that the authors of the above mentioned article have certainly never seen a specimen of the true *clytie*, and most possibly not even of *ines*, and that from a superficial study of a series of *leda* and an attempted comparison of mere descriptions they have considered themselves in a

position to cast doubts upon the work of one of the most careful entomological observers that America has ever produced. Descriptions are at best but feeble reeds to lean upon, and are capable, like statistics, of being twisted to suit the purpose of the moment; with an idea therefore of clearing up some of the doubt which seems to exist concerning these three forms we have prepared a somewhat enlarged photograph, which is reproduced in the accompanying plate, and append further a few remarks on the same.

*Thecla clytie* was described from a female taken by Boll at San Antonio, Texas; it was taken later by Aaron near Corpus Christi, Tex. (Pap. IV, 180); and a single female, captured by Dr. Barnes himself in the same locality, was for a long time the sole representative of this rare species in his collection; recently, however, the receipt of one male and ten females from Brownsville, Texas, has placed us in a position to better judge of its specific value, and we have no hesitation in declaring it to be a thoroughly valid species, belonging in the same group with *leda* but abundantly distinct. It apparently is confined to Southern Texas, and the listing of it from Arizona is probably due to an error of determination. Holland's figure (Butt. Book, Plate XXX, fig. 6) is an excellent representation of the upper side of the female, and in Fig. 3 of our plate we reproduce the under side. The points of difference to *leda* mentioned by Edwards (Pap. II, 24), viz. the *pale blue* of upper side, the *red marginal line* of under side, the *broad red dashes* of the transverse band, and the small *wholly white* outer tail all hold good and are excellent means of separation, notwithstanding Messrs. Haskin and Grinnell's disparaging remarks on the subject. We would further call attention to the entirely different course and general make-up of the discal band of dashes on primaries, which in fresh specimens are bright orange-red.

The male of this species has seemingly never been described; the single specimen before us was unfortunately too worn to include in the plate; as far as we can tell there is a faint trace of blue at the base of primaries and the black sex mark in the

cell is quite distinct; on the secondaries the blue scaling extends from the base and inner margin about midway across the wing and does not exceed an imaginary line drawn from the small outer tail to the base of wing.

Aaron's reference of *clytie* to *adria* Hew., a species from Brazil, can scarcely hold; Hewitson's figure is very poor and bears merely a general resemblance to *clytie*; in the description there are also certain details which do not tally at all with the specimens before us. Wright's remark (Butt. West Coast, p. 209) that *clytie* is but a slightly larger form of *ines* is quite erroneous and not at all applicable to the true species; what species Wright has misidentified as *clytie* it is impossible to say definitely; it may, however, be *ines*, for the *ines* of Wright is the *leda* of Edwards.

*Thecla leda* and *ines* are two forms much more closely allied to each other than to the preceding species; in fact we are in considerable doubt as to whether they should be classed as distinct species or forms of one species; they can readily be separated, as we shall show later, and the differences between them are by no means so minute as our California friends would have us suppose. Racial forms they cannot be, as we have them from identical localities in Arizona, nor are they seasonal variations, for our date labels show that both are taken from July to September. The male genitalia appear practically identical, so the question can only be settled positively by breeding from ova of a known female. It would, however, be foolish, in our opinion, in the present state of our knowledge, to sink one as the synonym of the other; names sunk as synonyms are gradually lost sight of, and before many years we should have some enterprising entomologist describing once more this same form and thus creating a true synonym. One of the main points of difference between *leda* and *ines* has been passed over by the authors of the above-mentioned article, viz. that in *ines* "on secondaries, beyond disk, the gray scales prevail." In fresh specimens of this form the contrast between the dark and light areas on the inner and outer sides of the discal band is very marked, much more so than is shown in our plate,

Fig. 5. Using this as a basis of separation we examined over 100 specimens contained among Dr. Barnes' duplicates and divided them into two groups; we next separated the sexes in each group, a task over which great care must be exercised, for in many males the sex-mark is quite faint, and in certain females, owing to the distribution of blue scales, a dark patch like a male sex-mark appears in the cell,—in doubtful cases recourse must be had to an examination of genitalia. The net result was that in one series we had specimens as represented by our figures No. 1 and No. 6, and in the other series insects corresponding to Nos. 2 and 7; the former are male and female *leda*; the latter the two sexes of *ines*. Even to the casual observer the much greater extent of the blue surface in *ines* on both wings and in both sexes is apparent; naturally slight deviations occur, but it may, we think, be stated as a general rule that in *leda* the blue scaling of primaries in both sexes never extends more than two-thirds along the inner margin and is scarcely to be seen in the cell; on the secondaries in the male sex it never extends upwards along the outer margin beyond the small tail, whilst in the female there is always a distinct dark costal margin extending downwards to about this same tail. In *ines*, on the other hand, the blue on primaries in the male is even more extended than in female *leda*, occupying the basal portion of the cell and approaching close to the anal angle; on the secondaries it extends upwards considerably beyond the small tail. In the female it covers close upon half the primaries and the whole of the secondaries, with the exception of an extremely fine marginal line of black extending from costa half-way to anal angle. Edwards certainly mixed his sexes in the description of *ines*, as Messrs. Haskin and Grinnell rightly surmised; his male is without doubt the true female, and Holland's figure (Plate XXIX, Fig. 35) is also that of the female; what Edwards' female was is a little difficult to tell from the short description; it might be the male of *ines* or even the female of *leda*—this is, however, of no great importance, as it is the first portion of the description which defines the specific name. With regard to Wright's figures, which are

made from atrociously poor specimens and can scarcely be recognized, his figure 327a (Plate XXVIII) is, in the light of our previous remarks, female *leda*, not male *ines*; 327b might be anything, but is probably male *leda*, and 327c is the under side of *leda*, certainly *not* of *ines*.

The amount of red in the bands and spots of under side of *ines* is variable and of no specific value; in typical specimens the transverse lines show very little color and the anal spots are small and dark; other specimens examined showed a considerable amount of orange-red both in bands and spots, seldom however attaining the bright color which is almost invariably present in *leda*.

Of the two forms, *ines* appears to be much the rarer, not more than 20 per cent. of the specimens examined being referable to this species; we possess it from the Huachuca Mts., Chiricahua Mts. and Prescott, Arizona, this latter being the typical locality; *leda* we have from the same localities, and it apparently extends into Southern California, although it has been recorded there under the name of *ines* (Wright, Jour. N. Y. Ent. Soc., XVI, 162).

We should be glad if some of our San Diego collectors would give us the privilege of examining the California specimens, with a view to correct identification, as we have no California material at hand.

---

## On the Spring and Summer Forms of *Sabulodes sulphurata* Pack. (Lepid.).

By WM. BARNES, M.D., and J. McDUNNOUGH, Ph.D.,  
Decatur, Ill.

(Plate VI, figs. 8-10.)

On the evening of May 10, 1911, a fresh female of *Sabulodes furciferata* Pack. was taken at light and about 25 ova obtained the same night before killing the specimen. The larvae hatched in eight days and fed up well on maple, being full grown about the third week in June. At this stage, possibly on account of the excessive heat, the majority suddenly died;

three, however, pupated, the imagines appearing the second week in July. To our surprise the specimens (2 males and 1 female), instead of resembling the parent *furciferata*, were typical representatives of what is at present listed as a good species under the name of *Sabulodes sulphurata* Pack. It is evident that under these two names we have but the spring and the summer forms of a single species.

*S. sulphurata* was described in 1873 (Fifth Rep. Peab. Ac. Sci., p. 79), *S. furciferata* in 1876 (Mon. Geom., p. 559); the reference given in Dyar's list (Fifth Rept. Peab. Ac. Sci., p. 68, 1873) is erroneous and refers to *Goniacidalia furciferata* Pack., an entirely different species. The synonymy will therefore stand:

*Sabulodes sulphurata* Pack.

(a) *form. vern. furciferata* Pack.

It would be interesting to breed ova obtained from *sulphurata* and observe whether the resulting imagines are typical *furciferata*; the species probably hibernates in the pupal stage, in contradistinction to *S. transversata* Dru., which hibernates as ovum. We present figures of the parent *furciferata* and a pair of its progeny, in which latter the striking yellow color is unfortunately not evident. Following are our notes on the larval stages, which, although incomplete, will perhaps prove of some slight value, as we believe nothing of the life history of this species has yet been published.

*Egg*.—Very similar to that of *S. transversata*; when first laid green, turning shortly deep red and finally, before emergence, black.

*Larva, 1st Stage*.—Head, flat and broad, pale red; body pale greenish with a very broad black-brown dorsal band; ventrally dark brown; legs and prolegs pale; tubercles pale with short setae. Length 4 mm.

*2nd Stage*.—Head small, flat, pale brown; body greenish white, cylindrical, with prominent lateral fold; a broad dorsal rosy-brown band, showing traces, principally anteriorly, of two pale subdorsal lines; ventrally brown; claspers broadly fan-shaped, whitish; tubercles very minute, dark brown. Length 12 mm.

*3rd Stage*.—Head flat, pale brown, mottled with darker; body, smooth, cylindrical; dorsum dark purple-brown shading laterally into pale greenish; traces of a geminate pale dorsal stripe on anterior and posterior segments; fairly distinct slightly wavy subdorsal line, and

several wavy lateral lines; ventrally brownish, crossed by several wavy longitudinal lines. Length 18 mm. Breadth 1.5 mm.

*4th Stage*.—Head flat, light or dark brown, strongly marbled with darker; palpi prominent; in a resting position head and prothorax incline dorsally upwards to mesothorax, which is considerably humped and contains two lateral protuberances. Body, cylindrical, smooth, tapering, dorsally dark purplish-brown, marbled, shading into light brown laterally; traces of dark dorsal line, much broken; indistinct light wavy subdorsal line and several similar lateral lines; tubercles small, black; dorsal tubercles on 4th and 5th abdominal segments larger, tipped with white; ventrally pale ochreous to reddish brown with broken dark medio-ventral line and several light wavy lines; prolegs more or less shaded with creamy. Length 27 mm.

*5th Stage*.—Head and prothorax very flat, mesothorax rising more or less abruptly above same and with two large lateral protuberances; remainder of body cylindrical. Head pale to dark ochreous, slightly marbled, with fairly prominent wart at apex of clypeus; prothorax light brown; remainder of body dark gray brown to red-brown, shaded and marbled with lighter; mesothoracic hump often tinged with white anteriorly; traces of a black dorsal line only distinct on thoracic segments; this line is bordered with light ochre, the color showing prominently on the abdominal segments where the black is lacking; several irregular wavy lateral longitudinal lines of a light ochre color, edged with black, all indistinct. Tubercles black, very small, except 11 on 4th and 5th abdominal segments which is larger, conical, and often marked basally with white; ventrally gray-brown, mottled and lined with darker, anterior half usually lighter than posterior portion; legs and prolegs of body color, often tinged basally and inwardly with whitish. Length 32 mm.

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## A New Cossid (Lepid.).

By WM. BARNES, M.D., and J. McDUNNOUGH, Ph.D.,

Decatur, Ill.

(Plate VI, figs. 11, 12.)

### *Givira cleopatra* n. sp.

♂.—Front, collar, and thorax composed of mixed black and white scales, giving a general grizzled gray appearance; abdomen similar, with slightly more white scales and a bifurcate anal tuft.

Primaries white, thickly sprinkled with gray, which predominates in apical portion beyond cell and around the anal angle; white color confined to a large patch in the cell, a patch extending between cubital and second anal veins from base of wing to shortly before vein Cu<sub>2</sub>, and

three irregular subterminal blotches between veins Cu<sub>2</sub> and M<sub>2</sub>; a series of black dots along costa, increasing in size near apex; a small black patch at origin of veins Cu<sub>1</sub> and M<sub>3</sub> and a similar one on second anal vein obliquely below it; inner margin with several fine black strigae; on outer margin a series of black dashes, of which the apical ones are perpendicular to the margin, that between veins M<sub>1</sub> and R<sub>5</sub> being the longest and most prominent; the lower ones are oblique and bordered inwardly with white. Secondaries dark gray, lighter at base, with traces of marginal row of white spots; fringes on both wings checkered white and gray.

Beneath much as above; white subterminal patches less prominent; terminal black dashes very clear; secondaries, lighter than above, white, sprinkled heavily with gray; veins bordered terminally with a series of black dots.

Expanse, 29 mm.

*Habitat*.—Eureka, Utah (T. Spalding). 1 ♂. Type Coll. Barnes.

Somewhat similar to our species *palmata*, but differing in venation. As it was late to include a figure in our revision of North American Cossidae, just published, we reproduce it on the accompanying plate, together with *ethela* N. & D., of which species the above mentioned work only figures a very poor specimen, the only available one at the time.

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### Mallophaga from Islands off Lower California.

By V. L. KELLOGG and W. M. MANN, Stanford University, California.

The following determinations and descriptions of new species of bird-infesting Mallophaga are made from a collection taken by R. C. McGregor in 1897 from birds of the islands off the coast of Baja California. The determinations of the bird-hosts were made by McGregor, an accomplished ornithologist. The parasites were taken from the fresh bird specimens.

The collection is of special interest on account of the relation of the host species to the birds of the Galapagos Islands, from which two collections of Mallophagan parasites have been studied at Stanford (see "Mallophaga from Birds of the Galapagos Islands," by Kellogg and Kuwana, in Proc. Wash. Acad.

Sci., Vol. IV, pp. 457-499, Sept., 1902; and "A Second Collection of Mallophaga from Birds of the Galapagos and Revillagigedo Islands and Neighboring Waters," by Kellogg, in Trans. Amer. Ent. Soc., Vol. XXXII, pp. 315-324, Nov., 1906). The birds of the Galapagos Islands are believed to be descendants, either unmodified, or modified to be new species and new genera, of species of the western coast of northern South America, Central America and Mexico.

In the light of this presumption and in the light of the fact that those Mallophagan species found so far on more than one host species are usually found on related host species, the comparison of a Mallophagan collection from birds of the West Coast of America (south of the United States) with the full collections already made from the Galapagos birds might be expected to turn up a number of interesting cases of host distribution. And this expectation finds some realization in the present opportunity.

Of the Mallophagan species included in this collection from birds of the islands off Baja California, fifteen have been also recorded from birds of the Galapagos Islands. Among these cases of common occurrence the taking of *Docophorus speotyti* Osborn, recorded from *Speotyto rostratus* and *Speotyto hypogaea* from Baja California, from *Speotyto* sp. of the Galapagos Islands is of special interest, as is the taking from *Anous stolidus* of the Galapagos Islands of *Colpocephalum milleri* recorded from *Anous ridgwayi* from Baja California.

***Docophorus acanthus* Giebel.**

A single specimen from *Haematopus bachmanni*, San Benito Island.

***Docophorus lari* Denny.**

Two males from *Aechmophorus occidentalis*, Ensenada Isl.

***Docophorus platystomus* Nitzsch.**

Two specimens from *Haliaeetus leucocephalus*, Todos Santos Island.

***Docophorus californiensis* Kellogg var. *quadripustulatus* var. nov.**

In the collection are four specimens that differ markedly from typical *californiensis* in having most of the hairs on the

abdomen distinctly pustulate and regularly arranged, four in a row. Equidistant on each side of the row, close to the posterior margin of the segment is an additional pustulate hair. On the sixth segment there are only two central hairs, and on the penultimate and last segments only the marginal hairs are pustulate. This variety is somewhat larger than the typical form (males 1.90 mm.). One male and one female from *Pipilio carmani*, Socorro Island; two specimens from *Conurus holochlorus*, Socorro Island.

**Docophorus breviantennatus** Piaget.

Three males and two females referable to this species, from *Phaethon aethereus*, Socorro Island. Another male from *Sula gossi*, San Benidict Island. *Docophorus breviantennatus* approaches most closely *D. validus*, but the connected dorsal bands of the former will at once distinguish it.

**Docophorus speotyti** Osborn.

Five specimens from *Speotyto rostratus*, Clarion Island, and others from *Speotyto hypogaec*, San Benito Island.

**Docophorus insolitus** Kellogg.

Two males from *Ptychoramphus aleuticus*, San Geronimo Island.

**Docophorus montereyi** Kellogg.

A single specimen from *Brachyramphus hypoleucus*, San Benito Island.

**Docophorus** sp. juv.

Two specimens, too young to identify positively, probably undescribed, from *Haematopus frazeri*, San Martin Island.

**Nirmus faralloni** Kellogg.

One specimen from *Arenaria melanocephala*, San Geronimo Island.

Two specimens from *Larus heermanni*, San Geronimo Island.

**Nirmus latifasciatus** Piaget.

One specimen from *Haematopus frazeri*, San Martin Island.

**Nirmus gloriosus** Kellogg and Kuwana.

One male and two females from *Sterna anaetheta*, Socorro Island.

**Nirmus euprepes** Kellogg and Chapman.

Male and female from *Arenaria melanocephala*, San Martin Island.

**Nirmus caracarensis** n. sp.

Three males from a caracara, *Polyborus lentosus*, Guadeloupe Island. This specimen most closely approaches *N. splendidus* Kellogg, but differs in the much smaller size, the broadly rounded clypeus, and the markings. It is perhaps related both to *splendidus* and to *N. discocephalus* Nitzsch, and the three species form a group distinguished by the broad abdomen and rounded head. The three species infect raptorial birds. *Splendidus* was found on *Polyborus cheriway*.

*Description of the male*.—Body, length 1.76 mm.; width .73 mm.; form broad, color whitish with brown markings, thorax entirely brown, head broad and rounded and, except clypeus and signature, brown.

Head, length .57 mm.; width .48 mm.; forehead broad between trabeculae, sides converging, straight to near front, which is broad and rounded; forehead with five short separated hairs on each side, trabeculae large for *Nirmus*: antennae short, uncolored; eye large, prominent with a long hair, and a fine prickle just behind it; temporal margins evenly rounded, with two long hairs; occipital margin concave; whole head except the signature and clypeus, brownish; antennal bands narrow, a little darker than the general color of head, running entirely around frontal margin of head, paler in front; trabeculae uncolored.

Prothorax short, with one hair in posterior angles; segment wholly colored; metathorax short, the whole thorax about one-half as long as head, and obtusely angulated on abdomen; two very long hairs on lateral margin, and posterior margin with two long hairs on each side; segment entirely grown; legs pale.

Abdomen ovate; posterior angles of segments 1 and 2 without hairs, segments 3 and 4 with a single hair, succeeding segments with two hairs; dorsal surface of each segment with about fifteen long hairs arranged in a single transverse row; posterior segments with fewer hairs, whitish with an uninterrupted transverse brown blotch on each segment; segment 9 rounded behind, with numerous longish hairs; uncolored except where the chitinized genitalia show through, the genital blotch not distinct.

**Nirmus melanococcus** Carriker.

Two females from *Mimodes greysoni*, Socorro Island. *Melanococcus* was described from a single female collected on

*Piranga bidentata sanguinolenta* in Costa Rica. Our specimens have a head much longer than that figured by Carriker, and may possibly be a distinct variety, but the *brachythorax* group (to which this species belongs) is at present too little known to justify the giving of names in it on slight differences.

***Nirmus lucidus* n. sp.**

One adult female and two immature specimens from the marbled godwit, *Limosa fedoa*, Playa Maria Bay. This species is close to Osborn's *N. cordatus*, but the more general elongate form of *lucidus* will at once separate it from that species.

*Description of female*.—Length 2.2 mm.; width .6 mm.; elongate; color clear, with translucent brownish yellow markings; rather Lipeuroid in general appearance.

Head, length .45 mm.; width .43 mm.; pale brownish yellow; sides slightly convex, and broadly rounded front; clypeus flatly rounded in front; trabeculae very small, colorless; antennae short and thick, colored same as head; eye flat, colorless, with one fine bristle; light-colored antennary bands converging in front, the space between them clearer but with darker triangular mark; mandibles light brown in color.

Prothorax small, sub-quadrangular, sides convex; narrow light brownish-yellow lateral bands almost unite at middle of posterior margin; coxal markings showing through as brownish yellow blotches. Metathorax larger, form similar to that of prothorax, except for obtusely angulate posterior margin; marginal bands distinct, though faintly colored; hairs on side very weak; coxae showing through as brownish yellow blotches; legs stout, tibiae brownish yellow, femora with large yellow spot, otherwise colorless.

Abdomen elongate elliptical, widest at fourth segment; posterior angles of segments little rounded, with a single marginal hair except on the first two segments; dorsum with short scattered hairs; color clear without marginal bands; transverse blotches light yellowish brown in color, extending width of segments, not interrupted; last segment with very faint blotch.

***Nirmus nesiotus* sp. nov.**

One female from *Haematopus bachmani*, San Martin Island. This new *Nirmus* approaches Piaget's *coniceps* and Carriker's *rhamphasti*, the first from a hornbill, the other from a toucan. It is rather remarkable to find such closely related Mallophagous species on birds as widely separated as to relationship.

The new species is closest to *rhamphasti* but can be distinguished from it by the more elongate form, the testaceous prothoracic bands, only slightly interrupted at middle, the more elongate head, and the head markings.

*Description of female*.—Body, length 2 mm., width .66 mm., moderately robust, for the most part clear with distinct testaceous markings and a piceous brown abdominal margin.

Head, length .75 mm.; width .48 mm.; front conical, broad, slightly concave at apex; sides slightly concave with four short hairs; clypeus clear, slightly emarginate in front; trabeculae short, colorless; antennae colorless, short, of medium thickness, the second segment longest; temples little rounded, expanded slightly anteriorly and posteriorly, with two hairs; eye prominent, colorless, with bristle; occiput concave; antennal bands broad, faintly colored; mandibles reddish brown; a small black ocular fleck; whole head slightly testaceous, except oval fossae and part between occipital bands.

Prothorax short, sides rounded, without hairs, blackish brown lateral bands, extending around on posterior margin and almost meeting; coxal bands visible; interior of segment same color as head; metathorax larger, pentagonal, posterior margin broadly angulated on abdomen; three hairs at posterior angles; sides convex, widely diverging; black-brown lateral bands curving inward; legs pale with golden tinge at end of tibiae.

Abdomen oval, colorless except faint median blotches on last three segments and sharply defined marginal band strongly piceous to brown, fainter on last two segments; each segment except the first two with two long hairs at outer angle; dorsum with long slender hairs.

**Nirmus actophilus** Kellogg and Chapman.

Two males from *Aphriza virgata*, San Geronimo Island.

**Nirmus complexivus** Kellogg and Chapman.

One specimen from *Limosa fedoa*, Playa Maria Bay.

**Nirmus ductilis** Kellogg and Chapman.

One specimen from *Amphispiza belli*, San Martin Island.

**Nirmus maritimus** Kellogg and Chapman.

Two specimens from *Ptychoramphus alcuticus*.

**Nirmus ochropygus** Nitzsch.

Male and female from *Haematopus frazeri*, San Martin Island.

**Nirmus felix** Giebel.

One specimen from *Larus heermanni*, Todos Santos Island.

**Philoceanus becki** Kellogg.

One female from *Carpodacus amplus*, Guadeloupe Island.

The specimen is a little larger than the type, but agrees in all other respects. The type was taken from *Procellaria tethys*, on Wenman Island of the Galapagos group. Our specimen may be a straggler, though we have no records of *Procellaria* in this collection.

The abdomen of this specimen, and of the type female, is much more distinctly margined than is shown in the original drawing of the species. (The size might make this worthy of varietal name.)

**Giebelia mirabilis** Kellogg.

Four specimens from *Puffinus opisthomelas*, Natividad Island.

**Lipeurus baculus** Nitzsch.

One male from *Columbigallina passerina socorroensis*, Socorro Island.

**Lipeurus confidens** Kellogg.

Three specimens from *Diomedea nigripes*, Magdalena Bay; one from *Diomedea immutabilis* near San Geronimo Island.

**Lipeurus concinnus** Kellogg and Chapman.

Four specimens from *Oceanodrama macrodactyla*, Guadeloupe Island. One specimen from *Diomedea immutabilis*, near San Geronimo Island.

**Lipeurus diversus** Kellogg.

Four females from *Oceanodrama macrodactyla*, Guadeloupe Island.

**Lipeurus gracilicornis** var. **major** Kellogg.

Two females from *Fregata aquila*, San Benedicte Island.

**Lipeurus faralloni** Kellogg.

Two specimens, too young to identify positively, probably undescribed, from *Haematopus frazeri*, San Martin Island.

**Lipeurus fuliginosus** Tasch.

Three specimens from *Puffinus opisthomelas*, Natividad Island.

**Lipeurus testaceus** Tasch.

Two specimens from *Puffinus opisthomelas*, Natividad Island.

**Lipeurus limitatus** Kellogg.

One female from *Oceanodrama macrodactyla*, Guadeloupe Island.

**Eurymetopus taurus** Nitzsch.

Two males from *Diomedea nigripes*, Magdalena Bay; one female and one immature specimen from the same albatross species, off Cape San Lucas. Another female bears the host record, *Carpodacus amplus*, Guadeloupe Island, but is evidently a straggler.

**Colpocephalum funebre** Kellogg.

One specimen from *Larus heermanni*, San Geronimo Island.

**Colpocephalum unciferum** Kellogg.

One female from *Puffinus auricularis*, Clarion Island.

**Colpocephalum** sp. juv.

A specimen, too young to be determined, from *Puffinus auricularis*, Clarion Island.

**Colpocephalum milleri** Kellogg and Kuwana.

Three specimens of this species from *Anous ridgwayi*, Socorro Island, and two from *Sterna anaetheta*, Socorro Island.

**Colpocephalum flavescens** Nitzsch.

Four specimens from *Speotyto hypogaea*, San Benito Island.

**Colpocephalum dominicanum** n. sp.

Two males from *Oceanodrama macrodactyla*, Guadeloupe Island. This specimen approaches *spinosum* of Piaget, from *Francolinus capensis*.

*Description of male*.—Body, length 1.72 mm.; width .60 mm.; strongly brown, concolorous with the exception of abdomen, which has slightly darker transverse blotches; head of unusual and distinctive shape.

Head, length .40 mm.; width .44 mm.; broadly rounded in front, with rather short hairs on the margin; ocular emargination not deep; eye small, convex; temples extended but slightly and moderately rounded, with three very long hairs; posterior angles angularly meeting occipital margin; occipital margin slightly concave; mandibles piceous.

Prothorax twice as broad as long; sides extended, coxae showing through very slightly darker; otherwise without distinct markings; sides with one long hair. Metathorax narrow in front; sides slightly arcuate, diverging; color brown, coxae showing through as darker blotches; dorsum with short scattered hairs; sides with one long hair; legs short, femora thick, lighter than general body color, and with numerous bristles.

Abdomen elongate; basal segment as broad as apex of thorax; broadest at segments 3 to 5; first segment with one hair at marginal angle; others with two long hairs; dorsum with many scattered long hairs; apical segment with fringe of shorter hairs; color almost uniformly dark brown, the marginal blotches showing slightly darker than the rest of the surface.

#### *Colpocephalum tigrum* n. sp.

Three males from *Arcnaria melanocephala*, San Martin Island, and two from *Aphriza virgata*, San Geronimo Island. The described species nearest this is *C. trimaculatum* Piaget, but the broad, complete transverse blotches of the metathorax and first abdominal segment at once distinguish that species from *tigrum*.

*Description of male*.—Body, length, 1.60 mm.; width .64 mm.; color clear with brownish blotches, producing a strikingly and unusually marked *Colpocephalum*.

Head, length .35 mm.; width .42 mm.; front broadly rounded, semi-circular; four short and two medium hairs on the frontal margin, a long hair on lateral margin of front; ocular fringe prominent; eye distinct, with a prominent bristle; temples prominent, with three strong hairs; posterior margin of occiput concave; mandibles dark brown; ocular blotches dark brown, large, about twice as long as base of eye; a small brown blotch on signature; occipital bands light brown, except for darker spots at base and at apex converging; space between occipital bands brown; most of head with faint smoky brown color.

Prothorax about twice as broad as long; sides angulate at anterior third, with short hair at angle; coxae showing through as brown blotches; a shield-shaped brown ventral blotch, and a brown margin, the rest colorless. Metathorax at broadest part as broad as base of abdomen; sides angulate at middle, the angles bearing two bristles; colorless except for brown margin, a shield-shaped ventral blotch, and a short brown longitudinal line at base; coxae showing through as brown blotches; legs short, femora very thick; a faint brown spot on outer edge of femur near base, and a dark brown spot near tip of tibiae; tarsi faintly yellow; legs otherwise uncolored or faintly smoky.

Abdomen elongate oval, broadest at third and fourth segments; the segments of nearly equal length, a stout bristle at the posterior angle of each, each segment except the first with a long stout hair in addition to bristle, a single transverse row of weak hairs on dorsum of each segment except last two; first to sixth segments with a transverse narrow brown dorsal blotch, first to seventh with an irregular, darker marginal blotch, seventh segment with faint dorsal blotch, eighth with four small blotches; last segment with rows of minute hairs; genitalia not visible; except for above blotches abdomen is colorless.

**Menopon dissimile** Kellogg.

One male from *Pyrhoxia venusta peninsulae*, San Jose del Cabo.

**Menopon infrequens** Kellogg.

Three males from *Larus heermanni*, San Geronimo Island.

**Menopon paululum** Kellogg and Chapman.

One immature male from *Oceanodrama macrodactyla*, Guadeloupe Island.

**Menopon singularis** Kellogg.

Two males from *Phaethon aethereus*, Socorro Island.

**Menopon becki** Kellogg.

One male from *Phaethon aethereus*, Socorro Island.

**Physostomum diffusum** Kellogg.

One specimen from *Anmodramus sanctorum*, San Benito Island.

**Physostomum subhastatum** Durrant.

Three specimens from *Pipilio albigula*, San Jose del Cabo.

**Physostomum fasciatus** Piaget var. **arcuatus** nov. var.

Two specimens from *Tyrannus vociferus*, Cerros Island. The type of the species, taken from *Larus capistratus*, at the Zoological Garden in Amsterdam, was undoubtedly a straggler. Our specimens differ from the species figure and description in having two hairs directly anterior to the eye, the posterior angles of the head with two hairs, the sides of the prothorax with three long hairs, and the sides of the metathorax more arcuate for the posterior two thirds. The signature is piceous, and the front more convex.

**Fulton County (New York), Tipulidae (Dipt.).—II.**

By CHAS. P. ALEXANDER, Cornell Univ., Ithaca, N. Y.

This is a continuation of the list in ENTOMOLOGICAL NEWS, June, 1910. Since the publication of that article, much of the undetermined 1909 collection has been worked over and an immense amount of new material collected. The total number of species definitely known from the county to date is about 125, which is more than is known from most States of the Union.

A few errors in the first part, most of which must be charged against the author, should be corrected: On page 248, thirteenth line in under 2, should read, "for several hundred feet." The altitude of the island is 750 feet (average), not 875 feet. On page 251, *Trichocera crumalis* should be *T. brumalis*.

New collecting grounds: Some of the new localities visited proved to have an extremely rich Tipulid fauna. The more notable of these are:

"Psocid Glen," on the west bank of the Cayudutta creek, between Johnstown and Sammonsville; a small creek flowing into the Cayudutta at the electric-light dam. Although at a low altitude (550 feet), the fauna is distinctly Canadian.

"Prairie Lake Bog" in Caroga Township (1,870 feet); a bog in the tertiary stage, supporting a perfectly normal oxylophytic type of vegetation, such as: *Solidago uliginosa*, *Gentiana linearis*, *Acer pennsylvanicum*, *A. rubrum*, *A. spicatum*, *Nemophanthus mucronata*, *Kalmia angustifolia*, *Andromeda polifolia*, *Chamaedaphne calyculata*, *Chiogenes hispidula*, *Vaccinium macrocarpon*, *Aronia melanocarpa*, *Sarracenia purpurea*, *Drosera rotundifolia*, *D. intermedia*, *Myrica gale*, and a variety of sedges.

Since the publication of the first part, the acceptance of Meigen's 1800 paper by most Dipterologists has changed many of the genera used in the *Tipulidae*. The names are given in Coquillett's "Type-Species of North American Diptera," but are widely scattered amongst the other genera of flies, so that

a compact record of the recent changes in nomenclature, as now held by many students of the family, may be of value.

Sub-fam. LIMNOBINÆ .....	AMPHINOMINÆ
Tribe LIMNOBINI .....	AMPHINOMINI
Genus <i>Limnobia</i> Meig. 1818 .....	<i>Amphinome</i> Meig. 1800
Genus <i>Dicranomyia</i> Steph. 1829 .....	<i>Furcomyia</i> Meig. 1818
Tribe ANTOCHINI, RHAMPHIDINI .....	MEGARHININI
Genus <i>Rhamphidia</i> Meig. 1830 ....	<i>Megarhina</i> St. Farg. et Serv. 1828
Genus <i>Dicranoptycha</i> O. S. 1859 .....	<i>Marginomyia</i> Meig. 1818
Tribe ERIOPTERINI .....	POLYMEDINI
Genus <i>Erioptera</i> Meig. 1803 .....	<i>Polymeda</i> Meig. 1800
Genus <i>Rhypholophus</i> Kol. 1860 .....	<i>Ormosia</i> Rond. 1856
Genus <i>Helobia</i> St. F. et S.; 1828; (preocc.)	<i>Symplecta</i> Meig. 1830
Tribe LIMNOPHILINI, TRICHOCERINI .....	PETAURISTINI
Genus <i>Trichocera</i> Meig. 1803 .....	<i>Petaurista</i> Meig. 1800
Tribe ANISOMERINI .....	HEXATOMINI
Genus <i>Eriocera</i> Macq. 1838 .....	<i>Caloptera</i> Guer. 1820
Genus <i>Analopsis</i> Hal. 1856 .....	<i>Tricyphona</i> Zett. 1837
Genus <i>Ctenophora</i> (of authors, non Meigen) ..	<i>Phoroctema</i> Coq. 1910
Genus <i>Xiphura</i> Brulle 1832; <i>Ctenophora</i> Meig. 1803.	
	<i>Flabellifera</i> Meig. 1800
Genus <i>Stygeropsis</i> Loew. 1863 .....	<i>Prionocera</i> Loew. 1844
Family PTYCHOPTERIDÆ .....	LIRIOPIDÆ
Genus <i>Ptychoptera</i> Meig. 1803 .....	<i>Liriopis</i> Meig. 1800
Genus <i>Idioplata</i> O. S. 1878 .....	<i>Protoplata</i> O. S. 1860

The present paper deals with the tribe *Amphinomini*, and begins the *Polymedini*. The remainder of the *Polymedini*, and the *Megarhinini*, *Petauristini*, *Hexatomini*, and *Pedicini*, as well as the *Cylindrotominae*, *Tipulinae* and *Liriopidae* will be considered in succeeding parts. New stations and new records for the species included in Part I are here given, with the original number in parentheses.

As in the previous part, I must acknowledge the kind advice of Prof. Needham and Prof. Johnson upon certain difficult questions.

34. ***Geranomyia canadensis* Westw.**

Rare. Canada Lake; Caroga T'sh'p; one ♂ only, June 23, 1911.

35. ***Geranomyia rostrata* Say.**

Common and widely distributed. Sacandaga Park; several

along the R. R. embankment, June 21, 1911. On Aug. 24, 1910, the species occurred in extraordinary abundance. Thousands of specimens occurred here and I secured about a dozen at each sweep of the net. They are very active and usually fly directly from the bag, not making their way up the side of the net after the fashion of most crane-flies. Sport Island, N. E. Coast, Aug. 24, 1911; some ten specimens. Johnstown, N. Y.; Sept. 14, 1909. "Psocid Glen"; Aug. 24, 1910. VanDenburgs Pond; Bleeker T'sh'p; Aug. 30, 1909. "Camp Naturalist," alt. 1428 feet; Bleeker T'sh'p; Sept. 14, 1910.

36. *Rhipidia fidelis* O. S.

Rare. Sport Is.; Sacandaga R.; June 27, 1910; ♀.

(1) *Rhipidia maculata* Meig.

Pinnacle Mt.; Bleeker T'sh'p.; alt. 2000 feet; Sept. 15, 1910; ♀.

37. *Furcomyia longipennis* Schum.

Common locally. Sacandaga R.; Sport Is. (bayou); Aug. 24, 1910. Hillside Park; Burrs Pond; abundant on marsh vegetation consisting of *Lycersia*, *Bidens*, etc.; Aug. 4, 1909, and Sept. 9, 1910.

38. *Furcomyia immodesta* O. S.

Commonly and widely distributed. Sacandaga R.; Sport Is.; Aug. 24, 1910; both sexes; on the mainland, along the R. R. embankment, common; June 21 and 28, 1911. Johnstown; common; June 10, 1910. Gloversville; Power House Woods; Sept. 23, 1910. Woodworth's Lake; Aug. 21, 1909.

39. *Furcomyia gladiator* O. S.

Local. Extremely common in B. P. H. U. Swamp, Woodworth's Lake; Aug. 22, 1910; males were more common than females.

40. *Furcomyia rostrifera* O. S.

Common, especially in late summer and autumn. Sacandaga Park; along the R. R. embankment; June 27, 1910; June 28, 1911; Aug. 28, 1911. Sammonsville; Sept. 22, 1910; common.

Gloversville; Power-house Woods, Sept. 23, 1910; very abundant on low vegetation. Prairie Lake Bog; Aug. 31, 1911.

41. *Furcomyia liberta* O. S.

A well distributed species at low altitudes. Sacandaga R.; Sport Is.; June 17, 1910; a few, Aug. 24, 1910; June 21, 1911; rare. Johnstown; June 10, 1910, not rare; June 17, 1911.

42. *Furcomyia stigmata* Doane.

Not uncommon about the face of cliffs. Gloversville; stone quarries near the reservoir; June 19, 1910, and June 16, 1911.

A species described from California. Neither Mr. M. D. Leonard nor I can separate the New York specimens off as distinct. It is possible that an actual comparison of specimens would reveal differences. *Stigmata* is distinguished from *haeretica*, O. S., by the shortness of Sc I, a distinct stigmal spot, and the plain brown mesothoracic praescutum.

43. *Furcomyia halterata* O. S.

Local and northern in distribution. Sacandaga Park; along the R. R. embankment; Aug. 24, 1910; ♀'s. Prairie Lake Bog; Aug. 31, 1911; a few. Woodworth's Lake; very common along B. P. H. U. Creek and in the bog-swamp at the head of the creek; Aug. 22, 1910.

44. *Furcomyia badia* Walk.

Not common. "Psocid Glen," Aug. 31, 1910; a few only. Stone quarry on the mountain side, near the Gloversville reservoir; Aug. 29, 1910, and Sept. 7, 1910. Woodworth's Lake; B. P. H. U. Creek; Aug. 22, 1910.

45. *Furcomyia morioides* O. S.

Common and widely distributed. Sacandaga Park; along the R. R. embankment; June 21, 1911. Hillside Park; Sept. 9, 1910. Johnstown; Aug. 6, 1909. "Psocid Glen," Aug. 26, 1910, a few; June 14, 1911, common, both sexes; Aug. 30, 1911, a few.

46. *Furcomyia pubipennis* O. S.

Not rare; Canadian life-zone. Sacandaga Park; along the

R. R. embankment, June 21, 1911; VanDenburg's Pond, June 19, 1911; in a sphagnum bog. Mountain Lake, June 15, 1911; common around the bog-pond. Woodworth's Lake, Aug. 19, 1909; very common about cliffs; both sexes.

47. *Furcomya globithorax* O. S.

Rare; Canadian life-zone. One fine ♀ of this peculiar little species; Woodworth's Lake, along the outlet, Aug. 22, 1910.

48. *Furcomya simulans* Walk.

Not common. East Canada Creek, near Ingram's Mills, Sept. 11, 1911.

49. *Amphinome immatura* O. S.

Rare. Sammonsville, Sept. 22, 1910; a broken specimen in a spider's web. Pinnacle Mt.; near cliffs; ♀; Sept. 16, 1910.

50. *Amphinome solitaria* O. S.

A common species of the Canadian life-zone. "Psocid Glen," Aug. 26, 1910; four ♂'s; Aug. 30, 1911, common, both sexes. Woodworth's Lake; B. P. H. U. Swamp; Aug. 22, 1910.

51. *Amphinome triocellata* O. S.

Rare. Woodworth's Lake; B. P. H. U. Swamp, Aug. 22, 1910, one ♂ only.

52. *Amphinome indigena* O. S.

Common. Sacandaga Park; along the R. R. embankment, June 21, 1911. "Psocid Glen," Aug. 21, 1910. Canada Lake, June 24, 1911. Woodworth's Lake, Aug. 22, 1910; June 23, 1910.

53. *Amphinome tristigma* O. S.

Abundant, northern in distribution. Gloversville; Power-house Woods, common on ferns, etc., July 3, 1910. Woodworth's Lake, B. P. H. U. Swamp, Aug. 22, 1910.

54. *Cryptolabis paradoxa* O. S.

Abundant. Gloversville; Power-house Woods, July 3 and 17, 1909; abundant on low vegetation, such as ferns, etc. Sacandaga R.; Sport Is., July 5 and 25, 1909. Not rare on herb-

age growing amongst shrubbery. June 27, 1910, "Very common on the rank herbage of the northeast coast and specimens could be found in my net at every sweeping. Hundreds—if not thousands—of specimens about." June 21 and 28, 1911, common on Sport Is.

55. *Sacandaga flava* Alex.

Locally common.

Since describing the genus *Sacandaga* (Ent. News, Oct., 1911), I have come to the conclusion that the insect is most closely related to the genus *Rhabdomastix*, Skuse\* of Australia. The differences between the two genera are rather numerous, but the resemblances, especially in the genitalia of the male and in the venation, are great, and it is possible that *Sacandaga* will, upon further study, be relegated to subgeneric rank. The genera should have been compared in the original description, but I was not in possession of Skuse's detailed description of *Rhabdomastix* at the time. This comparison is supplied in the following key:—

- A.—Antennae very long, filiform, nearly twice the length of entire body. Wings cuneiformly narrowed towards the base, with only a slight indication of an anal angle. Halteres, long, slender. Venation: Sc rather short, tip of Sc1 remote from the tip of R1; Sc beyond origin of Rs, twice the length of the cross-vein *r-m*. Sc2 absent or indistinct at tip of Sc1. R2+3 (petiole of second submarginal cell of Osten Sacken) one-half of cell R2. Cross-vein *r-m* as long as the basal deflection of Cu1. Second anal short, curved ..... **Rhabdomastix** Skuse.
- AA.—Antennae normal reaching about to the root of the wings. Anal angle present and prominent. Halteres short, abruptly capitate. Venation: Sc long so that Sc1 and R1 are somewhat approximated at the tip; Sc long, beyond the origin of Rs, four times the length of the cross-vein *r-m*. Sc2 conspicuous, removed from the tip of Sc1. R2+3 equal in length to, or longer than, cell R2. Cross-vein *r-m* much shorter than the deflection of Cu1. Second anal prominent, bisinuate ..... **Sacandaga** Alex.

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\*Diptera of Australia, by F. A. Skuse. Proc. of the Linnaean Society of New South Wales; vol. 4 (series 2nd) (25th Sept., 1889); P. 828, 829; Pl. 22, Fig. 15 (wing) Pl. 24, Fig. 57 (♂ genitalia).

Although the two species are almost antipodal in their respective ranges, it is not exceptionally remarkable to find such a distribution. Sport Island is the home of two other insects which are almost equally isolated from their near allies. The primitive crane-fly, *Protoplasa*, occurs here, and finds its only living relative (*Tanyderus*) in Chile and Australasia. The remarkable may-fly, *Siphonisca acrodromia* Ndm. described from this island, finds its near relative in *Oniscogaster wakefieldi*, McLach., of New Zealand. The present occurrence, therefore, merely adds one more difficulty to the explanation of the geographical distribution of animals and plants.

1909—June 12, not rare on Sport Island; July 5, a few. 1910—June 27, male; Aug. 24. 1911—June 21, one male; June 28, several. Gloversville, Power-house Woods, July 3, 1909. Seasonal distribution, June 12-Aug. 24.

The species has been taken only on Sport Island, with the exception of a single specimen at Gloversville, and mainly on the east and northeast coasts, where it may be swept from rank herbage. The vegetation in the places where the species is commonest consists of a dense tangle of herbage, composed mainly of such plants as *Onoclea sensibilis*, *Osmunda claytoniana*, *Veratrum viride*, *Polygonatum biflorum*, *P. commutatum*, *Laportea canadensis*, *Actaea rubra*, *Cryptotaenia canadensis*, *Galium lanceolatum*, *Eupatorium urticaefolium*, *Solidago canadensis*, *S. rugosa*, *S. graminifolia*, *Rudbeckia laciniata* and *Helianthus decapetalus*. The whole undergrowth is thickly intertwined with creepers, such as *Smilax herbacea*, *Clematis virginiana*, *Menispermum canadensis*, *Celastrus scandens* and *Convolvulus sepium*. It is not common, as a rule, but in June several specimens can generally be taken by sweeping. On June 13, 1909, I found the species swarming and made the following observations:

The species came out at about 7.45 P. M. and at 7.51 P. M. began its flight in under an elm tree at the northeast end of the island. The flight was generally forward, but continually from side to side for a few inches. The flight was quite irregular, always toward the slight north breeze. The whole

swarm would often move away and return, a little later, to the first place. It swarmed within four feet of the ground, generally much lower, averaging, perhaps, two feet. The flight is so irregular that it is difficult to describe. The number of individuals participating in the swarm was about twenty. Other species swarming nearby at the same time were *Chironomus hyperboreus*, var. *meridionalis*, Joh., and the may-flies. *Ephemerella excrucians* Walsh, and *Siphonisca aerodromia* Ndm.

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### Notes on Florida Thysanoptera, with description of a new genus.

By E. A. BACK, Virginia Agric. Exper. Sta., Blacksburg, Va.

While in Orlando, Florida, engaged in a study of the Aleyrodid pests of *Citrus*, the writer collected several species of Thysanoptera upon which the following notes have been made.

#### **Leptothrips aspersus** Hinds.

This species previously recorded from Massachusetts, California and Barbados Island, was frequently found at all times of the year on both new and old *Citrus* foliage.

#### **Scolothrips 6-maculatus** Pergande.

The distribution of this species as given by Hinds is Missouri, Iowa, Wisconsin and Nebraska. It has been recorded by both Pergande and Bruner feeding on mites. Found feeding on red spider on *Citrus* and several weeds during Spring of 1909.

#### **Heliothrips hemorrhoidalis** Bouche.

This species, which has been spoken of as one of our worst greenhouse pests, was found specially abundant during the Fall of 1908 in colonies on the foliage of red maple (*Acer rubrum*).

#### **Aleurodothrips fasciapennis** Franklin.

This species is of special interest from an economic standpoint in that it preys upon both the citrus white-fly (*Aleyrodes citri*) and the cloudy-winged white-fly (*A. nubifera*). It has

been seen on several occasions by the writer to suck the juices of mature larvae and pupae of these insects and in one instance, during March, 1909, to find its way into a rearing cage and kill 95.5 per cent. of 163 eggs present on the leaf enclosed. Specimens may be found at almost any season of the year on *Citrus* foliage where they are especially fond of concealing themselves in the empty cocoons of *Chrysopa*. In an examination of several thousand *Citrus* leaves picked at random in groves in and about Orlando, during the fall of 1909, for the purpose of making white-fly counts, there was found an average of from two to three thrips per leaf—sometimes on an individual leaf as many as five thrips. While this thrips kills large numbers of white-fly larvae and pupae at certain times, it has not yet demonstrated itself to be of practical value in holding these pests in check.

***Aeolothrips vespiformis* Crawford.**

During late February and March, and in less numbers during the late summer months a very conspicuous thrips was found running rapidly over the tender foliage of *Citrus*. It undoubtedly belonged to the Aeolothripidae and so closely resembled *Aeolothrips bicolor* Hinds, that the writer sent specimens to Dr. M. J. Franklin for comparison with the type material of *bicolor*. Upon making this comparison, Dr. Franklin found the Florida specimens distinctly different and in writing to that effect called attention to the description and figures of *Aeolothrips vespiformis* Crawford, which had just been published (*Pomona Journal of Entomology*, Vol. 1, Page 109), and had not been seen by the writer. The Florida specimens so closely agree with Crawford's description and figures (head, thorax, abdomen, wing and hind leg), that they represent either the same or a very closely allied species. Inasmuch as Crawford's description and figures were made from a single, very poorly preserved specimen and the Florida specimens show a certain range of variation, especially in regard to the number and relative position of the wing spines, the writer prefers to consider the species identical—at least until more specimens

from the habitat of the unique type, Nicaragua, are collected.

The differences, however, between *vespiformis* and the other species of the Aeolothripidae are sufficient to warrant the creation of a new genus. In all the other genera of this family thus far described, there are four or five cross veins in the fore wing. No cross veins are present in either Nicaragua (See Fig. 49C, Pomona Journal, Vol. 1, p. 111), or Florida specimens. Crawford, himself, recognized that the absence of cross veins present not only a specific difference but also a departure from the generic description of *Aeolothrips* given by Hinds. The following genus is proposed for this species:—

**FRANKLINOTHRIPS** new genus.

Head small, broader than long, rounded uniformly anteriorly, distinctly retracted into prothorax. Eyes prominent; ocelli present and large in size. Antennae slender, nine segments represented. Prothorax strongly rounded broader anteriorly than posteriorly, and broader than long; spines weak and inconspicuous. Wings well developed; fore wing with two well developed longitudinal veins without cross veins; veins and costa with prominent spines.

*Type*.—*Aeolothrips vespiformis* Crawford.

Although Crawford made his description and drawings from a poorly preserved specimen, one can readily identify the species by referring to his work, and taking into consideration the following additions and comments. In examining the live specimens, one is attracted by the rapidity with which the species runs. It was never seen to jump. Living color note as follows: Head and thorax purplish black, abdomen purplish black polished, basal segments lemon yellow, the basal third of following segment reddish black; tip of abdomen pale yellow. Antennae black, basal three segments whitish, with slight yellowish tinge, remaining segments pale at both extremities. Legs blackish, the femora by transmitted light show reddish and at base and on distal portion yellowish. Wings extend a trifle beyond sixth segment.

The antennae which are missing in the type specimen of *vespiformis* are long, slender, nine segmented; the relative length of segments which average about one space in width, is as follows: 1, 3 spaces; 2, 3.5; 3, 14.3; 4, 9; 5, 15.5; 6, 4.7; 7, 4; 8, 2.4; 9, 1 space. Segments clothed with sparse weak bristles.

The Florida specimens show two instead of one bristle between antennae and eye, and six instead of two on sides of head between eye and prothorax.

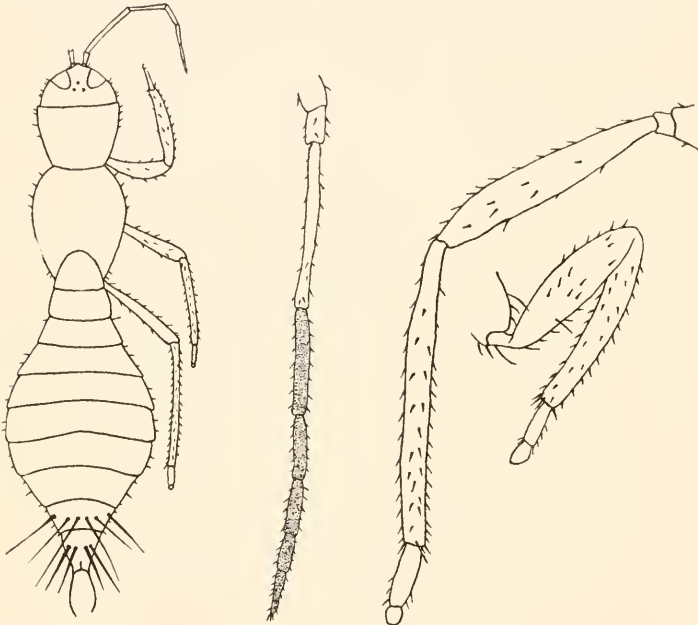


Fig. 1.—*Frankliniopsis vespiformis* Crawl. Fig. 2.—*F. vespiformis* Crawl., antenna. Fig. 3.—*F. vespiformis* Crawl. (a), hind leg; (b), front leg.

Mesothorax with four weak lateral bristles on anterior half.

All the legs are long and slender, moderately clothed with short weak bristles, those at tip of tibiae stronger.

Wings as described, but no reliance can be placed on number of spines on either margin or veins as the spines vary in number and even in location in different specimens. The por-

tion of the veins on the clear central area more often without than with spines.

In some specimens the abdomen expands laterally until at its widest point at the sixth segment, it is fully twice as wide as at base. Two instead of one lateral spine on fourth and fifth segments as well as on sixth and seventh; eighth segment with three lateral spines of which the central one is longest. Ninth segment with four dorsal and two lateral long conspicuous bristles and three short inconspicuous lateral ones. Tenth segment with four long dorsal bristles and two terminal bristles of nearly equal length. It is more than probable that these differences in the number of spines are due to the dilapidated condition of the type specimen.

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### A new species of *Dicaelus* from Arkansas (Coleop.).

By W. S. BLATCHLEY, Indianapolis, Indiana.

While looking over the Bolter collection of Coleoptera, now in possession of the State Laboratory of Natural History at Urbana, Illinois, I was struck by the much greater size of two specimens from Hot Springs, Arkansas, placed with *Dicaelus sculptilis* Say. At first I passed them by with a mere comment on their size to my companion, Mr. Walter S. Abbott, now in charge of the collection. Happening to open the same box on the following day I removed one of the Arkansas specimens and was surprised to find the sculpture of the elytra differing greatly from that of *sculptilis* by its side. Careful examination revealed other notable differences, so I borrowed the specimen for a few weeks and submitted it to that well known Coleopterist, Charles W. Leng, of New York City. He coincided with my opinion that "characters other than size were sufficient to differentiate it from *sculptilis*," and that he regarded it as *Dicaelus* n. sp. I therefore herewith describe it under the name of

#### *Dicaelus ocellatus* sp. nov.

Elongate oval, broad and robust. Black, not at all shining above, feebly shining below, the legs more so; antennae piceous. Head as

in *sculptilis* but much wider. Thorax subquadrate, base one-fifth wider than apex, sides feebly curved, the basal third almost parallel; margins less flattened and disc much less uneven than in *sculptilis*, the surface marked with fine transverse wavy lines, median line very fine, entire. Elytra with the alternate intervals broader, less convex, each with an irregular row of 10 to 12 large ocellate punctures; striae very finely punctate, the rows of punctures strongly sinuous on apical half; humeral stria strong, reaching three-fourths to apex.

Measurements; male, length 24 mm.; width of elytra at base 10 mm.; female, length 26 mm.; width of elytra at base 12 mm. Of *sculptilis*, (inserted for comparison) length 17-19 mm.; width of elytra at base 7.5 mm.

One pair in Bolter collection labeled "H. Springs, Ark., 10-6."

From *sculptilis*, which it resembles only in the curious sculpture of the elytra, *ocellatus* differs in the much greater size, it being slightly longer and much wider and more robust than the rather common *D. purpuratus* Bon. The upper surface of *sculptilis* is distinctly shining, of *ocellatus* wholly opaque. The basal depressions and median line of thorax of *sculptilis* are much deeper and the surface of the basal half therefore much more undulating than in *ocellatus*. Finally the elytral sculpture, though at first glance resembling *sculptilis*, is very different, the intervals containing the ocellate punctures being wider and much less broken and distorted, the punctures themselves larger and mostly placed along the middle of the interval, whereas in *sculptilis* they are at one side or in the striae. The rows of fine punctures of the striae are more distinct and on the basal halves much less sinuous in *ocellatus* than in the other species.

It is strange that so large and striking a species as *ocellatus* has heretofore been overlooked. It is, of course, possible that it is in a number of collections, as in that of Bolter, confused with *sculptilis*. Its range may also be found to be very limited in area. While Say does not give the length of *sculptilis* in his original description, the form and size of his figure and the details of the elytral sculpture there shown, prove that he had before him the form now widely known as that species and not the one above described.

# ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

TO CONTRIBUTORS.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, four weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form and without covers, will be given free, when they are wanted; if more than twenty-five copies are desired, this should be stated on the MS. The receipt of all papers will be acknowledged. Proof will be sent to authors for correction only when specially requested.—Ed.

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PHILADELPHIA, PA., FEBRUARY, 1912.

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The Christmas week meetings of Entomologists in Washington, in affiliation with the American Association for the Advancement of Science, were felt by those in attendance to have been a decided success. Both the Entomological Society of America and the American Association of Economic Entomologists met in the same room in the top (fourth) story of the United States National Museum, near the quarters of the Department of Insects, the Society on Tuesday morning and afternoon, December 26, and Wednesday morning, December 27; the Association on Wednesday afternoon, Thursday and Friday, December 27 to 29.

Twenty-three papers were listed on the printed program of the Society, at least four of which were not given owing to the absence of their authors or to the lack of time at the disposal of the Society, which has not yet applied a time limit to papers presented, as was suggested in the News for November last. As it is planned to publish in *Science* brief abstracts of the papers given, and as the program and many of the papers themselves will also appear in the *Annals*, the program will not be printed in the NEWS. The Annual Public Address of the Society was given by Prof. J. H. Comstock, on Wednesday evening, December 27, in the auditorium of the Cosmos Club. The topic selected, "On Some Biological Features of Spiders—

The Evolution of the Web," was most interestingly treated with the aid of lantern slides, which included a number of excellent photographs of what were termed by the speaker nests and webs "made to order."

The program of the Association included many reports of committees on important features of the work of Economic Entomologists, the Annual Address of the President, Mr. F. L. Washburn, State Entomologist of Minnesota, and some twenty-nine papers, formal provision being made for the discussion of many of the latter. Proper appreciation of these will be gained only from the *Journal of Economic Entomology*, in which the proceedings will appear *in extenso*.

A most enjoyable smoker was tendered by the Entomological Society of Washington to visiting entomologists on Friday evening, December 29, at the Saengerbund Hall. Somewhat over one hundred gathered around the tables here and "Section Q" was called to order by the Dean of the Washington Society, Mr. E. A. Schwarz. Mr. W. C. O'Kane, of Durham, New Hampshire, as toastmaster, called for remarks from both visitors and hosts, and the evening passed in personal intercourse, which is the most valuable part of these national meetings.

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## Notes and News.

### ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

A BROMELIADICOLOUS CADDIS-WORM.—Mr. Morton's note on this topic in the NEWS for November, 1911, page 411, recalls Fritz Müller's paper "Sobre as casas construidas pelas Larvas de Trichopteros da Provincia de Santa Catharina"—(Arch. Museu Nac. Rio de Janeiro III, p. 99-134, 209-214, 1880) in which he says (page 114): "encontra-se emfim, nutrindo-se daquelles restos vegetaes mais on menos apodrecidos ou transformados em humus, uma multidao de animaes terrestres e aquaticos; Planarias (Geoplana) Hirudineas (Clepsine) Oniscos, Centopeias, Formigas, larvas de dipteros, de Lavadeiras, Pererecas, etc." Among these he found a larva of a Trichoptera, which he describes farther on (p. 131) as *Phylloicus bromelia um*. He does not mention any Odonate larvæ.—NATHAN BANKS, East Falls Church, Virginia.

NOTES ON WESTERN U. S. LEPIDOPTERA.—*Erebus odoratus* L.—On Aug. 10, 1911, I took a worn and battered specimen of this moth at Palo Alto, California, 30 miles south of San Francisco. On the 9th of July, while in Nevada, I saw a large, black moth, which must have been this species, fluttering about the door of a cabin, just before dusk. The moth, as far as I was able to see, was in good condition. The cabin is in a small canyon about 30 miles north of Reno, the surrounding country being practically a desert.

*Vanessa californica* Bdv.—I noticed a remarkable abundance of the caterpillars of this species in the Sierra Nevada Mountains, during the past July and August. They were feeding on "buck brush" (*Ceanothus* sp.) for the most part. The newspapers state that the butterflies have since become very numerous, and bothersome to travellers. The butterflies have been quite common at Palo Alto during October. Ordinarily they are rare here.

*Lemonias mormo* Feld.—This species should be added to my "Butterflies of the Lake Tahoe Region," Ent. News. xxi, pp. 274-277, 309-317, 1910. I took a number of specimens near Deerpark, at elevations of 7,000 to 8,000 feet, during the latter part of August, 1910. The season of 1910 was very early, and I suppose ordinarily the species would not appear until September. I also took *Chrysophanus mariposa* and *Lycæna shasta* near Deerpark (7,500-8,000 feet). I have already recorded these from Glen Alpine.—E. J. NEWCOMER, Palo Alto, Cal.

A CASE EITHER OF SECONDARY OR DOUBLE EGG PARASITISM.—In early July, 1911, Mr. Henry H. Severin sent to me a large number of the parasitized eggs of *Cimbex americana* Leach in the leaves of willow. After several days, these gave forth large numbers of (*Pentarthron*) *Trichogramma minutum* Riley and a single proctotrypid. Upon their receipt, a few of the eggs had been isolated in vials and when they were examined later, in one case a third species of parasite was found to have emerged—a male eulophid of the *Entedoninæ*. Observation of the parasitized host egg in this case revealed also about a half dozen pupae of the *Trichogramma*, all in a compact mass on one side of it; the remaining part of the egg was clean and smooth somewhat like a pupal cavity and was doubtless occupied by the pupa of the eulophid. No adults of the *Trichogramma* issued from it and the pupæ observed were dead. Before the egg cavity had been disturbed, a single exit hole had been observed at one side of the center over the space doubtless occupied by the eulophid. Here, we have either a case of secondary or else double parasitism in the egg; and the former seems to me the more likely, from the nature and habits of the *Eulophidæ*, and also because of the fact that a large number of the *Trichogramma* seemed to have been killed, a larger number than would seem to be necessary for the survival of the eulophid, if the

case was that of double parasitism only. Whatever its nature, it seems worthy of record but it is not unique for egg parasites. The eulophid was seemingly *Nesomyia cimbicis* Brues, male, but the abdominal petiole was very long and the parapsidal furrows apparently complete or nearly, at least slender grooved lines. Its antennæ were in fragments and at the time I could not give the specimen enough attention to insure its identity. The locality was Milwaukee, Wis., June 30, 1911. It is worth recording, in this connection, that as many as thirty or more individuals of the trichogrammatid came to maturity in some of the isolated eggs of the Cimbex.—A. A. GIRAULT.

**RHYNCHITES BICOLOR.**—This beetle is common in New Mexico and Colorado, often damaging roses. When at Woods Hole, Mass., last July, I found it equally common there, but somehow the beetles did not look right, so I brought some home for comparisons. It appears that the Colorado insect, as compared with that from Woods Hole, is distinctly smaller, of a lighter shade of red, with the elytra less coarsely sculptured, and without the rows of evident coarse punctures. Also, I find the head entirely black, whereas it is largely red in the Woods Hole insect. I consulted Professor H. F. Wickham about this and he kindly informed me of Le Conte's three "races," of which  $\alpha$  from Oregon and California, is probably the same as my Colorado insect. As Professor Wickham knows of no available name, and I have found none, I propose to call the Colorado insect *Rhynchites bicolor wickhami*, taking as the type one from Boulder, Colorado, collected by myself on rose in June. It is surely not more than a subspecies or race, but I think valid as such.—T. D. A. COCKERELL, Boulder, Colorado.

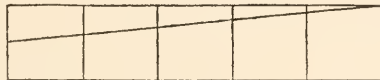
**SPHAERIDIUM SCARABAEOIDES.**—This beetle has reached Colorado; I took one on the University campus at Boulder, October, 1911. Blatchley, in his Coleoptera of Indiana, says there are no striae on the elytra, but in my specimen there are weak widely spaced striae. Professor Wickham has kindly examined his material (from Canada, Rhode Island, Illinois and Iowa) and finds the same striae, more distinct in some than in others.—T. D. A. COCKERELL, Boulder, Colorado.

**YELLOW APHID-INFESTING SPECIES OF APHELINUS DALMAN.**—Apropos of yellow species of *Aphelinus* Dalman which infest aphids, I have happened upon several instances in addition to the one recently published by me (The Entomologist, London, 1911, p. 178), and think it desirable that they be recorded. Mr. J. J. Davis sent me the material in both instances. This was several years ago and only recently did I have occasion to examine it. In some vials of alcoholic material—aphid parasites—I found two which contained a female specimen each of a yellow *Aphelinus* together with the host aphid, the latter in each instance bearing the characteristic exit-hole made by the parasite. The specimens, however, were found to be in too bad condition for specific

identification though they appeared to be the same species, and both resembled in general coloration *Aphelinus automatus* Girault, the only yellow aphid-infesting species so far known and the one referred to above. One of these specimens was found to have been reared from *Callipterus ulmifolii* on Elm, Morton Grove (Chicago), Ill., August 5, 1909, while the other was obtained from the same host, collected at Oak Park (Chicago), Ill., August 12, 1909, and emerging the fourteenth of August following. I now know of a third (or rather fourth) instance, the rearing from a *Calaphis* at St. Louis, Mo., by Mr. Davis very recently of a specimen of a species altogether different from *automatus* and consequently unknown to science. This species has been turned over to Dr. L. O. Howard, who has done so much to further our knowledge of the Aphelininæ.—A. A. GIRAULT.

A NEW MEASURING DEVICE.—In making accurate comparison of the proportions of the elements of the venation in the published illustrations of insect wings the writer hit upon a very simple device which may be of use to others.

Place a small piece of transparent celluloid upon the figure and scratch the design upon the celluloid, now carefully trim around the outside line and there is left a rectangle 1 cm. wide and 5 cm. long marked off into square centimeters, each cross line being divided by



the oblique line giving 4-6, 3-7, 2-8 and 1-9 mm. respectively.

By laying this device upon a drawing one can quickly determine the length of any line up to 1 cm. in length to the tenth of an mm. by estimating the tenths of the intervals between the cross lines. The rule may be read the long way with lessened accuracy but equal facility.

After rather extensive use the writer finds it very much more convenient and quite as accurate as the use of bow dividers or of any other method that has come to his notice.—C. W. WOODWORTH, University of California, Berkeley, California.

ALETIA ARGILLACEA.—The note in the November number of ENTOMOLOGICAL NEWS *in re* the abundance of *Aletia (Alabama) argillacea* has just come to my attention. I am very much interested in the "migration" you note, as a similar "migration" occurred in Milwaukee at about the same time. I first noticed the moth in the streets of this city, right in the center of the town, and increasing in numbers in the direction of the lake (Lake Michigan). I did not make a note of the first appearance of the moth, but a specimen which I picked up for a record bears the

date September 20th. From that date until October 7th, I saw the moths nearly daily, but the height of the "Migration" seems to me to have been about September 28-30. At night thousands of the moths could be seen flying around the electric lights and quite a number flew into my room to the lamp.

It would be of interest to know whether the swarm in Milwaukee constituted a separate migration or whether it had merely separated from that which wended into Philadelphia. At any rate, this much seems certain to me: the swarm followed the shore line of Lake Michigan. I remember determining a specimen of the species for a gentleman in Kenosha a week ago; Kenosha also lies at the shore. Further, one of the Museum staff brought me two specimens from Lake Okauchee, Waukesha Co., about 20 miles west from here, which would indicate that the swarm was not confined to the immediate shore line. The latter specimens bear the date October 3rd.

I have written to my friend, Mr. Gerhard, at the Field Museum, in Chicago, to see whether he knows anything of the matter. I shall also write to several correspondents in Wisconsin and see whether I can learn similar observations from them. The species is by no means rare in Milwaukee. I have repeatedly taken it on sugar and at the electric lights.—R. A. MUTTKOWSKI, Public Museum, Milwaukee, Wis.

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## Entomological Literature.

COMPILED BY E. T. CRESSON, JR., AND J. A. G. REHN.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), excluding Arachnida and Myriapoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species, will be recorded. The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published, and are all dated the current year unless otherwise noted. This (\*) following a record, denotes that the paper in question contains description of a new North American form.

For record of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington.

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- 4—The Canadian Entomologist. 5—Psyche, Cambridge, Mass. 7—U. S. Department of Agriculture, Bureau of Entomology. 9—The Entomologist, London. 10—Nature, London. 11—Annals and Magazine of Natural History, London. 13—Comptes Rendus, Societe de Biologie, Paris. 18—Ottawa Naturalist. 22—Zoologischer Anzeiger, Leipzig. 35—Annales, Societe Entomologique de Belgique. 40—Societas Entomologica, Zurich. 62—Handlingar, Kongliga Svenska Vetenskaps-Akademiens, Stockholm. 84—Entomologische Rundschau. 86—Annales, Societe Entomologique de France, Paris. 92—Zeitschrift fur wissenschaftliche Insektenbiologie. 97—Zeitschrift fur wissenschaftliche Zoologie, Leipzig. 143—Ohio Nat-

urist. 153—Bulletin, American Museum of Natural History, New York. 160—Internationale Revue der Gesamten Hydrobiologie und Hydrographie, Leipzig. 166—Internationale Entomologische Zeitschrift, Guben. 179—Journal of Economic Entomology. 182—Revue Russe d'Entomologie, St. Petersburg. 189—Pomona Journal of Entomology, Claremont, Cal. 193—Entomologische Blätter, Cassel. 197—Proceedings, Royal Society, Biological Sciences, London. 198—Biological Bulletin, Marine Biological Laboratory, Woods Hole, Mass. 234—Records, Indian Museum, Calcutta. 275—Philippine Journal of Science, General Biology, Manila. 285—Nature-Study Review, Urbana, Illinois. 305—Deutsche Entomologische National-Bibliothek, Berlin. 321—Annals of the New York Academy of Sciences. 336—Board of Agriculture, Trinidad. 346—Fauna Exotica. Mitteilungen aus dem Gebiete der exotischen Insektenwelt. Frankfurt am Main. 354—The Condor: a Magazine of Western Ornithology, Los Angeles. 355—Smithsonian Institution Report. Washington, D. C. 356—Nevada Agricultural Experiment Station. University of Nevada, Reno. 357—Annual Report of the Department of Agriculture, Washington, D. C. 358—Boletim do Museu Rocha, Ceara, Brazil. 359—Connecticut Agricultural Experiment Station, New Haven. 360—"Timehri," the Journal of the Royal Agricultural and Commercial Society of British Guiana, Demerara. 361—Atti della Societa Italiana di Scienze Naturali e del Museo Civico di Storia Naturale in Milano, Pavia.

**GENERAL SUBJECT.** Britton, W. E.—Vacation notes in the Adirondacks, 179, iv, 544-545. Bryant, H. C.—The relation of birds to an insect outbreak in Northern California during the spring and summer of 1911, 354, xiii, 195-208. Cockerell, T. D. A.—Scudder's work on fossil insects, 5, 1911, 181-186. Howard, L. O.—Report of The Entomologist for 1911, 42 pp., 357, 1911. Kusnezov, N. J.—Sur quelques methodes des investigations entomologiques (Russian), 182, xi, 124-137. Kuster, E.—Die gallen der Pflanzen, ein lehrbuch für Botaniker und Entomologen, Leipzig, 1911, 437 pp. McCook, Rev. Henry C.—Biographical notices (by various authors). Journal of The Presbyterian Historical Society, Vol. VI, No. 4, Dec., 1911, pp. 97-150. Mallock, A.—Note on the iridescent colours of birds and insects, 197, Ser. A, 1911, 598-605. Rocha, F. D.—Insectos (of Ceara, Brazil), 358, i, No. 2, 34-38. Sanderson, E. D.—Preliminary report of the Committee on Entomological Investigations, 179, iv, 536-543. Scudder, S. H.—Biographical sketch by J. S. Kingsley, 5, xviii, 175-178. Sheldon, W. G.—Formalin a remedy for mould on cabinet specimens, 9, 1911, 391-392. Shelford, V. E.—Ecological succession. III. A reconnaissance of its cause in ponds with particular reference to fish, 198, xxii, 1-38. Urich & Guppy.—Prelim-

inary notes on some insects affecting the cocoon palm, **336**, Circ. No. 5, 30 pp. **Webster, R. L.**—Insects of the year 1911 in Iowa, **179**, iv, 524-527.

**APTERA AND NEUROPTERA.** **Dogiel, V.**—Studien über die entwicklungsgeschichte der Pantopoden. Nervensystem und drüsen der Pantopodenlarven, **97**, xcix, 109-146. **Holmgren, N.**—Termitenstudien. 2. Systematik der Termiten. Die familien Mastotermitidae, Protermitidae und Mesotermitidae, **62**, Bd. 46, No. 6, 86 pp. **Karny, H.**—Neue Phloeothripiden-genera, **22**, 1911, 501-504. Revision der gattung Heliothrips, **84**, xxviii, 179-182. **Wesenberg-Lund, Dr.**—Biologische studien ueber netzspinnende, campodeoide Trichopterenlarven, 64 pp., **160**, Biol. Sup., Ser. III, Heft 1.

**ORTHOPTERA.** **Davis, W. T.**—Notes on two Conocephalids, **4**, 1911, 413. **Griffini, A.**—Studi sui Grillacridi del k. Zoologisches Museum di Berlino, **361**, I, 187-246. **Morse, A. P.**—The Orthopterological work of Mr. S. H. Scudder, with personal reminiscences, **5**, 1911, 187-192.

**HEMIPTERA.** **Crawford, D. L.**—American Psyllidae. V, **189**, iii, 628-632 (\*). **Davidson, W. M.**—Two new aphids from California, **179**, iv, 559-562 (\*). **Essig, E. O.**—Aphididae of So. California, VIII. Plant lice affecting the citrus trees (natural enemies and remedies), **189**, iii, 586-619 (\*). **Pierantoni, V.**—Larven-hermaphroditismus von *Icerya purchasi*, **92**, vi, 322-323. **Quayle, H. J.**—Scale insect parasitism in California, **179**, iv 510-515. **Sulc, K.**—Ueber respiration, tracheensystem und schaumproduktion der schaumcikadenlarven (Aphrophorinae), **97**, xcix, 147-188. **Yothers, M. A.**—*Perillus claudus* a beneficial insect, **4**, 1911, 418.

**LEPIDOPTERA.** **Britton, W. E.**—The Pyralid (*Omphalocera dentosa*) a pest of barberry hedges, **179**, iv, 521-524. **Britton & Cromie.**—The leopard moth (*Zeuzera pyrina*), **359**, Bul. No. 169. **Champion, H. G.**—Unusual dates of occurrence and emergence of Lepidoptera in 1911, **9**, 1911, 405. **Conte, A.**—Recherches experimentales sur l'accouplement et la ponte chez le Bonbyx mori, **13**, 1911, 549-551. **Druce, H.**—Descriptions of some n. sp. of Heterocera, mostly from Tropical So. America, **11**, viii, 716-720. **Fassl, A. H.**—Die vertikale verbreitung der Lepidopteren in der Columbi-schen Central-Cordillere, **346**, i, 29-30. **Felt, E. P.**—Codling moth. pp. 237-251, Bul. 28, Dept. Agric., Sta. of New York, 1911. **Field, W. L. W.**—Doctor Scudder's work on the Lepidoptera, **5**, xviii, 179-180. **Frohawck, F. W.**—Life-history of *Anosia plexippus*, **9**, 1911, 377-382. **Fruhstorfer, H.**—Neue Papilioniden aus meiner sammlung, **84**, xxviii, 178-179. **Fyles, T. W.**—*Gnorimoschema septentrionella* n. sp., **4**, 1911, 422 (\*). **Gibson, A.**—Abundance of the cotton moth in Ontario, **18**, 1911, 129-130. **John, O.**—Sur le "nouveau cours" en lepidopterologie (Russian), **182**, xi, 71-79. **Linstow, Prof.**—Die

brennhaare der spinnerraupen, 166, v, 241-243. **Lyman, H. H.**—Notes on the No. Am. species of Grapta in the Br. Museum, 4, 1911, 418-421. **Prout, L. B.**—New species of Geometridae, 11, viii, 702-711. **Sheldon, W. G.**—Description of ova and young larva of Chrysophanus amphidamas, 9, 1911, 399. **Stechel, H.**—Ueber Melanismus und Nigrismus bei Lepidopteren, 92, 297-302 (cont.). **Walsingham, Lord.**—Biologia Centrali-Americana Heterocera, Vol. IV, pp. 41-112 (\*). **Wheeler, G.**—The Athalia group of the genus Melitaea, 9, 1911, 382-385 (concluded). **Wolley-Dod, F. H.**—Further notes on Alberta Lepidoptera (cont.), 4, 1911, 393-399.

**DIPTERA.** **Anon.**—Tsetse-flies and sleeping sickness, 10, 1911, 149. **Alexander, C. P.**—Synonymical and other notes on the Tipulidae, 5, 1911, 192-203 (\*). **Annandale, A.**—Synonymy in Corethrinae, 234, iv, 317-320. **Bezzi, M.**—Eine seltene fliege von Weltverbreitung, 40, xxvi, 65-67 (cont.). **Coker, W. C.**—The necessity of water for flies, 285, vii, 277-278. **Corti, E.**—Di alcuni organi ghiandolari che si trovano nelle zampe di parecchi Ditteri, 361, I, 173-186. **Felt, E. P.**—New species of gall midges, 179, iv, 546-559 (\*). **Metcalf, C. L.**—Life-histories of Syrphidae, II, 143, 1911, 397-405. **Moore, H. W. B.**—Blood-sucking flies other than mosquitoes, 360, i, 255-259. **Wise, K. S.**—The Simuliidae of British Guiana, 360, i, 248-254.

**COLEOPTERA.** **Bowditch, F. C.**—Further notes on Diabrotica, No. II, 4, 1911, 415-417. **Burgess, A. F.**—Calosoma sycophanta: its life history, behavior, and successful colonization in New England, 7, Bul. No. 101, 94 pp. **Cushman, R. A.**—Notes on the host plant and parasites of some N. A. Bruchidae, 179, iv, 489-510. **Flautiaux, E.**—Revision des Trixagidae Melasidae et Elateridae des Antilles francaises, 86, 1911, 235-264. **Gebien, H.**—Coleopterorum catalogus, Pars 37: Tenebrionidae IV: Trictenotomidae, pp. 387-742. **Gillet, J. J. E.**—Lamellicornes Coprophages nouveaux ou peu connus, 35, 1911, 315-319. Coleopterorum Catalogus, Pars 38: Scarabaeidae: Coprinae I, 100 pp. **Kerremans, C.**—Monographie des Buprestides, Tome V, Livr. 17-18. **Lameere, A.**—Revision des Prionides, 35, 1911, 325-356. **Leng, C. W.**—The species of Brachyacantha of No. and So. America, 153, xxx, 279-333 (\*). **McDermott, F. A.**—Some further observations on the light-emission of American Lampyridae: The photogenic function as a mating adaption in the Photinini, 4, 1911, 399-406. **Pliginski, V. G.**—Notice sur un caractere chez les representants du genre Meloe, 182, xi, 44-47. **Sharp & Champion.**—Biologia Centrali-Americana. Rhynchophora: Curculionidae, Vol. IV, pt. 3, pp. 169-312; pt. 7, pp. 151-221 (\*). **Singh & Maulik.**—Nature of light emitted by fireflies, 10, 1911, 111. **Sokolar, Dr.**—Die flugeldecken-skulptur der Caraben, 305, ii, 175, 179-180. **Strohmeyer, H.**—Neue Platypodiden aus Ost- und West-Afrika, Madagaskar und Peru, 193, 1911, 222-234.

**HYMENOPTERA.** **Cameron, P.**—On the Hymenoptera of the Georgetown Museum, Br. Guiana, Part II, **360**, i, 306-330. **Cockerell, T. D. A.**—Descriptions and records of bees.—XL, **11**, viii, 763-770 (\*). **Cornetz, V.**—Das problem der ruckkehr zum nest der forschenden Ameise, **92**, vi, 312-316 (cont.). **Crosby, C. R.**—A new species of *Derostenus* (Chalcidoidea), **4**, 1911, 414 (\*). **Doten, S. B.**—Concerning the relation of food to reproductive activity and longevity in certain Hymenopterous parasites, **556**, Tech. Bul. No. 78, 30 pp. **Girault, A. A.**—Miscellaneous notes on the Hymenoptera Chalcidoidea: the genus *Arthrolytus*; *Horismenus microgaster*, **4**, 1911, 407-413. **Kieffer, J. J.**—Etude sur les Evaniides exotiques du British Museum de Londres. Description d'un nouveau genre et de deux nouvelles especes de *Stephanides*, **86**, 1911, 151-234. **Lozinski, P.**—Ueber einen eigentumlichen nestbau von *Osmia bicornis*, **92**, vi, 316-322. **Lyle, G. T.**—Stridulation in the pupa of an Ichneumonid, **9**, 1911, 404. **Pearse, A. S.**—On the habits of *Thalassina anomala*, **275**, vi, 213-215. **Roubaud, E.**—The natural history of the solitary wasps of the genus *Synagris*, **355**, 1910, 507-525. **Schulz, W. A.**—Grabwespen-typen Tourniers, Brulles, Lepeletiers und Schenks, **40**, xxvi, 67-68. **Wheeler, W. M.**—Three new ants from Mexico and Central America, **5**, 1911, 203-208 (\*). A list of the type species of the genera and subgenera of Formicidae, **321**, xxi, 157-175.

IER CONGRES INTERNATIONAL D'ENTOMOLOGIE. Bruxelles, Aout 1910.  
Volume II, Memoires Bruxelles, Hayez, Imprimeur des Académies  
Royales 30 Octobre, 1911.

This large octavo volume of 520 pages and 27 black and white plates reached us in the last days of December, 1911. It contains forty-nine memoirs by forty-one authors in German, English, French, Spanish and Italian. The titles have already been published in the News for October, 1910, pages 377-381. An accompanying slip announces that Volume I, containing the proceedings of the sessions of the Congress, will appear in the beginning of 1912.

CONTRIBUTIONS TO THE NATURAL HISTORY OF THE LEPIDOPTERA OF NORTH AMERICA. Vol. I, No. 1, Revision of the Cossidae. No. 2, Revision of the Lasiocampid Genus *Gloveria* and its allies. By William Barnes, S.B., and J. H. McDunnough, Ph.D., Decatur, Illinois.

These papers may be obtained from the authors. The price of the Cossidae is \$1.50 and of the Lasiocampidae \$1.00.

These moths, owing to lack of figures and careful study, were in an unsatisfactory condition and the authors are to be congratulated on the careful work they have done. In the Cossid paper there are seven plates and many figures, and in the Lasiocampid paper four plates.

The generic relations of the species have been studied and put on a firmer foundation. Specific variation of venation has not been used for generic separation, nor secondary sexual characters. The photographic reproductions are excellent. There are some slight faults owing to photographic limitations, but they are not material, as the figures are sufficiently exact for determination, the majority of the figures being very exact reproductions. The name *forma* is italicized on plate two in the second part, "*G. arizonensis forma dolores*," while in the body of the work the name is treated as a synonym. The word "*forma*" is put in italics as a part of the name of the insect, which is evidently incorrect.

We hope the authors may be able to continue the "Contributions," as it is studies of this kind that collate our knowledge and place it on a much firmer foundation.—H. S.

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## Doings of Societies.

### THE PACIFIC COAST ENTOMOLOGICAL SOCIETY.

The Thirty-seventh regular meeting was held on the evening of August 20, 1910, at 1801 O'Farrell street, San Francisco, Cal. President Van Dyke in the chair. Ten members and ten guests were present.

President Van Dyke reported the whereabouts of several absent members, namely: Miss Julia Wright, in Oregon; Karl R. Coolidge and Mr. Wm. Mann, collecting in Arizona.

Mr. James Cottle reported a collecting trip in July, 1910, to Castella, Siskiyou Co., California. He stated that there were no *Lycaenae*; the milk weeds were all past blooming and dry; and *Parnassius* were absent, although they were said to be abundant on meadows near Echo Lake. Four *Papilio daunus* were taken. No *Sphinx sequoia* were seen, and but five specimens of *Sphingidae* were taken at the Evening Primrose.

Mr. Huguenin stated that on August 14, 1910, while collecting at Fairfax, Marin Co., California, he captured a series of *Rosalia funebris*. The time is two months later than the regular time as heretofore reported. They were taken from the trunks of the California Laurel (*Umbellularia californica*).

Dr. Van Dyke stated that *Rosalia funebris* breeds in ash

(*Fraxinus oregona* and *dipetala*) in Washington, according to Prof. O. B. Johnson, while it breeds in California Laurel in this State. Mr. J. F. Killeen said that it also breeds in maple (*Acer macrophyllum*). Mr. Nunenmacher stated that the species is very abundant at Irvington, Alameda Co., California, and that it comes to the light.

Dr. Creighton Wellman stated that he had been working regularly, since the last meeting of the Society, on the *Meloidae* of East India, and that he had received the material from museums and private collections. Mention was also made of the faunal regions covered by his studies.

Dr. Van Dyke stated apropos of Dr. Wellman's remarks, that from some observations which he had made upon various species from the Sonoran, the Mediterranean and Aral-Caspian basin, and the Australian regions, he had come to the conclusion that the more typical part of the fauna of these three dry regions had a common origin, and the faunae therefore were not secondary to their adjacent tropical regions, but were of equal standing with them, and to a very great extent independent.

Dr. Wellman then stated that *Zonitis* and *Lytta* are the most primitive genera of the *Meloidae*.

Mr. J. F. Killeen made remarks on *Coccinella trifasciata* and *Adalia bipunctata*. He further stated that he had been experimenting on ants. These pests were trapped with bouillon poisoned with arsenic or strychnine.

Prof. W. B. Herms, of the Entomological Department of the University of California, being called upon, stated that he was interested in the sensory reactions of organisms to stimuli; and that he was working in Medical Entomology, studying the distribution of *Anopheles*, and their reactions.

Mr. J. C. Bridwell, recently from Oregon, and a Hymenopterist, being called upon, said that what little collecting he had done in California showed that there was a great variation in the species, and he considered that there was great need of rearing insects, in order to study variations, as we have too many species listed. He believed that we should rear

species from different localities and under the same conditions, and cited the tent-caterpillar as an example.

Mr. Nunenmacher said that the tent-caterpillar of Arizona was most interesting, as it never leaves its tent.

Percy Baumberger reported the results of a month's collecting, from June 15th to July 15th, at St. Helena, Napa Co., California, in the previous year. About a hundred species of Coleoptera were taken, not including any of the electric light material and Staphylinidae. He reported also that he had explored a cave: it was a long and narrow one, which wound around and descended in a serpentine manner. The walls were of clay, over which ice cold water ran. The cave was explored for about a mile, but he was unable to go any farther, because the passage was too small. Three beetles were caught, all light yellow and almost transparent. These were lost, except the elytron of one. A number of small centipedes and the remains of *Necrophilus hydrophiloides*, *Promecognathus lacvissimus* and *Pterostichus caligans* were found.

The names of Prof. W. B. Herms, J. C. Bridwell and R. F. Sternitzky were proposed for membership and were duly elected.

Dr. Blaisdell stated that the Thirty-sixth Meeting or Field Day of the Society was not held in May, 1910, on account of the Society not deciding on a suitable place at the Thirty-fifth Meeting.

Adjournment. Refreshments were served.

The Thirty-eighth Meeting was held on the evening of December 3, 1910, at the Toke Point Grill, San Francisco. President Van Dyke in the chair. Eleven members and three guests were present.

Under new business it was voted to raise the dues to \$1.00 a year, in order to accumulate funds for publishing the Proceedings of the Society at the end of each year.

Dr. Blaisdell read a paper on the "Variations in the Maculation of *Olla abdominalis*, and Observations on the Hibernating Habits of *Cicindela senilis*."

Mr. Nunenmacher supplemented the paper with other inter-

esting observations on the variations in the maculation of *Olla abdominalis*.

Mr. J. C. Bridwell gave an interesting talk on the habits, characters and distribution of an interesting group of Hymenoptera, with exhibition of the species.

Mr. Chas. Fuchs made remarks on his generic collection of *Cicindelidae* and *Carabidae*, with exhibition of his generic series.

Mr. J. E. Cottle exhibited and made remarks upon an interesting specimen of *Pyrameis* near *mulleri*.

Mr. F. W. Nunenmacher then referred to his studies on *Scymnus* with exhibition of the following species of *Coccinellidae*: *Axion incompletus* Nunenmacher, *Psyllobora koebeleri*, *Hyperaspis wolcotti*, *Hyp. wellmani*, *Hyperaspis floribunda*, *Hyp. lateralis* var. *flammula*; with Schaeffer's new species and co-types of *Rhyssomatus oculatus*, *Otidocephalus basalis*, *Brachytarsus nigromaculatus*, *Tychius suturalis*, *Bruchus crenatus*, *Laccophilus insignis*, *Xylotrechus quercus*, *Pogonocherus negundo*, *Chauliognathus obscurus*, *Ch. vittatus*, *Onthophagus arizonensis*, *Cymatodera antennata* and *Hydnocera fuchsi*.

Dr. C. Wellman exhibited specimens of the new *Hornia gigantea* collected by F. X. Williams in Kansas, together with other representatives of the Lyttid Tribe *Sitarini*, arranged so as to show the relations of the genera. He pointed out that through the palaeartic *Hapalus*, *Stenoria*, *Sitaris*, etc., the elytral reduction led by degrees to such strange forms as the Australian *Sitarida* and *Goetymes*, and that these in turn were replaced by the Asian *Sitarobrachys* and American *Leonidia* and *Hornia*, the last having the wings as well as the elytra almost wanting and the tarsal claws simple; in other words, the degradation had become complete.

In referring to Dr. Blaisdell's paper, he remarked, among other things, that the embryology and metamorphosis of animals were valuable as interpretative side lights on phylogenetic descent and that the pale forms were as a rule (which has many exceptions both from physical and selectional causes) primitive, pigmentation being a comparatively late phenom-

enon in many organisms. Reference was made to the influence of the remnants of the principal and cross-wing veins on the disposition of elytral fasciae and vittae.

Mr. Nunenmacher followed with remarks on the habits of a mud-dauber wasp and on type labelling.

Dr. Wellman took up the question of types and stated that with one type specimen there could be no mistake, or with a male and female type. The International Entomological Congress was recommended as a body to settle such questions.

Dr. Van Dyke stated, that as Dr. Wellman had been appointed Secretary of the International Entomological Congress, we should appoint him as our representative, and have Dr. Wellman use his influence to have the next Congress meet in San Francisco, in 1915.

Dr. Wellman was appointed as a committee of one.

A communication was then read from Mr. L. E. Ricksecker.

A discussion of the several papers and refreshments followed.

---

The Thirty-ninth Regular Meeting was held on the evening of February 25, 1911, at the Toke Point Grill, O'Farrell street, San Francisco, Cal. President Van Dyke in the chair. Ten members and six visitors were present.

Communications from Mrs. Kirkaldy, Prof. J. J. Rivers and Edw. Ehrhorn were read.

Prof. Rivers stated a desire to withdraw from the Society. It was moved and carried that he be made an honorary member.

President Van Dyke stated that it was desirable to obtain photographs or autographic letters from the older members of the Society, and also of other entomologists of the Pacific Coast, both of the past and present, a good beginning having been made in obtaining those of Prof. J. J. Rivers and W. G. W. Harford, both belonging to the older set of the recent workers.

Mr. Wm. Mann gave an account of collecting in Arizona,

at the lights, also on a trip to the Huachuca Mts. He stated that *Elcodes* was the characteristic beetle of that region; *Cychrus roeschkei* was taken on the trip.

Mr. J. C. Huguenin gave some very interesting information about collecting in winter in the vicinity of San Francisco. He stated that his records of capture of *Calligrapha sigmoidea* were as follows: February 26, 1910, three specimens; March 11, 1910, seven; April, 1910, nine; December 7, 1910, three; December 18, 1910, six; January 3, 1911, five; February 15, 1911, four; February 20, 1911, five; March 12, 1911, nine.

Trips were made each month to the locality, and he stated that from his observations, he believed it to be a winter species. Eggs and larvae were found. The food plant is the wild hollyhock, a species of *Sidalcea*. All stages were exhibited.

President Van Dyke thought that they were the hibernating adults that had been coaxed out by the warm weather, and had crawled up on the plants as stated. He also stated that the time had arrived for a change in the methods of collecting, saying that it is necessary to investigate closely and to work out the life histories of the species. Close collecting is constantly adding new and interesting things. No new *Cicindelidae* have been recently added, but among the *Carabidae*, a new variety of *Trechus* near *barbarae*, and at the same time a new *Ochthebius*, with the MS. name of *marinus*. Both of these species belong to a between-tides fauna. In Marin Co., California, the blind *Tenebrionid*, *Eschatoporis nunenmacheri*, had recently been found by Mr. Nunenmacher. Other things never before found south of Washington had also been found there. We must work closely with the *Rhynchophora*, as many a new species, or species new to this locality, is to be found.

Working among the *Cossonidae* of the State, it was found that much confusion has occurred with regard to several of the species. There are five species of *Cossonus* found on the Pacific Coast, two of which are new. In the genus *Meloe*, two species not found here before, have recently been captured here. New *Otiorrhynchids* are constantly being found.

After viewing and discussing the Exhibits, refreshments followed.

The Fortieth Meeting, or Annual Field Day of the Society was not held—F. E. BLAISDELL, *Secretary*.

#### THE NEWARK ENTOMOLOGICAL SOCIETY.

Meeting of September 10, 1911, at the Newark Turn Hall, Newark, New Jersey.

President Buchholz in the chair and eleven members present.

Messrs. Keller, Brehme and Angelman were appointed as a Committee to make arrangements for the Twenty-seventh Anniversary to take place in October.

Mr. Angelman reported *Ceratonia catalpa* caterpillars at Paterson, N. J., which is probably the most northern point which this species has reached up to the present time.

Mr. Buchholz reported the following captures: One *Scsia* unknown to him bred in speedwell and taken at Rye, New York; a new *Acronycta* bred; larvae found at Lakehurst, N. J., food either huckleberry or oak; *Catocala herodias* and *Catocala coccinata* variety *sinuosa*, both taken at Lakehurst, on August 12th.

Mr. Grossbeck gave an interesting talk on his trip to Jamaica and stated that collecting was much easier in the United States than in the tropics. About forty photographs illustrated his talk.

Meeting of October 8, 1911, at the Newark Turn Hall.

President Buchholz in the chair and ten members present.

Mr. Brehme reported the capture of *Catocala connubialis*, formerly called *sancta* Hulst, at South Elizabeth, N. J., July 23rd. This is the first record of this species being taken in New Jersey. There is no question about its being a native of this State, as the specimen only emerged a short time before it was captured.

Mr. Brehme also reported on the abundance of *Catopsilia cubule* along the coast from Monmouth Beach to Beach Haven

during August and September. By all appearance this species is also a native and not a visitor only.

After adjournment the members partook of a dinner, in celebration of the Society's Twenty-seventh Anniversary.—

---

Meeting of November 12, 1911, in the Newark Turn Hall. President Buchholz in the chair, nine members present.

Messrs. Keller, Brehme and Grossbeck were appointed as the Nominating Committee for the election of officers in December.

Mr. Zaiser reported the capture of *Dcilephila chamoenerii*.

Mr. Lemmer reported the capture of one *Gypsochroa sitelata* (Geom.) at light in Irvington, August 16th. This species is new to the State.

Mr. Buchholz showed a very interesting series of *Papaipema*, comprising thirteen species all raised by himself from larvae collected during the past season.

---

Meeting of December 10th, 1911, in the Newark Turn Hall.

President Buchholz in the chair, thirteen members present. Visitor, Mr. John Hampson, of Newark.

The Nominating Committee selected the following members to hold office for the year 1912, and they were duly elected:

President, Otto Buchholz (reelected); Vice-President, Adolf Schleckser; Secretary, Fred Lemmer; Financial Secretary, T. D. Mayfield (reelected); Treasurer, George J. Keller (reelected); Librarian, Herman H. Brehme; Trustees, for three years, Wm. J. Erhard; for two years, Julius Buenson; for one year, Louis Doerfel; Curator of Lepidoptera, Herman H. Brehme; Curator of other Orders, Edwin E. Bischoff.

Mr. Henry H. Brehme, of Newark, and Mr. Justus Kaiser, of Woodhaven, Long Island, were elected members.

Mr. Herman H. Brehme showed a very interesting series of *Junonia coenia*, 25 specimens in all, and no two alike, although all were from the same brood.

HERMAN H. BREHME, *Secretary*.

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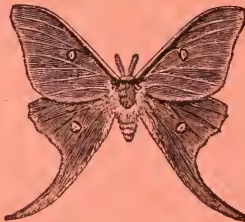
*Urania croesus*.

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*S. S. Haldeman 1862.*

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WATSON.

FIG. 1.—*Hemiteuca electra*, ♀.  
 " 1a " *ab. rickseckeri*, n. ab., ♀.  
 " 2 " *burnsi*, ♂.  
 " 3 " " ♀.  
 " 4 " *ab. conjuncta*, n. ab., ♀.  
 " 5 " " asymmetrical, ♀.

# ENTOMOLOGICAL NEWS

AND

## PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

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### CONTENTS:

Watson—Some new forms of North American Saturnidae, genus <i>Hemileuca</i> (Lepid.).....	97	Jones—The Female of <i>Sesia rubrofascia</i> Hy. Edw. (Lepid.).....	122
Williamson— <i>Hetaerina titia</i> and tricolor (Dragonflies—Odonata).....	98	Fenyés— <i>Gyronycha</i> Csy. (Coleop., Staphylinidae), a critical study.....	123
Banks—At the <i>Ceanothus</i> in Virginia..	102	Skinner—Two New Butterflies (Lepid.)	126
Fox—Two Apparently Hitherto Undescribed Species of <i>Xiphidium</i> from the Salt Marshes of the Atlantic Coast of the United States (Orthop.)	111	Nixon—Description of a New Variety of <i>Smerinthus jamaicensis</i> (Lepid.)	127
de la Torre Bueno—Records of Heteroptera from Brownsville, Texas (Hemp.).....	120	Editorial.....	125
		Notes and News.....	129
		Entomological Literature.....	132
		Doings of Societies.....	138

## Some New Forms of North American Saturnidae, Genus *Hemileuca* (Lepid.).

By J. HENRY WATSON, Withington, Manchester, England.

(Plate VII.)

*Hemileuca electra* ab. *rickseckeri* n. ab. ♀. (Plate VII, Fig. 1a.)

Forewing above wholly jet black except for the discal spot, a faint diffused white streak widening from base to half way up the cell and a faint diffused whitish spot on hind margin divided by the submedian nervure. The nervures submarginally pencilled with the faintest possible traces of white. Hindwing above with the costal margin heavily outlined with black extending to the large oblong black discal spot which has a distinct transparent line within. Outer margin heavily outlined with black which runs up the nervures as far as the discal spot.

Both wings below have the costa and outer margins broadly suffused with black. No apical white suffusion. Body less heavily banded with white below.

*Hab.*:—San Diego, California.

*Type*:—One ♀. Coll: J. H. Watson.

*Hemileuca burnsi* ab. *conjuncta* n. ab. (Plate VII, Fig. 4.)

Differs from typical *burnsi* in having the hinder ends of the apical and transverse black bands of forewings joined together by a distinct black line running along the hind margin. The nervures outlined with black form the apical band towards the discal spot.

*Hab.*: Reno, Nevada. Two ♀ specimens ex pupae. One in my own and one in Mr. Fred Burns' Coll.

A number of specimens of *H. burnsi* have hatched out asymmetrically; in fact I know no insect which has thrown so many erratic specimens in which the wings of one side are oddly marked. One curious female specimen has the right half as in the female of ab. *conjuncta* and the left one as in the normal female with the addition of a patch of black scales between the discal spot and the submarginal band. More heavily marked on the nervures.

The hybernated pupae from last season commenced to hatch with two days of this year's brood, though here in the north of England, they must have been subjected to very diverse temperatures from those in Nevada.

---

### **Hetaerina titia and tricolor (Dragonflies—Odonata).**

By E. B. WILLIAMSON, Bluffton, Indiana.

A specimen from the Wabash River near Bluffton, Indiana, compared with a specimen from Wister, Oklahoma, has colored areas of wings more extensive; there is more brown in the membrane of the fore wing in the colored area (in both cases brown is anterior to A for the full length of the colored area and, distal to the quadrangle, extends across the full width of the colored area but it is evident only on close examination, because it does not extend beyond the area of pink veins); in the hind wings the colored area is about the same in extent and shape in the two specimens, excepting that in the Indiana specimen the distal prolongation of the brown area toward the nodus is carried farther (3.5 mm. distant in Wister specimen, 3 mm. in Indiana specimen).

In the case of the Wister specimen, however, the body colors are distinctly and conspicuously darker, having metallic reflections, compared with the dull black of the Indiana specimen. The humeral stripes, strongly evident in the latter, are not represented at all in the Wister specimen; and the exten-

sive posterior and ventral pale thoracic areas of the Indiana specimen are represented in the other by a uniform black, with two very narrow pale lateral stripes. The mouth parts and bases of the legs in the Wister specimen are black and without markings, while they are varied with yellow in the other. The abdomen is also much darker, and without trace of markings in the Wister specimen.

The above described Wister specimen has the most reduced colored wing areas of any specimens seen from this locality. From this extent of color areas a continuous series is shown up to an extent corresponding about to Calvert's fig. 5, plate 3, Biol. Centr. Am. Neur.—that is, with the pale area of hind wing measuring about 7 mm. in length. As mentioned above, brown membrane exists in the front wing at least anterior to A and across the wing distal to the quadrangle. Where these areas of brown membrane show red or reddish, it is due to the veins and membrane immediately adjoining them. Hence the enclosure distally of the red area of the front wing by brown introduces no new character in the wing, but is merely an extension of the brown area there, as in the hind wing, beyond the area of red veins. In those specimens showing maximum development of brown beyond the red areas occurs the maximum development of brown membrane within the red areas, and, in the front wings, the area posterior to A and proximal to the distal end of the quadrangle may be invaded.

Two males from Clifton, Texas, are fairly intermediate in body markings between the Indiana and Wister, Oklahoma, specimens. Compared with two males, one from Tennessee, the other from Pennsylvania, they are smaller, darker and with more extensive colored areas on the wings. Six males from Black Bayou,\* Texas, are similar to the Clifton males, and indicate that, to a certain degree at least, the extent of black laterally on the thorax is determined by age as well as by habitat. For example, a teneral male from Black Bayou suggests a fully matured male from Pennsylvania.

---

\* Near Victoria, where St. L. B. and Mex. R. R. crosses the Guadalupe River.

In eighteen males from Wister only five show any extension of color on the hind wings distal to the nodus, and only one of these has the color carried across in a mass of color occupying approximately the wing breadth; in the others the nodus is attained by a narrow prolongation of color along the anterior edge of the wing. All these eighteen show the body colors of *titia*. Ten of the eighteen have the brown area conspicuous beyond the red in the front wing, though, as explained before, it exists in all and becomes conspicuous or evident with the extension of brown distally beginning a few cells beyond the quadrangle where the pink veins cease. Of these eighteen males, five, as stated, have the brown area of hind wing reaching the nodus, and one, as described, has the brown area separated from the nodus by about 3.5 mm.; the others vary in this particular from about 1—3 mm. The brown areas on the wing apices vary but little, the darkest wings apparently having the largest spots, but these differences being within narrow limits. Nothing approaching the condition shown in Calvert's fig. 7 and following, plate 3, Biol. Centr. Am. Neur. is represented. The largest spot begins slightly proximal to the stigma, others begin about the level of the proximal end, while the majority are still more reduced. Variations in the stigma are conspicuous, but meaningless, so far as I can tell.

In addition to the above mentioned material seven males from the Cumberland River, near Nashville, two males from the Clinch River, Tennessee, three males from Brookville, Indiana, and three males from Ohio Pyle, Pennsylvania, have been studied. In these the dark color of the hind wings in its posterior portion terminates at the distal end of the quadrangle; in its anterior portion it terminates at the same level in five males from Tennessee and two from Brookville, Indiana; in four males from Tennessee, one male from Brookville, Indiana, and three males from Ohio Pyle, Pennsylvania, there is a more or less distinct distal prolongation of color along the anterior edge of the wing toward the nodus.

A comparison of females from Texas and Tennessee fails to show any noteworthy differences.

A comparison of the eighteen Wister males shows that in wing color they fall, with one exception, between Calvert's figures 1 and 2, plate 3, Biol. Centr. Am. Neur. Figure 1 is *tricolor*, figure 2 is *titia*. The exception noted is clearly *titia* in wing markings (corresponding closely with fig. 5, *loc. cit.*) and body markings. The Wister specimens are unquestionably specifically identical, and I believe, supply the gap which Dr. Calvert expected would be discovered, showing that "*tricolor* is but the other extreme of the series in which *H. bipartita* and *H. titia* are terms" (Biol. Centr. Am. Neur., p. 32).

My conclusions are that in the United States one variable species, hitherto known as *Hetaerina titia* and *H. tricolor* exists; that the northern examples are larger and paler colored both as regards bodies and wings; that in any locality within this area where the species occurs, specimens representing the average forms of widely separated localities may be taken; that a large series of specimens from a southern locality will show more variation than a similar large series of specimens from a more northern locality; and that under these conditions it is useless to attempt to designate more than one entity by any device of nomenclature. The species will be *Hetaerina titia* Drury.

I have collected large numbers of both these nominal species in Guatemala, but none of this material is available for study at this time. I am sure, however, that specimens of *titia* collected at Los Amates, in June, 1909, will show a greater variation of wing markings within the old definitions of *titia* than the Wister specimens show within the old definitions of the wings of *tricolor*. The Wister specimens will show more variation, however, than series from either Indiana or Pennsylvania.

---

RICE GROWING AND MALARIA.—Dr. C. P. Kennard traces the connection between the annual increase of cases of human malaria and the rice harvest in British Guiana to the increased opportunities for the breeding of *Anopheles* larvae in the small pools of water left by draining the fields in order to cut the grain. (*Journ. Royal Agric. and Commerc. Soc. Brit. Guiana*, Dec., 1911).

## At the *Ceanothus* in Virginia.

By NATHAN BANKS, East Falls Church, Virginia.

If ever there is a proposition for the adoption of an entomologist's flower, I shall vote early and often for *Ceanothus*. In June, that month of profusion of bloom, *Ceanothus* is the most attractive enchanter of insect life. Its fragrance calls and calls till around the white head of blossom there is an encircling halo of admirers such as no flower in this vicinity may boast. Bee and fly and beetle follow the enthralling odor until they rest on that bed of white. The burly bumble-bee and the handsome longicorn, the fiery wasps and sharp-clawed Scarabaeids mingle with tiny beetles, delicate crane-flies and other Diptera to feast on this bounteous hoard. The vicious robber-flies hover about, the *Phymata* lurks in the flower, and many another predaceous insect here finds an abundance of food.

Each year as the bright warm days of mid-June come around I have taken a few days from my work to gather those insects that have answered the call of *Ceanothus*. To stand 'neath the broiling sun and watch this mazy whirl of restless insect life; to hear the hum of a hundred tiny wings, mingled with the sharper buzz of certain species; to easily and stealthily push one's way through the bushes, glancing anxiously here or there for something new, with net in hand a-tremble for a lightning stroke; these are the pleasures of *Ceanothus* collecting that bear pleasant memories on many a wintry day. Those specimens bearing the little label "*Ceanothus*" will always have a charm for me unequalled by the curious structures of many a more wondrous species.

There is great variation in the class of insect visitors according to the environment of the flowers. At a patch near woodlands where there were many dead trees, a considerable variety of Longicorns were always obtainable; at another patch in an open meadow few Longicorns were ever found. Some days insects were scarce when one could not tell why, the next day they might be abundant. A cloudy or clear sky, and the amount

of wind makes a great difference in the number of bees and flies, and a high degree of humidity lessens the abundance of insects, especially flies. Yet a hot spell after a mid-day shower has several times brought out a host of species, where before the shower there were but comparatively few visitors. The Hymenoptera are usually at their best from 11 till 2, the flies are often abundant till 5 or 6, while the small crane-flies and mosquitoes occur at twilight.

In this vicinity the *Ceanothus* usually begins to bloom before the 15th of June, and commonly there is little left by the Fourth of July; but each season has its peculiarities, and the location and exposure make much difference.

The list, as one will readily see, contains an abundance of common forms, but also many species that are considered rare. Some insects recorded, doubtless just happened to be there, but others, even parasitic and phytophagous species, seem to love to be in a crowd, and were captured on various occasions although there is apparently no reason for their visiting the flowers. The greatest variety of forms is among the Hymenoptera, the beetles come next, and then the flies. Bees form the great bulk of the Hymenoptera, and several species were often present in hundreds of specimens. For the names of these and some other Hymenoptera I am much indebted to Prof. T. D. A. Cockerell, and to Messrs. Crawford, Viereck, Rohwer, Lovell, and Swenk. Mr. Schwarz has kindly determined the Coleoptera. I have not listed the Lepidoptera; they are comparatively few in numbers, although a *Thyris* was sometimes fairly common.

The insect visitors of *Ceanothus* in Illinois have been recorded by Mr. Robertson in the Botanical Gazette, vol. XX; he obtained 48 Hymenoptera, 45 Diptera, 13 Coleoptera, 4 Hemiptera, and 2 Lepidoptera, all on the flowers. Mr. Hopping has given (Entom. News, 1899, pp. 162-5) a list of the beetles found on *Ceanothus* in California, 56 species; and Mr. Morris (Can. Entom. 1909, pp. 416-417) writes of Coleoptera taken on *Ceanothus* in Canada, only a few mentioned by name. There are many isolated records in various lists, while a considerable number are to be found in Smith's List of New Jersey insects.

Of the rare and unusual species one may note in the Hemiptera *Mineus strigipes*, *Lygaeus turcicus* often confounded with *L. kalmii*; *Phymata pennsylvanica*, and *Rhinocapsus vanduzeei*.

In the Coleoptera, the *Trichodes* was quite abundant at certain patches, and has doubtless been mistaken for *T. apivorus*; *Strangalia bicolor*, more apt to be on wild roses; *Eupogonius subarmatus*, very rare here; and *Griburius scutellaris*. The most common beetle was *Chauliognathus*, but there are always hosts of the small Mordellas and *Centrinus picumnus*, *Macratria murina*, *Lappus sturmi*, *Mycterus scaber* and *Isomira sericea* were always abundant. Eleven species of Cerambycidae have been taken at one patch of flowers in less than an hour.

Of the bees the *Viereckella ceanothi* is the best find, nine specimens were taken one day. The *Anthidium* was taken but once, and usually occurs later in the season on false-indigo; *Andrena rehni* was rather common. *Philanthus gibbosus* is the most common flower-wasp; *Tachytes* is quite numerous, but difficult to capture; its sharp buzz is very characteristic. *Amophila inepta* is the most common Sphecid, *Sphex auripes* was not rare; the *Stizus nanus* was taken but once, and I had not seen it north of North Carolina. *Monedula carolina* was also taken but once and is the only specimen I have seen here. *Episyron snowi* was taken only a few times, and *Pseudagenia cupida* but once. *Ropronia* was taken but once on *Ceanothus*. The most choice Ichneumonid is the delicate *Ophionellus virginiensis*; every year I have taken a few, rarely more than one a day; it hovers close to the flower and is so slender one can scarcely see it. Ants were usually abundant, especially *Camponotus* and *Formica*. The saw-fly, *Cephaleia plagiata* is a fine and uncommon species here, several were taken.

Of the flies *Odontomyia flavicornis* and *O. occipitalis* are fine catches. *Volucella obesa* was taken twice, *Milesia* was often present, and also *Xylota elongata*, this latter would usually rest on some of the interior leaves of a bush, where it was hard to sweep with the net. The rare Conopid, *Dalmannia vitiosa*, described from California, was taken twice; *Occemyia* and *Zodion fulvifrons* were abundant, *Conops brachyrhynchus*

was always to be found. Of the Tachinids, *Gymnochaeta* was taken twice, *Celatoria spinosa* but once, *Spallanzia* was perhaps the most common.

Besides these identified forms there are a few other Hymenoptera, mostly Ichneumonidae, which are unnamed, and, taken but one, may be accidental visitors.

## HEMIPTERA.

## THYREOCORIDAE.

Thyreocorus gillettei V. D.

“ pulicaria G.

## PENTATOMIDAE.

Nezara pennsylvanica D. G.

“ hilaris S.

Euchistus variolarius P. B.

Mormidea lugens F.

Mineus strigipes H. S.

Stiretrus anchorago F.

## COREIDAE.

Euthoetha galeator F.

Corynocoris typhaeus F.

Chariesterus antennator F.

Alydus quinquespinosus S.

“ eurinus S.

“ pilosulus H. S.

Corizus nigristernum S.

## PYRRHOCORIDAE.

Largus succinctus L.

## LYGAEIDAE.

Lygaeus turcicus F.

“ kalmii St.

Oncopeltus fasciatus H. S.

Ordancala dorsalis S.

## PHYMATIDAE.

Phymata pennsylvanica H.

## REDUVIIDAE.

Sinea spinipes H. S.

Apiomerus spissipes S.

## ANTHOCORIDAE.

Triphleps insidiosus S.

## CAPSIDAE.

Neurocolpus nubilus S.

Calocoris rapidus S.

Plagiognathus politus Uhl.

Lopidea media S.

Resthenia insignis S.

Lygus fusconotatus Prov.

Rhinocapsus vanduzeei Uhl.

## HOMOPTERA.

## MEMBRACIDAE.

Stictocephala lutea F.

## CERCOPIDAE.

Aphrophora parallela S.

## TETTIGONIDAE.

Oncometopia undata F.

## JASSIDAE.

Phlepsius irroratus S.

Deltocephalus sp.

Thamnotettix clitellaria S.

Xestocephalus sp.

Agallia quadrinotata Fh.

Bythoscopus sp.

## FULGORIDAE.

Oliarces humilis St.

Liburnia ornata St.

## COLEOPTERA.

## CARABIDAE.

Lebia ornata S.

“ scapularis D.

“ viridis S.

## DERMESTIDAE.

Cryptorhopalum triste L.

“ haemorhoidalis L.

## ELATERIDAE.

*Dolopius lateralis* Esch.  
*Corymbites inflatus* S.

## LAMPYRIDAE.

*Pyropyga decipiens* Harr.  
*Chauliognathus marginatus* F.

## CLERIDAE.

*Clerus lunatus* Spin.  
*Trichodes interruptus* L.

## CERAMBYCIDAE.

*Purpuricenus humeralis* F.  
*Euderces picipes* F.  
*Acmaeops directa* N.  
*Strangalia famelica* N.  
    " *acuminata* O.  
    " *luteicornis* F.  
    " *bicolor* S.  
*Leptura cordifera* O.  
    " *rubrica* S.  
    " *vagens* O.  
*Typocerus lugubris* S.  
    " *lunatus* F.  
    " *sinuatus* N.  
    " *velutinus* F.  
*Eupogonius subarmatus* L.  
*Oberea bimaculata* O.  
    " *tripunctata* S.  
    " *schaumi* L.

## CHRYSOMELIDAE.

*Babia quadriguttata* O.  
*Cryptocephalus venustus* F.  
    " *notatus* F.  
*Pachybrachys trinotatus* M.  
    " *infaustus* H.  
    " *tridens* M.  
    " *spumarius* Suff.  
*Bassaricus mammifer* N.  
*Triachus atomus* Suff.  
*Nodonota puncticollis* S.  
*Orthaltica copalina* F.  
*Griburica scutellaris* L.

## BRUCHIDAE.

*Bruchus macrocerus* Horn.

## CISTELIDAE.

*Isomira sericea* S.

## MELANDRYIDAE.

*Mycterus scaber* Hald.

## OEDEMERIDAE.

*Copidita thoracica* F.

## MORDELLIDAE.

*Mordella octopunctata* F.  
    " *scutellaris* F.  
    " *marginata* M.

## ANTHICIDAE.

*Macratia murina* F.  
*Lappus sturmii* Laf.

## MELOIDAE.

*Epicauta cinerea* Forst.

## MALACHIDAE.

*Attalus pallifrons* Mots.

## CURCULIONIDAE.

*Centrinus picumnus* Hbst.

## ANTHRIBIDAE.

*Brachytarsus tomentosus* S.

## SCARABAEIDAE.

*Valgus canaliculatus* F.  
*Anomala minuta* B.  
*Trichius piger* F.

## RHIPIPHORIDAE.

*Rhipiphorus limbatus* F.

## HYMENOPTERA.

## APIDAE.

*Apis mellifera* L.  
*Bombus vagans* Sm.  
    " *americanorum* F.  
*Anthidium notatum* L.  
*Heriades carinatus* Cr.  
*Nomada perplexa* Cr.  
    " *ceanothi* Ckll.

*Nomada pygmaea* Cr.  
 " sp.  
*Viereckella ceanothi* Ckll.  
*Anthophora abrupta* S.  
*Macropis ciliata* Pt.  
*Calliopsis andreniformis* Sm.  
 " *flavifrons* Sm.  
*Panurginus illinoisensis* Cr.  
 " *pauper* Cr.  
 " *virginicus* Ckll.  
*Andrena cressoni* Rbt.  
 " *fragilis* Sm.  
 " *nasoni* Rbt.  
 " *obscura* Rbt.  
 " *rehni* Vier.  
 " *robertsoni* D. T.  
 " *spireana* Rbt.  
*Colletes inaequalis* S.  
 " *latitarsis* Rbt.  
 " *nudus* Rbt.  
*Halictus arcuatus* Rbt.  
 " *caeruleus* Rbt.  
 " *cressoni* Rbt.  
 " *forbesi* Rbt.  
 " *fuscipennis* Sm.  
 " *lerouxii* Lep.  
 " *ligatus* S.  
 " *pectoralis* Sm.  
 " *provancheri* D. T.  
 " *sparsus* Rbt.  
 " *vierecki* Crw.  
 " spp. (Two)  
*Augochlora banksiella* Ckll.  
 " *fervida* Sm.  
 " *humeralis* Pt.  
 " *similis* Rbt.  
 " *viridula* Sm.  
*Agapostemon splendens* Lep.  
 " *virescens* F.  
*Prosopis modesta* S.  
 " *pygmaea* Cr.  
 " *zizae* Rbt.  
*Sphecodes ranunculi* Rbt.  
 " *stygius* Rbt.

## VESPIDAE.

*Vespa carolina* D.  
 " *germanica* F.  
 " *maculata* L.  
*Polistes metricus* S.  
 " *variatus* Cr.  
 EUMENIDAE.  
*Monobia quadridens* L.  
*Eumenes fraterna* S.  
 " *verticalis* S.  
*Nortonia symmorpha* S.  
*Ancistrocerus ceanothi* Roh.  
 " *campestris* S.  
 " *quadrisectus* S.  
 " *saeculus* S.  
 " *tigris* S.  
 " *unifasciatus* S.  
 " sp.

*Odynerus conformis* S.  
 " *foraminatus* S.

## PHILANTHIDAE.

*Cerceris alaope* Bks.  
 " *clymene* Bks.  
 " *clypeata* D.  
 " *compacta* C.  
 " *deserta* S.  
 " *imitatoria* Schlett.  
 " *robertsoni* Fx.  
*Philanthus gibbosus* F.

## CRABRONIDAE.

*Oxybelus laetus* S.  
 " *packardi* Rbt.  
 " *quadrinotatus* S.  
*Notoglossa emarginata* S.  
 " *frontalis* Rbt.  
 " sp.  
*Anacrabro ocellatus* S.  
*Crabro bigeminus* P.  
 " *brunneipes* P.  
 " *chrysarginus* Lep.  
 " *interruptus* Lep.  
 " *tumidus* P.  
 " sp.

*Trypoxylon clavatum* S.

NYSSONIDAE.

*Gorytes flavicornis* S.

*Nysson subtilis* Fox.

MIMESIDAE.

*Mimesa pauper* P.

LARRIDAE.

*Tachytes harpax* Pt.

*Tachysphex acuta* Pt.

" *terminata* Sm.

BEMBECIDAE.

*Bembidula ventralis* S.

*Monedula carolina* F.

" *pictifrons* Sm.

*Stizus nanus* Hdl.

SPHECIDAE.

*Sphex auripes* H.

*Isodontia philadelphicum* Lep.

*Chalybion caeruleum* L.

*Sceliphron caementarium* D.

*Ammophila fragilis* Sm.

" *nigricans* D.

" *procera* D.

" *inepta* Cr.

MUTILLIDAE.

*Mutilla scaeva* B.

*Epherta scrupea* S.

SCOLIIDAE.

*Plesia namea* F.

*Elis plumipes* D.

*Tiphia* spp.

PSAMMOCHARIDAE.

*Allocyphonyx maura* Cr.

*Psammochares tropicus* F.

" *philadelphicus* L.

" *virginiensis* Cr.

*Pompiloides cylindricus* Cr.

" *marginatus* D.

*Batazonus interruptus* S.

*Episyron biguttatus* F.

" *snowi* Vier.

*Pseudagenia accepta* Cr.

" *cupida* Cr.

*Aporinellus fasciatus* Sm.

CHRYSIDAE.

*Holopyga dimidiata* S.

*Chrysis* spp.

CHALCIDAE.

*Perilampus cyaneus* F.

*Smicra torvina* S.

BRACONIDAE.

*Cremnops haematodes* Br.

" *semirubra* Cr.

*Boethus* sp.

*Microdus* sp.

*Chelonus biannularis* Cr.

*Toxoneura tibiator* S.

ICHNEUMONIDAE.

*Trogomorpha trogiformis* Cr.

*Anomalon metallicum* Nort.

*Campoplex villosus* Nort.

*Joppidum apicale* Cr.

*Ophonellus virginiensis* Cr.

*Ophion bilineatum* S.

*Capitonius ashmeadi* D. T.

*Eugnomus pallidus* Ashm.

*Polyblastus* sp.

*Cryptus* sp.

*Cnemonus* sp.

*Temillus* sp.

*Hyptia reticulata* S.

*Gasteruption tarsatorius* S.

*Ropronia garmani* Ashm.

FORMICIDAE.

*Cremastogaster lineolata* S.

*Camponotus melleus* S.

*Formica schauffussi* M.

" *subsericea* S.

*Tapinomma sessile* S.

*Lasius alienus* F.

*Monomorium minutum* S.

## TENTHREDINIDAE.

- Acordulecera sp.  
 Eudelomyia aethiops F.  
 Cephaleia plagiata Kl.  
 Taxonus apicalis S.  
 " terminalis S.

## DIPTERA

## CULICIDAE.

- Aedes canadensis Th.

## TIPULIDAE.

- Geranomyia rostrata S.

## STRATIOMYIDAE.

- Clitellaria subulata Loew.  
 Odontomyia flavicornis O.  
 " occipitalis John.  
 " virgo Wied.

## TABANIDAE.

- Chrysops niger Macq.  
 " fallax O. S.  
 " univittatus Macq.  
 Tabanus melanocerus Wied.

## BOMBYLIDAE.

- Exoprosopa emarginata Macq.  
 Anthrax lateralis S.  
 Bombylius fraudulentus John.  
 " mexicanus Wied.  
 " fulvibasis Macq.  
 Geron senilis Fab.

## ASILIDAE.

- Leptogaster pictipes L.  
 Ceraturgus cruciatus S.  
 Taractius octopunctatus S.  
 Dasyllis thoracica F.  
 " posticata S.  
 Asilus sericeus S.  
 " lecythus W.

## DOLICHOPODIDAE.

- Psilopodinus siphos S.

## SYRPHIDAE.

- Chrysogaster nitida Wied.

- Chrysogaster nigripes Loew.  
 Pipiza pulchella Will.  
 Paragus bicolor F.  
 " angustifrons Loew.  
 Chilosia tristis Loew.  
 Baccha fuscipennis S.  
 " babista W.  
 Melanostoma mellinum L.  
 Syrphus americanus Wied.  
 " ribesii L.  
 Allograpta obliqua S.  
 Xanthogramma emarginata S.  
 " flavipes Loew.  
 Mesogramma geminata S.  
 " marginata S.  
 Sphaerophoria cylindrica S.  
 Sphegina rufiventris Loew.  
 Volucella obesa F.  
 Eristalis transversus Wied.  
 " dimidiatus Wied.  
 " brousi Will.  
 Syrritta pipiens L.  
 Xylota bicolor Loew.  
 " ejuncida S.  
 " elongata Will.  
 Milesia virginienensis D.

## CONOPIDAE.

- Conops brachyrhynchus M.  
 Physocephala tibialis S.  
 Zodion abitus Ad.  
 " fulvifrons S.  
 " nanellum Loew.  
 Stylogaster neglecta Will.  
 Dalmannia vitiosa Coq.  
 Occemyia abbreviata Loew.  
 " loraria Loew.  
 Myopa vesiculosa S.

## PIPUNCULIDAE.

- Pipunculus æques Cr.  
 " nigripes Loew.

## TACHINIDAE.

- Gymnosoma fuliginosa D.  
 Trichopoda pennipes F.

Cryptomeigenia thentis W.  
 Celatoria spinosa Coq.  
 Hypostena floridensis T.  
 " sp.  
 Macquartia pristis W.  
 Leskia thecata Coq.  
 Leskiomera tenera Wied.  
 Epigrimyia floridensis T.  
 " robertsoni T.  
 Distichona varia V. W.  
 Plagia americana V. W.  
 Senotaenia trilineata V. W.  
 Aphria ocypterata T.  
 Ocyptera argentea T.  
 " carolina D.  
 " dosiades W.  
 Linnæmyia compta Fall.  
 Gymnochæta alcedo Loew.  
 Exoristoides slossonæ Coq.  
 Exorista confinis Fall.  
 Masicera festinans M.  
 Paraphyto gillettei T.  
 Belpharipeza leucophrys Wied.  
 Winthemia quadripustulata F.  
 Hilarella polita T.  
 Spallanzia hesperidarum Will.  
 Trichophora ruficauda V. W.  
 Peleteria robusta Wied.  
 Archytas aterrina Desv.  
 Echinomyia algens Wied.

## DEXIIDAE.

Dexia sp.

Thelairodes sp.  
 Theresia tandrec Desv.  
 SARCOPHAGIDAE.

Sarcophaga spp.  
 Helicobia helices T.

## MUSCIDAE.

Pseudopyrellia cornicina F.  
 Pollenia rudis F.  
 Chrysomyia macellaria F.  
 Lucilia cæsar L.

## ANTHOMYIDAE.

Homalomyia canicularis L.  
 Pegomyia fusiceps Zett.

## SCIOMYZIDAE.

Tetanocera costalis Loew.

## SAPROMYZIDAE.

Sapromyza glauca Coq.

## ORTALIDAE.

Myrmecomyia myrmecoides Loew.  
 Amphicnephes pertusus Loew.  
 Rivellia micans Loew.  
 " pallida Loew.  
 " quadrifasciata M.

## TRYPETIDAE.

Neaspilota achillæ John.  
 Euaresta bella Loew.

## SEPSIDAE.

Nemopoda cylindrica F.

## AGROMYZIDAE.

Milichia indecora Loew.

## TOTALS.

	Species.
Hemiptera .....	42
Coleoptera .....	58
Hymenoptera .....	165
Diptera .....	117
Total .....	382

## Two Apparently Hitherto Undescribed Species of *Xiphidium* from the Salt Marshes of the Atlantic Coast of the United States (Orthop.).

By HENRY FOX, Ph.D., Ursinus College, Collegetown, Pa.

(Plates VIII and IX.)

In the salt marshes of southern New Jersey (Cape May County) I have taken examples of two species of *Xiphidium*, which, so far as I have been able to ascertain from the literature and an examination of the collections in the Philadelphia Academy of Natural Sciences, appear not to have been hitherto recognized as valid species. Specimens of the present species from New Jersey were included in the Academy collection with *X. brevipenne*, while among some Florida specimens referred with a query to *X. nigropleurum* Bruner, were examples of what appear to be larger geographical races of both the new species. The following measurements and descriptions are based on New Jersey, and in the case of *X. spartinae* on Massachusetts material also. The Massachusetts specimens were taken in a small salt marsh at Wood's Hole.

### *Xiphidium spartinae* n. sp. (Plate VIII).

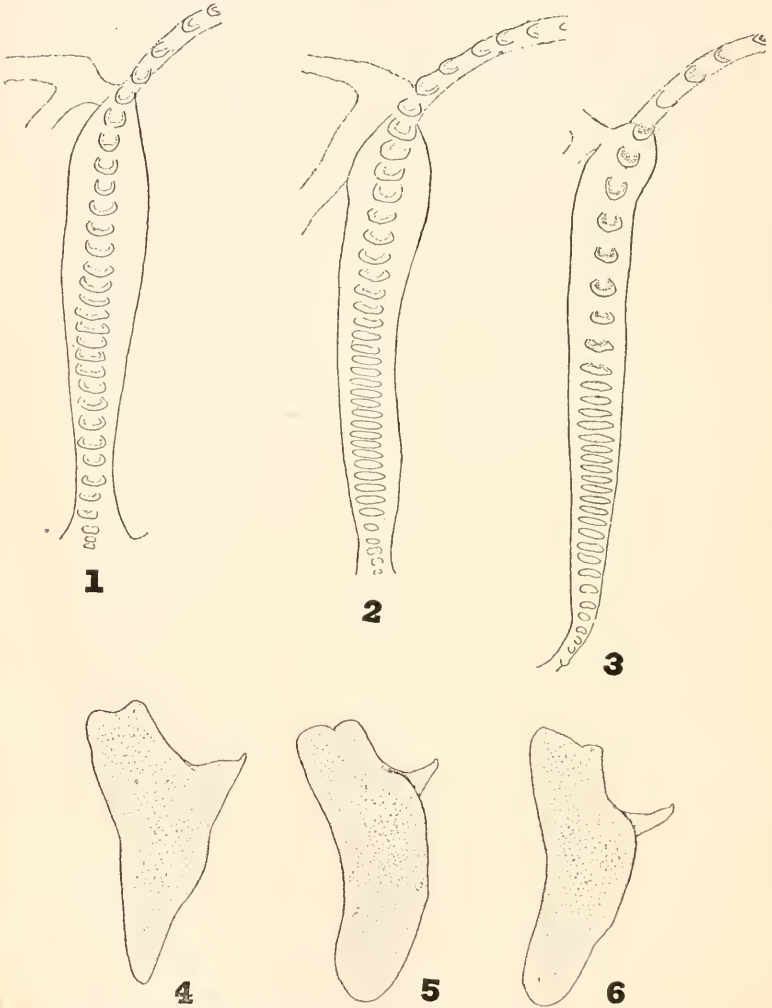
*Measurements*: Male—Length from fastigium to the tip of the supra-anal plate, 10.8-13.5 mm.; to the end of the pronotum, 4-5 mm.; to the tips of the tegmina, 10-14, mostly 11-12 mm.; length of pronotum, 2.3-3.0 mm.; of tegmina, 6.0-10.8, mostly about 7.0 mm.; of posterior femora, 8.2-10.5 mm.; of cerci, 1.5-1.8 mm.

Female—Length from fastigium to tip of supra-anal plate, 11-15 mm.; to the end of the pronotum, 4.3-5.5 mm.; to the tips of the tegmina, 9.5-12.0 mm.; to the tip of the ovipositor, 18-22 mm.; length of pronotum, 2.5-3.0 mm.; of tegmina, 5.5-8.0, mostly 7.0 mm.; of posterior femora, 9.2-11.2 mm.; of ovipositor (measured from the base of the subgenital plate) 8.2-11.0 mm. 14

*Structural Characters*: Closely resembling *X. brevipenne* Scudder in general size and proportions, but rather more slender and graceful than that species. Fastigium of the vertex distinctly, though slightly, elevated above the plane of the occiput; when viewed from above barely constricted in the preocular region, slightly swollen in front, its sides viewed from above subparallel, about one-third as wide in its broadest part as the interspace between the eyes, its front margin convexly truncate, extending in front of the eyes a distance equaling about

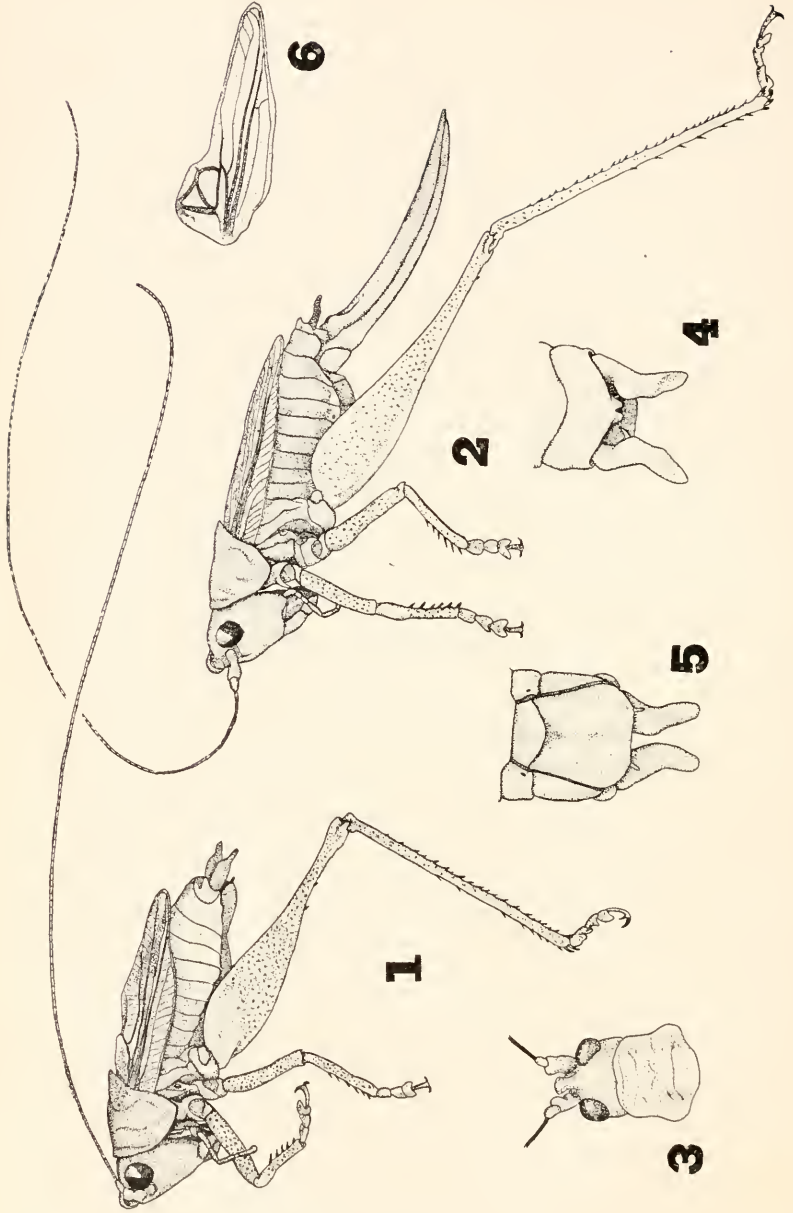
two-thirds the antero-posterior diameter of the eyes; viewed from in front the facial portion of the vertex is elongate-triangular, about one and a third times deeper than wide, its apex separated from the apex of the facial fastigium by a narrow suture.

Disk of the pronotum with its anterior margin shallowly excavate,

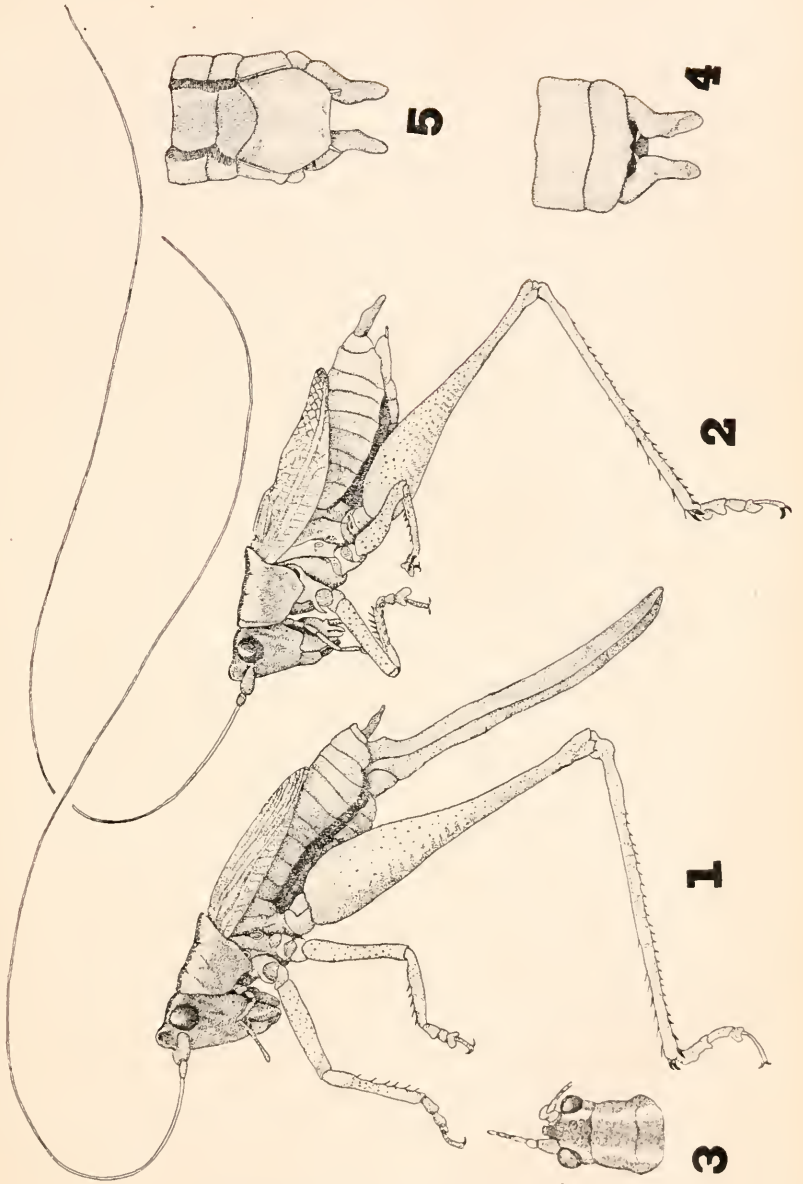


Figs. 1-3.—Left stridulating veins of *X. brevipenne* (1), *spartinae* (2) and *nigropleuroides* (3).  
Figs. 4-6.—Left cerci of *X. brevipenne* (4), *spartinae* (5) and *nigropleuroides* (6).





XIPHIDIUM SPARTINAE—FOX.



XIPHIDIUM NIGROPLEUROIDES—FOX.



its hind margin rotundo-truncate; lateral lobes nearly as deep as long, their antero-ventral borders barely, if at all, sinuate, their posterior margins shallowly sinuate, the antero-ventral angle inconspicuous, the ventral angle rounded, almost forming a right angle.

Tegmina in the male almost or quite reaching the tip of the abdomen, rarely exceeding it and only exceptionally surpassing the tips of the cerci (one individual, Ocean View, N. J.); in the female covering from slightly more than half to nine-tenths, usually three-fourths, of the abdomen; those of the male usually from two and a half to two and two-thirds the length of the pronotum, very rarely as much as three and six-sevenths times the length of the latter; those of the female shorter, mostly slightly more than twice the length of the pronotum, occasionally approaching in length those of the male; tegmina surpassing the wings by about one-fifth of their length, narrowly rounded at the tips, the veins and cross-veins distinct, but not unusually prominent. The tympanal area (Plate VIII, Fig. 6) is rather conspicuous and is distinctly broader and slightly longer than the same area in *X. brevipenne*; the stridulating ridge of the upper tegmina is stout, bearing numerous (about 40) teeth, which are evenly spaced on the outer half of the ridge but densely crowded together on its inner half. (Text-figures 1, 2.)

Anterior tibiae with usually six pairs of spines below, rarely with five. Posterior femora usually with one or two minute spines on their under sides, less frequently with none and still more rarely with as many as four; the genicular lobes terminate each in a minute spine with an additional inconspicuous subterminal spine below. Anterior tibial spines confined to the distal half of the tibiae.

The supra-anal plate of the male with its hind margin mesially produced and narrowly incised, cerci (Plate VIII, 5 and 4, also text-figure 5) moderately slender, curved, apically compressed, their tips rounded, rather blunt; a prominent swelling is present on the inner margin of each not far from the base and overlying the insertion of the tooth. Tooth interno-ventral, relatively short, but stout and when *in situ* usually invisible from above. Subgenital plate exceeding the base of the cercal tooth, its sides first diverging and then converging toward the hind margin (Plate VIII, Fig. 5), which is concavo-truncate with arched sides. Styles short. Cerci exceeding the subgenital plate by three-fourths the length of the latter.

Supra-anal plate of the female short, equilaterally triangular, about half as long as the cerci. Cerci about 1.2 mm. long, slender, compressed and rounded at the tip, slightly sinuate on their lower sides near their tips, the dorsal side less distinctly sinuate. Ovipositor distinctly, though gently, curved, the tip acute, formed by the upper division, the tip of the ventral division terminating immediately behind the extreme

tip of the upper division, the latter slightly less than twice the depth of the upper division. Ovipositor at least five-sixths the length of the posterior femora, frequently longer and sometimes nearly equaling them, surpassing their tips by an interval varying between one-fourth and one-half its length, and surpassing the abdomen by one and one-third to one and three-fifths the length of the latter. Subgenital plate trigonal, not surpassing the ninth abdominal segment, rounded apically.

*Coloration*: In the vast majority of specimens the general color is a clear grass-green with a more or less conspicuous orange tip to the abdomen and green cerci. Less frequently light brown individuals are taken in which the orange tip of the abdomen is duller and the cerci a pale olive. The following descriptions are based on the typical green race.

Male.—General color in life a bright, shiny grass-green with the terminal half of the abdomen usually of a conspicuous light orange hue; tegmina clear, slightly brownish with more or less of a trace of greenish at the apex, considerably clearer than in *X. brevipenne* and with scarcely a sign of the chestnut usually so marked in that species; cerci a bright green, except in brown individuals in which they are pale olive; dorsal stripe of the occiput and pronotum vandyke-brown, darkest on the occiput, margined laterally with an indistinct streak of yellowish, which on the pronotum shades into the green of the lateral lobes; dorsal stripe of the abdomen much paler, narrowed posteriorly and merging into the orange of the tip of the abdomen. All femora green with numerous reddish-brown dots. Hind tibiae dusky-green. Tarsi, brown.

Female.—Much like the male, but with the orange more restricted, confined to the extreme tip of the abdomen and the base of the ovipositor; cerci, green. On the abdomen the dorsal stripe is bordered laterally by a streak of greenish-yellow, which is cut off from the green of the sides by an interrupted band or series of blotches of pale brown.

*Distribution*: In southern New Jersey and at Wood's Hole I have taken this species exclusively in salt marsh, where it is abundant on the short *Spartinas* covering the tidal flats. Its preference for these maritime grasses led me to select the specific name, *spartinae*, here applied to it. Less frequently it may be found on the "black grass," *Juncus gerardi*, which forms one of the characteristic plants of the lowlands bordering the marshes on the upland side. Only rarely does it appear to stray inland and then only to that part immediately adjoining the salt marsh.

*Comparison with other species:* The present species appears to have most points in common with the following three species: *X. brevipenne*, *X. nemorale* and *X. nigropleurum*.

From *X. brevipenne* the new type may be distinguished by (1) the curved ovipositor; (2) the wider tympanum of the male tegmina; (3) the entirely different form of the cerci of the male (cf. text-figures 4 and 5); (4) the more prominent internal tuberosity of the male cercus; (5) the invisibility of most of the cercal tooth when viewed from above while in its usual position; (6) the form of the cercal tooth which is relatively slender and tapering, not swollen and obtuse as in *brevipenne*; (7) the usual, though not invariable, presence of sub-femoral spines on the hind femora; (8) the prevalence of orange rather than chestnut on the tip of the abdomen; (9) the green, instead of brown, cerci and (10) the almost total absence of chestnut from the tegmina.

From *X. nemorale* Scudder, this species differs in (1) its smaller size and slenderer form; (2) the narrower and more elevated fastigium of the vertex; (3) the relatively longer tegmina, especially in the male; (4) the less prominent veins and veinlets of the tegmina; (5) the greater difference in proportions of the tegmina and wings, the latter in *spartinae* being considerably shorter than the tegmina, while in *nemorale* they are only slightly shorter; (6) the usual presence of sub-femoral spines; (7) the less pronounced curve of the ovipositor; (8) the form of the sub-genital plate of the female, which is more truncate in *nemorale* than in *spartinae*; (9) the slenderer tips of the tegmina; (10) the generally green instead of brown color; (11) the green, instead of brown, cerci of the male.

(NOTE: These comparisons are based upon examples of *X. nemorale* in the collection of the Academy of Natural Sciences).

From *X. nigropleurum* Bruner, *spartinae* differs in its (1) smaller size and slenderer form; (2) its shorter hind femora and (3) tegmina; (4) the curved ovipositor which is always distinctly shorter than the body; (5) the apparent absence of

long-winged females; (6) the entire absence of black from the sides of the abdomen.

With the exception of characters 1), (2) and (6) the males of *spartinae* and *nigropleurum* are closely similar. A close examination of the cerci of Nebraska specimens of the latter in the Academy's collection shows that they are distinctly stouter and more swollen than those of *spartinae*. The depressed apical portion also appears to be shorter than the same part in *spartinae*. A female specimen from Florida grouped with *nigropleurum* in the collection is doubtless an example of a larger race of *spartinae*, while certain others, also from Florida, closely resemble another salt marsh species, *Xiphidium nigropleuroides* (n. sp.) which I have obtained in southern New Jersey and which, although closely resembling *nigropleurum* in many structural characters, differs entirely from it in size and in color characters. Both of these types were referred with a query by Rehn and Hebard to *X. nigropleurum*. (Proc. Acad. Nat. Sci., June, 1907, pp. 313-314).

***Xiphidium nigropleuroides* n. sp. (Plate IX).**

In addition to *X. spartinae* I have collected in the salt marshes of Cape May County, N. J., another species of the same genus, which, although it has a general resemblance to *X. nigropleurum* Bruner, appears to constantly differ from the latter in size and general proportions and in its strikingly different coloration. In its native habitat, as far as I have observed, it is associated with *X. spartinae*, but is much scarcer than the latter and is almost entirely restricted to the tall *Spartina* grasses which fringe the banks of the numerous channels and ditches traversing the marshes.

I have not found any description of a *Xiphidium* in the literature which corresponds entirely with the form here described. Three or four examples are in the collection of the Academy of Natural Sciences of Philadelphia. They are from Florida (Cedar Keys), and have been referred by Rehn and Hebard with some hesitation to *X. nigropleurum* Bruner. (Proc. Acad. Nat. Sci., Phila., June, 1907, pp. 313-314).

*Measurements*: Male.—length from apex of vertex to tip of supra-anal plate, 11-13.2 mm.; to end of pronotum, 4-4.5 mm.; to the tip of the tegmina, 11-11.8 mm.; length of the pronotum, 2.3-2.6 mm.; of tegmina, 7 mm.; of hind femora, 10 mm.; of cerci, 1.6 mm.

Female.—Length, 11.2-13.5 mm.; to end of pronotum, 4.2-5.0 mm.; to tip of tegmina, 9.5-11.4 mm.; to tip of ovipositor, 21.3-24.5 mm.; length of pronotum, 2.6-3.0 mm.; of tegmina, 5.5-6.8 mm.; of posterior femora, 11-12 mm.; of the ovipositor, 12-14 mm.

*Structural Characters*: Apparently resembling *A. nigropleurum* in general form, but smaller and slenderer. Fastigium of the vertex distinctly elevated above the plane of the occiput; viewed from above, its sides are subparallel with the slightest indication of a constriction in the preocular region; in its widest part it is between a fourth and a third as wide as the interspace between the eyes; its front margin is truncate and extends anterior to the eyes a distance equaling three-fourths the antero-posterior diameter of the eyes; viewed in front, the facial protion of the vertex is elongate-trigonal.

The pronotum is relatively short; its disk with its anterior margin shallowly emarginate, its hind margin rotundo-truncate; lateral lobes nearly as deep as long, their antero-inferior margins distinctly, though slightly sinuate, their posterior margins with a shallow humeral sinus; the ventral angle slightly projecting.

Tegmina of male usually reaching the front margin of the penultimate abdominal segment; that of the female shorter, covering about five-sevenths of the abdomen and usually reaching the hind edge of the sixth segment, but occasionally extending to the penultimate segment. Tegmina of the male from two and three-fifths to three times the length of the pronotum, those of the females from a little more than twice to two and a third times its length. Tegmina in both sexes surpassing the wings by about a fifth of their length.

Anterior tibiae with six pairs of spines below.

Posterior femora long and slender, in all cases so far examined without subfemoral spines. Genicular lobes terminating each in a minute blackish spine with an additional subterminal spine below.

Supra-anal plate of male with its hind margin mesially produced, reflexed downwards and narrowly incised. Cerci roughly sigmoid, closely similar to those of *X. spartinae*, but slightly slenderer and with a rather narrower apex (see text-figures 5 and 6). Tooth stout, in the same position as in *X. spartinae*, but distinctly longer than in the latter. As in *spartinae* the cerci show a prominent bulbous swelling immediately dorsal of the base of the tooth. When viewed from above the cercal teeth are just barely visible behind the supra-anal plate; below they are hidden from view by the subgenital plate.

Cerci exceeding subgenital plate by about three-fourths the length of the latter. Styles short.

Supra-anal plate of female short, equilaterally trigonal, about half as long as the cerci. Cerci about 1.2 mm. long, slender, acuminate at the tip and barely sinuate below. Ovipositor long and approximately straight with a very slight open-sigmoid curve, its tip barely upturned, acute, formed by the upper division, the ventral division terminating immediately behind the tip; the upper division about twice as deep as the lower division. Ovipositor exceeding the posterior femora by about two-fifths of its length; surpassing the abdomen by about one and one-third the length of the latter. Subgenital plate trigonal, not surpassing the ninth abdominal tergum; rounded apically.

*Coloration*: Male.—In most cases the general color is a dark brown, but occasional individuals are of a light olivaceous tint.

Median stripe on head blackish-brown, broadest on occiput, narrowed in front to the width of the apical tubercle, bordered laterally by grayish-white. Face, dark brown, darkest on the facial fastigium, radiating below to form a brownish suffusion over the genae, which are a light grayish-green with numerous brownish spots and blotches. Postocular stripe brown, deeper than long and extended well down over the genae where it fades into the general grayish tint of the latter.

Median stripe of the pronotum blackish, bordered laterally by a broad streak of grayish which extends down over the dorsal third of the lateral lobes. Remainder of the lateral lobes a deep rich brown.

Tegmina with the basal three-fourths a pale chestnut or orange, the color being deepest on the larger veins; apical portion of a pale translucent bluish-green; radial areas colorless.

Median dorsal abdominal stripe brown, blending laterally with the lighter brown of the sides and posteriorly more or less interrupted by invasions of the orange of the sides. Anteriorly the sides of the abdomen are a light brown bordered below by grayish; posteriorly the brown is replaced by a bright orange which covers about half of the abdomen and the subgenital plate. Spiracular areas of the first to the eighth segments inclusive a deep brownish-black, the whole forming a conspicuous band along the ventral portion of the sides of the abdomen. This blackish band is in striking contrast with the grayish or orange of the sides.

Sternites of the abdomen a beautiful steel-blue more or less mixed and blended with pale orange posteriorly. Subgenital plate orange.

Cerci a bright grass-green, similar in color to those of *spartinae*.

Posterior femora a pale greenish-blue strongly suffused with brownish-orange at the base and thickly spotted with reddish. Tibiae pale bluish green. Tarsi dusky.

Female.—Nearly similar to the male, but with the orange of the abdomen duller and confined to the terminal third. Ovipositor a pale bluish-green strongly suffused with orange-chestnut apically.

*Distribution*: Personally, I have taken this species only in the salt marshes of Cape May County, N. J. Several specimens in the Academy's collection from Florida grouped under *X. nigropleurum* Bruner, are undoubtedly this species, although they are larger than the New Jersey types. It would seem therefore that the distribution of this species includes at least the salt marshes of the Atlantic coast from Florida to New Jersey.

*Comparisons with other species*: Structurally the females of *nigropleuroides* closely resemble those of *nigropleurum*, although the hind femora are relatively longer in the latter. The male bears closest resemblance to that of *spartinae*. In fact it was only after a long and arduous analysis and comparison of the various characteristics of the two forms that I was enabled to determine some apparently constant structural differences. The cerci of the two forms are superficially alike, but camera lucida drawings (Text-figs. 5 and 6) enabled me to determine their specific differences.

The color characters of *nigropleuroides* are to my knowledge peculiar and by them it is an easy matter to recognize the species in the field. The light brown form has the colors less conspicuous, but even in its case enough of the characteristic color markings remain to enable one to identify it with little hesitation.

#### EXPLANATION OF PLATES.

PLATE VIII: *Xiphidium spartinae* n. sp.:

1. Lateral view of a ♂ specimen.
2. Lateral view of female.
3. Dorsal view of head and pronotum of a female.
4. Dorsal view, tip of male abdomen.
5. Ventral view, tip of male abdomen.
6. Left tegmina of male.

PLATE IX: *Xiphidium nigropleuroides* n. sp.:

1. Lateral view of female.
2. Lateral view of male.
3. Dorsal view, head and pronotum, male.
4. Dorsal view, tip of male abdomen.
5. Ventral view, tip of male abdomen.

## Records of Heteroptera from Brownsville, Texas (Hemip.).

By J. R. DE LA TORRE BUENO, White Plains, N. Y.

In 1906, Mr. H. G. Barber published a list of "Hemiptera from southwestern Texas"\* based on material collected in 1903 and 1904 by Mr. C. Schaeffer, in which were recorded a number of species new to the United States. Through Mr. George Franck I came into possession this summer of a small lot of Heteroptera collected by Mr. George Dorner in Brownsville, Texas, the scene of the labors of Mr. Schaeffer and also of the late Prof. F. H. Snow, of the University of Kansas. In going over this lot, I was able to confirm the records of *Euschistus bifibulus* P. B., *Leptoglossus phyllopus* Linné, *Acanthocephala declivis* Say, *Largus convivus* Stål, *Jadera acola* Dallas, *Corizus sidae* Fabr., *Rasahus hamatus* Fabr., *R. biguttatus* Say, *Pnirontis infirma* Stål, *P. languida* Stål, and *Repipta taurus* Fabr. In addition to these, however, there were the twelve species hereafter enumerated which have not been previously recorded from that locality, seven of which are new to the United States, so far as may be deduced from Banks' Catalogue and other sources, including *Biologia Centralia Americana*. They follow with appropriate comment in each case.

### *Euschistus crenator* Fabr.

This has been previously recorded from Texas by Stål, although seemingly not taken in this exact locality.

### *Brochymena haedula* Stål.

So far as known this species has not been recorded from as far north as the United States. The published records give it only for Guatemala and Mexico.

### *Acanthocephala femorata* Fabr.

Does not seem to have been heretofore recorded from Texas, although pretty widespread throughout the southeast United States.

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\* Bulletin, Museum Brooklyn Institute of Arts and Sciences. Vol. I, No. 9, pp. 255-289.

**Leptocorisa tipuloides** DeG.

Apparently not uncommon in the Southern States, but not taken at Brownsville.

**Ozophora** (=Davila Dist.) **consanguinea** Dist.

Recorded from Mexico and Guatemala, but previously unknown from the United States.

**Largus bipustulatus** Stål.

A Mexican form apparently not previously taken north of the boundary.

**Dysdercus obscuratus** Dist.

A species described from Costa Rica and Guatemala. Taken by me in Mexico and now recorded from the United States for the first time.

**Pygolampis spurca** Stål.

Known from Panama and Guiana, according to Champion, and not previously known to occur as far north.

**Narvesus carolinensis** Stål.

A common North American Reduviid, which does not seem to have been previously taken at Brownsville.

**Meccus phyllosoma** Burm.

This species has been recorded from Mexico, Colorado and California, but seemingly not from Texas.

**Nabis signatus** Uhler.

Occurs in Panama and the West Indies; not heretofore recorded from the United States.

**Corixa edulis** Champion.

Originally described from Lake Texcoco, Mexico, and now recognized for the first time from the United States.

One fact is striking in connection with this small collection. It is the absence of the smaller *Lygaeidae*, *Coreidae*, *Pentatomidae* and *Reduviidae*. This is noticeable in practically all collections of Heteroptera, and it is indeed unfortunate, as the small forms make up the bulk of the great Lygaeid family,

and the entirety of the *Capsidae* and *Anthocoridae*, as well as the *Aradidae* and *Tingidae*. In fact, the families *Lygaeidae* and *Capsidae* constitute together at least one-half of the Heteropterous fauna of any given region. It may not therefore be out of place to here urge a special effort in securing these small forms, which even in closely collected sections such as the Northeastern States, for instance, still yield unrecognized species.

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### The Female of *Sesia rubrofascia* Hy. Edw. (Lepid.).

By FRANK MORTON JONES, Wilmington, Delaware.

In 1881 (Papilio 1, 191) Mr. Henry Edwards described *Sesia rubrofascia* from a single male collected in Georgia by Morrison. In 1901, when this family was monographed (Beutenmüller, Mem. Am. Mus. Nat. Hist. Vol. 1), the type specimen was still unique. In April, 1907, the writer captured a red-banded *Sesia*, male and female, at Summer-ville, South Carolina; the male is undoubtedly Edwards' *rubrofascia*; the female has opaque primaries, and if previously captured has perhaps been mistaken for a small *Sanninoides exitiosa* ♀, which it resembles, though readily separable on comparison, Mr. Beutenmüller has kindly examined my specimens and confirmed their identification.

Description of female: head, palpi, antennae, thorax, black with a purplish-blue metallic lustre; legs the same color, with tarsi and spines showing light beneath over-lying dark scales; abdomen black, with fourth and fifth segments entirely red; anal tuft black; primaries densely opaque, black with blue and purple reflections; secondaries transparent to base, with black discal mark, the fringe and black outer border twice as broad as in the male; expanse 25 mm.

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THE NEWS extends its hearty congratulations to Professor John Henry Comstock, and to American Entomology, by reason of his election as an Honorary Fellow of the Entomological Society of London, on November 1, 1911, to fill the vacancy created by the death of Dr. Samuel H. Scudder. On the same occasion Father Eric Wasmann was also made an Honorary Fellow in the place of Mr. P. C. T. Snellen, lately deceased.

## *Gyronycha* Csy. (Coleop., Staphylinidae), a critical study.

By A. FENYES, M.D., Pasadena, California.

Amongst the nearctic Aleocharinae, *Gyronycha* Csy. can be characterized as follows:

Tarsi 4-4-4-jointed; antennae 11-jointed; right mandible dentate, left simple; maxillary palpi 4-jointed; labial palpi 3-jointed; ligula bifid; genae entirely margined. Tarsal claws abruptly bent behind the middle.

Mesosternal process acute; mesocoxal cavities entirely closed; middle coxae contiguous.

Male with prominences on the third and seventh tergites.

The tarsi are unquestionably 4-4-4-jointed, although the fourth joint of the third tarsal pair (at least) apparently is divided by an obsolete (anchylosed) suture. The clearest view of the tarsi can be obtained by observing them from below, where no vestiture will interfere. If we would accept the presence of this suture as a true demarcational line between two joints, then the seemingly 5th joint would be very short in *Gyronycha*, a circumstance entirely at variance with the generally observed fact that the last tarsal joint of the hind legs is always long in the Aleocharinae (if I am not mistaken), and longer than the penultimate joint. This preponderance in length of the last tarsal joint is undoubtedly necessary to give a better leverage to the tarsal claws, especially where the latter are so strongly modified as they are in *Gyronycha*.

The last joint of the maxillary palpi is remarkably short, especially when compared with the penultimate joint.

The ligula is undoubtedly divided, and not entire, in certain lights seemingly only emarginate at tip; the lobes rather broad and subtriangular.

The infralateral carina of the head can easily escape notice, and is in some specimens seemingly interrupted behind, but always visible when the lower surface of the head is freely displayed and viewed in proper light. This carina in

*Gyronycha* is more distant from the eye than in the majority of the other genera; it is almost entirely on the lower surface of the head, but should not be confounded with the gular sutures, which are near the lower median line.

The mesocoxal cavities are entirely surrounded by a bead (entirely closed).

The secondary male characters on the abdomen consist in a backwardly directed carina in the apical half of the third tergite, and in a small carinula at the base of the seventh tergite.

The type species is:

*Gyronycha valens* Csy., Ann. N. Y. Ac. Sc. VII. 1893, 373. With this I propose to unite *G. texana* Csy., ibid. 374, *obscura* Csy., ibid. 375, *fusciceps* Csy., ibid. 376, *lepida* Csy., Mem. Col. II. 1911, 217, and *longicornis* Csy., ibid. 217. This synonymy is based mainly on the entirely uniform male characters, which, it is safe to assume, the above mentioned forms possess. Those students who wish to record local, individual or other varieties, can use the above synonyms as trinomials; to me the various described (and some other undescribed) forms do not present themselves as specifically different.

The species lives along sandy creeks, and probably burrows in the soft sand. I have specimens from Arizona, taken by myself in the debris of a storm-drain at Flagstaff; others from Porvenir, New Mexico, were taken in evening flight along the creek, and under stones at the shore of another creek. One of my California specimens was taken after a flood in the debris of the Arroyo Seco near Pasadena; and finally there are in my cabinet single specimens from Indiana, Maryland and New Hampshire, none of them provided with data on their habitat.

It is not impossible that *Bamona robusta* Shp., Biol. Centr. Amer. Col. I. 2. 1883, 290, is really the type of the genus; in this case the above specific names will all lapse into synonymy.

The other species hitherto carried on our lists as *Gyrony-*

*cha* is *attenuata* Csy., Bull. Cal. Acad. Sc. I. 1885, 306, and has the following synonymy: *lineata* Csy., Ann. N. Y. Ac. Sc. VII. 1893, 376; *fenyesi* Brnhr., Deutsch. Ent. Ztschr. 1906, 337; *longipennis* Csy., Mem. Col. II. 1911, 219. This species must be removed from *Gyronycha* on account of the 5-5-5-jointed tarsi, and must be made, for the time being, the representative of a new genus: *Gyronychina* Csy. (Mem. Col. II. 1911, 218). It seems to belong in the neighborhood of *Apimela* M. & Rey, and also of *Aleuonota* Thoms., in case this latter genus proves to possess 5-5-5-jointed tarsi.

Mr. P. de Peyerimhoff informs me, in a letter dated the 24th of June, 1911, that in both *Apimela* and *Aleuonota* the front and middle tarsi are pentamerous. I found this to be the case in *Apimela*, but not in *Aleuonota*, although I may be mistaken. According to Peyerimhoff, both genera ought to be placed near *Phloeopora* Er.

I have in my collection a large series of *Gyronychina attenuata* Csy., all from California, the specimens showing a great range of variation. Some are very pale, reddish brown and shining, while the darker specimens are more opaque, especially on the elytra; the antennae are longer or shorter, according to the size of the specimens and also to the method of their preservation; the head, prothorax, elytra and abdomen also vary to a considerable extent, and any attempt to base a species on such minor differences would result in splitting my series into at least a dozen species.

The males are probably the more opaque specimens, while the females seem to be the pale and shining ones; the probable males are much more frequently taken than the females.

The life habits of *Gyronychina attenuata* Csy. are the same as those of *Gyronycha valens* Csy. I took most of my specimens in evening flight, and some of them in the storm debris of the Arroyo Seco.



DR. WALTER HORN, of Berlin, expects to be in Italy until mid-March for the benefit of his health, as he has been suffering from bronchial pneumonia.

## Two New Butterflies (Lepid.).

By HENRY SKINNER, Philadelphia, Pa.

### *Mesosemia ramsdeni*, n. sp.

*Male.* Expanse 30 mm. Primaries blackish brown with two white dots on the costa, two-thirds the distance from the base to the apex; extending from these to the inner margin is a whitish fascia, lined interiorly by black; at outer angle is a black spot about 2 mm. in diameter; at base of wing are four black lunule-shaped markings, two in the cell and two below. Secondaries blackish brown with a well defined black ocellus at anal angle, narrowly margined with orange, with a line of blue scales on its outer side; two broad black bands at base, then a narrow black line crossing the wing; on outer margin three nearly obsolete black dots.

*Underside.* Primaries much as above but the white fascia is more distinct and composed of the two costal spots and four others; ocellus black with a few blue scales; the spots at the base as above but better defined; color of wing lighter. Secondaries have a line of eight black spots crossing the wing, and at base about eleven small spots of black; ocellus at anal angle black with two superimposed blue spots. Antennae black annulated with white, tip cream color.

*Female* nearly like the male but lighter in color; on primaries an orange band extending from ocellus to costa; three brown spots in cell and two below. Secondaries with an orange line from ocellus to costa. Wings below as in male.

From two specimens, male and female, from La Yberia, twenty miles from Baracoa, Cuba, September 18th, 1909. Named for Mr. Chas. T. Ramsden, the well known entomologist of Guantanamo, Cuba. The species is not closely related to any known to me.

### *Megathymus neuwoegeni stephensi*, n. sub. sp.

*Male.* Color of wings grayer than in *neuwoegeni*. Upperside with the markings as in the Huachuca mountains, Arizona, form of *neuwoegeni* but cream color instead of orange yellow.

On the underside of the secondaries the spots are larger than in *neuwoegeni* and more accentuated; there is a large coalesced spot near the center of the wing and eight spots parallel to the margin.

This is a very striking-looking race. About thirty specimens were taken by Mr. Frank Stephens, the well known collector of California and Arizona mammals, birds, plants

and insects. Type locality, La Puerta, eastern edge of San Diego County, California, October 11th, 1911. Five specimens were sent to me by Mr. L. E. Ricksecker, who says "they do not vary much. None of them have the spots in actual bands, but always in distinct spots and all of these are dirty white, not yellow. It so happens that Mr. Stephens has a single specimen of *neumoegeni* from the Huachuca Mountains, Arizona. It has the broad orange, fulvous band and agrees with the description. Hence we think the La Puerta specimens are a variety, and when you consider the circumstances it looks to me very probable that it will be found constant. My reason is because the La Puerta Agave district is entirely isolated from any other Agave field and is a very long distance from the Agaves of southern Arizona. There is little, if any, probability of individuals going back and forth between the two districts and thus if the La Puerta tribe or colony is left by itself it will gradually produce a new form, variety or species."

I have given Mr. Ricksecker's theory to account for this strikingly different colored race. He says it feeds on *Agave deserti*.

Type in the collection of the Academy of Natural Sciences of Philadelphia.

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## Description of a New Variety of *Smerinthus jamaicensis* (Lepid.).

By S. D. NIXON, Baltimore, Md.

*Smerinthus jamaicensis*, n. var. *flavitincta*.

Color of forewing same as type, only much lighter. Color of head light brown. Body light slate color.

Hindwing, cream color with tint of lemon near eyespots; eyespots same as in variety *geminatus* with two blue spots, the red missing entirely.

*Type*.—Male in my collection.

*Habitat*.—Baltimore, Maryland.

# ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

TO CONTRIBUTORS.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, four weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form and without covers, will be given free, when they are wanted; if more than twenty-five copies are desired, this should be stated on the MS. The receipt of all papers will be acknowledged. Proof will be sent to authors for correction only when specially requested.—Ed.

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PHILADELPHIA, PA., MARCH, 1912.

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At its recent meeting in Washington, the Entomological Society of America voted down a proposition to the effect that a recommendation be made to the Second International Congress of Entomology that a list of *nomina conscrvanda* of insects be prepared without strict reference to the rule of priority.

Those who regretted this action will be consoled to some extent by an article (in English) in the *Zoologischer Anzeiger* for January 3, 1912, entitled, "A Vote against the strict application of the Priority-Rule," by Dr. Th. Mortensen, of the Zoological Museum in Copenhagen. This vote was taken among the professional Zoologists of Denmark, Finland, Norway and Sweden, not including anatomists, palaeontologists or amateur zoologists, with the result that two Scandinavian Zoologists, Dr. Sig Thor, of Skien, Norway, and Dr. E. Wahlgren, of Malmö, Sweden, "are of opinion that *the law of priority should be strictly applied in all cases.*" One hundred and twenty (120) "undersigned Scandinavian and Finnish Zoologists protest *against the strict application of the law of priority in all cases and express the desire that the most important and generally used names should be protected against any change on nomenclatorial grounds.*" [The italics are our own.]

Some of the entomologists among these 120 names are: Adlerz, Aurivillius, Bengtsson, Hansen, Holmgren, Lundbeck, Palmén, E. Reuter, O. M. Reuter, Sahlberg, Schöyen, Sjöstedt, Theel, Tragardh, Trybom and Tullgren.

Dr. Mortensen comments on the vote as follows:

"The result of the vote is very striking. Of the 122 names there are 2 (two) for the strict application of the priority rule in all cases, which means less than 2 per cent. It may perhaps not be unreasonable to conclude from this result that the number of those Zoologists, who swear to the strict application of the priority rule, is upon the whole very small, the great majority wishing to have the more important names preserved unaltered.

It is to be hoped that the Zoologists of other countries will follow the example given here. When this has been done and it has been definitely proved that the great majority object to the strict application of the priority rule, it may perhaps be expected that the tyranny of that notorious law, which has already done so much damage to science, will be thrown off....."

THE NEWS will be glad to receive and to print the names of any American entomologists and zoologists who will send in their votes on one or the other of the two alternatives which we have italicized above.

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## Notes and News.

### ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

ANNOUNCEMENT OF THE JOURNAL OF ECONOMIC ENTOMOLOGY.—At the Annual Meeting of the American Association of Economic Entomologists held at Washington, D. C., Dec. 29, 1911, it was voted that the Association take over and publish the Journal of Economic Entomology in accordance with an offer made by the Journal of Economic Entomology Publishing Company.

The Publication will be in charge of Dr. E. P. Felt, Albany, N. Y., as Editor; Dr. W. E. Britton, New Haven, Conn., as Associate Editor, and A. F. Burgess, Melrose Highlands, Mass., as Business Manager. The Journal will be conducted along the same lines as in the past, but such improvements as possible will be made from time to time.

As the Secretary of the Association is now Business Manager of the Journal, all communications, except material for publication and related matter, should be sent to the undersigned.—A. F. BURGESS, Melrose Highlands, Mass.

MONOGRAPH OF THE GENUS *HYDROPHILUS* (COLEOP.).—M. A. d'Orchymont, Statiertzaat 58, Meenen, Belgium, is preparing a work on this subject and desires to examine as many specimens of this genus as possible. He would be glad to identify material for those who possess it. He has published a paper on certain species of the Hydrophilidae in tome XIX of the *Memoires de la Societe Entomologique de Belgique*, 1911.

THE LAKE LABORATORY of the Ohio State University, at Cedar Point, near Sandusky, Ohio, will offer courses of instruction in Zoology, including Entomology, and Botany from June 17 to July 26, 1912, while free tables will be open to investigators from June 20 to September 9. Further information may be obtained from Professor Herbert Osborn, Director, Ohio State University, Columbus, Ohio, or after June 15 at the Lake Laboratory.

THE MEMORIAL PORTRAIT of the late Dr. James Fletcher, Dominion Entomologist, which is the work of Mr. Franklyn Brownell, R.C.A., was unveiled at an evening meeting of the Ottawa Field-Naturalists' Club on January 9th, 1912. It is an exceedingly good likeness and, as most satisfactory arrangements have been made with the Municipal Library Board and the Librarian of the Carnegie Library, the portrait will be hung in a prominent place in this latter building. It will be remembered that the Memorial Fountain, erected on the Central Experimental Farm, was unveiled on July 19th, 1910. The Fountain, including the medallion, is the work of Dr. R. Tait McKenzie, of the University of Pennsylvania, Philadelphia, U. S. A.

*CALPODES ETHLIUS* (LEPID.).—On November 5th, 1911, my friend, Mr. Neuman of this city, discovered in his garden six caterpillars new to him on Canna. As there was prospect of cold weather he took food plant and larvae into the house so that they might not be injured by the frost. Two days later they began to spin their cocoons which, while not of a dense nature, were very strong, about twice the length of the pupae. The color of the cocoon is white and has much the appearance of ordinary writing paper. The cocoon-spinning was done in a way similar to that of *Eudamus tityrus*, beginning by pulling the edges of the leaves close together. On November 20th, 21st and 22d, the butterflies made their appearance and, much to the astonishment of Mr. Neuman, proved to be *Calpodès ethlius*, a southern species. To my knowledge this species has never been found feeding so far north. Mr. Neuman has been so kind as to present to me a leaf containing cocoon and chrysalis, also a fine specimen of the migrator's descendants.

Frost occurred the night from Nov. 6th to 7th, which would have proved fatal to the larvae. I conclude that, although the food plant is plentiful here, the species could never thrive.—ERNEST SCHWARZ, St. Louis, Mo.

ATTRACTIVENESS OF FORMIC ACID(?)—Robert Venables, of Mulhouse, Alsace, gives account in *Nature* for Sept. 21, 1911, of his poodle eating wasps, "generally catches them alive, evidently suffers somewhat from the sting, but only for ten or fifteen seconds." "Mr. Venable's reference to formic acid (*Nature*, Sept. 21, p. 382) reminds me that once, in the pine woods at Potsdam, I came upon a forester performing some curious evolutions, apparently patting something on the ground and then holding his hands to his face. He explained that it was an ant-hill, and the smell was 'very good for the nerves.'" (E. Everett, *Nature*, Oct. 19, 1911).

A LOCUSTID INJURIOUS TO MAN.—Dr. Hugh S. Stannus writes in the *Bulletin of Entomological Research*, 1911, page 180, "among the natives of Nyasaland [a Locustid, *Enyaliopsis durandi*, or an allied species] is held to cause skin lesions by the emission of a fluid on the bare skin surface of the body . . . having asked for a volunteer, I procured a specimen of the Locustid in question and tested the truth of the native statement. The insect was put on to the arm of the native, and then worried with a penholder. It promptly emitted a slightly yellowish clear fluid from pores at the side of the body near the junction of the thorax and abdomen. This secretion was allowed to remain on the arm. In a few hours a sensation of burning was produced, the skin showed signs of reaction, swelling and redness, and twelve hours later the superficial layers appeared to be dissolved, so that the pink skin beneath was visible, covered by a serous exudation. This superficial destruction of tissue healed in a few days without trouble. The secretion was acid to litmus. I have little doubt that such a breach of surface may in many cases be the starting point for extensive ulceration, if it becomes infected, as in a similar way small abrasions in the native are often followed by ulceration, owing to lack of proper treatment."

EFFECTS OF CLIMATIC CONDITIONS ON DEVELOPMENT OF INSECTS.—Egypt presents two different regions from an entomological point of view: (1) the valley of the Nile irrigated by numerous canals which permit an intensive agriculture and which is favored by winter and spring rains in its northern part; (2) a desert region which receives only a little rain in winter which hardly suffices to produce a spontaneous vegetation in spring. It results from these special conditions that the Lepidoptera which inhabit the Delta, or the Valley, of the Nile produce several generations in the year, while those of the desert can propagate by only a single annual generation. Thus the butterflies most commonly seen in Egypt, such as *Pieris rapae*, *Vanessa cardui* and others which live in the fields and cultivated lands of the Delta, have several generations each year and the imagoes are seen in all

seasons. On the other hand, *Anthocharis belia*, of the desert fauna, has but one generation, flies in the spring, and often the chrysalid transforms into a butterfly only at the end of two years of hibernation. By hibernation is to be understood in Egypt not that state of torpor produced by cold, but the phase of inactivity which can appear at any season, in summer as well as in winter, summer offering, in the desert, the same conditions of aridity as winter in cold countries. This phase of torpor can appear in the different states of the life-cycle of Lepidoptera, as the egg, the caterpillar (*Agrotis nili*, *A. ypsilon*), the chrysalid (*Prodenia littoralis*, *Anthocharis belia*), or the imago (*Prodenia littoralis*). The duration of each generation is subordinated to the more or less favorable conditions for its development which the insect meets at different seasons of the year.—(A. Andres, *Bull. Soc. Entom. d'Egypte*, 1910, pp. 89-96, 1911.)

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## Entomological Literature.

COMPILED BY E. T. CRESSON, JR., AND J. A. G. REHN.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), excluding Arachnida and Myriapoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species, will be recorded. The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published, and are all dated the current year unless otherwise noted. This (\*) following a record, denotes that the paper in question contains description of a new North American form.

For record of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington.

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- 2—Transactions, American Entomological Society, Philadelphia. 3—The American Naturalist. 4—The Canadian Entomologist. 7—U. S. Department of Agriculture, Bureau of Entomology. 8—The Entomologist's Monthly Magazine, London. 9—The Entomologist, London. 11—Annals and Magazine of Natural History, London. 18—Ottawa Naturalist. 21—The Entomologist's Record, London. 22—Zoologischer Anzeiger, Leipzig. 35—Annales, Societe Entomologique de Belgique. 38—Wiener Entomologische Zeitung. 40—Societas Entomologica, Zurich. 47—The Zoologist, London. 49—Annales historico-naturales Musei Nationalis Hungarici, Budapest. 89—Zoologische Jahrbucher, Jena. 94—"Das Thierreich" herausgegeben von d. Deutschen zoologischen Gesellschaft, Berlin. 102—Proceedings, Entomological Society of Washington. 119—Archiv fur Naturgeschichte, Berlin. 152—California Agricultural Experi-

ment Station, Berkeley. **153**—Bulletin, American Museum of Natural History, New York. **166**—Internationale Entomologische Zeitschrift, Guben. **169**—"Redia," R. Stazione di entomologia Agraria in Firenze. **173**—Die Grossschmetterlinge der Erde, von A. Seitz, Stuttgart. **176**—Archiv für entwicklungsmechanik der Organismen, Leipzig. **180**—Annals, Entomological Society of America. **191**—Natur, München. **200**—Bulletin Scientifique de la France et de la Belgique, Paris. **208**—Boletín, Real Sociedad Española de Historia Natural, Madrid. **281**—Annals of Tropical Medicine and Parasitology, University of Liverpool, Series T. M. **289**—Kansas University Science Bulletin, Lawrence. **310**—L'Echange Revue Linnéenne, Moulins. **324**—Journal of Animal Behavior, Cambridge, Mass. **344**—U. S. Department of Agriculture, Washington, D. C. **362**—Bulletin of the Pan-American Union, Washington, D. C. **363**—Schriften herausgegeben von der Naturforschenden-Gesellschaft bei der Universität Jurjew (Dorpat). **364**—Biologica Journal Scientifique du Medecin, Paris. **365**—Collections Zoologiques du Baron Edm. de Selys Lonchamps, Bruxelles. **366**—Palaeontographica beitraege zur Naturgeschichte der Vorzeit, Stuttgart. **367**—International Entomological Congress. **368**—The Monthly Bulletin of the State Commission of Horticulture, Sacramento, Cal. **369**—Entomologische Mitteilungen, Berlin-Dahlen. **370**—Behavior Monographs, Boston, Mass.

**GENERAL SUBJECTS.** Coquillett, D. W.—Obituary notice and list of writings; **102**, xiii, 196-210. Dixey, F. A.—Mimicry; **367**, ii, 369-384. Handlirsch, A.—Ueber fossile insekten; **367**, ii, 177-184. Holland, W. J.—The conservation of types; **367**, ii, 361-368. Howlett, F. M.—A note on methods of preserving insects in tropical climates; **367**, ii, 357-360. Imhof, P. D. E.—Kleine ergebnisse; **367**, ii, 257-264. John, O.—Some more considerations about descriptions and figures; **21**, 1911, 318-319. Klages, E. A.—The entomological writings of John Hamilton, M. D.; **2**, xxxviii, 361-367. Lyman, H. H.—Variation in the use of certain scientific terms and changes in the spelling of scientific names; **367**, ii, 423-424. Maxwell-Lefroy & Howlett.—Progress of economic entomology in India; **367**, ii, 465-482. Merrifield, F.—Experimental entomology. Factors in seasonal dimorphism; **367**, ii, 433-448. Navas, R. P. L.—Algunos organos de las alas de los insectos; **367**, ii, 69-78. Olivier, E.—Les accouplements anormaux ches las insectes; **367**, ii, 143-144. Perez, T. deS.—Notizie preventive e informazioni sulla "Sphenoptera lineata" e la larva di un Lepidottero che attaccano la sulla (*Hedysarum coronarium*) della Tunisia e della Sicilia; **367**, ii, 184-194. Rabaud, E.—Le peuplement des cavernes et le comportement des

etres vivants; **364**, i, 389-394. **Reinick, W. R.**—Insects destructive to books (Reprint); **40**, xxvii, 3-6 (cont.). **Reitter, E.**—Protest gegen einen neuen missbrauch in der nomenklatur; **38**, xxx, 293-294. **Roeschke, H.**—Bibliographische studien. Ueber Panzer's "Fauna Insectorum Germanica"; **369**, i, 29-31. **Schaus, W.**—A quoi sert le mimetisme? **367**, ii, 295-304. **Schenkling, S.**—Zur entomologischen nomenklatur; **369**, i, 21-26. **Skinner, H.**—One hundred years of entomology in the United States; **367**, ii, 425-432. **Speiser, P.**—Der begriff der gattung in der heutigen systematik; **367**, ii, 105-112. **Strand, E.**—Drei neue gattungsnamen in Arthropoda. Neuer name einer Braconide; **166**, vi, 287, 291. **Torne, O.**—Untersuchungen uber die insertion der muskeln am chitinskelett bei insekten (Russian); **363**, 1911, 94 pp., 2 pls. **Urich, F. W.**—Economic entomology in Trinidad; **367**, ii, 509-515. **Worsham, E. L.**—Bulletin No. 35. Georgia State Board of Entomology. **Xambeu.**—Moeurs et metamorphoses d'insectes; **310**, 1911.

**APTERA AND NEUROPTERA.** **Bagnall, R. S.**—Preliminary notes on the importance of the new family "Urothripidae" in the study of the "Thysanoptera"; **367**, ii, 283-288. **Enderlein, G.**—Die fossilen Copeognathen und ihre phylogenie; **366**, lviii, 279-365. **Leue, F. W.**—Beitrage zur kenntniss der Ephemeriden. Untersuchungen uber die larve von Heptagenia sulphurea; **191**, 1911, 1 Bd. 3 Sup., 202-231. **Merrill, G. E.**—The white fly (*Aleyrodes citri*) in California; **368**, i, 14-15. **Ris.**—Libellulinen. Catalogue systematique et descriptif; **365**, fasc. xiii, 529-700. **Russell, H. M.**—A true internal parasite of Thysanoptera; **102**, xiii, 235-238. **Theobald, F. V.**—"Springtails" (Collembola). Their economic importance, with notes on some unrecorded instances of damage; **367**, ii, 1-18. **Wodsedalek, J. E.**—Formation of associations in the may-fly nymph *Heptagenia interpunctata*; **324**, ii, 1-19.

**ORTHOPTERA.** **Griffini, A.**—Nuovi studi sopra diversi Grillacridi del Museo Nazionale di Budapest; **49**, ix, 171-185. **Kuthy, D.**—Orthoptera nova exotica in Museo Nationali Hungarico asservata; **49**, ix, 294-296. **Rehn, J. A. G.**—Orthoptera from the Santa Rita Mountains, Ariz. Collected by the University of Kansas Expedition; **289**, v, 299-306 (\*).

**HEMIPTERA.** **Hoppe, J.**—Die atmung von *Notonecta glauca*; **89**, xxxi, 189-244. **Horvath, G.**—Miscellaneous Hemipterologica; **49**, ix, 327-338. Nomenclature des familles des Hemipteres; **49**, ix, 1-34. Les Polyctenides et leur adaptation a la vie parasitaire; **367**, ii, 249-256. **Kelly & Parks.**—Chinch-bug investigations west of the Mississippi River; **7**, Bul. No. 95, pt. 3. **Montandon, A. L.**—Deux genres nouveaux d'Hydrocorises; **49**, ix, 244-250. **Osborn,**

H.—Notes on distribution and ecology of *N. A. Jassidae*; **367**, ii, 235-236. **Quayle, H. J.**—The red or orange scale (*Chrysomphalus aurantii*); **152**, Bull. No. 222. **Severin & Severin.**—An experimental study on the death-feigning of *Belostoma flumineum* and *Nepa apiculata*; **370**, No. 3, 47 pp. **Teodoro, G.**—La secrezione della Cera nei maschi della *Pulvinaria camelecola*; **169**, vii, 352-361. **De la Torre Bueno, J. R.**—On *Merragata lacunifera*; **4**, 1912, 31-32.

**LEPIDOPTERA.** **Anon.**—Argentine plains and Andine glaciers; with a description of the South American locust; **362**, 1911, 1082-1094. **Andres, A.**—Bemerkungen ueber die den baumwollpflanzen in Egypten schadlichen schmetterlinge und ueber die methoden sie zu vertilgen; **367**, ii, 317-320. **Barnes & McDunnough.**—Contributions to the natural history of the Lepidoptera of No. Am., vol. 1, Nos. 1-2. Revision of the Cossidae. The Lasiocampid genus *Gloveria* and its allies. Decatur, Ill. The Review Press. New species and genera of N. A. Lepidoptera; **4**, 1912, 17-22 (cont.). **Bryk, F.**—Sonderbare lebensgeschichte eines sonderlings; **191**, 1912, 163-166. **Closs, A.**—Einige neue aberrationen aus meiner sphingidensammlung; **166**, xxvii, 275-276. **Croft, E. O.**—A Notodontid attacked by a wasp; **8**, 1912, 13. **Crosby, C. R.**—Notes on the life history of *Nepticula slingerlandella*; **4**, 1912, 25-27. **De-witz, I.**—Recherches physiologiques sur la coloration des cocons de certains Lepidopteres; **367**, ii, 133-136. **Dognin, P.**—Heterocereres nouveaux de l'Amerique du Sud. Fasc. IV. Imprimerie Oberthur, Rennes; 32 pp., 1911. **Dyar, H. G.**—Descriptions of the larvae of some Mexican Lepidoptera; **102**, xiii, 227-232. **E. G.**—Sexe et regeneration a propos des ailes d'un papillon; **364**, i, 408-410. **Hampson, G. F.**—Descriptions of n. sp. of Pyralidae of the subfamily Pyraustinae; **11**, ix, 149-174 (cont.). **Hasebrock, K.**—Ueber die einwirkung der rontgenstrahlen auf die entwicklung der schmetterlinge; **367**, ii, 195-198. **Jordan, K.**—The systematics of some Lepidoptera which resemble each other, and their bearing on general questions of evolution; **367**, ii, 385-404. **Kleine, R.**—Die schmetterlinge unserer heimat ihre entwicklung und ihr leben. Theo. Thomas, Leipzig, 95 pp., illus. **Kopee, S.**—Untersuchungen ueber kastration und transplantation bei schmetterlingen; **176**, xxxiii, 1-116. **Kosminsky, P.**—Einwirkung ausserer einflusse auf schmetterlinge. III. Veranderungen an den copulationsorganen unter dem einflusse von kalte; **89**, xxxi, 297-302. **Oberthur, C.**—Etudes de lepidopterologie comparee. Fasc. V, pt. 1-2, pp. 1-346, 1-136. **Poulton, E. B.**—On Dr. C. A. Wiggins' researches on mimicry in the forest butterflies of Uganda (1909); **367**, ii, 483-508. **Riley, C. V.**—Description of the larva of "*Monoleuca semifascia*"

Walker; **102**, xiii, 210. **Rowland-Brown, H.**—A supplementary note on Hesperid classification; **9**, 1912, 5-7. **Schaus, W.**—New species of Heterocera from Costa Rica, XII; **11**, ix, 34-57. **Schouteden, H.**—*Rhopaloceres recueillis* dans l'Uelle par M. Castelain; **35**, lv 362-364. **Sherborn, C. D.**—Note on the date of publication of the works of Jacob Huebner on the Lepidoptera; **11**, ix, 175-180. **Stendell, W.**—Ueber Drusenzellen bei Lepidopteren; **22**, 1911, 582-585. **Stenton, R.**—Pupation of Lepidopterous larvae in glass tubes; **9**, 1912, 7-8. **Stephan, J.**—Tonerzeugende schmetterlinge, **191**, iii, 117-119. **Weymer, G.**—Euptychia; **173**, Fauna Am. Lief 29, 233-240. *Taygetis-Euptychia*; **173**, Faun. Amer. 225-232.

**DIPTERA.** **Banks, N.**—The structure of certain Dipterous larvae with particular reference to those in human foods; **7**, Tech. Ser. No. 22. A curious habit of one of our Phorid flies; **102**, xiii, 212-214 (\*). **Bezzi, M.**—Eine seltene fliege von weltverbreitung, **40**, xxvii, 2-3. **Carpenter, G. H.**—Notes on the Oestridae; **367**, ii, 289-294. **Enderlein, G.**—Die phyletischen beziehungen der Lycoriiden (Sciariden) zu den Fungivoriden (Mycetophiliden) und Itonididen (Cecidomyiiden) und ihre systematische gliederung; **119**, 1911, Bd. 1 Sup. 3, 116-201. **Geddoelst, L.**—Les Calliphorines a larves cuticoles des animaux domestiques; **367**, ii, 19-28. **Hetschko, A.**—Zur kenntnis der biologie und verbreitung der Liponeuraarten; **38**, xxx, 273-278. **Keilin, D.**—Recherches sur la morphologie larvaire des Dipteres du genre Phora; **200**, xlv, 27-88. **Kertesz, K.**—Ueber die generische hinzugehorigkeit der bis jetzt beschriebenen Pachygaster-Arten; **367**, ii, 29-32. **Morris, D.**—Destruction of mosquitoes by small fish in the West Indies; **367**, iii, 171-172. **Newstead, R.**—The papataci flies (*Phlebotomus*) of the Maltese Islands; **281**, v, 139-186. **Perez, J.**—Sur quelques particularites curieuses du rapprochement des sexes chez certains Dipteres; **200**, xlv, 1-14. **Theobald, F. V.**—The distribution of the yellow fever mosquito (*Stegomyia fasciata*) and general notes on its bionomics; **367**, ii, 145-170. **Tothill, J. D.**—Systematic notes on N. Am. Tachinidae; **4**, 1912, 1-5.

**COLEOPTERA.** **Bondroit, J.**—Note sur les genres *Pteroloma* et *Apatetica*; **35**, lv, 365-369. **Champion, G. C.**—*Biologia Centrali-Americana*. Vol. IV, pt. 3, 313-354 (\*). **Cook, A. J.**—The alfalfa leaf-weevil (*Phytonomus murinus*). An alarming menace; **368**, i, 19-22. **Deville, J. S. C.**—De l'utilisation des insectes et particulierement des Coleopteres dans les questions de zoogeographie; **367**, ii, 305-312. **Fuchs, G.**—Morphologische studien ueber borkenkafer. I. Die gattungen *Ips*, und *Pityogenes*. Munchen, p. 1-45. **Heikertinger, F.**—Zur praxis des kaferfanges mit dem katscher; **38**, xxx, 247-261. **Hopkins, A. D.**—The dying of pine in the Southern

states: cause, extent, and remedy; **344**, Farmers Bull. No. 476. **Horn, W.**—Ueber zweigbewohnende Cicindelinenlarven und ihre entdeckung in Brasilien durch Herrn Jos. Zikau; **367**, ii, 173-176. Die "Weddabrücke"; **367**, ii, 313-316. **Kolbe, H.**—Die vergleichende morphologie und systematik der Coleopteren; **367**, ii, 41-68. **Normand, H.**—Description d'un nouveau procede de capturer des Coleopteres hypogees; **310**, 1911, 114-116, 124-126. **Olivier, E.**—Contribution a l'histoire des Lampyrides; **367**, ii, 273-282. **Pic, M.**—Diagnoses preliminaires de 30 Coleopteres exotiques; **310**, 1911, 122-124. Coleopteres exotiques nouveaux ou peu connus; **310**, 1911, 99, 117, 127, 132, 142, 149, 155, 164, 172, 181. **Swaine, J. M.**—The engraver beetles (Family Ipidae), Popular Entomology; **18**, xxv, 141-145 (cont.). **Titus, E. G.**—The genera Hypera and Phytonomus in America, north of Mexico; **180**, iv, 383-473 (\*). **Wagner, H.**—Zur katschertechnik; **38**, xxx, 263-268. **Waterhouse, C. O.**—Observations on Coleoptera of the family Buprestidae, with descriptions of n. sp.; **11**, ix, 57-63 (cont.).

**HYMENOPTERA.** **Banks, N.**—A tendency towards posterior erythratization in the Psammocharidae; **102**, xiii, 238. **Beutenmuller, W.**—The N. Am. species of Dryophanta and their galls; **153**, xxx, 343-369. **Black-Hawkins, M.**—Some observations of Vespa germanica; **47**, 1911, 457-463. **Bouvier, E. L.**—Sur les fourmis moissonneuses (Messor barbara) des environs de Royan; **367**, ii, 237-248. **Buttel-Reepen, H. V.**—Atavistische erscheinungen im bienenstaat (Apis mellifica). Mussen wir dem bienenei zwei oder drei keimesanlagen zuschreiben? Entdeckung der "sporen" (Calcaria) bei der honigbiene; **367**, ii, 113-132. **Crawford, J. C.**—Two new Hymenoptera; **102**, xiii, 233-234 (\*). **Donisthorpe, H.**—Fourmis et leurs hotes; **367**, ii, 199-208. **Forel, A.**—Apercu sur la distribution géographique et la phylogenie des Fourmis; **367**, ii, 81-100. Une colonie polycalique de "Formica sanguinea" sans esclaves dans le canton de Vaud; **367**, ii, 101-104. **Friese, H.**—Apidae I. Megachilinae; **94**, Lief 28, 440 pp. **Fullaway, D. T.**—Monograph of the gall-making Cynipidae (Cynipinae) of California; **180**, iv, 331-380 (\*). **Girault, A. A.**—Notes on the parasite Hymenoptera, **4**, 1912, 5-12 (\*). **Grandori, R.**—Contributo all'embriologia e alla biologia dell'Apanteles glomeratus; **169**, vii, 263-428. **Hickson, S. J.**—The saw-fly pest in the lake district. Manchester, Eng., 15 pp. (For private circulation.) **Kleine, R.**—Welche ursachen haben zur beendigung der diesjahrigen blattlauskalamitat vorgelegen? **166**, vi, 291-292. **Lovell, J. H.**—The color sense of the honey-bee; the pollination of green flowers; **3**, xlvi, 83-107. **Mercet, R. G.**—Los Calcididos parasitos de Coccidos; **208**, xl, 506-314. Sobre la nidificacion, la biologia y los parasitos de algunos Esfegidos; **367**,

ii, 449-464. Nixon, S. D.—Notes on *Apantesis figurata*; **102**, xiii, 232. Rohwer, S. A.—A note on a genus of Tenthredinidae (*Eniscia*); **102**, xiii, 214. A classification of the suborder Chalastogaster of the Hymenoptera; **102**, xiii, 215-226. A preoccupied name in Sphecoidea; **102**, xiii, 234. The synonymy of a Thynnid genus; **102**, xiii, 240. Schulz, W. A.—Systematische uebersicht der Monomachiden; **367**, ii, 405-422. Wasmann, E.—Die anpassungsmerkmale der *Atemeles*, mit einer uebersicht ueber die mitteleuropaischen verwandten von "*Atemeles paradoxus*"; **367**, ii, 265-272. Die ameisen und ihre gaste; **367**, ii, 209-234.

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IN MEMORY OF DR. HENRY C. MCCOOK.—The *Journal of The Presbyterian Historical Society* for December, 1911 (Vol. VI, No. 4—Philadelphia) is a "McCook Memorial Number." It contains various addresses delivered at his funeral and at a Memorial Service held in the church of which he was formerly pastor, Nov. 12, 1911. One of the latter series is by Dr. Henry Skinner on Dr. McCook's entomological work (pp. 115-121). De Benneville K. Ludwig, Ph.D., contributes a "List of the Writings of Dr. McCook" (pp. 137-140) which includes 25 titles on Ants, 7 on other Insects and 31 on Spiders. On page 145 is the statement that it was Dr. McCook's request that his scientific collection should go to the Academy of Natural Sciences.

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## Doings of Societies.

### ENTOMOLOGICAL SECTION, ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA.

Meeting of September 28th, 1911, Mr. Philip Laurent, Director, presiding. Fourteen persons present; Mr. R. D. Glasgow, of Urbana, Ill., and Mr. H. A. Wenzel, of Philadelphia, visitors.

Mr. Glasgow made some remarks on the genus *Lachnosteria*, and said Prof. Forbes had been studying the species from an economic standpoint. Large collections had been made (150,000 to 200,000 specimens) with a view of finding out the food plants and the relation of the species to soils and soil conditions.

Dr. Calvert spoke of some observations made by Dr. Ris, of Rheinau, Switzerland, on the pairing of *Anax*. He could tell when the female had been in coitu without having seen the individuals in this condition by the scratches made by

the inferior abdominal appendage of the male on the eyes of the female. The speaker said these scratches could be seen on the eyes of our common *Anax junius*.

Mr. Wenzel said in *Macrodictylus* the pubescence on the abdominal segments of the female is rubbed off by the male if copulation has taken place.

Mr. H. A. Wenzel read an interesting account of his recent trip to the Great Bend of the Rio Grande in southern Texas.

Mr. Rehn spoke of the difficulties of desert collecting, the conditions in the mountains being far less trying.

Dr. Skinner exhibited specimens of *Adelpha bredowi* and *californica* and gave characters to separate the two.

Mr. H. W. Wenzel compared the faunas of the Huachuca Mts. in Arizona and Southern Texas, and said that so far as the Coleoptera were concerned there was very little similarity. He mentioned the different families, genera and species that bore out his conclusion.

Mr. Rehn made some remarks on a recent Orthoptera-collecting trip made with Mr. Morgan Hebard through the greater portion of the coastal plain of the southeastern States. The time spent in the field covered from Aug. 24th to Sept. 10th. The chief object of the work was to secure information concerning the northern limits of numerous Austroriparian species and twenty localities extending from Northern Florida to Southeastern North Carolina were examined. A series of fifty-five hundred Orthoptera and much valuable field information on the same were secured. A number of species taken were little known and some are without doubt new.

Dr. Skinner mentioned the immense flight of *Aletia argillacea* that had taken place in Philadelphia during the week. Mr. Haimbach exhibited specimens which, when he had mounted them, seemed dry and brittle. This was not the case with some other species he had taken at light at the same time, among which was *Feltia gladiaria*. He also spoke of a big flight of *argillacea* he saw in St. Louis in October

during the great fair held there a few years ago. Mr. Laurent said he had often found *argillacea* at Anglesea, N. J., about Sept. 20th. He also mentioned a large flight of *Tortrix fervidana* he had witnessed 25 years ago at 10th and Spring Garden Sts., Philadelphia.

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Meeting of November 23rd, 1911, Mr. Philip Laurent, Director, presided. Seven persons were present.

Dr. Calvert read a biography of the late Dr. McCook, which appeared in ENTOMOLOGICAL NEWS for December, 1911.

Dr. Skinner exhibited a variety of *Satyrus alope* taken at Southern Pines, N. C., by Mr. F. M. Jones. Mr. Rehn said this locality disclosed intergrades between northern and southern species.

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Meeting of December 11th, 1911, Mr. Philip Laurent, Director, occupied the Chair. Ten persons were present.

Mr. Rehn made some remarks describing the Lawrence Bruner collection of Orthoptera, purchased by Mr. Morgan Hebard and now on deposit in the Academy.

Dr. Calvert referred to some Odonata collected by Mr. C. S. Williamson in Newfoundland and said one species, *Enallagma civile* had not hitherto been found so far north, although it has a wide range.

Mr. Wenzel exhibited some Bruchids from Texas. *Bruchus julianus* was said by Mr. Fall to be very variable in size. Mr. H. A. Wenzel collected a number of specimens in Texas from Fort Davis to the Chisos Mountains which were typical *julianus*. The Brownsville species is not *julianus*, but a new one. The small species, *julianus*, does not vary and it is found on the ground. A species of *Lebia* found in the desert in Texas had been described from the Huachuca Mountains of Arizona by Schaeffer. It is not a variety of *viridis*.

He also stated that *Exochomus scaphinus*, taken by H. A. Wenzel in the Huachuca Mountains is a Mexican species and not hitherto recorded in the United States.

The following persons were elected to serve as officers for the year 1912: Director, Philip Laurent; Vice Director, H. W. Wenzel; Treasurer, E. T. Cresson; Conservator, Henry Skinner; Secretary, J. A. G. Rehn; Recorder, Henry Skinner; Publication Committee, E. T. Cresson, E. T. Cresson, Jr.

HENRY SKINNER, *Recorder.*

#### FELDMAN COLLECTING SOCIAL.

Meeting of October 18th, 1911, at the home of Dr. Skinner, Glenn Road, Ardmore, Pa. Thirteen members were present. President Haimbach in the Chair.

Dr. Skinner exhibited leaf stems from large hickory trees on a lawn here in Ardmore that had been attacked at the base (of the stems) by an insect presumably a beetle or micro-moth. Also sections of the bark, the back of which was badly marked by Scolytids and Buprestids, and which contained living larvæ of both, and some dead imagoes of the former in too poor a state for determination but most likely *Scolytus quadri-spinosus* Say.

Prof. Calvert read a clipping from a Milwaukee paper quoted from the New York *Times* mentioning live insects found in solid rock by a mine or quarry superintendent two hundred feet below the surface, at Marysville (State not given).

Mr. Daecke recorded the following Diptera: *Nusa fulvicauda* and *Lampria bicolor* Wied., both collected at Hunter's Run, Pa. VII-23-'11, saying he would exhibit the species at the next meeting.

Mr. Harbeck exhibited a species of *Mixogaster* which he took thinking it was a Hymenopter, but upon examination it turned out to be a Dipteron; collected at Manahawkin, N. J.

Mr. C. T. Greene exhibited and recorded the following Conopidae (Dip.), all collected by himself and determined by Mr. Banks: *Zodion perlongum* Coq., Broomall, Pa., Sept. 18, 1910 (Aldrich's List records it from Mex., N. M. and Col.);

*Z. intermedium* Banks, Pocono Lake, Pa., July 11, 1911, Malaga, N. J., Sept. 15, 1907, and *Physocephala furcillata* Will., Pocono Lake, Pa., July 10, 1911.

Mr. H. W. Wenzel exhibited *Allorhina mutabilis* Gory (Col.); four from Florence, Ariz., and five from Davis Mts., Tex., only one of the latter having the elytra nearly covered with the green coloring as in those from Arizona. The Texas specimens were collected by H. A. Wenzel in July on "grease wood" in open fields. Prof. Calvert stated he had collected this species in Chihuahua, Mexico, in August.

Prof. Calvert said he had collected eggs of the 17-year Cicada between Almonesson and Blackwood, New Jersey, in twigs, and had hung some twigs up and placed others in water, putting white cloth beneath each to render visible any larvae which might hatch, but had waited six or seven weeks with no result, as all seemed to have dried up. This led to a discussion on the species.

---

Meeting of November 15th, 1911, at the new Zoological Laboratory of the University of Pennsylvania. Fifteen members and sixteen invited guests were present. President Haimbach in the Chair.

The death of James H. B. Bland, the first president of the Social, was announced as having occurred on the 12th.

Prof. Calvert said he was exceedingly glad the Social had accepted his invitation to hold this meeting in the Laboratory, and hoped it would not be the last; and was glad that his colleagues on the teaching staff were also there to welcome us. He mentioned the different classes and branches of study carried on in the laboratory.

Dr. Skinner remarked on the new building, and said it was very different from the time when he attended college here thirty years ago, as then there were few buildings, and only two men he knew of at that time interested in Entomology, Drs. Joseph Leidy and Harrison Allen. He spoke of the ignorance of physicians in relation to Entomology and cited cases. He described the manner devised by E. T. Cres-

son, Jr., in which the collection of the American Entomological Society was lately moved.

Mr. Wenzel, Sr., exhibited two boxes of Coleoptera containing *Pachybrachys*, Bruchids, Buprestids, Clerids and Carabids collected by Mr. Wenzel, Jr., in Southwest Texas, and said they contained many which were new. He had gotten the first named genus in readiness for Prof. Fall, who is to monograph this group.

Mr. Daecke exhibited galls of *Eurosta elsa* Daecke (Dip.), and said they were almost the same as *E. comma* Wied., but they were found on the roots of a different species of golden rod. He also exhibited the Diptera recorded at the last meeting and three specimens of *Polypleurus perforatus* Germ. (Col.) from Manumuskin, N. J., April 24, 1900, Linglestown, Pa., November 30, 1908, and Rockville, Pa., March 27, 1910, all having been compared with the Horn collection, and found to be determined correctly. The first was the only one collected by himself, and was exhibited to refute the statement on p. 358 of the 1910 New Jersey List: "It may be that this record really refers to the preceding" (*geminatus* Sol.)

Mr. C. T. Greene exhibited *Rhamphomyia gracilis* Loew (Dip.), Pocono Lake, Pa., July 12, 1911, collected by himself.

Mr. Harbeck exhibited a *Tabanus* of which he had caught several at shore in company with *lincola* Fabr., *costalis* Wied. and *nigrovittatus* Macq., and which is most likely a new species. This one was taken at Manumuskin, N. J., July 4, 1909, and he said that by sweeping the net about the head hundreds of specimens of the other species could be taken. Mr. Daecke said by glancing at *Tabanus*, one of the most interesting characters would not be noted, that is the maculations of the eyes—this one has three fine green stripes.

Prof. Calvert in continuation of his communication of last meeting on the 17-year Cicada said that where the twigs were found no chimneys were to be seen. This was June 19th. Females were more abundant than the males. Two females were particularly mentioned as displaying extreme vitality.

One fell to the ground from some distance up in a tree and began crawling, and when picked up the entire abdomen was missing, most likely cut off by a bird; five hours later it could still crawl, cling to a finger and flutter its wings, but could not right itself when placed upon its back. One caught in the net while flying had a large cavity in end of the abdomen, ovipositor and muscles were lacking; this lived at least twenty-two hours later, for at that time it was crawling and fluttering about a room in which it had been liberated. Dr. Skinner wanted to know if anyone had theories as to when the Cicadas do or do not make the chimneys. Mr. Wenzel said they seemed to make more in wet seasons than dry. Mr. Hornig said he had seen them very numerous in one spot, about fourteen or sixteen in a square foot near Glassboro, New Jersey. General discussion.

After refreshments were served the members were shown over the building by those in charge of the various departments.

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Meeting of December 20th, 1911, at 1523 S. 13th St., Philadelphia. Twelve members were present. Vice-President Wenzel in the Chair.

Mr. Daecke said that the vitality was so great in certain insects that the cyanide was a long time affecting them, but if tobacco smoke was blown in the bottle the combination of the two fumes would kill almost immediately. *Trogosita virescens* Fabr. (Col.), was specially mentioned as after being in the bottle 36 hours and then pinned, found to be alive several days later. Exhibited 9 specimens of *Cosymbia culicaria* Gn. (Lep.), from the following localities in New Jersey: Browns Mills, April 29, 1906, May 19, 1907, May 21, 1904, July 4, 1907; Da Costa, May 17, 1903, and Clementon, May 17, 1901.

Mr. C. T. Greene exhibited *Blepharocera tenuipes* Walker (Dip.), collected by himself at Castle Rock, Pa., June 19, 1910, as new to this locality. Osten Sacken's Catalog records Axton and Ithaca, N. Y., and White Mts., N. H.

Dr. Castle exhibited a specimen of *Calopteron reticulatum* Fabr. from Glenolden, Pa., June 2, being nearly all black, except small humeral spots and a narrow band across the middle of the elytra.

Mr. Wenzel, Sr., exhibited the weevils collected in Southwestern Texas by Mr. Wenzel, Jr., in 1911.

Adjourned to the annex.

GEO. M. GREENE, *Secretary.*

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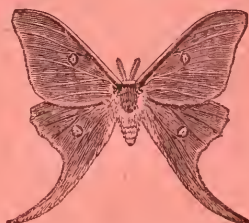
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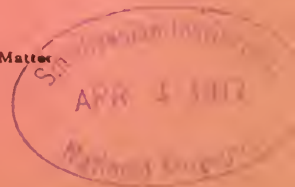
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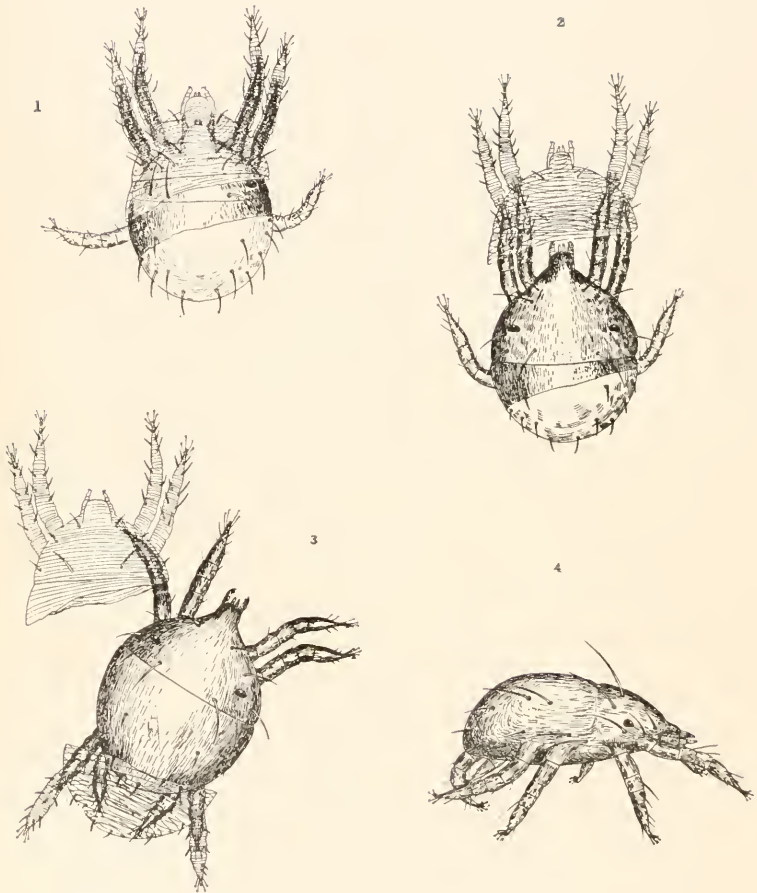
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VOL. XXIII.

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### CONTENTS:

Ewing—Notes on the Molting Process of our common red spider ( <i>Tetranychus telarius</i> L.) (Acarina).....	145	Braun—Notes on Chambers' species of <i>Tineina</i> (Lepid.).....	163
Neils—Wing Production in Aphids (Hemip.).....	149	Busck—A new Microlepidopter of the genus <i>Epicallima</i> Dyar from Penna.	170
Williamson—The Known Indiana <i>Somatochloras</i> (Odonata).....	152	Slosson—Collecting at the Water Gap.	171
Blaisdell—Hibernation of <i>Cicindela senilis</i> (Coleop.).....	156	Felt—New West Indian Gall Midges (Dipt.).....	173
Aldrich—Flies of the Leptid genus <i>Atherix</i> used as Food by California Indians (Dipt.).....	159	Editorials.....	178
		Notes and News.....	180
		Entomological Literature.....	185
		Doings of Societies.....	191
		Obituary—Prof. John B. Smith.....	192

## Notes on the Molting Process of Our Common Red Spider (*Tetranychus telarius* L.) (Acarina).

By H. E. EWING, Corvallis, Oregon.

(Plate X)

As far as the writer has been able to ascertain, we have no record of any one having witnessed the molting process in any of the red spiders. Since the members of this family (the *Tetranychidae*) are themselves almost or quite microscopic in size, this fact is not surprising. In order to get any valuable observations of the process, it is necessary to use the compound microscope; and since the molting process occurs but three times in the life of an individual, and occupies only a few minutes many weary observations would ordinarily have to be made in order to see it.

### OBSERVATION OF THE MOLTING PROCESS ON THE STAGE OF THE MICROSCOPE.

While working out the life history of our common red spider (*Tetranychus telarius* L.), a species which is known to every keeper of a greenhouse and to almost every gardener or orchardist, I was fortunate enough to observe the complete process of molting of a quiescent larva into the nymphal stage.

This was in the early part of the winter of 1909, at Ames, Iowa, where some extensive experiments on this species were being carried out.

The following detailed account of the process and the subsequent actions of the newly emerged nymph are given almost word for word as I have them from the records taken at the time.

At 11.50 A. M. on December 11th, I came into the laboratory as usual to take notes on the breeding cells. These cells were very small glass stender dishes. Each was small enough to be placed on the stage of the microscope, and each contained a single, isolated individual upon some very small, one-leaved plant. The larva in cell A 25 was observed along with the others, and at first I saw that the larva had fixed itself for a molt. But to my surprise as I examined it more carefully, I thought I saw it move slightly. At once I took my hands off the microscope to be sure that this apparent motion was not due to my own movements. The larva was now seen clearly to move. Its body was moved back and forth and sideways, but the legs were kept still. Suddenly in a single instant the skin of the old larva burst all the way across the body just behind the scapular groove on the dorsal surface. In another instant some of the dorsal bristles of the cephalo-thorax were released as if they were springs, and projected in almost their normal position. At the same time the eyes of the emerging nymph burst into view.

Now began a series of side motions and of backward strains. The hindmost larval legs were used, being extended laterally and slightly anteriorly. At the same time the muscles of the body gave it a wriggling motion. These motions continued for about one minute when the whole anterior part of the new nymph began to be drawn out of the anterior part of the old larval skin. This motion was at first rather slow until the anterior legs were released from their old sheath, when all of a sudden the whole nymph pulled loose from the anterior part of the old skin.

The now half emerged nymph, having thus shed its coat, so

to speak, began to cast off the remainder of its "old garments." This consisted of that part of the old skin covering most of the abdomen and the third pair of legs. The individual walked away about twice its own length, and after a few movements, which apparently were used for fastening the posterior part of the old skin to the surface of the leaf, it calmly walked out of the rest of its "garments." The whole time consumed in casting the skin was less than four minutes, beginning with the first noticed movement of the inert larva.

The new pair of legs which now appeared (there being four pairs in the case of the nymph, while only three pairs were present in the larva) were smaller than the rest and could not be used in walking for some time. This pair appeared just back of the third pair, as is the rule in the case of other Acarina. The larva now walked about some, but all the time it kept flexing and extending its added pair of legs. It was "trying them out" so to speak, before it could use them in walking. At 12 o'clock this nymph went to the base of the plant and stretched out its legs, and lay motionless, doubtless exhausted by the ordeal of the molting process. It remained in this position from 12 o'clock to twelve minutes after 12. Now its body began to move and soon it was "trying out" its legs again. After about three minutes the nymph began walking, but it was a shaky, unnatural gait. It kept this up until 12.17, when my observations ceased.

#### SOME GENERAL NOTES IN REGARD TO THE MOLTING PROCESS.

The molting process in this species is always preceded by a quiescent period of several hours. This period is perhaps used in the reformation of some of the bodily structures, but certainly not many.

In assuming a position at the beginning of the quiescent period previous to the molt the legs are always extended, and they are nearly always attached to a fine web which the species spins.

One of the chief uses of the web which is spun by this species is as an aid in the molting process. The cast skins are nearly always found fastened to some threads of this web.

Frequently the posterior part of the cast skin is left attached to the anterior part, and is not torn entirely apart from it, as it was in the case of the individual which was observed molting under the microscope.

Although I never have observed the second and third molting processes, a study of the second and third cast skins would indicate that it is essentially the same as the first one.

#### THE FOUR STAGES OF THE MOLTING PROCESS.

From the observations made of the molting process it may be divided into four stages.

*The first stage* (Fig. 1). This stage begins with the first movements of the body, and ends with the complete transverse rupture of the old integument.

*The second stage* (Fig. 2). This stage begins with the transverse rupture of the old integument, and ends with the complete shedding of the anterior part of the old skin.

*The third stage* (Fig. 3). Includes that part of the process between the casting of the anterior part of the old skin, and the complete freeing of the body from the posterior part of the old skin.

*The fourth stage* (Fig. 4). Includes that part of the process coming after the last part of the old skin has been cast and extending until the rest period due to exhaustion sets in.

#### A PART OF THE CHRONOLOGY OF THE MOLTING PROCESS AS RECORDED.

	Ames, Iowa, December 11th, 1909.
Time:	Individual in cell A. 25.
A. M.	
11.50	The first movements noticed in the quiescent larva. These movements were back and forth and sideways, with the legs fixed at their tips by means of the tarsal claws.
11.54	Last part of the old larval skin is detached from the body.
12.00	The new nymph stops "trying out" its new pair of legs, the hindmost pair; and stretches itself out motionless and presumably exhausted.
P. M.	
12.12	Period of rest is broken by the "trying out" of the new and old legs, but not by walking upon them.
12.15	Nymph begins walking about although its gait is not steady.
12.17	Observations stopped.

### Wing Production in Aphids (Hemip.).

By J. D. NEILS, University of California, Berkeley, Cal.

The results obtained by Doctor J. Loeb by the use of chemical salts on micro-organisms, suggested to Professor W. T. Clarke that some of the polymorphism exhibited by Aphids might be due to the action of such salts. Accordingly he experimented with a series of salts\*.

The method of introducing the salts into the insect was as follows: Cuttings of rose, bearing a single apterous viviparous aphid (*Nectarophora rosae*) were planted in five four-ounce tumblers containing washed and sterilized sand. The sand was wetted with saturated solutions of magnesium chloride, magnesium sulphate, potassium phosphate, sodium hydrogen phosphate and pure water, respectively. Records extending through a period of three weeks were kept with the result of an apparent and very striking effect of magnesium salts. Since this paper is not accessible to many, the results obtained by Professor Clarke are given in detail in the following table:

September Experiment	MgCl <sub>2</sub>	MgSO <sub>4</sub>	K <sub>3</sub> PO <sub>4</sub>	NaH <sub>2</sub> PO <sub>4</sub>	H <sub>2</sub> O
Total Number of Aphids.....	263	142			131
Percentage of winged forms.	89	92			0.4
October Experiment					
Total Number of Aphids.....	254	268			217
Percentage of winged forms.	73				1
November Experiment					
Total Number of Aphids.....	233	228			227
Percentage of winged forms.	80	77			4.4
February Experiment					
Total Number of Aphids.....	278	271	295	146	252
Percentage of winged forms.	78	84	2	0	3

As pointed out in a paper by Professor C. W. Woodworth on Winged Aphids † the wilting of plants results in a slowing down of the birth rate, also in bringing about

\* Journal of Technology, Vol. 1, Berkeley, California.

† Entomological News, March, 1908.

a spontaneous production of young with wing pads. Many species of Aphids increase until the condition of the plant is wilted or curled, due to the poisonous effect of the lice or the lack of water; then they produce winged forms and free the plant entirely.

There seem thus to be two possible explanations of wing-production in these experiments; first, there may be a stimulative action due to the chemicals, or second, it may be due to the slower development after hatching and after feeding begins. This slower development of tissue gives more opportunity for the development of wings, which would otherwise be sacrificed to the development of such tissue as the reproductive system under more favorable conditions. This retarding in development is brought about by the wilting effect produced by several agencies, as drought, excessive infestation of the plant by the lice, the preparation of the plant for winter conditions, or perhaps artificially by the presence of magnesium salts.

The writer undertook to verify the determinations made by Professor Clarke and obtained the following results:

Material	1st 3 days		2nd 3 days		3rd 3 days		Total		Percentage of W. forms
	Births	W. forms	Births	W. forms	Births	W. forms	Births	W. forms	
MgSO <sub>4</sub> .....	5	3	10	10	8	8	23	21	91.3
H <sub>2</sub> O .....	8	0	12	0	14	2	34	2	5.9

These results completely confirmed those obtained by Professor Clarke, but bring out the additional fact that after the first three days all the MgSO<sub>4</sub> aphids developed wing pads. This makes it possible to determine quite accurately the time during the development of the insect at which the action of magnesium became effective.

A series of experiments were made by the writer to discover whether the determination of the future development into winged or wingless aphids occurred before or after

birth. Professor Woodworth, in the paper quoted above, has pointed out that a distinction may be made between the two forms as soon as they have accomplished their first molt, thus placing one limit to this critical period. These experiments were conducted in the following manner: A cutting of rose bearing a number of young apterous viviparous aphids (*Nectarophora rosae*) was planted in a four-ounce tumbler containing washed and sterilized sand and watered with a saturated solution of magnesium sulphate. In a like manner a cutting with aphids was wetted with water. Since in the former experiments the aphids born during the first three days did not show the effect of the salt, three days were permitted to pass and then as soon as the young were born on the plant treated with magnesium sulphate they were carefully transferred to a fresh cutting bearing no aphids planted in sand, to which only pure water had been added. Those born on the plant in water were likewise transferred just after birth to a plant bearing no aphids, which had been planted in sand watered with magnesium sulphate. The following table shows the results:

	Chemicals used	
Plant on which birth occurred .....	MgSO <sub>4</sub>	H <sub>2</sub> O
Plant to which newly born aphid was transferred ..	H <sub>2</sub> O	MgSO <sub>4</sub>
Per cent. developing wing pads .....	0	100%

From this table it will be seen that the effects of magnesium salts on the wing production of aphids is due strictly to the salt taken by the insect after birth and that the feeding during the first day of its existence determined its future development.

These experiments do not answer the question whether the magnesium is a stimulant to the development of wing-buds or a retarder of the general development, but the much slower development of the ovaries and the slower increase in total body weight, which has been readily observed in the experiments, would seem to favor the latter idea.

The writer proposes to show the morphological differentiation between these two forms which occur during this stage in a subsequent paper.

## The Known Indiana Somatochloras (Odonata).

By E. B. WILLIAMSON, Bluffton, Indiana.

In the Journal of the Academy of Natural Sciences of Philadelphia for 1839, Thomas Say, in a paper read July 12, 1836, says of his new *Libellula tenebrosa*, "Inhabits Indiana." Twenty-five years had elapsed since the Battle of Tippecanoe; and just twenty-five years more were to pass when the cicadas and the darters with their capital W's announced another war. And forty years after the beginning of that war passed before a *Somatochlora* was again recorded for Indiana. Well did Professor Needham include one *Somatochlora* in his discussion when he wrote of "Two Elusive Dragonflies." (Ent. News, 1905).

In these sixty-five years between the captures of Somatochloras in Indiana, the State had passed from a wilderness to cultivated lands. Where the farmer as a boy caught cat-fish and snapping turtles, he plowed corn as a man. The smaller streams became tile ditches; the primitive forests, fields and pastures. What changes took place in the original plant and animal inhabitants of the State are known very meagerly even for the most conspicuous forms. The passing of the obscurer has not left a trace. Of the wild turkey and the deer we know something, but who has concerned himself with the extinction of an orchid or the loss of a dragonfly? That these questions already difficult are to be answered in the future while data are yet obtainable is scarcely to be hoped. Philanthropy is concerning itself in pure science mainly in attacking problems whose solutions may be as ready for the student thirty generations hence as at the present time. Unfortunately no one will find an opportunity to collect native orchids or Somatochloras in Wells County, Indiana, a thousand years from now. The humble apology of the writer of local lists to the student of the anatomy of the cat is not in good taste.

Thomas Say, then, in 1836, recorded *L. (Somatochlora) tenebrosa* for Indiana. On June 4, 1901, Mr. Chas. C. Deam

took a teneral female *Somatochlora* in Fountain County, which Dr. Calvert, several years ago, determined as *linearis*. Along Flat Creek in Wells County, on July 2, 1911, I took a male *S. charadraea*, and two days later, at the same location, took a male of *S. linearis*. These are the State records, scanty because of the nature of the dragonflies themselves, but especially because no one is employed, or has the leisure, to give the subject attention.

The capture of no other known species could have furnished a greater surprise than *charadraea*. The only other specimen known was taken at an altitude of about 8,000 feet in Bear Creek Canon, Jefferson County, Colorado, by Ernest J. Oslar. The elevation of Flat Creek is about 800 feet, and its name is indicative of its character, which is anything but that of a mountain torrent. Flat Creek is a tributary of Little River which it joins just above Mardenis, Huntington County. Little River, meeting the Wabash River at Huntington, is the shrunken descendant of the Fort Wayne outlet of the extinct Lake Maumee whose waters once passed into the Wabash. Flat Creek passes into Huntington County from Wells County about one and one-half miles south of the Allen County line. Its last 200-300 yards in Wells County is through brushy and rank second-growth woodland on the Simmers sisters' farm. In Huntington County it passes into a large open field, and above the Simmers woodlot it runs for nearly a mile through practically open fields and through the barnyard of the J. M. Settlemyer farm. Mr. Settlemyer has made some borings in the creek bottom on his farm obtaining a limited but continuous artesian water supply. He tells me that prior to these borings the creek dried up in summer. Early in July, 1911, when I collected there, it averaged possibly 3 feet in width and carried a very small amount of water. The creek bottom will average about 3 feet below the land surface in the adjoining woodland. Its course is meandering, and in a few places there are perceptible ripples over gravel bottom. The water is generally only a few inches deep, but

there is one pool where the water is possibly 2 feet deep. The banks are grass-grown or bare in places, with much willow herb and some lizard tail. The water is warmed by its exposure in fields, and is fouled by barnyards and the visits of domestic animals.

On July 2, 1911, en route to Little River, I reached the bridge over Flat Creek on the Wells-Huntington Counties line at about 8 A. M., and leaving the motorcycle on the bridge, started up the creek through the Simmers woodlot. At a short distance I saw a dragonfly, hovering like a *Tetragoneuria*, over a ripple. It left the ripple, flying upward and being lost to sight. It appeared again at the ripple, not approaching by following the creek, but "dropping down from the clouds;" and it disappeared as it had in the first instance. After a few moments' wait I followed the creek through the woods to the fields beyond without seeing any dragonflies. On my return, as I walked in the creek bed, a flash of black, yellow and green danced for a second before my eyes and as it passed to one side the net overtook it,—a brilliant male of *S. charadraca*. Possibly half an hour more was spent at the creek, and no *Somatochloras* were seen. Leaving the creek I went to Little River near Mardenis where I expected to find *Macromias*, and where I hoped, after my experience at Flat Creek, I might find *Somatochloras*. Collecting here without success and thinking over the morning's experience, I became more and more convinced that the first *Somatochlora* seen was a different species from the one captured. The first one seen showed no yellow at all in the two good views I had of it, while the one captured gave me a distinct glimpse of yellow, though I had but the most fleeting glance at it on the wing. So before noon I returned to Flat Creek, first a mile below where I had collected in the morning, and later at the former woods. But at neither place did I see any *Somatochloras*.

The next day, Monday, I made a hurried early morning trip to the creek in the Simmers' woods, and saw the *Somatochlora* again,—a good view and one that convinced me it

was not *charadraea*. That evening I rode to the creek again, a total of about 55 miles traveled that day, but in the last hour or two before dark I failed to catch a glimpse of Somatochloras. I slept that night in Settlemeyer's barn and in the morning followed the sun's first rays into the Simmers' woods. Twice I got good though distant views of the *Somatochlora*. He would drop down from over the trees, pass along the creek for a short distance, and leave like a flash. Then an hour passed and no sign of him. As I stood in the creek near where I had caught *charadraea* the Sunday before, planning my next trip after the wretch that was making the glorious Independence Day a mockery, there was a flash over a large red haw tree and in the same breath the net got him as he started to rise in passing me. And this one was *S. linearis*. Wallace somewhere tells of a headache which seized him when a butterfly slipped to freedom from his fingers. Waking and sleeping I had seen this dragonfly for nearly forty-eight hours, and my emotions I believe were as intense. On subsequent trips to the creek I failed to see any Somatochloras.

The colors of *charadraea* are as described in Ent. News, January, 1907, with the following notes:

Labrum largely brown, greenish or paler at center, clypeus brown, lighter at center below to meet pale on labrum; frons in front, below metallic area, brown; no yellow on vertex. On abdominal segment 2 an additional small yellow spot above the yellow of the genital lobe.

Eyes Nile green, brilliant. Yellow markings chrome yellow, tending to gamboge.

The living colors of *linearis* may be briefly described as follows:

Labrum yellow; face brown, clypeus paler at center; frons obscure yellowish on either side against the eyes, above and slightly in front metallic dark blue; vertex and occiput dark, nearly black; eyes brilliant Nile green; rear of eyes pale brown.

Thorax metallic without other color excepting the sclerite between the front wings which is pale lemon. Legs black, brown at base.

Abdomen black, segment 1 brown above; a large rounded pale yellow spot at base of genital lobe; lower lateral margins of 3 and 4 edged with gray; small lateral basal yellow spots on 5-8, all about the same size, most distinct and bright on 6 and 7, dullest and smallest on 8; a hint of lateral basal spots on 3, large but dully colored and ill defined.

### Hibernation of *Cicindela senilis* (Coleop.).

By FRANK S. BLAISDELL, SR., San Francisco, California.

It has been my custom for several years to spend the Thanksgiving Holidays at Vine Hill, Contra Costa Co., California.

Vine Hill is a railroad station on the Santa Fe Railroad, about three miles south of Benecia Bay. The region is settled up, and the land divided up into ten- or twenty-acre ranches, fruits and chickens being the main productions.

The marsh land, bounding the southern shores of Benecia Bay, sends an arm inland to the south for quite a distance, and the irregular edge of this saline area reaches the ranch at which I stop. The country in general is rolling; hills of two or three hundred feet elevation are quite common. Upon one hill in particular there are a number of white oaks on the northern and northwestern slopes.

The weather was moderately cold and dry on November 24th to the 27th, 1910, and insects at this time are all in hibernation. Collecting consists mainly in hunting out all crevices about buildings and fences, turning over of rocks and of pulling off the bark of trees. Beating oak trees over an umbrella yielded many good things. The Coccinellidæ were particularly in evidence.

After having collected from all of the oaks I took to the grain fields, where ledges cropped up here and there. Finally I worked my way to the borders of the saline flats. A short distance from the edge of a grain field, and within the marsh boundaries, a small barren knoll with croppings of a ledge attracted my attention. Heretofore it had never yielded anything more than a few *Bembidium indistincta* and *Thicanus californicus*. The surface of the ground is always crusted over with a saline exudation or deposit; this barren spot is not much more than one hundred feet square, and not much more than three feet above the general level. It is bounded by the saline marsh plants—mostly what I take to be *Salicornia*. About the ledge were three or four loose and flat rocks, which measured about two and one-half feet in length and one and one-half feet in width. As I looked about it occurred to me

that it was an ideal place for *Cicindela senilis*. After tipping over a number of small stones, I approached one of the large rocks mentioned above, and as I did so, I noticed that the lizards had been feeding upon a species of *Cicindela*. Close examination of the fragments proved them to be the remains of *senilis*. A new record, for I had never found them at Vine Hill before.

After turning over the large rock I noticed a small hole (B) at the edge of the impression (A) made by the rock, as shown in the accompanying diagram. I also observed that there was something whitish in that hole, and with my forceps



I extracted a *C. senilis*. It was torpid from the cold. At the mouth of its burrow there was a small pile of dirt (B), which looked like a miniature gopher mound. This little pile of dirt was not the only one, for all around the rock impression there were numerous others (C).

An idea occurred to me and I began to dig, and *Cicindela senilis* began to appear by the twos and fours. They were at different depths, none deeper than three inches (G), and there was distinct evidence of galleries. There was no evidence of larvæ, and the little piles of dirt told the story very clearly,—that these insects had retired to this rock and dug their way beneath it for the purpose of hibernating through the winter.

Having exhausted that colony, I passed on to another large rock, raised it, and again I could see signs of burrows and one or two *senilis* were in sight. So I determined upon a more systematic study of the burrows. The diagram shows the results.

There was one main gallery (D) with branches leading distinctly to the margins of the rock impression (A), and each branch was closed with dirt as before; some of the branches ended blindly (E).

In one end of the gallery I found five individuals that exhibited scarcely any signs of life; in the blind branches of the gallery there were usually one or two specimens. The main gallery was not more than one-half to one inch below the surface of the dirt (broken lines), and came to the surface wherever the continuous line (F) is shown in the diagram.

A number of individuals were enclosed in oval cells (G), resembling a pupal cell; these were apparently cut off from any exit, or at least I could not trace it to the margin of the rock impression. But as a rule a pile of dirt was opposite to these isolated cells, as in cases where the connection was evident.

I consider that the gallery was not community property through instinct, but through accident, as each *Cicindela* in nearly all instances had its corresponding pile of dirt at the margin of the rock impression. In most cases it was clearly to be seen that a burrow had been dug from periphery to center, and that the dirt had been pushed outward interruptedly as indicated by the transverse markings of the filled burrows.

The different individuals of the colony, in working centrally beneath the rock, would eventually meet each other, their burrows uniting; this being the case, it would undoubtedly modify and convert the gallery into community property, with the result that there would be an amicable association of individuals, which at other times would be decidedly bellicose.

Such an association apparently aroused a latent social instinct that is so well exhibited by many other species, especially the *Coccinellidae*, and for that matter some species of *Cicindelae* are social, but not all.

Sixty-four specimens were collected from beneath three rocks, and I was well satisfied that many more could be found beneath other immovable rocks of the ledge.

These insects did not develop beneath the rocks, but on the other hand sought these protected sites to hibernate.

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### Flies of the Leptid genus *Atherix* used as Food by California Indians (Dipt.).\*

By J. M. ALDRICH, Moscow, Idaho.

In March, 1911, as I was making plans to investigate the *Ephydras* and other insects of western salt and alkaline lakes, I wrote to the Commissioner of Indian Affairs in Washington, mentioning the well-known use of an *Ephydra* at Mono Lake as food by Indians, and asking if any information could be procured for me in regard to other places in the West where such food was used. The Commissioner obligingly sent a circular to employees of the service in the West, which elicited several responses, one of which brought the first intimation of the use of a Leptid fly as human food.

Mr. Joseph A. Garber, farmer in charge of the Yainax sub-agency, Yainax, Oregon, wrote down two statements made to him by Indians living at or near the sub-agency, which I am permitted to publish. The Indian name under which it is reported that the *Ephydra* was used was "Koo-chah-bie," and this was used in the circular of inquiry.

"Statement of Chief Ben Lawver:

"Ben Lawver, an old Modoc Indian now living at Yainax sub-agency says that this fly which was used for food by the Indians was called by the Modocs and Pitt Rivers Ha-lib-wah, but after the flies were prepared for use as food, the product was called Koo-chah-bie. There are a few of these flies on Sprague River in this county and they are still called the Ha-lib-wah fly by the Klamath Indians.

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\* This paper is one of the results of an investigation carried on with the aid of an appropriation from the Elizabeth Thompson Science Fund.

"About forty years ago when the Indians used the Koo-chah-bie as food, they would go to Pitt River in Modoc County, California, at a point about ten miles down the river from where the little village or town of Canby now is. The time for gathering the flies was some time in the early summer. The Indians would place logs across the river in about the same manner that a present-day log or lumber boom is constructed. Then they would go up stream and shake the flies off the willow bushes growing along the banks of the river. The flies falling on the water would float down stream and lodge against the logs in great quantities. As many as a hundred bushels could be gathered in this way in a single day. The Indians used a kind of basket to dip the flies from the water and carry them to the place where they were to be prepared for food.

"A pit was dug in the ground about  $1\frac{1}{2}$  to 2 feet deep and about 2 feet or more square. Then two layers of stones were placed in the bottom of the pit, each layer being about three inches thick. A wood fire was built on these stones and more stones were put around and over the fire. When the fire was burnt out and the stones were hot, all the stones were removed except the bottom layer. Then green tules or green coarse grass was spread out on the bottom layer of rocks. The walls of the pit were lined with hot rocks also, and this inclosure lined with tules or grass. The oven-like inclosure was then filled with the flies. These were covered with green coarse grass and the whole covered with more hot stones. Water was then poured on the hot stones of the walls of the pit, the hot stones converting it into steam.

"As soon as the water was poured on, dirt was hurriedly thrown over all to the depth of several inches. The flies were allowed to cook in this manner until the heat was pretty well expended. The dirt and grass were then removed from the top and the mass allowed to cool. When sufficiently cooled the product was taken from the oven and was ready for use as food. In this state it was called by the Modoc and Pitt River Indians 'Koo-chah-bie.' When cold Koo-chah-bie is about the consistency of head-cheese, having a reddish brown color and can be cut into slices with a knife."

“Statement of William Turner Jackson:

“William Turner Jackson, a Pitt River Indian now living near Yainax, Oregon, says that he saw this fly forty or more years ago, when he was a mere boy, in great quantities on a mountain side about eight or ten miles northeast from the postoffice or village of Lookout, in Modoc County, California. It seems that these flies, according to his statements, would gather at or near the head of a small canyon through which flowed a small stream of water. He never saw them at any other place in quantities and if one would go a quarter of a mile from this point in any direction there would be practically no flies. These flies gathered there some time in the month of May, and could be gathered by the tons. The trees, bushes and rocks were covered with them in places to the depth of five or six inches. Hence it was no trouble to gather them, for they could be scraped off the rocks and trees into great heaps. They would alight on the Indians until they were literally covered with them.

“The time of gathering them was in the cool of the morning when they were all settled and too cold to fly. In the heat of the day the air would be so filled with them as to exclude the sun and one could see but a short distance. (Where the flies came from and where they went to from this place is not known by the Indians who gave me this version of the incident.—J. A. G.)

“Indian Jackson also says that the flies were gathered in great quantities and prepared for food.

“A large pit was dug in the ground and the same materials used in constructing the oven as those mentioned in the Ben Lawver statement. But before the flies were put into the oven they were dumped into large baskets and mashed up and kneaded like a housewife works her paste when preparing to bake bread. The mass is made into loaves like bread and placed in the oven side by side. There may be a half dozen or more layers of these loaves in one oven with the hot stones between the layers. A great quantity could be cooked or baked in one oven in this manner. When this product was baked and dried it could be sliced from the loaf and used as food.

"The food was called at that time and place by the Pitt Rivers 'Why-hauts.' When the Indians had gotten as much of the Why-hauts as they needed for winter supply, they carried it away to their places of living. A great deal of this was used as winter food."

The two places described by the Indians are both on Pitt River in the southern part of Modoc County, the northeastern county of California, and are not much more than ten miles apart by the data given. The two Indians it will be noticed belonged to different tribes, which probably accounts for slight differences in handling the flies. I believe both accounts are truthful, although the quantity of material secured may be a little exaggerated.

The identification of the fly as a member of the genus *Atherix* is very easy. About the year 1900 I was at Logan, Utah, early in July, and joined a fishing party which drove to a point southeast of Avon, in the south end of Cache Valley, on a small stream in the mountains. I distinctly remember seeing masses of flies of the genus *Atherix* come floating down the stream, and in one spot where a stick lay partly under water they would lodge so that a handful could easily be picked up. At the time I had no place to put the insects for preservation, and did not collect any, but I recognized the genus. In the summer of 1898 also, at Hailey, Idaho, or a few miles above the town, I noticed on the underside of a wagon bridge crossing Wood River masses of old dead flies that had apparently been attached to the timbers of the bridge for several years; they were hanging over the water. Material which I collected here was afterwards destroyed by a fire in the University of Idaho, and again I am not sure of the species, but I collected *Atherix variegata* at Hailey on another occasion. It would be necessary to collect in the Pitt River region to feel certain of the species of the above account by the Indians.

The explanation of the gregarious habit of the fly is that the females deposit their eggs collectively in this manner. The female does not fly away from the egg mass, and other females gathering on the outside of the cluster and also depositing their eggs results in the formation of a mass of eggs and

flies several inches deep. An instance of this is cited by Ives, in *Entomological News*, i. 39, 1890, and Dr. Riley, commenting on the case in *Insect Life*, ii, 386, 1890, mentions something similar, but possibly not the same. The Ives material came from Pemberton, New Jersey.

This habit in *Atherix* is much better known in the European *Atherix ibis*, in which it has often been described. Verrall (*British Flies*, v, 288, 1909), quotes a condensed description of the habits of the species from Walker (*Ins. Brit. Dipt.*, i, 70)—“The female of this fly is gregarious, and attaches its eggs in large clusters to boughs hanging over streams, and there remains, and shortly dies. The cluster is generally pear-shaped, and sometimes contains many thousands of dead flies, and continually receives accessions by new comers settling upon it. When the larva is hatched it falls into the water, its future residence; it has a forked tail about one-third the length of the body, and has the power of raising itself in the water by an incessant undulating motion in a vertical plane.” Williston, in the 3d edition of his *Manual of North American Diptera*, p. 160, also refers to this habit.

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### Notes on Chambers' species of *Tineina* (Lepid.).\*

By ANNETTE F. BRAUN, University of Cincinnati.

#### *Coleophora vernoniaeella* Chambers.

*Coleophora vernoniaeella* Chambers, Can. Ent., X, 114, 1878; Dyar, List N. A. Lep., No. 6051, 1902.

Antennae whitish, basal joint without a tuft. Labial palpi white; second joint with a very small projecting tuft and tinged with brownish ocherous on its outer side, third joint sometimes brownish ocherous on its outer side. Head and thorax white. Forewings whitish, with the extreme edge of the costa near the base dark brown, and marked with longitudinal ocherous and fuscous lines, distributed as follows: a longitudinal streak from the base through the cell, bifurcating about the middle of the cell, the upper branch following the upper side of the cell and curving down into the cilia just below the apex, the lower branch extending outwardly almost straight and reaching the cilia just above the fold; a second ocherous streak just below the fold

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\*(Continued from December, 1909.)

and parallel to it. There is sometimes a third ochereous streak just below the costa for about one-half the wing length. There are three or four ochereous streaks lying between the costal veins. In the darker specimens these streaks and also the longitudinal streaks before described are more or less flecked with fuscous scales. Cilia somewhat ochereous. Hindwings grayish ochereous, cilia the same. Legs whitish, the anterior pair dark brown along their outer sides. Expanse: 13-14 mm.

Chambers described this species from larval cases only, noting particularly the extreme length of the cases. The largest cases are almost an inch long, although the usual length is 15 to 18 mm., almost straight and cylindrical, but slightly tapering and roughly three-valved at the apex. The full-grown cases are found upon the leaves of Ironweed (*Vernonia fasciculata* Michx.) during May and the early part of June. One leaf may contain as many as six or seven mines. The mines are irregular in shape, often a centimetre or more across. At the time of pupation the case is usually attached to the stem. The imagoes appear during the early part of July.

#### ***Chrysopeleia purpuriella* Chambers.**

*Chrysopeleia purpuriella* Chambers, Can. Ent. VI, 73, 1874; XI, 9, 1879; Psyche, III, 64, 1880; Dyar, List N. A. Lep., 6133, 1902.

This species was originally described from captured specimens and later (Can. Ent., Vol. XI) Chambers says, "Its food plant is unknown and certainly its habits of life must differ from those of *ostriacella*, for no mine similar to that of the latter is found in this vicinity." A year later, in Psyche, Vol. III, Chambers infers that the food plant of *C. purpuriella* is Locust (*Robinia pseudo-acacia* L.) and that certain small mines on these leaves are those of this species, because a single specimen emerged among leaves of this plant which were collected for breeding other species.

I have bred specimens which I consider to be undoubtedly the true *Chrysopeleia purpuriella* Chambers, from mines on Red Oak very closely resembling the mines of *C. ostriacella* on *Ostrya*. The mine begins either at the margin of the leaf or along a vein and gradually broadens, its outlines being somewhat more irregular than those of *C. ostriacella*. It shows the

characteristic tube formed of particles of excrement, and the diverging lines of excrement extending out through the mine. The larva, when full grown, leaves the mine by a circular opening in the lower epidermis and spins among the leaves an ovoid cocoon, very similar to that of *C. ostryaeella*. The mine of *C. purpuriella* is perhaps smaller in extent than that of *C. ostryaeella* and more variable in shape, due to its position and the irregularities in the outline and venation of the oak leaves.

The imagoes obtained from these mines agree closely with Chambers' descriptions. Apart from the general larger size and darker color, the best character to be used in distinguishing *C. purpuriella* from *C. ostryaeella* is, as noted by Chambers, the relative position of the central pair of scale tufts. In *C. purpuriella* these tufts are at approximately the same distance from the base; in *C. ostryaeella* the more dorsal of the pair is the farther from the base.

Apart from the improbability of the breeding of a species of this genus from so small a mine as that noticed by Chambers on locust leaves, there is the fact that Chambers' observations rested largely upon conjecture and took no account of the possibility of the accidental introduction of a cocoon already formed upon the locust leaves. In one instance I found a cocoon of *C. purpuriella* on a blackberry leaf beneath an oak tree.

I have collected the mines only during the latter part of September; the imagoes appeared the nineteenth of the following June. The species is, however, undoubtedly double brooded as the cocoon found on blackberry was collected on the 22d of July, the imago appearing on the 29th.

#### *Opostega albogalleriella* Clemens.

*Opostega albogalleriella* Clemens, Proc. Ent. Soc. Phil., I, 131, 1862; Tin. No. Am., 180, 1872; Busck, Proc. Ent. Soc. Wash., V, 208, 1903; Dyar, List N. A. Lep., No. 6228, 1902.

Syn. *quadristrigella* Chambers, Cin. Quart. Jn. Sci., II, 106, 1875; Busck, Proc. Ent. Soc. Wash., V, 208, 1903; Proc. U. S. N. M., XXX, 731, 1906; *accessoriella* Frey and Boll, Stett. Ent. Zeit., XXXVII, 216, 1876; Busck, Proc. Ent. Soc. Wash., V, 208, 1903; *nonstrigella* Chambers, Jn. Cin. Soc. Nat. Hist., III, 296, 1880; Busck, Proc. Ent. Soc. Wash., V, 208, 1903.

A large number of specimens collected in July, 1911, at Balsam, N. C., shows that the varieties described under the names *albogalleriella*, *nonstrigella* and *quadristrigella* form part of a series in which there is a gradual increase in the number of fuscous markings and in the extent of the wing occupied by fuscous scales, culminating in a fourth form in which the entire wing up to the first pair of dark streaks is suffused with fuscous, except the extreme costa.

In *O. albogalleriella* the entire wing is white, except for the apical dot and costal and dorsal streaks; some of my specimens have the dorsal dark spot faintly indicated by a few pale fuscous scales. Apical markings are absent in *O. nonstrigella*, according to Chambers' description; I have one specimen in which one costal streak and a streak beyond the apical spot are indicated by faint dark lines, thus approaching *quadristrigella*, which appears to be the most abundant form. In the darker specimens there is considerable variation in the amount of fuscous on the wing. In all of these specimens there is an additional dark dorsal streak, proximal to the dorsal streak referred to in the description of *quadristrigella*, and corresponding to the first costal streak in the variety *quadristrigella*. The suffusion of the basal three-fourths of the wing with fuscous varies; in some specimens it is confined to the dorsal half of the wing and is not deep enough to obscure the dark dorsal spot; in extreme forms the entire wing to the first pair of black streaks, except a narrow streak along the costa, is an almost uniform dark fuscous.

***Gracilaria belfrageella* Chambers.**

*Gracilaria belfrageella* Chambers, Can. Ent., VII, 92, 1875; Dyar, List N. A. Lep., No. 6348, 1902.

Chambers described the species from captured specimens from Texas. A series of specimens bred on *Cornus asperifolia* Michx. at Cincinnati, one of which Mr. Busck has kindly compared with Chambers' type in the U. S. National Museum and pronounced identical with it, agree very closely, but show a few minor variations from the typical form, among them being the golden tinge of the face in some specimens, and the dark

tips of the middle and posterior tarsi. Rarely the costal pale triangle, instead of extending as a broad band along the costa, is divided into two spots.

The mine is placed on the under side of the leaf, and begins as a linear winding mine, abruptly enlarging into a whitish blotch, which later becomes wrinkled. The larva leaves the mine, forming the characteristic cone. Pupation takes place in a fold of the leaf.

On the same bushes at the same time is found the larva of a *Gracilaria* utilizing the entire leaf to make a very striking long cylindrical roll. It begins by rolling under the lateral edge of the leaf, continuing until the entire leaf is rolled up. The pupa in this instance is formed within the roll. The imagoes which issue from such rolls are almost indistinguishable from those obtained from the cones and regarded as the true *G. belfrageella* Cham. In these the separation of the costal triangle into two portions is of more common occurrence than in *G. belfrageella*. As yet I have been unable to find any mines different from those of *G. belfrageella*, and without such data, I cannot decide that this is a different species.

#### ***Gracilaria ostryaeella* Chambers.**

*Gracilaria ostryaeella* Chambers, Bull. Geol. Surv. Terr., IV, 121, 1878; Can. Ent., IX, 127, 1877.

Chambers named this species from a knowledge of the mine only, merely saying that "the larva when very small makes a linear whitish mine in the upper surface of the leaves." The same species is also briefly mentioned by Chambers in the *Canadian Entomologist* of the preceding year. The species is omitted in Dyar's list.

The mine to which Chambers refers is undoubtedly identical with one I have frequently found in the vicinity of Cincinnati on the upper side of *Ostrya* leaves. The mine is in general similar to that of *G. packardella* on sugar maple. Although linear at first the mine soon spreads out into a whitish blotch, lying over a vein, and sending out irregular finger-like processes. The blotch portion of the mine later becomes transparent and marked with a network of brownish veins. The

larva forms the usual characteristic cone by rolling down the tip of the leaf. These larvae are extremely difficult to rear, and I have succeeded in breeding but a single moth which emerged late in autumn. This specimen unquestionably represents *Gracilaria ostryaeella* Chambers.

On the underside of *Carpinus* between the lateral veins are narrow linear mines spreading out into flat blotches which become transparent and marked with a dark network of veins. When viewed from the upper side of the leaf, the completed blotch on *Carpinus* is remarkably similar to the upper side blotch on *Ostrya*. Specimens bred in September and October from the underside mines on *Carpinus* are identical with the specimen bred from the upperside mine on *Ostrya*. In spite of the different larval habit I think they must be regarded as belonging to the same species. An underside mine like that on *Carpinus* is found on *Ostrya*, and is doubtless also a mine of *G. ostryaeella* Cham.

The summer form bred from underside mines on leaves of *Carpinus* collected in July, emerges in the early part of August, and affords a remarkable example of seasonal variation. Its identity with the later form would never be suspected from captured specimens. The two varieties are described separately below.

*Summer form*: Antennae ochreous, tinged with bronze toward the base, becoming darker toward the tip and broadly annulate with dark brown. Labial palpi yellowish white, third joint annulate with dark brown just before the tip. Maxillary palpi yellowish white. Face, head and thorax pale golden, the vertex somewhat bronze. Forewings suffused with purplish bronze; a pale golden patch at the base, broadest on the dorsum; costal triangle pale golden, broadly truncated on the fold and extended outwardly as a band along the costa to the costal cilia. This pale patch is almost immaculate, there being only two or three brown scales on the costa. Hindwings fuscous, cilia reddish. Fore and middle legs dark purplish brown except the tarsi, which are white sometimes faintly tipped with black. Hind legs pale yellowish; a black patch externally on the apical half of the femora; tibiae and tarsi sometimes tipped with dark brown. Expanse: 9.5-10 mm.

*Autumn form*: Antennae grayish, annulate with dark brown. Labial palpi dark purplish brown except the inner side of the second joint, and the upper side near the base and extreme tip of the third

joint which are pale golden. Maxillary palpi pale golden, the joints brown toward their tips. Face golden below, head and thorax bronzy gray. Forewings suffused with purplish brown and speckled with patches of darker brown scales. An elongate patch of these scales lies just within the margin at the inner angle, leaving merely a narrow edge of golden color instead of the broad golden patch at the base in the summer form. In darker specimens this is also obliterated. The dark scales form a very distinct margining along the inner side of the pale costal triangle. The costal triangle is separated from the pale patch beyond (with which it is continuous in the summer form) by a patch of dark brown scales on the costa. The golden yellow color of the costal triangle deepens into purplish brown toward the costa where there are two or three small brown spots. The pale costal patch beyond is sometimes almost obsolete, because of the darkening of the color and the large admixture of dark brown scales. Hindwings and cilia fuscous. Legs as in the summer form, except that the tibiae of the hind legs and the tarsi are more deeply shaded with brown. Expanse: 9.5-10.5 mm.

The summer form reminds one strongly of a small specimen of *G. superbifrontella* Clem.; the autumn form is perhaps closest to *G. juglandiella* Cham., but the general color is lighter and more reddish, and the costal triangle is more distinctly outlined.

***Gracilaria negundella* Chambers.**

*Gracilaria negundella* Chambers, Can. Ent. VIII, 18, 1876; Bull. Geol. Surv. Terr., III, 132, 1877; Psyche, III, 66, 1880; Dyar, List N. A. Lep. No. 6360, 1902.

The species to which Chambers originally gave the name *negundella* was bred from Box Elder in Colorado. Specimens bred from the same tree around Cincinnati do not agree with Chambers' description. These specimens are decidedly darker, but the distribution of the markings and particularly the markings of the legs and body are as Chambers has described them. A description which will serve better for the identification of the Eastern form is given below:

Antennae grayish, annulate with dark brown. Labial palpi yellow, the second joint dusted beneath and tipped with dark brown, the third joint dusted beneath and on the sides with dark reddish brown, with a broad annulus just before the tip. Maxillary palpi pale yellow, the joints tipped with brown. Face and head golden, the latter usually almost entirely suffused with purplish bronze. Thorax and forewings

pale golden, more or less suffused with bronzy brown or red, and flecked with dark brown scales. Costal triangle usually distinct and pale golden, broadly truncated on the fold and extended along the costa as a narrow band to the cilia. The costa within the costal triangle is marked with four or five black specks. There are three or four similar dark spots on the costa in the extended portion of the triangle, the first being the largest and sometimes separating the costal triangle from its prolonged portion, which is in this case more or less suffused with the darker shade. Fore and middle legs yellowish, the basal joints brown, femora and tibiae banded with reddish brown, these bands sometimes confluent; tarsi tipped with brown. Hind legs whitish, apical half of femora dark brown, tarsi tipped with brown. Underside of abdomen whitish, upper side dark smoky brown.

The mine begins as a narrow linear mine on the underside crossing to the upperside, where it spreads out into a rather large whitish blotch. The larva later feeds within conically rolled leaves as Chambers mentioned in the description of the species.

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## A new *Microlepidopter* of the genus *Epicallima* Dyar from Pennsylvania.

By AUGUST BUSCK, U. S. National Museum, Washington, D. C.

*Epicallima lucidella*, new species.

Labial palpi golden yellow. Antennae velvety black with silvery white tips; basal joint smooth without pecten. Face, head and thorax bronzy. The deep black ground-color of the forewings occupies but a small part of the wing as a margin on the base, along dorsum and around the apical edge to the brilliant deep golden yellow area which occupies the larger costal half of the wing and sends a long process out towards the apex; at basal third is a narrow perpendicular black-edged metallic blue fascia, crossing the golden area and terminating in a pale yellow dorsal spot; on the cell are two pairs of parallel longitudinal metallic blue streaks, all edged with black; on the middle of costa is a small pale yellow spot and at apical third is a similar pale costal dash. Cilia blackish with strong golden reflections. Hindwings and abdomen black. Legs black, with the tips of the tarsi and the spurs silvery white.

Alar expanse: 12-13 mm.

Habitat: Oak Station, Allegheny Co., Pennsylvania. Fred. Marloff, collector.

Type: No. 14435, U. S. Nat. Mus.

A brilliant species, suggesting some of the European metallic species, but very different in pattern. Among the American species it comes nearest the smaller *E. edithella* Busck, from which, however, it is also amply differentiated in pattern.

## Collecting at the Water Gap.

By ANNIE TRUMBULL SLOSSON, New York City.

When, a few years ago, I deserted the happy hunting-grounds of the White Mountains and selected the Delaware Water Gap for a summer resort, I had faint hope of entomological success. The place was so near New York and Philadelphia, had been so hunted over for years, how could I expect to make any discoveries, capture new or even rare species? But as I look back over my records I am not at all ill pleased with the net results. The locality is almost ideal from the viewpoint of a naturalist. Well wooded, well watered, a rolling country with surrounding hills and real mountains to look up to or climb, it is a tempting spot for botanist, entomologist or general zoologist. Its insect fauna is rather peculiar, including both northern and southern species beside those commonly found in the Middle States, so-called. I have found there several insects which I had before taken only on Mt. Washington, and again some species which I have heretofore called southern and taken only in Florida have turned up at the Gap.

As some of you know, I no longer like "roughing it" when on a collecting trip. I stay at a comfortable hotel where, between my tramps, I can rest and eat under most favorable conditions. At the Gap my night collecting would be styled by strenuous entomologists almost criminally luxurious. A large private bathroom opened from my bedroom; its floor was tiled, its woodwork and walls pure white. It had one window and bright electric light. Before I went down to dinner in the evening the window was always opened to its fullest extent, the lights turned on and the door closed. Then, when I returned later at night, I found my "catch." Walls, ceiling and white bathtub were covered with specimens; certain families of Neuropteroid insects, Perlidae, Rhyacophilidae, Hydropsychidae and others were abundant. Among these Mr. Banks found several new to science and has since described such. In my latest number of Transactions of the Am. Ent. Soc. two of these are described by Mr. Banks, *Rhyacophila formosa*

—the specific name a fitting one for the exquisite little creature with its jet black wings spotted with white and yellow, and antennae ringed with black—and *Wormaldia plutonis*, a dark plutonic fellow in deep mourning.

The big *Corydalid cornuta* is common and has been brought to me dozens of times by bellboys and night watchmen, though let alone severely by the hotel guests of both sexes. A large Chauliodes, *pectinicornis* I think, flies occasionally into the house at night. I have found good species of Lepidoptera in that room, too. The first and thus far the only specimen I have captured of *Polygrammate hebraicum* Hub. was sitting on the white wall, where his green and black wings showed to the best advantage, one evening when I first looked at my trap. Coleoptera come there also, especially longicorns from the oaks near my windows. *Elaphidion villosum* is rather common and I have taken *unicolor* and *cincerascens* there, too.

Employes and guests show a kindly interest in my researches. As I came in from a walk one day I saw a young man whom I knew but slightly, sitting upon the stairs in a constrained position, head bent backward and eyes directed towards the top wall near the ceiling. As I spoke to him he answered in a greatly relieved tone that he had sat there over an hour, keeping his eye on "that bug up there" for me. The "bug" proved to be a good specimen of the handsome beetle *Eburia 4-geminata* Say., and the hearing of this sonorous name and trying to commit it to memory seemed an adequate reward to the patient watcher.

In the same bathtub of which I have spoken I found, this last summer, a fine specimen of the longicorn *Stromatium pubescens* Hald. It is a rare species in this part of the world, and one of our best-known coleopterists here (a shy man, so I will not name him) tells me he suspects it is but a wanderer from some other region and but of chance occurrence.

I take many rare, some new, species of Hemiptera at the Water Gap. Two specimens of a new capsid, one of each sex, were taken on different nights at the bottom of the bathtub, which was fortunately dry just then. It is a *Phytocoris* and has the manuscript name of *pruinusoides* Heid.



I have two or three new namesakes among my Gap captures, but modesty forbids my enlarging upon these. One wet chilly day I started for a walk; but my net was soon useless, being soaking wet, and insects were scarce. I decided to give it up and return home. As I passed a low dwarfed sycamore I caught sight of an odd-looking lump on a leaf and knocked it into my damp net. It was a large Membracid new to me, and I sent it to Mr. Van Duzee. The very next day I received a letter from him telling me that this was a long lost species of Walker's, which he had never before seen, and that it settled a doubtful point for him as to the identity of another species described by himself. I was, of course, filled with joy and pride over my rare unique. But, a day or two after, a note from Mr. Van Duzee told me that, after hearing from me that the insect in question was found on sycamore, he had searched such trees and—found two specimens of the bug, right in the suburbs of Buffalo! He secured but one of the two, the other escaping from the net. I tried hard to sympathize with the loser, but fear I felt selfishly resigned to the thought that he now had no more than I had—just one. But a little later my second specimen was secured and now I earnestly hope that at least one more Buffalo bug of this sort will fall into the net of my good friend, the Hemipterist.

I was going to tell you of some other interesting captures made in this same locality, Odonata, Diptera and Orthoptera, but that story must wait till another time. However, I can assure you that I heartily agree with the ambitious bellboy, fresh from the country academy, who, after looking at a box of my insect treasures, exclaimed, "The Water Gap must be a very insectivorous place."

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### New West Indian Gall Midges (Dipt.).

By E. P. FELT, Albany, New York.

The following descriptions of new species are based upon material received during the past year from St. Vincent, W. I. The most interesting form is *Bruggmanniella pisoniae*, remarkable because of its presenting a combination of characters found

in *Schizomyia* and *Asphondylia*, and in being a form approximately intermediate between *Schizomyia* and *Cincticornia*.

***Bruggmanniella pisoniae* n. sp.**

The interesting midge described below was reared May 5, 1911, by Mr. W. H. Patterson, St. Vincent, W. I., from stems of *Pisonia nigricans*.

*Gall.* The affected young stems show irregular elevations about 4 mm. long, each marking an oval cell some 3 mm. long. These cells are numerous, 8 or 10 occurring on a piece of stem some 4 cm. long and only about .5 cm. in diameter.

*Larva.* Length 2 mm., rather slender, yellowish orange. Head moderately broad, retracted. Antennae short, stout, apparently bi-articulate. Breastbone apparently wanting. Segmentation distinct, the skin nearly smooth; terminal segment greatly reduced, irregularly conical, with a diameter about three-fourths that of the preceding segment and a length a little greater than its diameter.

*Pupa.* Length 2.5 mm., moderately stout, yellowish orange; cephalic and thoracic horns minute though distinct. Abdominal segments dorsally with a sparse basal row of moderately stout papillae, each with a chitinous apex, the general surface of the abdominal segments with rather coarse, irregular, chitinous plates; terminal segment with two pairs of submedian, conical processes and minor lateral processes.

*Male.* Length 1.75 mm. Antennae as long as the body, sparsely short haired, yellowish brown; 14 segments, the fifth with a stem one-fourth the length of the cylindrical basal enlargement, which latter has a length thrice its diameter, a slight constriction near the basal third; basal, subbasal and apical whorls of short, stout setae and high, irregular circumfili closely resembling those of the male *Schizomyia*; terminal segment produced, with a length about four times its diameter, a marked constriction at the basal third and the apex broadly rounded. Palpi: first and second segments short, irregular, the third one-half longer than the preceding, fusiform. Mesonotum dark brown. Scutellum and postscutellum apparently yellowish brown. Abdomen rather thickly haired, dark brown, the genitalia fuscous. Wings hyaline, costa dark brown, the third vein uniting with the margin at the apex of the wing. Halteres yellowish. Coxae and femora basally yellowish, the distal portion of femora and tibiae fuscous straw, the tarsi darker; claws slender, simple, evenly curved, the pulvilli about half the length of the claws. Genitalia: basal clasp segment stout, narrow conical, the apex subacute; terminal clasp segment subapical, its apex pectinate; dorsal plate short, divided, the lobes narrowly oval, coarsely setose; ventral plate short, broadly and roundly emarginate, the short lobes broadly rounded and thickly setose.

*Female.* Length 1.75 mm. Antennae about as long as the body, rather thickly haired, fuscous yellowish; 14 segments, the fifth with a stem about one-fifth the length of the cylindric basal enlargement, which latter closely resembles that of the male, though the irregular circumfili are not so highly developed as in the opposite sex; terminal segment reduced, sessile, with a length about twice its diameter, obtuse apically. The apex of the abdomen is expanded, bearing several irregularly triangular plates and a moderately short, stout, crooked, setose ovipositor with a distinct subapical enlargement. Other characters practically as in the male. Type Cecid. a2234.

#### ***Mycodiplosis pulvinariae* n. sp.**

Numerous larvae of this midge were found by Mr. W. H. Sands, St. Vincent, W. I., preying upon *Pulvinaria pyriformis*, and the midges reared therefrom were submitted to us through the courtesy of Mr. William H. Patterson of the Agricultural School. The species is allied to *M. coccidivora* Felt, though easily distinguished by the much stouter basal clasp segment in the male and the rather closely spined terminal lobes of the female.

*Larva.* Length 1.5 mm., yellowish, moderately stout, tapering slightly at both extremities and without a visible breastbone.

*Pupa.* Length 1.5 mm., salmon-colored, moderately stout. Thoracic horns filiform. Wing cases extending to the second abdominal segment, the anterior and mid-leg cases to the fourth, and the posterior leg cases to the fifth abdominal segment.

*Male.* Length 1 mm. Antennae one-fourth longer than the body, rather thickly haired, fuscous yellowish; 14 segments, the fifth having stems with a length one-half and one-fourth greater than their diameters, respectively; distal enlargement pyriform, with a length one-fourth greater than its diameter; circumfili moderately long, stout, setae long, stout. Palpi: first segment subquadrate, the second with a length about thrice its diameter, the third and fourth a little shorter than the second and successively more slender. Mesonotum dark brown. Scutellum and postscutellum yellowish. Abdomen fuscous yellowish. Wings hyaline, costa fuscous yellowish. Halteres yellowish. Coxae and femora basally yellowish, the distal portion of femora, tibiae and tarsi mostly dark straw. Claws slender, strongly curved, the anterior unidentate, the pulvilli rudimentary. Genitalia: basal clasp segment rather long, slender; terminal clasp segment relatively short, stout; dorsal plate long, deeply and triangularly incised, the lobes tapering and narrowly rounded apically; ventral plate moderately short, tapering to a narrowly rounded apex.

*Female.* Length 1 mm. Antennae nearly as long as the body, sparsely haired, fuscous yellowish; 14 segments, the fifth with a stem one-third the length of the cylindric basal enlargement, which latter has a length twice its diameter; circumfili moderately high, setae abundant, stout; terminal segment with a length about two and one-half times its diameter and a short, knoblike process apically. Ovipositor short, the terminal lobes lanceolate, narrowly rounded and apically with an irregular, sparse group of chitinous spines, the latter with a length about equal to half the width of the lobe. Other characters nearly as in the male. Type Cecid. a2233.

***Arthrocnodax meridionalis* n. sp.**

This minute midge, easily separated from *A. abdominalis* Felt by the shorter stems of the flagellate antennal segments in the male, was reared May 7, 1911, by Mr. W. H. Patterson, St. Vincent, W. I., from open *Eriophyes* galls on the leaves of *Ruellia tuberosa* Linn. and doubtless preys upon the mites. A similar, if not identical species was obtained by this gentleman May 20, 1911, from *Eriophyes* galls on the leaves and bracts of *Lepidagathis alopecuroidea*. He reared the same species, April 6, 1911, from galls of *Eriophyes gossippii* on Sea Island Cotton and also on April 18th from mite galls on the leaves of a species of *Eupatorium*.

*Larva.* Length 1 mm., apparently yellowish, slender, the diameter being only one-fifth that of the length. Head and anterior body segments greatly produced, the former extensile and with a length about thrice its diameter. Antennae long, slender, curved, with a length about half the head; mouth-parts fuscous; the body segments with a transverse row of tubercles, each bearing a long, stout seta with a length about half the body diameter; terminal segment broadly rounded and with several sublateral setose tubercles. Pseudopods occur on the third to twelfth segments.

*Male.* Length .6 mm. Antennae one-fourth longer than the body, thickly haired, yellowish brown; 14 segments, the fifth with stems having a length respectively one and one-half and one and one-fourth times their diameters; distal enlargement subglobose, the whorls of setae thick, long, the circumfili moderately stout. Palpi slender, the first and second segments quadrate, with a length one-half greater than the diameter, the third and fourth nearly equal, each with a length twice the diameter; mouth-parts somewhat produced, with a length one-half that of the head. Mesonotum reddish brown. Scutellum, postscutellum and abdomen probably yellowish. Wings hyaline, costa

light straw. Halteres yellowish. Legs a variable yellowish straw, the pulvilli as long as the slender claws. Genitalia: basal clasp segment long, stout; terminal clasp segment slender, swollen; dorsal plate broadly and triangularly emarginate, the ventral plate long, rather broad.

*Female.* Length .6 mm. Antennae nearly as long as the body, sparsely haired, yellowish; 14 segments, the fifth with a stem one-third the length of the cylindrical basal enlargement, which latter has a length twice its diameter; terminal segment somewhat reduced, with a length one-half greater than its diameter, broadly rounded apically. Ovipositor as long as the body, stout, the lobes narrowly oval and sparsely setose. Type Cecid. a2235.

#### **Hyperdiplosis producta** n. sp.

This species was reared by Mr. W. H. Patterson, St. Vincent, W. I., from presumably mite galls in the inflorescence of *Stachytarpha jamaicensis*. It is provisionally referred to this genus.

*Male.* Length .75 mm. Antennae one-fourth longer than the body, thickly haired, yellowish; 14 segments, the fifth having the two stems with a length, respectively, twice and thrice their diameters. Distal node pyriform, each enlargement with a coarse whorl of stout setae, the circumfili slender; terminal segment produced, the distal enlargement cylindrical, with a length thrice its diameter and apically a slender, fingerlike process. Palpi: first segment subquadrate, the second with a length three and one-half times its diameter, the third probably as long as the second, the fourth probably one-half longer, somewhat dilated. Mesonotum, scutellum and postscutellum yellowish. Abdomen greenish yellow. Wings hyaline, costa light straw. Halteres yellowish. Legs pale straw; claws stout, strongly bent, swollen subapically, pulvilli rudimentary. Genitalia: basal clasp segment long, the slender terminal clasp segment slender, other structures indistinct.

*Female.* Length 1 mm. Antennae a little longer than the body, sparsely haired, yellowish; 14 segments, the fifth with a stem three-fourths the length of the cylindrical basal enlargement, which latter has a length two and one-half times its diameter: a subbasal whorl of long, stout setae and a subapical band of somewhat smaller setae; terminal segment produced, with a length about thrice its diameter and apically a nearly equally long, tapering process. Ovipositor short, the lobes lanceolate and setose apically. Other characters nearly as in the male. Type Cecid. a2236.

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Mr. E. B. Williamson, of Bluffton, Ind., is expected home about April 1 from a collecting trip in British Guiana and Trinidad.

# ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

TO CONTRIBUTORS.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, four weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form and without covers, will be given free, when they are wanted; if more than twenty-five copies are desired, this should be stated on the MS. The receipt of all papers will be acknowledged. Proof will be sent to authors for correction only when specially requested.—Ed.

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PHILADELPHIA, PA., APRIL, 1912.

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The Americans who expect to attend the Second International Entomological Congress, at Oxford, August 5-10, 1912, number more than those who were present at the First Congress at Brussels.

As far as known, the following will go to Oxford this coming summer: Prof. and Mrs. J. H. Comstock, Ithaca; Dr. and Mrs. Henry Skinner, Philadelphia; Mr. Henry H. Lyman, Montreal; Prof. Herbert Osborn, Columbus; Dr. W. J. Holland, Pittsburgh; Prof. Vernon L. Kellogg, Palo Alto, California; Mr. Nathan Banks, East Falls Church, Va., and Dr. and Mrs. P. P. Calvert, Philadelphia.

We hope there will be still more and trust they will send in their names to the Editor of the NEWS. Elsewhere in this number we reprint a part of a circular issued by the Reception Committee at Oxford. Copies of this circular, and blanks for subscriptions, for submission of titles of papers and for requisition of rooms may be obtained from Dr. Henry Skinner, member of the Executive Committee, Academy of Natural Sciences, Logan Square, Philadelphia.

Woe! Woe! Woe! Hear the voice of lamentation. How long! how long shall the deserving ones be scoffed at for their labors. Surely the worthy study of nature is becoming a babble of words, the worship of names supplanting a devotion to research. Has orthography parasitized entomology?

We hear in an authoritative voice from across the waters<sup>1</sup> that the "specific *name* and not the *species* is the only really new thing that is intended;" that "*n. sp.* whenever applied, signifies a new specific name only, and not a new species." Now, in fact, although "entomologists do not purpose to have created the insect they describe," they do propose to have defined a new species, new to science, new in the sense of having never been known. If that is not new, what is it?

Further, that voice still louder acclaims that priority shall be ignored in respect to certain names because these names are "obviously based on a barbarous and unmeaning gibberish, and . . . must be rejected as null and void." Of course this is ridiculous and cannot stand; and it is to be regretted that these unmeaning names, these combinations of letters, must stand lords and masters over other good, well meaning names, which must be placed beyond further reach in the Sargasso Sea of synonymy.

It is further to be regretted that a well respected journal should give its pages to such a list of these good names that are thereby made worthless; and using the form of argument adopted by a fellow entomologist in another journal<sup>2</sup>, if the scientific status of a publication is gauged by the quality of its contents, these pages will surely stand as an indissolvable stain, detracting seriously from its prestige.—E. T. C., JR.

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C(laude) M(orley) says in the *Entomologist* for March, 1912, p. 99, "We do not know Mr. Kearfott; but he has stirred up more animation in this country than we have seen displayed for a long time." Our hearty congratulations to Mr. Kearfott.—H. S.

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(1) *The Entomologist's Monthly Magazine*, Feb., 1912, p. 32.

(2) *The Entomologist*, March, 1912, p. 99.

## Notes and News.

### ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

PROF. J. F. TRISTAN wrote from Nicoya, Guanacaste, Costa Rica, under date of February 4, 1912, "My wife and I left San Jose on the 9th of January and went to a new colony, Colonia Carmona, in the southern part of the peninsula of Nicoya. From that place we came here and then crossed the peninsula to the Pacific. We remained in a beautiful farm near the seashore for eight days, and then returned to this place [town of Nicoya]. On the 7th we shall go again to Colonia Carmona, where we will remain some days more. We hope to reach San Jose on February 25. In all this long trip and at different places I have collected Odonata for you. There are only two species that I have not seen before. Most of the species are very abundant." [Entomologically, the peninsula of Nicoya has been examined but slightly so that the data gathered by Prof. Tristán will be very welcome.—Ed.]

SECOND INTERNATIONAL CONGRESS OF ENTOMOLOGY will be held at Oxford on August 5th to 10th, 1912, under the Presidency of Professor E. B. Poulton, D.Sc., F.R.S.

A Reception Committee has been formed, consisting of:—Dr. F. A. Dixey, F.R.S. (Chairman). Professor G. C. Bourne, F.R.S. (Professor of Zoology). Professor H. L. Bowman, D.Sc. (Secretary to the Delegates of the University Museum). Professor E. B. Poulton, D.Sc., F.R.S. (President of the Second Congress). Geoffrey W. Smith, M.A. (Fellow of New College). Commander J. J. Walker, M.A. (Secretary of the Entomological Society of London.) H. Eltringham, M.A. (Cant.), M.A. (Oxon.), G. H. Grosvenor, M.A., Secretaries.

It is hoped that the Reception Committee will be able to arrange for members of the Congress to have rooms in the Colleges at a moderate price, but this privilege will be available for gentlemen only.

A list of hotels and lodgings recommended, with tariffs, will be issued later.

In order to facilitate the arrangements, it is requested that ladies and gentlemen who propose to join and attend the Congress send in their names as early as possible to the General Secretary of the Executive Committee, who will be happy to give any further information.

Ordinary Members who pay £1 (25 francs) will receive all publications of the Congress. Ladies and children accompanying Members will, on payment of 10s. (frs. 12.50) each, have all privileges of Members except that of receiving the publications.

Life Members who pay a composition of at least £10 (frs. 250), will receive free all future publications of the Congress.

The funds in respect of Life Compositions will be invested, and only the interest will be at the disposal of the Executive Committee. Sir Daniel Morris, D.Sc., and The Hon. N. Charles Rothschild, M.A., F.E.S., have kindly consented to act as Trustees of the funds.

Members who propose joining the Congress, or presenting papers, are requested to fill in the accompanying forms and send them in with their subscription (except of course in the case of Life Members who have originally paid) to the General Secretary of the Executive Committee, Malcolm Burr, D.Sc., care of Entomological Society of London, 11, Chandos Street, Cavendish Square, London, W.

The Programme of the Second Congress of Entomology will be sent out early in the spring, and, we believe, will be found so attractive that we shall have the pleasure of welcoming to Oxford a large gathering of Entomologists and friends of Entomology.

On behalf of the Committee, E. B. POULTON, *President*; MALCOLM BURR, *General Secretary*.

STRICT PRIORITY IN NOMENCLATURE—OR NOT?—[The following have been received in response to the editorial in the March News. We hope to hear from many other entomologists. This subject will be discussed editorially in the May News.]

Please place my name on the list of those who vote *against* the strict application of the law of priority in all cases, etc.—J. H. COMSTOCK.

I wish to register my vote *against* the strict application of the law of priority. Old names and old descriptions are often worthless and even misleading. Such of them as serve to clearly separate out from allied species rendering them clearly distinguishable, and not, as in many cases, applying to aberrant forms, should be retained.

The time was when the describing and naming of insects was an end; but now it has ceased to be such and has become an imperatively essential means toward tracing out their development and inter-relationships. Priority, like any other law that does not admit of progressive, intelligent and practical application, is sadly in need of either amendment, or elimination. Nature does not compel an insect to carry about with it the cast larval skins and pupa case, but enables it to discard these as they cease to be useful.—F. M. WEBSTER.

Relative to the question of abandoning the law of priority as discussed editorially in the last number of the NEWS, I would say that this step must have been approved by the entomologists mentioned with scarce appreciation of what a fearful condition it is apt to lead to. Most systematists know of one or more preoccupied genera which they are very reluctant to see changed, and if a proposition is suggested to disregard a law which prohibits the retention of such personally favored genera, they are apt to center their thoughts on that one point and so

vote for the annulment of a law that may be essential and desirable in nearly all other cases. Such a motion was voted down at the meeting of the Entomological Society of America at the recent Washington meeting because of the discussion the matter evoked. When a motion meets with opposition and arguments on both sides of the question are presented, the voters are enabled to deal more intelligently with the matter and a fairer and more meaning vote is the result. Thus the Entomological Society of America voted to retain intact the law of priority. When questions of nomenclature are no longer solved according to codified laws and rules, but are submitted to the varying judgment of different workers, we may abandon all hope of an ultimately stable nomenclature. That the law of priority should always be retained intact is my earnest belief and you may record my vote to this effect.—A. N. CAUDELL.

I hasten to ask that my name be put down on the side of the second proposal in your editorial column, in favor of the preservation of the most used names against unused names claiming priority.

This looks like the glimmering of the dawn of a brighter day in nomenclature. After we get past the period of priority-worship, scientists will look back in astonishment at the actions of the last decade or two.—J. M. ALDRICH, Moscow, Idaho.

WEEVILS OF MEXICO AND CENTRAL AMERICA.—[The Coleoptera part of the *Biologia Centrali-Americana* has been completed with the appearance of Volume IV, Part 3, on certain groups of the Curculionidae. Much interest therefore attaches to the "Introduction" of this Part, which we quote as follows:]

This volume, one of five required for the enumeration of the Rhynchophora, was commenced by Dr. Sharp in 1889 and is now concluded by myself. The study of the "Otiiorhynchinae Alatae" has unfortunately been delayed for many years, during the publication of Vol. IV, parts 4, 5 and 7, all of which are devoted to the Family Curculionidae. The present Volume, IV. part 3, includes the Sub-families Attelabinae, Pterocolinae, Allocoryninae, Apioninae, Thecesterninae, and Otiiorhynchinae. The Attelabinae are represented by 104 (88 new), the Pterocolinae by three (all new), the Allocoryninae (a new sub-family) and Thecesterninae each by one, the Apioninae by 88 (84 new), and the Otiiorhynchinae by 419 (340 new) species respectively; the total number for the six sub-families being 616 species, with 516 new, and forty new genera. Amongst the 419 Otiiorhynchinae, the apterous and winged forms are almost equal in number, there being a preponderance of apterous terrestrial species (*Eupagoderes*, *Epicoerus*, *Epagriopsis*, etc.) in the arid portions of Mexico and the winged forms (*Exopthalmus*,

etc.) becoming relatively more numerous in the forest regions southward. Taking the Curculionidæ as a whole—the sub-families Curculioninæ and Calandrinæ, in addition to those worked out in the present volume—the number of species enumerated altogether from Central America is as follows: Vol. IV, part 3, 616; IV, part 4, 1365; IV, part 5, 908; IV, part 7, 344; total 3233. The three other families of Rhynchophora—the Brentidæ, Scolytidæ and Anthribidæ—dealt with in Vol. IV, part 6, number 615 species, thus bringing the total for the whole of the weevils up to 3848. The Rhynchophora, therefore, as anticipated (though not to the extent roughly estimated by myself in the introduction to Vol. IV, part 4 of this series), greatly outnumber the Phytophaga (2619, including the Hispidæ and Cassididæ) within our limits.

The Otiorynchid material examined by me includes that belonging to the U. S. National Museum, to whom we are indebted for co-types of all the species here described from their collection, as well as for many North American forms for comparison. From Costa Rica we have received during recent years numerous interesting species, both from Pittier and Biolley. Mr. Wickham, too, during his visit to Mexico in 1909, secured various Otiorynchids, and, as usual, has kindly allowed us to retain any of these specimens that we required. Signor A. Solari again, has also permitted us to keep for the British Museum the types of such species as have been described by me from his collection, which includes a portion of that of Jekel. The "Sommer collection" of Curculionids (including various types of Boheman, etc.) having been recently acquired by Prof. Poulton for the Oxford University Museum, we have been enabled to verify the names of certain species left unidentified by Dr. Sharp, and this involves some slight corrections to the synonymy of the "Otiorynchinæ Apteræ," which are noted in the Supplement.

As stated in a footnote on p. 317, various Apioninæ left undetermined by Dr. Sharp for want of sufficient material, with such forms that have since come to hand have been handed over to the specialist Herr Hans Wagner for study, and his descriptions of the new forms will be published elsewhere.

Of the fifteen colored plates issued, the first six were drawn by Mr. Purkiss, the others by Mr. E. Wilson, of Cambridge.

It will not be out of place to note here that the enumeration of the Coleoptera, commenced in 1879, is now completed, bringing the total number of species to 18,039, for which eighteen volumes have been required.—G. C. CHAMPION, December, 1911.

*ALETIA ARGILLACEA* (Lepid.) Since the flight of this moth last fall seems to have attracted the attention of observers in different parts of the country, it may be worth while to put on record the notes I made at the time of the appearance of the horde at Iowa City. If data from different sections are properly correlated, we may learn something definite and valuable regarding the speed, extent and exciting causes of the movement. My notes, with one or two slight verbal changes to make them comprehensible to the general reader (by the omission of certain purely local references), are as follows: "October 1, 1911. This morning, on going to the post-office, I noticed that the side of the building around the south door was plentifully sprinkled with these moths, most of them resting head downward on the stone wall, others clinging to the globes or supports of the two large lights with less regularity of pose. In one place four of the insects were resting in a row, the thorax of each of the last three tucked under the wings of the one preceding. The moths seem very fresh and in fine condition. I counted 100 at this place and estimated that there must be at least 150 in the group. At the west door only about twenty were to be counted. On the way home I saw them in abundance on the electric light poles along Iowa Avenue, and on one corner they were plentiful in the grass at the base of the support, flying out in numbers when disturbed. This flight has followed two or three days of unsettled, more or less rainy weather. On the night of the 29th of September there were none about the avenue lights, since Mr. Stoner and myself had been out looking for beetles and would certainly have noticed the moths had they been present. The invasion seems to have been sudden, and to have taken place last night." A note made the next day (October 2) refers to the great abundance of the moths on poles at various points about town. In one place 35 were counted on a space about the size of the palm of my hand. A later item states that five days later scarcely any were left. This is the second really large flight of the species that I have seen at Iowa City, the other taking place in 1898, my record specimens carrying dates from September 7 to October 8, the majority being September 21.—H. F. WICKHAM, Iowa City, Iowa.

[In addition to the notes by Mr. Muttkowski and Dr. Skinner in the NEWS for February, 1912, and November, 1911, respectively, other observations on the swarms of this species are published in Journ. N. Y. Ent. Soc. xix, p. 259, for Dec., 1911.—*Ed.*]

THE ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA celebrated the One Hundredth Anniversary of its foundation by a three days' series of meetings, a reception by the President, and a banquet, on March 19th, 20th and 21st.

## Entomological Literature.

COMPILED BY E. T. CRESSON, JR., AND J. A. G. REHN.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), excluding Arachnida and Myriapoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species, will be recorded. The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published, and are all dated the current year unless otherwise noted. This (\*) following a record, denotes that the paper in question contains description of a new North American form.

For record of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington.

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4—The Canadian Entomologist. 6—Journal, New York Entomological Society. 7—U. S. Department of Agriculture, Bureau of Entomology. 8—The Entomologist's Monthly Magazine, London. 9—The Entomologist, London. 11—Annals and Magazine of Natural History, London. 18—Ottawa Naturalist. 22—Zoologischer Anzeiger, Leipzig. 34—Proceedings, Iowa Academy of Sciences, Des Moines. 33—Wiener Entomologische Zeitung. 40—Societas Entomologica, Zurich. 46—Tijdschrift voor Entomologie. 51—Novitates Zoologicae, Tring, England. 69—Bolletino, Societa Italiana Entomologica. 73—Archives, Zoologie Experimentale et Generale, Paris. 79—La Nature, Paris. 84—Entomologische Rundschau. 89—Zoologische Jahrbucher, Jena. 97—Zeitschrift fur wissenschaftliche Zoologie, Leipzig. 153—Bulletin, American Museum of Natural History, New York. 179—Journal of Economic Entomology. 182—Revue Russe d'Entomologie, St. Petersburg. 190—Deutsche Entomologische Zeitschrift "Iris," Dresden. 193—Entomologische Blatter, Cassel. 216—Entomologische Zeitschrift, Stuttgart. 223—Broteria. Revista de Ciencias Naturaes do Collegio de S. Fiel. (Ser. Zoologica). 240—Maine Agricultural Experiment Station, Orono. 337—Meddelelser om Gronland. Denmark Ekspeditionen til Gronlands Nordostkyst 1906-08, Copenhagen. 346—Fauna Exotica. Mitteilungen aus dem Gebiete der exotischen Insektenwelt, Frankfurt am Main. 368—The Monthly Bulletin of the State Commission of Horticulture, Sacramento, Cal. 369—Entomologische Mitteilungen, Berlin-Dahlen. 371—Memoires de la Societe des Naturalistes de Kieff. 372—Imperial Department of Agriculture for the West Indies. 373—Contributions to the Natural History of the Lepidoptera of North America, by Wm. Barnes and J. H. McDunnough, Decatur, Ill.

**GENERAL SUBJECT.** Ballou, H. A.—Insect pests of the cocoa-

nut, 372, Pamphlet Ser. No. 70, 21-34. Gennerich, J.—Treibzucht durch einwirkung grünen lichten, 216, xxv, 235-236. Horn, W.—Skizzen aus der geschichte des "Deutschen Entomologischen Museums," 369, i, 33-38. Janet, C.—Sur l'ontogenese de l'insecte 1909, F. 28, Limoges, 129 pp. Johansen, F.—Freshwater life in Northeast Greenland, 337, v, 321-337. Johannsen, O. A.—Insect notes for 1911, 240, Bull. No. 195. Marlatt, C. L.—Some recent new importations (insect pests), 179, v, 73-77. O'Kane, W. C.—Methods in insect photography, 179, v, 54-59. Poche, F.—Die motive und ziele der modernen nomenklaturbewegung, 182, xi, 253-260. Portier, P.—Recherches physiologiques sur les insectes aquatiques, 73, viii, 89-379. Reitter, E.—Ueber den eingeburgerten missbrauch bei benutzung von entomologischen typen, 38, xxxi, 21-26. Rosa, D.—Il lamarkismo e le farfalle, 69, xlii, 39-42. Sanderson, E. D.—Insect pests of farm, garden and orchard, New York, John Wiley & Sons, 684 pp, 1912. Washburn, F. L.—The relation of the station entomologist to his environment, 179, v, 33-53. Weiss, H. B.—Some economic methods a hundred years old, 179, v, 88-90.

**APTERA AND NEUROPTERA.** Crawford, D. L.—A new insect pest (*Trioxa alacris*), 368, i, 86-87. Jones, P. R.—Some new California and Georgia Thysanoptera, 7, Tech. Ser. No. 23, pt. 1 (\*). Navas, P. L.—Notas sobre Mirmeleonidos, 223, x, 29-75. Strickland, E. H.—A quiescent stage in the development of "*Termes flavipes*," 6, xix, 256-259.

**ORTHOPTERA.** Gahan, C. J.—A new species of Phasmid of the genus *Prisopus*, considered especially in reference to the supposed aquatic habits of the genus, 9, xlv, 49-57. Trouessart, A.—La mante tunisienne et le pouillot fitis, 79, xl, 193-195. Wheeler, W. M.—A desert cockroach, 6, xix, 262-263.

**HEMIPTERA.** Butler, E. A.—On the eggs of two British species of Coreidae, 8, 1912, 36-38. Davis, W. T.—The periodical cicada in the Half Way Hollow Hills, Long Island, N. Y., 6, xix, 261. Doten, S. B.—The European elm scale (*Gossyparia spuria*), 368, i, 89-100. Jordan, K.—Contribution to our knowledge of the morphology and systematics of the Polycetenidae, a family of Rhynchota parasitic on bats, 51, xviii, 555-579 (cont.).

**LEPIDOPTERA.** Aldrich, J. M.—Note on "*Theronia fulvescens*," 179, v, 87-88. Barnes & McDunnough.—Revision of the Megathymidae, 373, i, No. 3, 42 pp. (\*). Bryk, F.—Apollinische liebe, 40, xxvi, 50-52. Englisch, J.—Ueber das ei und die zucht der raupe von "*Attacus edwardsi*," 34, xxix, 21-22. Fassl, A. H.—Nochmals ueber *Agrias amydon* und eine neue *Sardanapalus*-form aus Columbien, 84, xxix, 9-10. Fruhstorfer, H.—Neue Nymphaliden des neotropischen gebietes aus der sammlung Staudinger. Neue Bras-

soliden, **84**, xxix, 14-17. Fuge, E.—Eine zweite generation von "Limenitis populi," **216**, xxv, 239. Gauckler, H.—Etwas vom kochen und nachtlischen raupensuchen, **34**, xxix, 17-19. Grossbeck, J. A.—Migration of "Alabama argillacea," **6**, xix, 259-261. Hampson, G. F.—Description of new species of Pyralidae of the subfamily Pyraustinae, **11**, ix, 242-269. de Joannis, P. J.—Le genre Ensonista et ses allies, **223**, x, 5-28. Jordan, K.—A new hawk-moth from Ecuador, **51**, xviii, 599-600. Kennel, J. V.—Ueber tympanalorgane im abdomen der spanner und zunsler, **22**, xxxix, 163-170. Meyrick, E.—On some impossible specific names in Micro-lepidoptera, **8**, 1912, 32-36. Mitterberger, F.—Die zucht von Crambus pyramidellus aus dem ei, **216**, xxv, 243-244. Neustetter, H.—Neue "Heliconius," **346**, i, 54-55. Pospjelow, W.—Die postembryonale entwicklung und die imaginale diapause bei den Lepidopteren (Russian), **371**, xxi, 163-418. Rothke, M.—Catocala relicta und ihre formen, **84**, xxix, 12-14. Schaus, W.—New species of Heterocera from Costa Rica—XIII, **11**, ix, 202-214. Stobbe, R.—Die abdominalen duftorgane der mannlichen Sphingiden und Noctuiden, **89**, xxxii, 493-532. Verity, R.—Studio comparato dello sviluppo del "Pieris manni" e "Rapae," **69**, xlii, 137-141. Wolff, P.—Ueber hitze- und kalteversuche mit schmetterlingspuppen, **216**, xxv, 231-232. Zykoff, W. P.—Les parasites des Psychides (Russian), **182**, xi, 213-220.

**DIPTERA.** Bezzi, M.—Dipteres (Premiere serie) suivi d'un appendice sur les Dipteres cavernicoles recueilli par le Dr. Absolon dans les Balcanes, **73**, viii, 1-87. Dipteros do Brazil, Sobre tres interessantes Dipteros de S. Paulo, **223**, x, 76-84. Felt, E. P.—The identity of the better known midge galls, **18**, xxv, 164-167. Hendel, F.—Neue Muscidae acalyptratae, **38**, xxxi, 1-20. Hunter, S. J.—The sand-fly and pellagra (Abstract), **179**, v, 61-63. Knauer, F.—Unser kampf gegen die stechmuckenplage, **191**, 1912, 177-181. de Meijere, J. C. H.—Zur kenntnis der metamorphose von Platypeza und der verwandtschaftlichen beziehungen der Platypezinen, **46**, liv, 241-254. Ruhl, M.—Zur lebensweise von Piophila casei, **40**, xxvii, 15. Wust, O.—Studien an "Cecidomyia rosaria" und "albipennis," **216**, xxv, 247-248.

**COLEOPTERA.** Alt, W.—Ueber das respirationssystem von Dytiscus marginalis. Ein beitrag zur morphologie des insektenkorpers, **97**, xcix, 357-443. Carnes, E. K.—Collecting ladybirds (Coccinellidae) by the ton, **368**, i, 71-81. Chapman, T. A.—Notes on the first stages of "Sitaris muralis" and "Metococcus paradoxus," **8**, 1912, 29-32. Davis, W. T.—Miscellaneous notes on collecting in Georgia, **6**, xix, 216-219. Deville, J. St. C.—Die bedeutung der insekten, insbesondere der Coleopteren fur die zoogeographie, **193**,

viii, 4-8. **Fall, H. C.**—New Coleoptera chiefly from the Southwest.—V, 4, xlv, 40-48 (\*). **Hopkins, A. D.**—The dying hickory trees: cause and remedy, 7, Circ. No. 144. **Kerremans, C.**—Monographie des Buprestides, Tome V, 19-20 Livr., 577-640. **Leng, C. W.**—Notes on Coleoptera collected in Northern Georgia—II, 6, xix, 209-216. "*Deltometopus amoenicornis*" with ants in beach stump, 6, xix, 261. **Schmidt, A.**—Neue Aphodiinen und eine synonymische bemerkung, 40, xxvi, 52 (\*). **Smirnov, D. A.**—Contribution a l'etude des moeurs et de la metamorphose de *Bruchus affinis* et d'autres Bruchides (Russian), 182, xi, 169-194. **Wichmann, H.**—Beitrag zur kenntnis des stridulationsapparates der borkenkafer, 193, viii, 8-10.

**HYMENOPTERA.** **Banks, N.**—Psammocharidae: classification and descriptions, 6, xix, 219-237 (\*). **Beutenmuller, Wm.**—The No. American species of *Dryophanta* and their galls, 153, xxx, 343-369. **Girault, A. A.**—Notes on the Chalcidoid *Trichaporus* of the family Eulophidae, with description of one new form from Illinois, 4, xlv, 49-52 (cont.). **Grossbeck, J. A.**—A contribution toward the life history of "*Emphor bombiformis*," 6, xix, 238-245. **Pawlowsky, E. N.**—Zur kenntnis des anatomisch-histologischen baues des geschlechtapparates der Hymenopteren. I. Das mannliche geschlechtapparat der *Bombus*-arten, 182, xi, 221-234. **Wheeler, W. M.**—Descriptions of some new fungus-growing ants from Texas, with Mr. C. G. Hartman's observations on their habits, 6, xix, 245-255 (\*). "*Lasius*" (*Acanthohyops*) *claviger* in Tahiti, 6, xix, 262. Additions to the ant-fauna of Jamaica, 153, xxx, 21-29.

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INSECT PESTS OF FARM, GARDEN AND ORCHARD. By E. Dwight Sanderson, Dean of the College of Agriculture, West Virginia University; Director West Virginia Agricultural Station; John Wiley & Sons, New York; Chapman & Hall, London. Price, \$3.00 net.

The growth of economic entomology is so rapid that we may no longer expect to see books covering the whole field. In the future we will expect to see special works devoted to branches of the subject. Prof. Sanderson's book is made up of 669 pages, an index, and 513 illustrations. The sources of illustrations are given and it is a proper courtesy, but does anyone ever read the long lists of figures? The amount of damage done by insects annually is a very real one, and Prof. Sanderson places it at the nice sum of \$1,272,000,000 (grand total.) A grand total like that should be a splendid thing with which to dazzle Congress, State Legislatures, institution officials and others, for increased appropriations and increased salaries. This sum is not inconceivable, but "almost." The sequence of subjects treated is a logical one and the various insect enemies of certain species of plants

or groups of allied plants are treated under those headings. The large number of illustrations of injurious insects, coupled with their description, should enable any intelligent person to identify them and apply the appropriate remedy. The book is written in a lucid way and should prove very useful. Prof. Sanderson has had a wide experience as an economic entomologist and has used judgment in the selection of remedies and control measures. The work covers the subject admirably and as well as it is possible to treat such a large subject within the pagination of a single book.—H. S.

---

CONTRIBUTIONS TO THE NATURAL HISTORY OF THE LEPIDOPTERA OF NORTH AMERICA, Vol. I, No. 3, Revision of the Megathymidae. By William Barnes, S.B., and J. H. McDunnough, Ph.D.

The authors call the family "giant skippers" and are "inclined" to give them super-family rank as Hesperiiides. They do not consider them related to the Castniidae, where they have been placed by some authors. The comparative anatomy of the group, early stages and habits as far as known are discussed in detail. The authors found the sexual organs of value in specific separation and they were given special consideration. The genus *Aegiale* Felder is used for the species *hesperiaris* Walk., and the other species are placed under *Megathymus* Scudder. *Aegiale* is separated from *Megathymus* by differential characters in the pulvillus, the squamation of the palpi and the wing venation in the male. The Boreal American species have twice been previously been treated as a whole: by Dyar, Journ. N. Y. Ent. Soc. 13, 111, 1905, and by Skinner, Trans. Amer. Ent. Soc. 37, 169, 1911.

Some of the species are rare in collections. *Smithi* was mentioned by Skinner on pages 170 and 205. It was not in the table as no material was at hand for study. No detailed study was made of *Megathymus* in Dr. Skinner's paper as he knew that the present authors had their paper well under way. Dr. Dyar need not have confused *streckeri* and *cofaqui* as he studied Dr. Skinner's material containing the types of *streckeri* and one male and two females of *cofaqui*. The authors have carefully examined all the literature of the subject and commend the work done by Dr. Skinner, saying Skinner's identifications "appear" to be correct.

Their studies of *M. neumogeni* are extremely interesting. This species was described by Edwards, from one "male" and three females. Barnes and McDunnough say that the type with the male label on it is a female. It is not unlikely that Mr. Edwards confused the sexes, as it is a very easy thing to do if you do not dissect out the genitalia. Ottolengui says that Doll caught seven specimens. Barnes says he has a male of the original lot and states there is also a male in the

Strecker collection. There is also a male of the original lot in the collection of the Academy of Natural Sciences of Philadelphia. The male of this species was redescribed by Dyar under the name *aryxna*. Barnes and McDunnough find two species in the "type series" of *aryxna*. It seems a pity to have such an elastic series and in the future it will be well for Dyar, McDunnough and Barnes to fix a single type. After the careful examination of a good series of specimens I am unable to see anything more than individual non-specific differences between *neumoegeni* Edwards and the *aryxna* of Barnes and McDunnough. All the characters they give appear to the writer as gradational, including the genitalic. We need much better and additional evidence before specific value can be accepted.

*M. polingi* Skinner was described from two specimens supposed to be male and female. The type and paratype prove to be females as stated by the authors of this paper. They had over one hundred specimens of both sexes for study, and were able to detect the fact that Dr. Skinner erred as to the sex of one specimen. The writer does not assume any obligation to take cognizance of letters at a particular time. When statements appear in the literature they are placed on an entirely different basis.

The authors place *M. var. navajo* as a synonym of *coloradensis* Riley. If a black form as compared with a light chestnut brown one is not sufficient difference to constitute a variety, then they are correct. Riley in his original description said, "This Colorado form is remarkable for its small size and the paleness of its colors." There can be no question about the meaning of the above. It refers to the color of the insect and not alone to maculation as the two authors state. The Academy of Natural Sciences possesses one of the cotypes of *coloradensis* and it has not faded since it was caught and it is a light chestnut brown in color, whereas *yuccae* is dark umber-brown and *navajo* black.

*M. cofaqui* Strecker is a very distinct species, both in maculation and in the male genitalic characters. The male has a buff border on the upper side of the secondaries, otherwise the markings are the same as in the female, except that the row of spots on the secondaries is almost obsolete. The male specimen of *streckeri* bearing the type label, was taken in Arizona by Morrison. State labels were the fashion when it was captured and it can only be said that it was taken in one of the various localities in Arizona where Morrison is known to have collected.

Barnes and McDunnough have given us an able paper which has considerably advanced our knowledge of the family. There are still questions that need elucidation and they will be solved in the future.  
—H. S.

BIBLIOGRAPHIA COLEOPTEROLOGICA. Under this title W. Junk, the Entomological publisher and antiquarian bookseller of Berlin (W. 15, Kurfurstendamm 201), has brought out a catalogue of 3928 Coleopterological books and memoirs, arranged alphabetically under authors' names, which he has for sale. The edition of this Bibliographia which is bound in linen boards, includes fourteen pages on "Die Coleopterologische Literatur," which gives the principal works of reference on this group of insects under such headings as: For the Beginner (German), Coleoptera of Central Europe, Nomenclature, Larvae, French fauna, Nearctic Region [where Blatchley's Coleoptera of Indiana has not yet found a place], etc. This edition is sold at one mark, and this summary of the literature (which is lacking in the paper-bound copies distributed free) should be very useful.

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## Doings of Societies.

### AMERICAN ENTOMOLOGICAL SOCIETY.

Meeting of December 11, 1911. Dr. Philip P. Calvert, President, presiding. Nine persons were present.

Reports of the various officers and committees for the year 1911 were read. The report of the Librarian recorded four thousand volumes in the library of the Society and recommended the purchase of additional bookcases for the new quarters.

The President announced the deaths of two former Presidents, the Rev. Henry C. McCook, D.D., on October 31st, and J. H. B. Bland on the 12th of November, aged 79.

The following persons were elected to serve as officers for the year 1912: President, Philip P. Calvert; Vice-president, Henry W. Wenzel; Treasurer, E. T. Cresson; Curator, Henry Skinner; Recording Secretary, Henry Skinner; Corresponding Secretary, J. A. G. Rehn. Executive Committee: Philip Laurent, H. W. Wenzel, D. M. Castle. Publication Committee: E. T. Cresson, C. F. Seiss, B. H. Smith. Finance Committee: C. S. Welles, D. M. Castle, Morgan Hebard.

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Meeting of February 15, 1912, Mr. Philip Laurent in the chair. Seven persons were present.

Mr. E. T. Cresson was appointed a delegate to represent the

Society at the Centenary of the Academy of Natural Sciences of Philadelphia, to be celebrated March 19, 20 and 21.

Mr. Laurent called attention to Circular 144, U. S. Dept. Agric., and said he was not previously aware that *Scolytus quadrispinosus* injured the small stems and buds of the hickory.

He also read a newspaper clipping, dated Woodbury, N. J., January 30th, which read as follows: ". . . According to fruit experts the yield of South Jersey the coming season ought to be a record breaker. These men declare that when the trees have a coating of ice once during the winter the following season is prolific in the yield as the ice kills any pests that may have clung to the bark. Thus far there have been three sleet storms, and at present every tree in Gloucester County has a half-inch ice coating." The speaker asked whether it was a fact that ice kills scale and other bark insects.

Dr. Skinner made some remarks on the so-called Pharmacophagus *Papilio*, *P. philenor* and its alleged mimics, *Papilio glaucus*, *polyxenes* and *troilus*. The records of birds attacking these insects are very meager and it is doubtful whether *P. philenor* is poisonous or noxious to birds. A large amount of careful experimental evidence will be necessary to prove that the three species, in the female sex, mimic *philenor*, and that their markings were thus developed.

Mr. E. T. Cresson, Jr., suggested that *Dasyllis* may mimic the non-predaceous bumblebee so that it may deceive other insects on which it feeds, the latter mistaking it for a bumblebee and not making an effort to escape.

HENRY SKINNER, Sec'y.

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## OBITUARY.

PROFESSOR JOHN B. SMITH, State Entomologist of New Jersey, eminent as an Economic Entomologist, endeared to many friends by his personal qualities, author of important memoirs on Lepidoptera and Coleoptera, died at New Brunswick, New Jersey, on March 12, 1912. An account of his life and work will appear in the next number of the NEWS.

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*S. S. Haldeman 1868.*

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VOL. XXIII.

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No. 5.

### CONTENTS:

Grossbeck—Professor John Bernhardt Smith, Sc.D.....	193	from the Northeastern United States (Hemip., Coreidae).....	217
Williamson—The Dragonfly <i>Argia moesta</i> and a n. sp. (Odonata).....	196	Barnes and McDunnough—New Microlepidoptera.....	219
Knetzler—Observations on the Lepidoptera of St. Louis, Missouri, and vicinity during 1911.....	203	Stryke—The Life-Cycle of the Malarial Parasite.....	221
Rowley and Berry—A dry year's yield of <i>Catocala</i> (Lepid.), 1911.....	207	Editorial.....	224
Cockerell—A Fossil <i>Raphidia</i> (Neur., Planip.).....	215	Notes and News.....	226
de la Torre Bueno—A new <i>Corizus</i>		Entomological Literature.....	233
		Doings of Societies.....	237
		Obituary—Prof. Thomas H. Montgomery, Jr.....	239

## Professor John Bernhardt Smith, Sc.D.

(Portrait, Plate XI)

Professor John Bernhardt Smith, one of the best known entomologists in this country, and widely known in foreign lands also, died at his home at New Brunswick, New Jersey, on Tuesday morning, March 12th, after an illness of seven months. For some years Professor Smith had been ailing, and in 1906, partly under the advice of his physician, he spent several months in Europe in the hope of regaining his health. He returned a much better man physically; but he was never again his old self, and he frequently alluded in a jocular manner to the fast approaching end to his earthly career. His indomitable energy, however, kept him from becoming a chronic invalid, and even during the last months of his life when he was largely confined to his bed he regularly attended to his correspondence and directed the work under his charge at the New Jersey Agricultural Experiment Station. Bright's disease, with its manifold complications, finally claimed him, and he rapidly sank under its dreaded influence.

Professor Smith was born in New York City on November 21, 1858. He was educated in the Public schools, studied law

and was admitted to the bar in 1879. But the practice of law was not to his especial liking; and, as he himself once expressed it, "a fly on the wall was more interesting to him than the case in hand." In 1884, after a four years' career as a lawyer, he bade adieu to that vocation forever, and accepted the appointment as Special Agent to the United States Department of Agriculture at Washington under the late Dr. C. V. Riley. In 1886 he became Assistant Curator of Entomology in the United States National Museum, and in the three years of his connection with that Institution published a number of excellent papers and monographic works, chief among which are his "Monograph of the Sphingidæ of America north of Mexico," "A Preliminary Catalogue of the Arctiidæ of Temperate North America," "A Revision of the Lepidopterous Family Saturniidæ," some of his "Contributions toward a Monograph of the Family Noctuidæ," and "Notes on the Species of *Lachnosterna* of Temperate North America with descriptions of New Species."

In 1889 he resigned his post in the National Museum to accept a Professorship of entomology at Rutgers College, and to become entomologist to the New Jersey Agricultural Experiment Station at New Brunswick, positions which he held until the time of his death, and to which was added in 1894 the office of State Entomologist of New Jersey. In these three capacities he brought honor and renown to the institutions he served. His annual reports, which all told, form several bulky volumes, are mines of information, and rank with the best ever produced by any experiment station. His numerous bulletins also represent a vast amount of original research along economic lines. His "Contribution toward a Knowledge of the Mouth Parts of the Diptera" (1890) set forth views on the homologies of these organs quite different from those generally accepted.

In 1902 he became intensely interested in the work of the extermination of mosquitoes which had been prosecuted with marked success in various parts of the world, and he immediately urged and secured from the legislature in 1903, under

the most adverse conditions, an appropriation for an investigation of the subject in New Jersey. The final report (1905), which covered a two years' investigation, comprised 482 printed pages and treated elaborately every phase of the subject, economic and systematic. From the time of the appearance of that report on, he annually secured, by dint of hard work, an appropriation to carry the recommendations made in the report into effect. The success of his work has been heralded far and wide, and the ditching scheme for the draining of marshes was developed by him in the highest degree. To Professor Smith is due the credit for having demonstrated the practicability of ridding immense marsh areas of a most pestiferous insect.

During all the years of his work on economic entomology which kept him busy answering a voluminous correspondence, attending Farmers' Institute meetings and experimenting with proprietary insecticides which came on the market, he still found time to pursue his work on the systematic side of the subject and continued to publish incessantly revisions of particular Noctuid genera and papers on new species of Noctuidæ, in which family he was the recognized authority. In 1893 he also published as Bulletin 44 of the United States National Museum his "Catalogue of the Lepidopterous Superfamily Noctuidæ found in Boreal America," which was an excellent illustration not only of the industry of the man but of his wide knowledge of the family which he chose for his specialty.

The popular side of entomology also was not neglected as is shown by his two books "Economic Entomology," and "Our Insect Friends and Enemies;" nor was the general subject, as is shown by his three lists of the insects of New Jersey, each of which was a total revision of the last and really a separate work, his "Explanation of Terms used in Entomology" and his two lists of the Lepidoptera of Boreal America.

As a lecturer he was widely in demand by Farmers' Institutes, public schools and scientific institutions.

Professor Smith was a firm believer in scientific societies and himself belonged to many, including the Brooklyn Entomological Society, of whose journals, "The Bulletin of the Brooklyn Entomological Society" and "Entomologica Americana," he was editor from 1882 to 1890; Newark Entomological Society of which he was an honorary member, Feldman Collecting Social, Entomological Society of Ontario, Entomological Society of America, Association of Economic Entomologists, Society for the promotion of Agricultural Science, Brooklyn Institute, Washington Academy, New Jersey State Microscopical Society, Ottawa Field-Naturalists' Club, etc. He was a fellow of the American Association for the Advancement of Science and of the New York Academy of Sciences, and a corresponding member of the American Entomological Society (elected June 28, 1897). In most of these societies he was an active member, and frequently served in the capacities of president and secretary at one time or another.

In recognition of his high attainments as a scientist, the honorary degree of doctor of science was conferred upon him by Rutgers College in 1891.

To all who knew him he was ever the same jovial, good natured man, always willing to help where assistance was needed. He will be greatly missed not only by his many friends and scientific associates to whom he had endeared himself, but by scientific workers throughout the country.

He is survived by a widow and two grown up children.

JOHN A. GROSSBECK.

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## The Dragonfly *Argia moesta* and a new species (Odonata).

By E. B. WILLIAMSON, Bluffton, Indiana.

*Agrion moestum* and *putridum*, as described by Hagen, have some slight differences in color and size only to distinguish them. In *Synopsis des Agrionines*, 5me légion, *Argia putrida*

is recognized as very closely related to *moesta*, and an added character, reduced venation, is mentioned as distinguishing *putrida*. At the same time a race (?) from Rock Island, Illinois, is mentioned which equals or slightly exceeds *moesta* in size. Calvert, in *A List and Bibliography of the Species (of Argia)*, *Bull. Mus. Comp. Zool.*, 1902, lists *putrida* as a variety of *moesta*. The same opinion is expressed on page 76 of the *Biol. Cent. Am. Neur.*

In studying some material from Texas and Oklahoma, I have found it necessary to examine carefully the status of these two nominal species, and my conclusion is that, if two species exist, they must be defined in terms of other characters than those used in the past; and I am at present unable to detect any such characters. I have studied specimens from Texas, Oklahoma, Tennessee, Indiana, Ohio, District of Columbia, Pennsylvania, Maine, Michigan and Ontario.

Of these the palest male individual is from Ontario, which has about one-half the mesepisternum and less than one-half the mesepimeron dark colored. This individual has the abdomen black with pale on sides of 1, lateral apical spot on 2, and the customary narrow basal abdominal rings. It has the abdomen 33.5 mm., hind wing 25 mm. The darkest male individual is from Wister, Oklahoma, in which the entire thorax is dark, with a narrow pale antehumeral stripe, not reaching the antealar sinus, and a narrow, abbreviated streak on the metepisternum. This specimen has the abdomen black, with the basal annulations present but dark. Abdomen measures 32.5 mm., hind wing 25 mm.

To facilitate a comparison of thoracic pattern of males the following five types of pattern may be defined and designated by Roman numerals:

I, mesepisternum one-half black, mesepimeron with black in a broken pattern occupying less than one-half the area, metepisternum and metepimeron without black, with the exception of a line, present or absent, on the sutures.

II, mesepisternum one-half black, mesepimeron black excepting a narrow anterior stripe above and a narrow posterior stripe below, metepisternum and metepimeron without black.

III, mesepisternum two-thirds black, pale area not reaching antealar sinus, mesepimeron as in II, with pale slightly reduced, metepisternum and metepimeron pale as in II, but a distinct line on second lateral suture.

IV, mesepisternum two-thirds black, but pale area reaching the antealar sinus, mesepimeron as in III, but posterior ventral pale area reduced to a spot, metepisternum black below and narrowly along second lateral suture, metepimeron black, pale above in a sinuate pattern.

V, thorax all black, but a narrow pale antehumeral stripe not reaching the antealar sinus, and a narrow, abbreviated streak on the metepisternum near its middle, just posterior to the first lateral suture.

In the tabulation which follows, these numerals, followed by + or — mean respectively that the thorax is slightly darker or lighter than the number indicates.

MALES ONLY.

LOCALITY.	COLOR OF THORAX.	LENGTH OF ABDOMEN		LENGTH OF HINDWING	
		Ex-tremes	Average	Ex-tremes	Average
Texas . . .	IV+, IV+, IV—.	32-36	33.6	25-28	26
Oklahoma .	V, V—, V—, IV, V—, IV—, V—	30-33	32	23-25	24
Tennessee .	IV+, IV+, IV+		32		24.5
Indiana . .	II+, IV+, IV+, IV+, II, IV, IV+, II	30-34	31.7	23-25	24
Ohio . . . .	II		32		25
Pennsylvania	III, III, V—, IV+, III, III, III.	27-34	32	22-27	25
Maine . . .	III, III		30		24
Ontario . .	I+		33.5		25

In all the males studied the abdomen is black, with narrow basal rings on 2-7; in one specimen from Wister, Oklahoma, there is some pale color laterally on 1-5, and 9 and 10 have a little pale color laterally; in another male from Clifton, Texas, the pale color on 1-5 is faintly discernible; a male from Auburn,

Indiana, has some gray on either side of 9 and 10; other males from Tennessee, Pennsylvania and Maine have the sides of 1 pale, and a more or less distinct lateral spot on 2.

Females from the same localities show fewer differences. Unless obscured, there is present a longitudinal, dorsal pale area, adjoining or near the black dorsal carina; a similar pale area occupies the mesepimeron in all but its most anterior and dorsal portions; and a similar large pale area occupies the metepimeron, excepting only a narrow border; along the second lateral suture on the metepisternum a narrow area of the same kind is less definitely developed. These pale areas give the impression of a thin coating of paraffin over the general body color. They seem to depend largely on post-mortem changes, and asymmetrical specimens are not rare. One female from Indiana is remarkable; the pale areas on the thorax are of usual size and definiteness, but instead of being surrounded by the usual light brown or pearly gray, the pale areas lie in a field of dark brown or nearly black; the result is a thoracic color pattern not at all suggestive of other individuals of either sex in which, if any dark color appears, it is in the usual pale areas of the normal females; in this case the pale areas remain pale, but the adjoining areas are dark. Two other Indiana specimens suggest this female. In two other Indiana females the thorax is light brown with green dorsal thoracic stripes of indefinite pattern, suggesting *Gynacantha*.

To describe the dorsum of the abdomen of *moesta* as pale colored is only partially correct. About segment 6 the lateral apical and basal black fail to connect in a continuous line as they do on the preceding segments, and the black decreases posteriorly and disappears before 9. If segment 3 or 4 be examined carefully it will be apparent that the dorsum of each segment above the lateral black streak is darker colored than the sides below the streak, and that the definition of the black and paler is obscure on the dorsal side of the streak; there is no well-defined longitudinal dorsal pale area, and the dorsum color (reddish brown) is a very different color from the pale basal rings of obscure bluish.

Females from various localities show the following sizes:

LOCALITY	LENGTH OF ABDOMEN		LENGTH OF HIND WING	
	Extremes	Average	Extremes	Average
Texas . . . . .	31-34	32.5	26-29	27.5
Tennessee . . . . .		31		26
Indiana . . . . .	28.5-33	30.7	24-27	25.6
Pennsylvania . . . . .	30-33	32	25-27	26
Maine . . . . .	28-31	29.5		25
Michigan . . . . .		31.5		26

It is possible that a more intelligent study of larger material may reveal that I have included more than one species in the above discussion, but for the present I am forced to conclude that *putrida* is a synonym of *moesta*. In all the material I have been unable to detect any differences in male abdominal appendages or female mesostigmal laminae.

#### *Argia intruda* n. sp.

Associated with the dark *moesta* at Wister, Oklahoma, are other *Argias* which seem to be specifically distinct from *moesta*, and which, after some correspondence with Dr. Calvert on the subject, I venture to describe as new.

*Male*. Abdomen 33-36, average 34.5, hind wing 25-26, average 25.3.

*Female*. Abdomen 33-37, average 33.8, hind wing 26-29, average 27.2.

*Male*. Head dull pale brown, rear of head black above, pale brown below.

Thorax pale brown, black as follows: A middorsal thoracic stripe, on either side occupying one-half the mesepisternum; a spot on the mesepimeron against the humeral suture where it meets the mesinfraepisternum, and another above against the first lateral suture just in front of (or below) the posterior border; a faint line on humeral suture, widened into a small spot above. This is the palest coloration represented and is shown by four specimens; in others the two spots on the mesepimeron grow towards each other till they form an oblique

irregular stripe across the mesepimeron; from this stage this stripe grows in width posteriorly till it occupies nearly the entire area (pattern II, as described under *moesta*); this stage represents the maximum development of black on the thorax and is attained by only a single specimen.

Abdomen black above, pale below on the sides on all segments but 7, pale narrow blue basal rings on 3-7, a longitudinal middorsal stripe, absent or very reduced on 6-7; 9 and 10 variable, generally gray or light brown, excepting the lower lateral margins and ventrally, and a black lateral spot on either side, near the middle, of 9; this spot on 9 may be wanting or it may be developed into an elongated spot.

Abdominal appendages similar to *moesta* (see Fig. 29, Tab. 4, Biol. Centr. Am. Neur.), but the inferiors are longer than the superiors (not equal), and are terminated by a large, rounded, pale tubercle.

*Female.* Similar to the male. Black area on rear of head reduced to a spot on either side.

Darkest thoracic pattern: A black line on either side of the middorsal thoracic carina, originating just below the antecular sinus and reaching the mesostigmal lamina, separated from the black middorsal carina by pale area equal to the width of the black line, the dark line and the pale area next the carina together occupy less than one-half the area of the mesepisternum. This black area is developed in a pale area which is present on the mesepisternum as well as on the mesepimeron and metepimeron, as described for *moesta*. In other specimens the black dorsal lines on either side of the middorsal carina are reduced and in three specimens they are wanting altogether. No such lines are present in *moesta*. All specimens show more or less distinctly the pale areas above mentioned as present on females of *moesta*.

Abdomen darker than in any *moesta* examined, though, if the reddish brown of *moesta* be considered dark, *moesta* has a more extensive area dark colored, since in *moesta* there is no longitudinal middorsal pale area, while in *intruda* the dorsum is black (instead of reddish brown as in *moesta*), and there is a narrow but sharply defined and distinct pale longitudinal middorsal stripe, narrowest on 7, where it is reduced to the merest line. The lateral black is carried posteriorly on to 9, usually to its apex; 10 is pale colored. Sides of abdomen below the black, pale colored.

The mesostigmal lamina of *intruda* differs from *moesta* as follows: in *moesta* the posterior (or superior) lobe of the lamina is symmetrical with the border of the lamina on either side similarly curved, while the anterior (or inferior) border of the lamina is distinctly concave, the external angle of the lamina being correspondingly acute; in *intruda* the posterior (or superior) border of the lamina external to

the lobe is straighter or less curved than internal to the lobe, resulting in an asymmetrical lobe, and the anterior (or inferior) border is straight or slightly convex, resulting in a less acute external angle.

Wister, Oklahoma, August 2 and 4, 1907; 15 males, 17 females, Frank Collins; all in collection of E. B. Williamson. When this material was studied and the differences detected, specimens were sent to Dr. Calvert for his opinion. He kindly separated the appendages of several males and returned these specimens to me. In his opinion they are specifically distinct from the material which we identify as *moesta* and *putrida*, and it is at his suggestion that I have described them as new.

The material on which the preceding study is based is in my collection and is as follows:

*Argia moesta.*

Texas—Bay City, May 24, 1907, 2 males, 1 female, E. B. W.

Clifton, May 28, June 1, 1907, 16 males, 9 females, E. B. W.

Oklahoma—Wister, June 3, 1907, 1 male, E. B. W.; August 2 and 4, 1907, 6 males, Frank Collins.

Tennessee—Nashville, Cumberland River, September 29 and October 5, 1900, and June 1, 1901, 3 males, 1 female, E. B. W.

Indiana—Saint Paul, August 13, 1911, 11 males, 5 females, E. B. W.

Bluffton, without data, 2 males; July 10, 1900, 1 male; July 27, 1902, male, female; August 9, 1903, 1 male; July 16, 1905, 3 males, 2 females; July 22, 1906, 1 male; August 1, 1909, male, female; June 8, 1911, male, female, E. B. W.

Ft. Wayne, July 17 and 18, 1901, 2 males, 4 females, E. B. W.

James Lake, July 5, 1908, 1 male, E. B. W.

Auburn, July 7, 1911, 1 male, E. B. W.

Ohio—Kent, June 21, 1900, 1 male, J. S. Hine.

District of Columbia—July 18, 1897, 1 male, J. S. Hine.

Pennsylvania—Fayette County, July 2, 1899, 1 male, E. B. W.

Ohio Pyle, June 24, 1900, 2 males, 1 female, E. B. W.; September 8, 1901, 5 males, 3 females, J. L. Graf.

Maine—7 males, 8 females, F. L. Harvey.

Michigan—Emmett County, August 11, 1907, 1 female, L. A. Williamson.

Ontario—Go Home Bay, July 12, 1907, 1 male, E. M. Walker.

*Argia intruda.*

Oklahoma—Wister, August 2 and 4, 1907, 15 males, 17 females, Frank Collins.

All specimens studied have, I believe, a nature color pattern which would not have varied with increasing age, though I do not know how early in the life of the imago this pattern is attained, since I have no teneral material before me, and I have no notes on the colors of recently emerged imagoes. Thoracic pruinescence appears first ventrally, occupying the bases of the legs and the metepimeron, then the pale areas of the thorax, and finally, in older individuals, including the entire thorax and obscuring the thoracic pattern. It can be removed by gentle rubbing or scraping. Pruinescence of the apical abdominal segments appears later in the life of the imago than the first traces of thoracic pruinescence. These two species of *Argia* begin to show thoracic pruinescence earlier in imaginal life than any other dragonflies known to me.

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## Observations on the Lepidoptera of St. Louis, Missouri, and vicinity during 1911.

By the Members of the St. Louis Entomological Club.

Compiled by AUGUST KNETZLER.

The opening of the season, being quickly followed by hot weather and a protracted drouth, brought out some unexpected features, the most striking of which was the wonderful abundance of the entire *Colias* family and the scarcity of *Papilio*s. Particularly surprising was the appearance in large numbers of *Dione vanillae*, specimens of which could be seen daily on the city streets from August till November. The larvae of this beautiful insect were found feeding on *Passiflora* in several gardens. No less remarkable was the first appearance here of the fine large Hesperid, *Calpododes ethlius*, of which not only were there several fine specimens taken, but the larvae also were discovered feeding on *Canna* by Mr. Ernst Schwarz, who bred several with good results, the imagoes emerging even after our first heavy frost. Another new Hesperid, male and female, not yet determined, was taken by Mr. Paul Schroers.

Of Heterocera nearly all species were common during the early half of the season, more particularly *Ecpanteria deflorata*, *Haploa lecontei*, *Haploa vestalis* and *Anisota rubicunda*, while *Cressonia juglandis* and *Ampelophaga choerilus* were not observed. All Saturniidae and Sphingidae were scarce. During the latter part of the season most Heterocera were not nearly as common as in previous seasons. New species were taken as follows: *Euerythra phasma*, *Apantesis anna*, *A. persephone*, *Ampelophaga versicolor*, *Erebus odora* and *Cochlidon Y-inversa* by Mr. Paul Schroers; *Pholus vitis* by Mr. Frank Malkmus; *Catocala viduata*, *C. dejecta*, *Schinia chrysellus* and *S. trifascia* by Mr. Geo. Hosenfelt. All larvae were scarce during the latter part of the season.

The following list of Rhopalocera, with remarks applying to the season of 1911, contains the names of all the different species taken in this locality within the last fifteen years:

1. *Danais plexippus*, L. Abundant particularly during October. Their flight this year seemed to be in a southwesterly direction.
2. *Dione vanillae*, L. For once this ever rare insect was common.
3. *Euptoieta claudia*, Cr. Swarming during September and October.
4. *Argynnis diana*, Cr. None observed.
5. *Argynnis idalia*, Dr. One specimen taken by the writer.
6. *Argynnis cybele*, Fab. Common in June.
7. *Phyciodes nycteis*, D. and H. Common in July.
8. *Phyciodes ismeria*, B. and L. None observed.
9. *Phyciodes tharos*, Dr. Common in June.
10. *Phyciodes tharos* v. *marcia*, Edw. Many specimens taken in April.
11. *Phyciodes tharos* v. *morpheus*, Fab. Common, summer and fall.
12. *Phyciodes tharos* v. *packardii*, S. None observed.
13. *Melitaea phaeton*, Dr. None observed.
14. *Grapta interrogationis* v. *unbrosa*, L. Common.
15. *Grapta interrogationis* v. *fabricii*, Edw. Usually common during September and October, very rare this season.
16. *Grapta comma*, H. Scarce.
17. *Grapta comma*, v. *harrisi*, Edw. Scarce.
18. *Grapta comma*, v. *dryas*, Edw. Fairly common.
19. *Grapta progne*, Cr. Observed by Mr. Fred. Schwarz.
20. *Vanessa J-album*, B. and L. None observed.
21. *Vanessa antiopa*, L. Scarce as usual.
22. *Vanessa milberti*, G. Observed by Mr. Paul Schroers.

23. *Pyrameis atalanta*, L. Common in June, but extremely rare later.
24. *Pyrameis huntera*, F. Abundant.
25. *Pyrameis cardui*, L. Common.
26. *Junonia cocnia*, H. Perhaps never before so abundant. Mr. Noel Poeping, while on a trip to S. E. Missouri, reported that he saw myriads of this species flying across the Mississippi River, many falling into the water.
27. *Limenitis ursula*, G. Moderate.
28. *Limenitis disippus*, G. Quite abundant.
29. *Apatura celtis*, B. and L. Common.
30. *Apatura clyton*, B. and L. Rare.
31. *Apatura clyton* v. *proserpina*, Sc. Extremely rare.
32. *Anaea andria*, Sc. Not as common as usual.
33. *Debis portlandia*, F. Common.
34. *Neonympha eurytus*, F. Common.
35. *Satyrus alope*, F. Taken at Meramee Highland, Mo., by Messrs. Herman Schwarz and Chas. Dieckmann.
36. *Libythea bachmanni*, K. Common June and July, but not seen later.
37. *Thecla M-album*, B. and L. None observed.
38. *Thecla melinus*, H. Common.
39. *Thecla calanus*, H. Common in June.
40. *Thecla calanus* v. *lorata*, G. and R. None observed.
41. *Thecla liparops*, B. and L. One specimen taken at Forest Park by Mr. Marion Henderson.
42. *Thecla damon* v. *discoidalis*, Sk. One specimen taken at Forest Park by the writer.
43. *Thecla cecrops*, F. Quite abundant.
44. *Thecla irus*, G. Common in April.
45. *Thecla titus*, F. Common in July.
46. *Feniseca tarquinius*, F. Scarce.
47. *Chrysophanus thoe*, B. Common.
48. *Chrysophanus hypophlaeas*, B. Common.
49. *Chrysophanus hypophlaeas* v. *fasciata*, S. One specimen taken by writer.
50. *Calephelis borealis*, G. and R. None observed.
51. *Lycaena pseudargiolus*, B. and L. Common.
52. *Lycaena pseudargiolus* v. *violacea*, Edw. Scarce.
53. *Lycaena pseudargiolus* v. *marginata*, Edw. Scarce.
54. *Lycaena comyntas*, G. Common.
55. *Lycaena isola*, R. One specimen taken at Forest Park by Mr. Marion Henderson.
56. *Lycaena isola* v. *alce*, Edw. None observed.
57. *Pieris protodice*, B. and L. Abundant all season.

58. *Pieris protodice* v. *vernalis*, Edw. Very scarce. March.
59. *Pieris rapae*, L. Unfortunately common.
60. *Pieris rapae* v. *immaculata*, Sk. and A. None taken.
61. *Pieris rapae* v. *novangliae*, Sc. None taken.
62. *Nathalis iole*. Extremely common.
63. *Euchloe genutia*, F. Two specimens taken by Mr. Ernest Schwarz.
64. *Euchloe olympia* v. *rosa*, Edw. Seems to have become extinct in this locality.
65. *Catopsilia eubule*, L. Exceptionally abundant.
66. *Zerene caesonia*, St. Common in July.
67. *Zerene caesonia* v. *rosa*, McN. Scarce. October.
68. *Colias eurytheme*, B. With its variations.
69. *Colias ariadne*, Edw. Probably never before more abundant.
70. *Colias eryphile*, Edw. Probably never before more abundant.
71. *Colias keewaydin*, Edw. Probably never before more abundant.
72. *Colias keewaydin* v. *alb.* Probably never before more abundant.
73. *Colias philodice*, G. Not as common as usual.
74. *Colias philodice* v. *alb.*, Sk. Not as common as usual.
75. *Terias mexicana*, B. Many specimens taken.
76. *Terias nicippe*, Cr. Abundant.
77. *Terias nicippe* v. *flava*, St. Scarce.
78. *Terias lisa*, B. Very common in September and October.
79. *Terias lisa* v. *alba*, St. Not common.
80. *Papilio ajax* v. *walshi*, Edw. Common April and early May.
81. *Papilio ajax* v. *telaemonides*, F. Extremely rare.
82. *Papilio ajax* v. *marcellus*, B. and L. There seemed to be a direct transition from *walshi* to *marcellus* with *telaemonides* eliminated altogether. *Marcellus* appeared in early June in fair numbers, while at its usual time, in late July, it was hardly in evidence.
83. *Papilio philenor*, L. Common in June, very scarce later.
84. *Papilio asterias*, Cr. Scarce all season.
85. *Papilio troilus*, L. Scarce all season.
86. *Papilio cresphontes*, Cr. Scarce all season.
87. *Papilio turnus*, L. Abundant in June, scarce later.
88. *Papilio glaucus*, L. Abundant in June, scarce later.
89. *Ancyloxypha numitor*, F. Common.
90. *Atrytone zabulon*, B. and L. Scarce.
91. *Atrytone hobomok*, H. Common.
92. *Atrytone hobomok* v. *pocahontas*, Sc. Scarce.
93. *Hylephila huron*, Edw. Common, September and October.
94. *Hylephila phylaeus*, Dr. Common, October.
95. *Thymelicus otho*, S. and A. Scarce.
96. *Thymelicus cernes*, B. and L. Common.
97. *Thymelicus brettus*, B. and L. Very scarce. Several taken by Messrs. L. P. Arras and G. Hosenfelt.

98. *Polites peckius*, K. Scarce.
  99. *Euphyes verna*, Edw. Scarce.
  100. *Euphyes metacomet*, H. Scarce.
  101. *Euphyes bellus*, Edw. None observed.
  102. *Euphyes fusca*, G. and R. None observed.
  103. *Limochroes manataaqua*, Sc. None observed.
  104. *Preues ocola*, Edw. None observed.
  105. *Phycanassa viator*, Edw. One specimen taken by the writer.
  106. *Phycanassa delaware*, Edw. None observed.
  107. *Calpododes ethlius*, Cr. Discovered breeding here, several specimens taken.
  108. *Pholisora catullus*, F. Common.
  109. *Pholisora hayhursti*, Edw. Common.
  110. *Hesperia tessellata*, Sc. Common.
  111. *Anthomaster leonardus*, H. None observed.
  112. *Amblyscirtes vialis*, Edw. Rather scarce.
  113. *Amblyscirtes samoset*, Sc. Rather scarce.
  114. *Eudamus tityrus*, F. Not as common as usual.
  115. *Eudamus lycidas*, S. and A. Abundant.
  116. *Eudamus bathyllus*, S. and A. Fairly swarming.
  117. *Eudamus pylades*, Sc. None observed.
  118. *Thanaos brizo*, B. and L. Common.
  119. *Thanaos martialis*, Sc. Common.
  120. *Thanaos juvenalis*, F. Very scarce.
  121. *Thanaos naevius*, L. None observed.
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## A Dry Year's Yield of Catocalae (Lepid.) 1911.

By R. R. ROWLEY and L. BERRY, Louisiana, Missouri.

Everybody remembers how warm the first of February was, in fact how warm the entire season has been. Insects began to fly early.

The first moth from a cocoon was an Indian *Caligula* on the 25th of March. After that *Cricula* and *Antherca* and, all through April, numbers of *Thais polycena*.

The first larva of *Catocala* was of *illecta*, half an inch long, on April 28th. After continued search through May, hardly a dozen caterpillars of this species were found, where the senior author had always before found them abundantly. It was evidently not an *illecta* year.

Some of the few larvae found were but freshly hatched,

very slender, faintly greenish, almost transparent. Head small and of the body color. All were found resting lengthwise along the underside of the small locust thorns, well color-protected.

A large *ilia*-like egg found on the underside of hickory bark, hatched on the 30th of April. The young larva was slender, gray with a tinge of green and with black cross bands. Very noticeably bristly. Head black. It refused hickory and fed on bur oak but died without moulting. In searching for *Catocala* eggs under the bark of shagbark hickory we had occasionally found dead eggs, large and elliptical, apparently of *ilia*. The live egg mentioned and found the winter before, gave an *ilia* larva.

Why are these eggs laid on a tree whose leaves the worm can never eat? Dead egg shells are not uncommon but never in crowded or overlapping masses as in the case of *palacogama* and other hickory feeders.

A minute, distinctly reddish egg, ribbed as in *Catocala*, and found under hickory bark, hatched but was lost. It was probably *judith*.

The *ilia* and other eggs for rearing, were kept from hatching for nearly a month, on a cold cement floor and the experience was the same as in past years, the larvae did not thrive.

The young *ilia* larvae feed best on bur oak buds. They often refuse the leaves till they are well grown. The first imago of *Actias selene* cut through its cocoon, May 6th.

The cocoons of *Caligula cachara*, *Cricula trifenestrata*, *Antherea roylei* and *Actias selene* were furnished the senior author by Mr. James L. Mitchell of Indianapolis. An overlapping mass of white eggs, found under hickory bark, hatched on the 9th of May.

Eggs of *Catocala innubens* began hatching May 7th and eggs of *C. flebilis*, furnished by Mr. Ernest Schwarz of St. Louis, on May 10th. Eggs of *C. resecta* began hatching on May 11th and those of *C. vidua* and *C. nebulosa* on the 12th of the same month. Part of the *resecta* eggs were furnished the senior author by the junior and all of the *nebulosa* by Mr. Harold Davenport.

The little *nebulosa* worms were reddish brown with the head a little lighter than the body, but no further notes were obtained on this species as the little "crawlers" died without eating, although they were offered foliage of walnut, shellbark hickory, pecan, honey locust, plum, willow, sycamore, grape, linden, ash, poplar, apple, coffee bean, butter nut, elm, bur oak, and all of which they refused.

Larvae of *Catocala flebilis* readily ate hickory and pecan and were light brown, with a small, almost black head, just after hatching.

On the 18th, eight days later, these caterpillars were over half an inch long, dark or lead color lined with lighter longitudinally. Head a little darker than the rest of the body. The V's outlined middorsally.

On the 21st, the larvae were nearly an inch long, light gray, almost white with a darker cross band over the latter half of the 5th abdominal segment, over the 3d pair of prolegs. On the top of the first and second abdominal segments are two black dots and two short black dashes. Head with gray and black dashes. Tubercles black dot-like and each set with a bristle.

On the 25th the larvae of *flebilis* were one and a fourth inches long, light gray, almost white with black "W's" on the dorsal side of the 1st and 2d abdominal segments and a cross band of black or very dark brown on the top of the 5th abdominal segment. The underside of the body whitish green with dark brown, almost black midventral spots. Head dead-leaf brown without lateral dash. True and prolegs flesh color.

On the 30th, after moulting the day before, the larva was nearly two inches long, mottled gray with a lighter middorsal row of "V" spots, not very distinct. Tubercles reddish and studded with bristles. No lateral row of setae. A double black "V" on the dorsal side of the 1st and 2d abdominal segments and the cross black band over the 5th abdominal segment broken on top by the middorsal row of "V's."

On June 3d the larva was full two inches long and almost white with markings as described on May 30th. The head a chestnut brown with white streaks.

On June 6th, the caterpillars were from  $2\frac{1}{4}$  to  $2\frac{1}{2}$  inches long, light gray, almost as white as flour. Underside white with greenish tinge. Mid-ventral row of black spots. The two pairs of double dorsal "V's" on the 1st and 2d abdominal segments, black. A black cross band covers the dorsal side of the lateral half of the 5th abdominal segment but is separated middorsally by an elliptical spot. Tubercles red-brown. A few scattered lateral bristles or setae. True legs and head chestnut

brown with white mottling. No black dash on the side of the head. Prolegs body color. On the side of the 6th and 7th abdominal segments and behind the middorsal ridge on the 7th are black lines or dashes. The first two larvae began spinning inside leaves on June 9th.

The full grown larva of *flebilis* is about  $2\frac{1}{2}$  inches long and has as chief characteristics, a light ashen-gray color, reddish tubercles, lack of row of lateral setae, the broken cross band of dark brown or black over the lateral half of the 5th abdominal segment. Head and true legs flesh color. Head without side black dash. Whole body raspy. Imago July 1st.

The larvae of *Catocala resecta* on May 18th, seven days after hatching, were half an inch long, dark, almost black, striped longitudinally. Head, body color.

On May 21st larvae nearly  $\frac{3}{4}$  of an inch long, very dark, lined longitudinally with black and white. True legs flesh color. Prolegs lighter (ashen). The first two pairs the lightest. Head a little darker than the body color.

On the 25th the larva was  $1\frac{1}{4}$  inches long, bluish with a tinge of red. Tubercles reddish. Body indistinctly streaked longitudinally. Underside of the body greenish with the black, midventral round spots. Head hardly lighter than the body color, streaked longitudinally with white. Slight lateral dash of black. Lateral setae short.

On May 30th, the larva of *resecta* was  $1\frac{1}{2}$  inches long, reddish brown with red tubercles. Bristles dark. Head round with white and red-brown mottling. Front legs flesh color. The mid-dorsal row of spots very indistinct.

On June 1st the caterpillar is two inches long, grayish with a tinge of green. Tubercles reddish. A lateral row of short sparse setae. A cross band of brown on the top of the 5th abdominal segment. Head red-brown with white lines.

On June 5th the larvae were  $2\frac{1}{4}$  inches long, dark gray with central dorsal row of V spots not very distinct. Tubercles reddish. Lateral row of short setae. A cross band of darker brown on the latter half of 5th abdominal segment, dorsally. Head light chestnut with white linear markings. A short lateral black dash either side of the mouth. True legs light flesh color. Prolegs much the same color. The cross dorsal band broken by the middorsal row of "V's." Ventral side of the body white with the mid-row of black spots.

The first larva spun in leaves on the 15th of June and was less than  $1\frac{3}{4}$  inches long.

Compared with the larva of *flebilis*, that of *resecta* is much darker. On some of the grown larvae of *flebilis* there is a narrow stigmatal band, darker than the ashen body color and

black on the 5th, 6th, 8th, and 9th abdominal segments. The absence of the row of lateral setae on *febilis* would distinguish it from *retecta*.

The first imago of *retecta* emerged on July 13th from a larva that spun on June 17th.

Eggs of *Catocala cara*, *piatrix* and *relicta* began hatching on the 17th of May.

The young larvae from the white eggs of a hickory species of *Catocala*, hatched on May 9th, were over half an inch long on the 18th, lead color, striped longitudinally with white. Head body color.

On the 21st, these caterpillars were over half an inch long and just ready to moult, dark, streaked longitudinally with gray and brown or black.

On the 25th one inch long, very dark with a whitish prunescence, giving the appearance of a blue-black, striped longitudinally. Head slightly browner than the body.

On June 8th, larvae over two inches long, gray, with a tinge of flesh color. A pair each of dorsal black "V's" on the first and second abdominal segments. A dark dorsal shade over the latter half of the 5th abdominal segment. Head gray with flesh tinge. A black line at the mouth. The row of lateral setae (fringe) strong. True and prolegs body color. Ventral side of the body white with a midrow of black spots set in red.

On June 10th larvae over two inches long, very light gray with faint reddish tinge. Double "V's" of black on the dorsal part of the 2d and 3d abdominal segments and brown cross band on the top and sides of the 5th and 6th abdominal segments. A lateral row of stout, short setae, set thickly. Tubercles faint reddish. Head, with pair of elongate hazel brown spots at the upper lobes, front streaked with white and darker. No black lateral dash.

On the 16th, the caterpillars were light gray with a reddish tinge. Tubercles pale flesh color, almost white. Side row of setae. The "V's" on the dorsum of the 2nd and 3rd abdominal segments almost obsolete. The cross black band between the 5th and 6th abdominal segments is continuous, not broken as before the last moult. Head very large, gray and light chestnut. Underside of the body light and the black spots are set in beautiful crimson. There is no black on the head except at the mouth. Over two inches long and near maturity but every larva perished without spinning.

The intensity of the heat probably was responsible for the loss of these interesting things. The eggs of this species were

found in an overlapping cluster on the underside of the bark of shell bark hickory and were white in color and discoidal in shape.

The description of this larva is given with the hope that the life history may be worked out from captured caterpillars, probably not uncommon under hickory bark in the early summer.

Another hickory larva from a dark red brown egg or June 20th was  $2\frac{3}{4}$  inches long, dark brown with light, almost white tubercles. Two pairs of dorsal black dots or short marks on each 1st and 2nd abdominal segments. Legs body color. Head somewhat lighter than the rest of the body. A black dash on either side of the head. No row of lateral setae. Behind the cross ridge on the 8th abdominal segment are black lines or shades, one to each of the two tubercles. Underside pale with the midventral black spots. One larva is almost a light prune color. Like the other hickory larvae just mentioned, these also died without pupating, but when fully grown. Species unknown to the writer.

The intense heat of the latter part of June played havoc with the *Catocala* larvae, the last of the white-egged species dying on the 24th.

The first larva of *Catocala grynea* was taken between shingles on apple on the 25th of May. It was almost white.

Eggs of *Catocala amatrrix* hatched on May 28th and the last of the larvae died on June 24th.

The last of the *ilia* larvae succumbed to the heat May 27th.

A second larva of *grynea* was taken on apple, May 29th.

Larvae of *C. neogama* and *piatrix* were as abundant as usual and the former seemed healthier than for several years past but many of them died after pupating, as did also the *piatrices*.

At first the *piatrix* "worms" thrived, but later many of them died. Full grown larvae of the species were found on June 6th.

The first stage of *Catocala illecta* came from its chrysalis on June 3d.

On the 9th of June, the senior author received from the junior a full grown larva of a *Catocala* taken on apple and a few days later two or three more.

These "worms" were  $1\frac{3}{4}$  inches long, rather dark brown with a narrow middorsal lighter band which was almost white on the two abdominal segments in front of the tubercle and the one behind. The tubercle darker than the body color. The head flattened and lobed above as in *cara* and with an encircling black line (from the right side of the mouth around to the left side). Inside the black line at the dorsal lobes are yellow lunules. A heavy lateral fringe of setae. These larvae differ from the normal larvae of *grynea* but as they all died as chrysalids, there is doubt of their specific affinity.

Larvae and chrysalids of *ultronia* from the same source gave a few imagoes.

From two larvae of *Agnomonina anilis* on wild crab June 10th, secured one imago July 7th.

The last *vidua* larva died June 15th.

The first imagoes of *C. innubens* emerged from chrysalids on the 15th of June. These were specimens bred from the egg, two in number, one normal and one *scintillans*. Many other *innubens* emerged later. This is our healthiest *Catocala*

The last of the *cara* larvae died on the 26th of June.

The distinctive features of the larva of *Catocala resecta* is the distinct greenish tinge of body color, the four midventral black spots set in beautiful red patches, there being a more or less distinct red patch for every thoracic and abdominal segment, the ones on the 8th, and 9th abdominal segments being faint. The first imago of *resecta* to emerge July 11th, spun its cocoon on the 16th of June. A second on July 12th spun on the 18th of June. A third on July 13th, spun June 17th.

Accompanied by Mr. Harold Davenport, the senior author visited "Catocala Hollow" on the 7th of July and found *C. cara*, *innubens*, and *scintillans* quite common, while *palaeogama*, *neogama*, *ilia* and *resecta* were less abundant. Good specimens of *residua* and one fine one of *flebilis* were taken.

On July 9th in company with Lowell Pinkerton two fine *phalanga* and one *amica* were taken, in addition to species captured on the previous trip.

But two or three *amica* were seen during the entire summer. In fact, this species, so common most years, has been very scarce for two or three years past.

On July 13th, the best catches of the season were made. Mr. Lowell Pinkerton took a fine *phalanga*, a splendid *paolina* and an immense *viduata* with a spread of wings of quite four inches. The senior author captured two beautiful *phalanga*, one *habilis* (the only one of the season), *neogama*, *palacogama* and *residua*. Numbers of *cara* and *immubens* were seen.

On July 15th, the senior author and Mr. Harold Davenport took one *lachrymosa*, normal form, one *residua*, a battered *grynea*, a number of *resecta* and one *parta*, a female, the first taken since June 9th, 1906. A fine *viduata* was located but defied capture.

On July 22d, another *phalanga* was taken.

On August 5th, accompanied by Mr. G. W. Dulany of Denver, the senior author took eleven fine specimens of *Catocala luciana* under a rickety wooden bridge over the South Fork of the Platte River, eleven miles north of Denver.

On the 12th of August, Mr. and Mrs. G. W. Dulany visited the same bridge again and succeeded in taking sixteen or more male *luciana* and several females from the latter of which over one hundred eggs were obtained. These Denver trips were the most exciting of the season and, although but one species was taken, yielded the best net results.

Another trip to "Catocala Hollow" on the 19th of August gave us little but ragged *cara*, *innubens*, *neogama*, *ilia*, barring five good specimens of *C. vidua*, all males and all under size, no larger in fact than *resecta*.

September 2d, the senior author captured four *vidua*, two males and two females, one *robinsoni*, the only one seen during the season, and one ragged *piatrix*. No other species of *Catocala* were seen on this trip.

We wish to express our obligations to Miss Margaret Haley for the careful typing of this article.



THE PUGET SOUND MARINE STATION, at Friday Harbor, Washington, will hold its ninth annual session from June 24 to August 3, 1912, under the direction of Professor Trevor Kincaid, of the University of Washington, Seattle, Washington, from whom further information may be obtained.

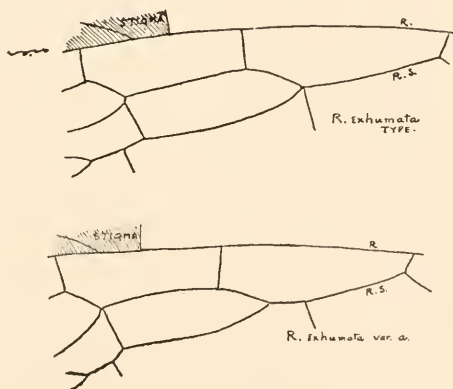
## A Fossil Raphidia (Neur., Planip.).

By T. D. A. COCKERELL, Boulder, Colorado.

A well-preserved anterior wing of *Raphidia* was found by my wife in the Miocene shales of Florissant, Colorado, at Station 23. It is about 12.75 mm. long and 3.75 broad. On comparing it with the type of *R. exhumata* Ckl., I find that it corresponds very closely in appearance and structure, but in Rohwer's table (*Amer. Journ. Science*, xxviii, 534) it runs to *R. mortua* Roh., from which it differs by the larger size, darker venation, the greater number (nine) of cross-veins in the costal area, subcosta joining costa much less than length of stigma from stigma, and some other details. It differs from *R. exhumata* principally as follows:

(a.) Only two cells on costa beyond stigma (three in *exhumata*.)

(b.) Second cross-vein connecting radial sector with media a considerable distance basad of forking of sector, as in *R. mortua* (jointing base of fork in *exhumata*).



(c.) Fifth branch of radius forked at end, though fourth is simple (both simple in *exhumata*).

Thus the new fossil seems intermediate between *R. exhumata* and *R. mortua*; it may be known as *R. exhumata* var. *a.*

and it now seems probable that *R. mortua* is another variety of the same species.

The species problem among fossil insects is a difficult one. Handlirsch attempts to solve it by treating each distinguishable form as a distinct species; thus in *Contributions to Canadian Palaeontology*, Vol. II, part III (1910) he describes twenty species of the Bibionid genus *Penthetria* from the Tertiary rocks of British Columbia, although it is surely improbable that they are all specifically distinct. Such a plan has the advantage of separating and defining all the available structural types, but it must result in misleading statistics if carried far. It seems better to give specific names only to forms which are probably distinct, using the same criteria as are considered valid in the case of their nearest living allies, and to distinguish others as varieties, with either varietal names or letters of the alphabet.

Handlirsch, in the work just cited, has an interesting discussion of the fossil Raphidiidae, in which he proposes new generic names for two of the Florissant species. *Megaraphidia elegans*, *Raphidia exhumata* and *R. mortua* all agree in having the upper branch of the radial sector simple until it reaches the end, or nearly the end, of the cell in the fork of the sector; a condition very different from that found in the living *R. oblita* and *R. notata*. In the living *R. rhodopica*, however, the condition in this respect is as in the fossils. *R. rhodopica* differs conspicuously from the fossils in the much shorter lower side of the pterostigma. In the basal stalk of M-Cu *R. rhodopica* differs from the fossils, which herein agree with *R. oblita* and *R. notata*. The cross-vein descending from the lower side of the pterostigma is a character which separates the fossils from the recent species; in the latter the cross-vein is beyond the stigma, or in *R. rhodopica* descending from its end. All things considered, it seems impracticable to separate *R. exhumata* and *mortua* from *Raphidia*, and I am now doubtful whether *Megaraphidia* is more than a subgenus, although Handlirsch says it is "undoubtedly a well-founded genus."

## A new *Corizus* from the Northeastern United States (Hemip., Coreidae).

By J. R. DE LA TORRE BUENO, White Plains, New York.

On occasion, I have called attention to the neglected condition of the Hemiptera in the United States, and to the opportunities this group affords for discoveries of species new to science and much other original research work of great interest and importance. It is from time to time my good fortune to add my mite to the treasures of entomology and on this occasion I present a hitherto undescribed Coreid bug, of the genus *Corizus*. Last year, toward the end of September, I accompanied my good friend, Mr. G. P. Engelhardt, of the Children's Museum, of Brooklyn, N. Y., to Yaphank, in the central part of Long Island, in the pine woods. Here, in a sandy, grassy spot, by sweeping, I got a bug which at once struck me as unfamiliar, and which at first glance was taken for a species of *Nysius*, a Lygaeid.

I called Engelhardt's attention to it, and we were able to secure some fifteen or so specimens, mainly short-winged. A careful examination later showed that my field determination was erroneous, and further study at greater leisure confirmed the opinion already formed as to its being unknown to science. At first, following Hambleton's table, it appeared to run to *C. parvicornis* Sign., and superficially it somewhat resembles this species. Comparison with Mexican specimens of the latter in my collection, however, disposed of this notion and showed that it deserved a name of its own. Its extremely hairy character furnished the name under which I now describe it:

### *Corizus hirtus* n. sp.

Small and stout in general aspect; dark in color and clothed with long erect hairs; hemelytra nearly hyaline throughout with dark streaks on the nervures.

#### Dimensions:

Long-winged form: ♂ long, 4.3 mm.; lat., thorax 1.8 mm., abdomen, 1.9 mm.; ♀ long, 4. to 4.5 mm.; lat., thorax, 1.8 to 1.9 mm.; abdomen, 2 to 2.1 mm.

Short-winged form: ♂ long, 3.5 to 4. mm.; lat., thorax 1.4 to 1.6 mm., abdomen 1.6 to 1.8 mm.

♀ long, 3.9 to 4.4 mm.; lat., thorax 1.4 to 1.8 mm.; abdomen 2. to 2.3 mm.

*Head*.—Antenniferous tubercles absent or but slightly developed. Antennae short, shorter than head and thorax taken together; first segment reaching to or slightly surpassing apex of head. Head including eyes as broad as long. Eyes small and quite distant from the anterior angles of the prothorax, beyond which they extend, making head including eyes wider than the anterior part of pronotum. Antennal joint 1 shortest; 2 and 4 subequal; 3 longer than 1 but shorter than either 2 or 4; 4 fusiform and thickest; all sparsely, shortly pilose. Rostrum reaching beyond middle coxae.

*Pronotum*.—Variable in proportions, thickly punctured with large, coarse punctures and covered with long, erect hairs; anterior margin straight; posterior sinuate; humeral angles rounded, callous, prominent; sides sinuate.

Scutellum, about as long as head, rather broad and rounded at the tip margined by a raised border rather darker than the surface; deeply punctured. Metapleurae projecting noticeably and acutely beyond the abdomen in a free point directed posteriorly.

*Abdomen* wider than the prothorax; connexivum showing broadly beyond hemelytra, especially in the short-winged forms; hairy, especially at the margin.

*Hemelytra* in the winged form are slightly longer than the body but narrower than the abdomen. The short-winged are of varying degrees of length, in some instances not reaching the 4th, in others, the 6th abdominal segment, both corium and membrane being shortened in varying degrees, but neither wholly absent. Membrane hyaline; corium semi-transparent; nervures with dark markings.

Legs; thighs dark, tibiae lighter in color.

Described from 2 long-winged and 8 short-winged females and 1 long-winged and 3 short-winged males. Cotypes in my collection.

In Hambleton's Key\* it runs to section 5, which includes forms with scutellum broad and rounded at the tip, the species being *scutatus*, *tuberculatus* and *indentatus*, from all of which it may at once be separated by its smaller size and the absence of antenniferous tubercles. From *C. parvicornis* Sign. it is distinguished by the smaller scutellum, narrower prothorax, smaller head, thicker antennae, form of genital segments and absence of antenniferous tubercles.

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\*Ann. Ent. Soc. Am. I, No. 1, p. 135 (1908).

*Corizus hirtus* produces a general impression of darkness, especially as regards the upper surface, but it varies in color, a characteristic of the genus. Its hairiness betrays its psammophilous nature. It is the smallest of the four species of the genus so far recognized from the Northeastern United States, which may be easily separated by the following

KEY TO THE SPECIES OF CORIZUS OF THE MIDDLE STATES AND NEW ENGLAND.

1 (2). Metapleurae not sinuate posteriorly; posterior angle rounded, not projecting; without distinct sutures; antennae much longer than head and prothorax taken together; insect between 6. and 8.5 mm. long.

*crassicornis* Linné.

2 (1). Metapleurae posteriorly sinuate; posterior angle acute and produced backward; their surface divided by a transverse impression into 2 parts, the anterior coarsely punctuate, the posterior finely so or not at all.

3 (4). Rostrum long, reaching to or going beyond posterior coxae; antennal joint 2 shorter than 3 or 4; antennae shorter than head and prothorax taken together; connexivum nearly or quite unspotted; length, 5. to 6. mm.

*lateralis* Say.

4 (3). Rostrum not reaching posterior coxae; connexivum spotted, sometimes nearly entirely dark.

5 (6). Antennae, 3d joint shorter than 2 or 4; 4th longest; pronotum with a whitish median callous line, sometimes obscure, terminating in a small callous white spot at the transverse suture; length, 5. to 6. mm.

*bohemani* Sign.

6 (5). Antennae stout, 2d joint longest; 4th nearly as long and notably thickened, fusiform; 3d shorter than 2 or 4; pronotal median line absent; length 3.5 to 4.5 mm.

*hirtus* Bueno.

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### New Microlepidoptera.

By WM. BARNES M.D. & J. McDUNNOUGH, PH.D., Decatur, Illinois.

We have recently received a very interesting lot of Lepidoptera for determination from Mr. G. H. Field, captured in La Puerta Valley and around San Diego, California. Among them were several apparently new species of Microlepidoptera which we herewith describe; the types of these are in Coll.

Barnes, cotypes with Mr. G. H. Field. We might also mention that two specimens of our recently described Cossid, *Hypopta palmata*, were included, these being noticeably larger in size than our type specimens from Gila Co., Arizona.

#### PYRAUSTINAE.

##### *Noctuelia puertalis* sp. nov.

Primaries pale ochreous, heavily shaded with brown, especially in basal and terminal areas, leaving the median space as a broad paler band across the wings; faint traces of a dark basal line; t. a. line dark, rather diffuse inwardly, bent outward slightly below costa then straight to inner margin; t. p. line from costa three-fourths from base, strongly bent inward below cubital vein, slightly dentate on the veins; at the end of cell a prominent black discal lunule, the lower edge of which closely approaches the incurve of the t. p. line; the whole space beyond t. p. line may be heavily shaded with smoky brown or else there may be a paler narrow terminal space, defining a subterminal line by contrast with the brown subterminal area; when present the s. t. line is subparallel to t. p. line, bidentate opposite cell, the two teeth touching the outer margin and forming a W mark; fringes pale, cut with darker median line; secondaries smoky brown; beneath pale smoky with traces of a darker terminal band. Expanse 15 mm.

*Habitat*:—La Puerta Valley, Calif. (G. H. Field) (July 11th). 4 ♂ ♂.

Seems best referred to this genus owing to the rounded frontal prominence; it is a very slight species, rather like a miniature *Schinia* in appearance.

#### SCHOENOBIIINAE.

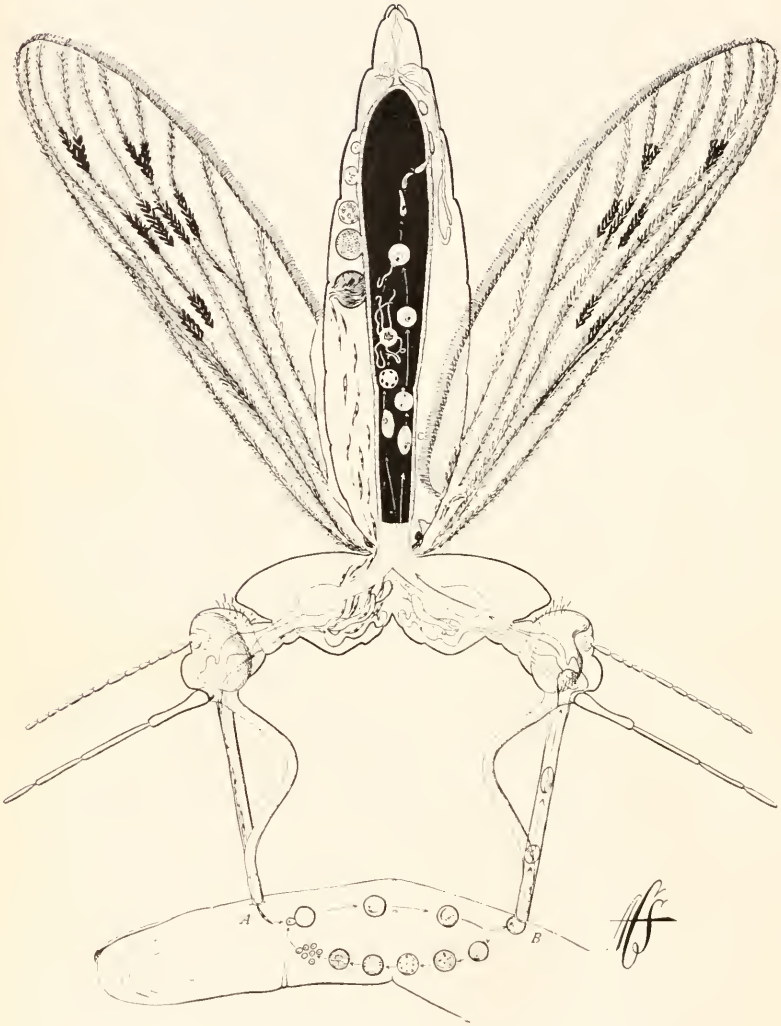
##### *Schoenobius pallulellus* sp. nov.

Palpi, head, thorax, and primaries very pale ochreous, slightly deeper in the male than in the female, immaculate; secondaries glossy white. Beneath as above, primaries of male faintly washed with smoky brown. Expanse ♂ 21 mm., ♀ 26 mm.

*Habitat*:—Puerta Valley, Calif. (G. H. Field) (July 11th). 1 ♂, 2 ♀ ♀.

As is usual in this genus the apices of the primaries are more drawn out and pointed in the ♀ than in the ♂.





LIFE CYCLE OF THE MALARIAL PARASITE—STRYKE.

## CRAMBINAE.

*Thaumatopsis fieldella* sp. nov.

♂. Antennae unipectinate; palpi, head and thorax light brown; primaries light ochreous suffused and sprinkled with smoky brown which at times is so extended as to render the whole wing almost unicolorous brown; basal half of costa rather broadly deep brown; a streak of the same color extends from the middle of the cell to the apex of the wing, heaviest and most prominent in the cell, where it is slightly shaded inferiorly with paler ochreous than the ground color of wing; beyond the cell the streak is diffuse and less distinct; from the end of the cell to the middle of inner margin an indistinct oblique brown line, only noticeable in the paler specimens; a distinct brown submarginal line outcurved below costa, with slight inward angle on vein  $Cu^2$ , minutely crenulate, shaded outwardly with pale ochreous, terminal row of minute black dots; fringes dusky. Secondaries smoky, paler at base and outer margin, with a faint dark, irregular, subterminal line. Beneath smoky brown, paler along inner margin of secondaries, costa of primaries at times slightly tinged towards apex with ochreous.

♀. Antennae simple; paler in color than ♂, rather bright ochreous-yellow without much dark shading; basal half of costa not shaded with brown; subterminal line orange-yellow; dark streak in cell as in ♂; secondaries whitish. Beneath primaries pale smoky, secondaries whitish. Expanse ♂ 25-31 mm., ♀ 31 mm.

*Habitat*:—San Diego, Calif. (G. H. Field) (June 6 & 16; July 17 & 27; Aug. 6 & 15). 5 ♂ ♂, 1 ♀.

In the dark forms the subterminal line and the streak in the cell are the most persistent of the markings.

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## The Life-Cycle of the Malarial Parasite.

Contributions from the Entomological Laboratory of Cornell University,  
Ithaca, New York.

By ANNA CLEGG STRYKE.

(Plate XII)

Entomological workers who have occasion to refer in more or less detail to the relation of mosquitoes to malaria usually find that students have difficulty in grasping the essential features of the complicated life-cycle of the malarial parasite. Taking the suggestion from Maxwell-Lefroy's diagram published in his manual of "Indian Insect Life," I have attempted

to represent graphically the main features of this life-cycle, as simply and accurately as possible.

It has seemed worth while to include more of the details and to represent the whole less diagrammatically than in the work cited. The nomenclature adopted is that of Schaudinn.

By means of the double-headed mosquito I have endeavored to show how the infection takes place through the biting of the human victim and how multiplication takes place asexually in the blood of that victim and sexually in the body of the mosquito which has bitten the malarial patient.

At "A" the spindle-shaped sporozoite is injected into the finger together with the salivary secretion of the mosquito. It develops into the pale amœboid schizont which enters the blood corpuscle, and developing there at the expense of the hæmoglobin, it deposits the characteristic melanin granules which are excretory in nature.

These developing parasites are of two kinds. Many of them having become crescent-shaped within the corpuscles may be sucked up by the mosquito biting the malarial patient as at "B." Others however are destined to increase their kind by sporulation in the blood of man. In these individuals the nucleus breaks up, the elements arranging themselves near the wall. Partitions begin to grow in from the wall until the nuclei are entirely separate from one another and finally the individual spores or merozoites are set free in the blood plasma by the disintegration of the corpuscle. Many of these are of course attacked and destroyed by the white corpuscles, but many enter healthy red corpuscles and repeat the entire process or develop into the type which, if swallowed by the mosquito) begin a new development in the stomach of the insect at "C."

The crescents are the gametes. They leave the corpuscles, become spherical in form and develop into either microgametoblasts (male) or macrogametes (female). In the latter case a small round body (perhaps a "polar" body) is extruded and finally thrown off so that at this stage the mature macrogamete is ready for fertilization. In the case of the micro-

gametoblast the nucleus divides into a number of parts (the number depending on the species of parasite) which arrange themselves near the wall, and from each of which is developed a flagellate microgamete. These are freed from the resting cell and being motile may find a macrogamete which one of them enters and fertilizes. The fertilized macrogamete now becomes elongate and ovoid and is termed the oökinete, or wandering cell. It penetrates the wall of the stomach, and, passing through the epithelium, it encysts just under the basement membrane. These cysts occur mostly on the posterior two-thirds of the dilated part of the stomach. The resting cell or oöcyst increases greatly in size as by nuclear division it produces many sporoblasts which in turn develop into sporozoites. When completely matured the cyst bursts liberating the sporozoites in the body cavity of the mosquito.

They are carried around in the blood currents, and, penetrating the salivary gland, surround the central canal down which they finally pass with the salivary secretion. The mosquito in biting its victim, injects them into the blood and the life-cycle is complete.

The nature of the diagram necessitates inaccuracies in structure such as for example the exaggerated length of the dilated portion of the stomach. On the other hand since not all mosquitoes are capable of transmitting the parasite, I have included such characteristics of *Anopheles*, the malarial bearing mosquito, as could be placed in such a diagrammatic representation.

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A STATION FOR INSTRUCTION AND RESEARCH IN BIOLOGY will be maintained by the University of Michigan from July 2 to August 23 inclusive, 1912, near the Bogardus Engineering Camp of the University on a tract of land stretching from Douglas Lake to Burt Lake in Cheboygan County, Michigan. Since the number of students that can be accommodated is limited, immediate registration is necessary to insure admission and no registration will be accepted if received after June 1st. Applications for admission should be addressed to Professor T. E. Rankin, Secretary of the Summer Session, Ann Arbor, Mich. Among the courses offered is one on the Natural History of Insects by Professor Frank Smith and Mr. Paul S. Welch, of the University of Illinois.

# ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

TO CONTRIBUTORS.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, four weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form and without covers, will be given free, when they are wanted; if more than twenty-five copies are desired, this should be stated on the MS. The receipt of all papers will be acknowledged. Proof will be sent to authors for correction only when specially requested.—Ed.

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PHILADELPHIA, PA., MAY, 1912.

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## Strict Priority in Nomenclature—or Not?

The editorial on this subject in the NEWS for March, page 128, having brought responses, some of which were printed in our issue for April, page 181, it is proposed to comment here on Mr. Caudell's statement (*l. c.*, page 181) for the case of the strict priorists.

It must be said first that the Editor assumes entire responsibility for that which follows.

The following propositions appear fundamental:

I. Nomenclature is a means, not an end; a means whereby we attempt to designate certain objects of study.

II. The names of animals and of plants are not for the systematist or taxonomist only; they are for the anatomist, the physiologist, the ecologist, the student of habits, of behavior, of distribution, of phylogeny, as well. Their right to use these names is as great as the systematist's.

III. A stable nomenclature is desirable on account of all of these kinds of students.

We maintain also that the "Law" of priority has not given the stability it was expected to give, that recent experience leads one to think that many names, now apparently of earliest date, are quite likely to be rejected as the result of further antiquarian research tomorrow or the day after.

Mr. Caudell implies that it is the desire to retain a long-used, but not prior, name in his own specialty by a taxonomist that impels the latter to vote *against* strict priority in all cases. We urge that it is not the desires of the taxonomic specialists that should be given the chief weight. Every specialist can keep in touch, at least to a great extent, with the nomenclatural changes in his own group. Those who can not and ought not, be compelled to submit to these changes are those who, whether taxonomists or not, are not specialists in the nomenclature of all the subdivisions of the animal kingdom but who, as morphologists, physiologists or laborers in other fields, make constant comparisons between members of different groups of animals. Too much has already been done in these non-taxonomic fields to bury the results under unfamiliar names simply because they are of prior date.

Mr. Caudell also implies that priority, because based on codified laws and rules, is certain of more unanimous consent than any proposal to retain certain long-established and much-used, but not prior, names. This we deny. The attitudes of recent authors in the Diptera, in the Lepidoptera, in the Odonata (to quote no others), show that many students have not accepted the prior names and therefore not accepted the principle of priority. Both the priority principle and the principle of *nomina conservanda* appeal to the common sense and unanimous consent of naturalists and the former has no more certain footing than the latter.

Finally Mr. Caudell implies that the discussion on the *nomina conservanda* question in the recent Washington meeting of the Entomological Society of America was sufficient. This, too, we must deny. The discussion came before the program of papers was finished. To have prolonged it would have deprived more contributors of the opportunity to read their papers than was actually the case. Even as it was, several withdrew on account of the lack of time. We have already expressed our views on this feature of the Society's meetings.\* Because the discussion on the *nomina conservanda* question there was not sufficient, and because of the approaching Congress of Entomology at Oxford, we have opened the pages of the NEWS to its further consideration.

In this number of the NEWS we publish a list of Generic Names in Diptera for inclusion in the Official List of Generic Names of the International Zoological Commission. If these lists, after adoption by the Commission, could be made definitive by that body, so that none of the included names should be disturbed by the results of any future antiquarian research, a long step would be made toward stability and conservation in nomenclature.

We invite further votes on the alternative questions proposed in our March editorial.

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\* Ent. News, November, 1911, p. 418; February, 1912, p. 79.

## Notes and News

### ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

STRICT PRIORITY IN NOMENCLATURE—OR NOT?—With regard to the *nomina conservanda*, I should at present only be willing to vote to keep the matter open. I think something will have to be done to preserve us from disastrous nomenclatural changes, but it should be done with care and deliberation and particularly with the knowledge and consent of zoologists generally. I object very much to a recent ruling of the committee on genera without species (last part of opinion 46, also last half of summary), and venture to think that it is contrary to the spirit of the International Rules and to common sense. It is this sort of thing which increases our difficulties, and will eventually convert people to the plan of purely arbitrary selections of *nomina conservanda*.

At the present time I think it is important to get every zoologist to think seriously about these matters, and as many as possible to ascertain precisely what will be the effect of particular rules or rulings on their own special groups. I do not see how, under any circumstances, we could allow two generic names, spelled alike in zoology; but I think a difference of one letter should suffice to prevent homonymy.—THEO. D. A. COCKERELL.

While signing the protest against the strict application of the law of priority, I do so with the provision that any general concurrence in such an opinion should not be accepted as a license for every zoologist to adopt any names that he chooses. I believe that the rules of nomenclature involving the law of priority should be operative in the future in all cases, and in the past in the majority of cases. I believe that no individual should be sanctioned in taking it upon himself to waive them, but that in specific cases where clearly greater convenience will result from setting them aside, that this should be done by a centrally organized and authorized body, presumably the Commission on Zoological Nomenclature. I thoroughly believe that such a body should work toward the compilation of a list of *nomina conservanda*, and that the names of such a list, once adopted, should *never* be open to future change on nomenclatorial grounds.

As far as working justice to the older authors, our present laws are at best *ex post facto*, and are not more likely to effect a real justice than would a list of *nomina conservanda*. But the latter would accomplish a greater debt of justice to future generations, to whom it is more due. It is they, and not the past, who must suffer from our shortcomings. I believe in rules, I believe in laws, but I emphatically believe in their limitations, and to bind ourselves by rules for the

rules' sake after they become an encumbrance and a limitation to endeavor is to merit ridicule.

There is no *a priori* value in the law of priority. It is a means to secure the end of a uniform and stable usage. Use it in so far as it is the best means, but not one step beyond. Yet in many recent applications—comparatively few in number, yet revolutionary in result—it works the opposite way.

There has been no little criticism of the mode of organization of the International Commission on Zoological Nomenclature. It must be conceded that at any International Congress local representation will far outnumber, and will likely outweigh in voting, that from more distant quarters. In a question which so vitally concerns all naturalists as the *names* of animals, adequate provision should be made to secure a consensus of the opinion of all zoologists.

This could be accomplished by having all fundamental questions, and perhaps the election of members of the commission, referred to the zoologists of the world by mail. There would be expense attached to this, but the list could be restricted to those who were willing to pay their share of the cost of such communications, which need not be large, perhaps a dollar a year. Certainly any one who was vitally interested in the nomenclature of zoology would welcome the opportunity of voting upon questions affecting it, and of bearing the necessary expense of obtaining the opportunity, and would feel much more inclined to accept decisions reached in that way than those reached by a Commission in the appointment of which he has had no word. Excellent and logical as many of the opinions of the International Commission on Nomenclature may be, I voice the sentiments of many when I say that they would be far more generally acceptable if they were known to represent a consensus of opinion, rather than that of four or five and especially of one man. A list of *nomina conservanda* voted on and accepted by a majority of the working zoologists of the world would not be ignored by subsequent writers, nor would we ever have to fear subsequent alteration or rejection.—J. CHESTER BRADLEY.

We fully concur in the above statement.—H. D. REED, A. H. WRIGHT, ROBERT MATHESON, G. C. EMBODY, WM. A. RILEY, GLENN W. HERRICK.

The Executive Committee of the German Zoological Society has requested all German zoologists to notify the Secretary of the Society, Prof. Dr. A. Brauer, Berlin, on or before March 15, whether, like the 120 Scandinavian and Finnish investigators, they are against the strict application of the law of priority in all cases and desire that the most important and generally-used names shall be protected against any alteration, or whether they favor, as two Scandinavians did, the strict application of the law of priority in all cases. The result of the vote

will be published in the *Zoologischer Anzeiger*. If the majority favors the first of these propositions, the matter will be brought before the Halle meeting of the Society, May 27-30, 1912, and put in execution as far as possible.

Prof. F. E. Schulze proposes to submit a proposition to the International Nomenclature Commission to be reported to the International Zoological Congress of 1913 to the effect that since some zoologists wish no alteration of long-used generic names, while others prefer the oldest available names, both parties can be met for the present by writing first the oldest justifiable generic name, followed by the long-used later name preceded by the sign of equality and enclosed in parentheses, thus: *Sphenodon* (=Hatteria); *Fasciola* (=Distomum) *hepatica*; *Molge* (=Triton) *alpestris*. (*Zool. Anzeig.*, Feb. 27, 1912.)

This procedure, according to R. Hartmeyer (*l. c.*, p. 336) has been used for several years by specialists in the Ascidiæ, except that square brackets without the sign of equality have been used instead of the parentheses, etc., in order to avoid confusion with the use of a name of lower taxonomic rank, as subgenus, *e. g.*, in parentheses after a generic name.

Prof. Fr. Dahl in an article on "The value of definitively established Rules of Nomenclature" (in German) argues for the preservation of the rules as adopted at the International Zoological Congress of Berlin without any later modifications or exceptions. (*Zool. Anzeig.* Feb. 27, 1912, pp. 205-209.)

A NEW GENERIC NAME FOR CALLOSAMIA CALLETA (WESTWOOD).—In the course of preparing for the press the manuscript on Saturniidae left by Dr. A. S. Packard, it has become evident that *Callosamia calleta* stands quite apart from the typical members of the genus (*promethea* and *angulifera*), and should surely form a distinct genus, to which the name *Eupackardia* may be applied: type *Eupackardia calleta* (Westwood). Dr. H. G. Dyar, to whom I am indebted for some advice in the matter, does not know of any other species which should go with *calleta*. The *calleta* moth differs in venation and markings from *Callosamia*, as Dr. Packard's manuscript fully indicates; but more especially the species differs in the larva, the characters being described by Packard in *Proc. American Acad.*, xxxix (1904), pp. 547-551, and beautifully illustrated by colored plates prepared for the forthcoming volumes.—T. D. A. COCKERELL.

FOSSIL COCKROACHES FROM TEXAS. (ORTHOP.)—In Publication 146 of the Carnegie Institution of Washington, issued December 20th, 1911, Professor E. H. Sellards has an interesting account of two new cockroaches, *Etoblattina texana* and *Etoblattina* (?) *robusta*, from the Permian of Texas. The specimens were obtained by Professor E. C. Case, but unfortunately nothing is said of the exact locality. I am

indebted to Professor Case for the information that the specimens were found a few miles almost directly south of the town of Dundee (Archer County), on the banks of the Little Wichita. It seems desirable to record this information, so that the type-locality of the two species can be properly cited.—T. D. A. COCKERELL.

FOURTH LIST OF GENERIC NAMES FOR THE "OFFICIAL LIST OF ZOOLOGICAL NAMES," PROVIDED FOR BY THE GRAZ CONGRESS.—15. \*The following generic names of Diptera are proposed for *inclusion* in the "Official List of Generic Names." The species mentioned are the correct types, according to Coquillett, 1910.

*Anopheles* Meig., 1818, 10, type *bifurcatus*.

*Anthomyia* Meig., 1803, 281, type *Musca pluvialis*.

*Chrysops* Meig., 1800, 23, type *caccutiens*.

*Corethra* Meig., 1803, 260, type *Tipula culiciformis*.

*Culex* Linn., 1758a, 602, type *pipiens*.

*Cuterebra* Clark, 1815, 70, type *Oestrus cuniculi*.

*Gasterophilus* Leach, 1817, 2, type *Oestrus intestinalis* (cf. *Oe. equi*.)

*Haematobia* St. Farg. & Serv., 1828, 499, type *Conops irritans*.

*Hippelates* Loew, 1863, 36, type *plcbejus*.

*Hippobosca* Linn., 1758a, 607, type *equina*.

*Hypoderma* Latr., 1818, 272, type *Oestrus bovis*.

*Lucilia* Desv., 1830, 452, type *Musca caesar*.

*Musca* Linn., 1758a, 589, type *domestica*.

*Muscina* Desv., 1830, 406, type *stabulans*.

*Nycteribia* Latr., 1796, 176, type *Pediculus vespertilionis*.

*Oestrus* Linn., 1758a, 584, type *ovis*.

*Ophyra* Desv., 1830, 516, type *Anthomyia leucostoma*.

*Phora* Latr., 1796, 169, type *Musca aterrima*.

*Piophilha* Fall., 1810, 20, type *Musca casei*.

*Psorophora* Desv., 1827, 412, type *Culex ciliatus*.

*Sarcophaga* Meig., 1826, 14, type *Musca carnaria*.

*Stegomyia* Theob., 1901, 234, type *Culex calopus*.

*Stomoxys* Geoffr., 1762, 538, type *Conops calcitrans*.

*Tabanus* Linn., 1758a, 601, type *bovinus*.

*Tipula* Linn., 1758a, 585, type *oleracea*.

16. The following generic names of Diptera are proposed for *exclusion* from the "Official List," on the ground that they are absolute homonyms and preoccupied.

*Acanthina* Wiedem., 1830, not Fisch., 1806.

*Allocotus* Loew, 1872, not Mayr, 1864.

*Ammobates* Stann., 1831, not Latr., 1809.

*Anepsius* Loew, 1857, not LeC., 1852.

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\*Paragraphs are numbered continuously with the earlier lists.

- Anoplomercus* Rond., 1856, not Latr., 1844.  
*Archilestes* Schin., 1866, not Selys, 1862.  
*Ascia* Meig., 1822, not Scop., 1777.  
*Aspilota* Loew, 1873, not Færst., 1862.  
*Asthenia* Westw., 1842, not Hübn., 1816.  
*Astoma* Lioy, 1864, not Oken, 1815.  
*Atomaria* Bigot, 1854, not Steph., 1830.  
*Atrichia* Loew, 1866, not Schrank, 1803.  
*Blacodes* Loew, 1874, not Dej., 1859.  
*Blax* Loew, 1872, not Thom., 1860.  
*Brachygaster* Meig., 1826, not Leach, 1817.  
*Callopietria* Loew, 1873, not Hübn., 1816.  
*Centor* Loew, 1866, not Schönh., 1847.  
*Ceria* Fabr., 1794, not Scop., 1763.  
*Chauna* Loew, 1847, not Illig., 1811.  
*Chrysonotus* Loew, 1855, not Swains., 1837.  
*Clytia* Desv., 1830, not Lam., 1812.  
*Coprina* Zetters., 1837, not Desv., 1830.  
*Caquillettia* Willist., 1896, not Uhler, 1890.  
*Cyrtosoma* Brauer & Bergens., 1891, not Walk., 1829.  
*Dendrophila* Lioy, 1864, not Swains., 1837.  
*Diabasis* Macq., 1834, not Hoffmanns., 1819.  
*Diphysa* Macq., 1838, not Blainv., 1834.  
*Discocephala* Macq., 1838, not Lap., 1832.  
*Empheria* Winn., 1863, not Hag., 1856.  
*Enicopus* Walk., 1833, not Steph., 1830.  
*Erichsonia* Desv., 1863, not Westw., 1849.  
*Eriogaster* Macq., 1838, not Germ., 1811.  
*Eristicus* Loew, 1848, not Wesm., 1844.  
*Eudora* Desv., 1863, not Less., 1809.  
*Eumetopia* Macq., 1847, not Westw., 1837.  
*Eumetopia* Brauer & Bergenst., 1889, not Westw., 1837.  
*Euphoria* Desv., 1863, not Burm., 1842.  
*Eurycephala* Röd., 1881, not Lap., 1833.  
*Exocheila* Rond., 1868, not Rond., 1857.  
*Fabricia* Meig., 1838, not Blainv., 1828.  
*Fallenia* Meig., 1838, not Meig., 1820.  
*Grassia* Theob., 1902, not Fisch, 1885.  
*Halithca* Hal., 1838, not Sav., 1817.  
*Helobia* St. Farg. & Serv., 1828, not Steph., 1827.  
*Heteroneura* Fall., 1823, not Fall., 1810.  
*Hcterostoma* Rond., 1856, not Hart., 1843.  
*Himantastoma* Loew, 1863, not Ag., 1862.  
*Hydrachus* Fall., 1823, not Germ., 1817.

- Hyria* Desv., 1863, not Lam., 1819.  
*Icaria* Schin., 1868, not Sauss., 1853.  
*Idiotype* Loew, 1873, not Först., 1856.  
*Isoglossa* Coq., 1895, not Casey, 1893.  
*Itamus* Loew, 1849, not Schm.-Goeb., 1846.  
*Latreillia* Desv., 1830, not Roux, 1827.  
*Laverania* Theob., 1902, not Grassi & Fel., 1890.  
*Leptochilus* Loew, 1872, not Sauss., 1852.  
*Leptopus* Fall., 1823, not Latr., 1809.  
*Leptopus* Hal., 1831, not Latr., 1809.  
*Lissa* Meig., 1826, not Leach, 1815.  
*Lophonotus* Macq., 1838, not Steph., 1829.  
*Macrochira* Zettlers, 1838, not Meig., 1803.  
*Macrurus* Lioy, 1864, not Bonap., 1841.  
*Meckelia* Desv., 1830, not Leuck., 1828.  
*Microcera* Zettlers., 1838, not Meig., 1803.  
*Mochtherus* Loew, 1849, not Schm.-Goeb., 1846.  
*Mycetina* Rond., 1856, not Muls., 1846.  
*Myobia* Desv., 1830, not Heyd., 1826.  
*Odontocera* Macq., 1835, not Serv., 1833.  
*Okenia* Zettlers., 1838, not Leuck., 1826.  
*Omalcephala* Macq., 1843, not Spin., 1839.  
*Pales* Desv., 1830, not Meig., 1800.  
*Panoplites* Theob., 1900, not Gould, 1853.  
*Phoneus* Macq., 1838, not Kaup, 1829.  
*Plagiocera* Macq., 1842, not Klug, 1834.  
*Plagiotoma* Loew, 1873, not Clap. & Lachm., 1858.  
*Plectropus* Hal., 1831, not Kirby, 1826.  
*Polydonta* Macq., 1850, not Fisch., 1807.  
*Psilopus* Meig., 1824, not Poli, 1795.  
*Pygostolus* Loew, 1866, not Hal., 1833.  
*Rhopalomyia* Willist., 1895, not Rübsaam., 1892.  
*Roeselia* Desv., 1830, not Hübn., 1816.  
*Rondania* Jænn., 1867, not Desv., 1850.  
*Sargus* Fabr., 1798, not Walb., 1792.  
*Sicus* Latr., 1796, not Scop., 1763.  
*Stenomacra* Loew, 1873, not Stal, 1870.  
*Stictocephala* Loew, 1873, not Stal, 1869.  
*Subula* Meig., 1820, not Schum., 1817.  
*Tetrachaeta* Brauer & Bergenst., 1894, not Ehrenb., 1844.  
*Tetrachaeta* Stein, 1898, not Ehrenb., 1844.  
*Trichoptera* Lioy, 1864, not Meig., 1803.  
*Triodonta* Willist., 1885, not Bory, 1824.  
*Trupanea* Macq., 1838, not Schrank, 1795.

*Wulpia* Brauer & Bergenst., 1893, not Eigt, 1886.

17. These names are published herewith for the information of all persons interested. They will be forwarded by July 1st, 1912, to the International Commission on Zoological Nomenclature, the Commission on Nomenclature of the International Entomological Congress, and to several Entomological Committees and Societies.

18. A vote will be called on these names at the next meeting of the International Commission on Zoological Nomenclature, in the summer of 1913, and any objection to the proposed action should be filed with the undersigned, and stating ground for the objection, not later than May 1, 1913.

C. W. STILES, *Secretary International Commission on Zoological Nomenclature, Hygienic Laboratory, Washington, D. C.*

A NEW NAME IN ORTHOPTERA.—Mr. A. N. Caudell has called to our attention the fact that the name *Ceratites*, proposed by us for a subgenus of walkingsticks (Proc. Acad. Nat. Sci., Phila., 1909, p. 126), is preoccupied. We find *Ceratites* proposed by de Haan (Monogr. Ammonit. et Goniatit., p. 156, 1825), in Mollusca. To replace the preoccupied name we propose *Rhabdoceratites* (*ραβδος* a rod, *κερατιτης* one that has horns).—JAMES A. G. REHN and MORGAN HEBARD.

AN ENTOMOLOGICAL EXCHANGE.—According to the European style some entomologists of Massachusetts have opened an "Entomological Exchange." This method, now in use for more than 25 years in Europe, has proven to be very satisfactory and we have the sincere hope that such an "Exchange" in America will bring in closer touch the collectors and entomologists of both hemispheres. While I am the curator of the "Exchange," Mr. Rudolph C. B. Bartsch is the secretary. I shall send you later the regulations of the "Exchange."—WILLIAM REIFF, Entomologist of the Massachusetts Gypsy Moth Com., 67 Hampstead Road, Forest Hills, Mass.

[An announcement of this project will be found in the Exchange column at the back of this number.—ED.]

HERMAN H. BREHME, Assistant to the late Professor John B. Smith, has been appointed Acting Executive Officer in charge of the Mosquito Extermination Work at the New Jersey Agricultural Experiment Station, New Brunswick, New Jersey.

TYPES OF XIPHIDIUM SPARTINAE AND NIGROPLEUROIDES (ORTHOP.).—Following a suggestion made to me by Mr. Rehn, I have selected as types of the two species of *Xiphidium* described by me in the March number of this journal (Vol. XXIII, p. 111, seq.), a female of each species from Ocean View, Cape May County, N. J., taken in August, 1911, and have donated them to the collection of the Academy of Natural Sciences of Philadelphia.—HENRY FOX, Collegeville, Pa.

## Entomological Literature.

COMPILED BY E. T. CRESSON, JR., AND J. A. G. REHN.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), excluding Arachnida and Myriapoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species, will be recorded. The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published, and are all dated the current year unless otherwise noted. This (\*) following a record, denotes that the paper in question contains description of a new North American form.

For record of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington.

4—The Canadian Entomologist. 5—Psyche, Cambridge, Mass. 8—The Entomologist's Monthly Magazine, London. 9—The Entomologist, London. 10—Nature, London. 11—Annals and Magazine of Natural History, London. 22—Zoologischer Anzeiger, Leipzig. 35—Annales, Societe Entomologique de Belgique. 47—The Zoologist, London. 49—Annales historico-naturales Musei Nationalis Hungarici, Budapest. 50—Proceedings, U. S. National Museum. 84—Entomologische Rundschau. 89—Zoologische Jahrbucher, Jena. 97—Zeitschrift fur wissenschaftliche Zoologie, Leipzig. 102—Proceedings, Entomological Society of Washington. 143—Ohio Naturalist. 152—California Agricultural Experiment Station, Berkeley. 166—Internationale Entomologische Zeitschrift, Guben. 184—Journal of Experimental Zoology, Philadelphia. 186—Journal of Economic Biology, London. 189—Pomona Journal of Entomology, Claremont, Cal. 198—Biological Bulletin, Marine Biological Laboratory, Woods Hole, Mass. 216—Entomologische Zeitschrift, Stuttgart. 240—Maine Agricultural Experiment Station, Orono. 265—Proceedings, Delaware County Institute of Science, Media, Pa. 291—Proceedings, Staten Island Association of Arts and Sciences, Lancaster, Pa. 302—Mitteilungen, Naturwissenschaftlichen Vereins an der Universitat Wien. 303—Entomologische Meddelelser, udgivne af Entomologisk Forening, Copenhagen. 304—Annals, Carnegie Museum. 324—Journal of Animal Behavior, Cambridge, Mass. 335—Smithsonian Miscellaneous Collection. 346—Fauna Exotica. Mitteilungen aus dem Gebiete der exotischen Insektenwelt, Frankfurt am Main. 368—The Monthly Bulletin of the State Commission of Horticulture, Sacramento, Cal. 369—Entomologische Mitteilungen, Berlin-Dahlen. 374—Sitzungsberichte der mathematisch-physikalischen Klasse der K. B. Akademie der Wissenschaften zu Munchen.

**GENERAL SUBJECTS.** Britton, W. E.—Eleventh report of the state entomologist of the Connecticut Agricultural Experiment Sta-

tion, New Haven, Conn., 259-346 pp. **Dahl, Fr.**—Der wert endguel-tig fixierter nomenklaturregeln, **22**, xxxix, 205-209. **Davis, W. T.**—Miscellaneous observations on the natural history of Long Island, N. Y., **291**, iii, 113-115. **Muller, G. W.**—Der enddarm einiger insect-entarven als bewegungsorgan, **89**, Suppl. xv, i, 219-240. **Omen-setter, S.**—The speech of insects, **265**, vi, 121-136. **Seidlitz, G.**—Ein wort zur rechten zeit. (Ueber entomologische jahresberichte.) **369**, i, 65-67.

**APTERA AND NEUROPTERA.** **Bagnall & Hall**—Records of some bird-lice (Mallophaga), **1**, **186**, vii, 5-9. **Crawford, D. L.**—A note on certain Psyllidae, **189**, iv, 684. **Patch, E. M.**—Notes on Psyllidae: "Livia," **5**, xix, 5-8 (\*). **von Rosen, K.**—Neue Termiten aus der zoologischen staatssammlung in Munchen sowie einigen anderen sammlungen, **22**, xxxix, 221-232. **Thienemann, A.**—"Rhyacophila laevis," eine fur Deutschland neue Rocherfliege und ihre metamorphose, **216**, xxv, 250-251 (cont.). **Wodsedalek, J. E.**—Palm-en's organ and its function in nymphs of Ephemeridae, "Hepta-genia interpunctata" and "Ecdyurus maculipennis," **198**, xxii, 253-272.

**ORTHOPTERA.** **Bruner, L.**—South American Acridoidea, **304**, viii, 5-147. **Caudell, A. N.**—A new Proscopiid grasshopper from Peru, **5**, xix, 12-13. **Szymanski, J. S.**—Modification of the innate behavior of cockroaches, **324**, ii, 81-90.

**HEMIPTERA.** **Cockerell, T. D. A.**—The oldest American Hom-opterous insect, **4**, 1912, 93-95 (\*). **Butler, E. A.**—Stridulation in British Reduviidae, **8**, 1912, 65. **Davis, W. T.**—A new species of "Pselliopus (Milyas)," **5**, xix, 20-21 (\*). The Seventeen-Year Cicada on Staten Island between the years 1894-1911, **291**, iii, 120-122. **Es-sig, E. O.**—Plant lice affecting citrus trees, **368**, i, 115-135. **Horvath, G.**—Miscellanea Hemipterologica, **49**, ix, 423-435. **Quayle, H. J.**—The purple scale (*Lepidosaphes beckii*), **152**, Bull. No. 226.

**LEPIDOPTERA.** **Barnes & McDunnough.**—On the early stages of certain Geometrid species, **5**, xix, 14-20. **Van Bemmelen, J. F.**—Ueber die phylogenie der flugelzeichnung bei tagschmetterlingen, **89**, Suppl. xv, i, 453-478. **Busck, A.**—A new Microlepidopter of the genus "Epicallima" from Pennsylvania, **102**, xiv, 44 (\*). Descriptions of n. g. and sp. of Microlepidoptera from Panama, **335**, lix, No. 4, 10 pp. **Cook, A. J.**—California peach borer (*Sanninoidea opallescens*), **368**, i, 111-113. **Draudt, M.**—Eine neue *Taygetis* aus Mexiko, **346**, i, 61-62. **Dyar, H. G.**—Descriptions of n. sp and genera of *L.* chiefly from Mexico, **50**, xlii, 36-106 (\*). Descriptions of the larvae of some Lepidoptera from Mexico, **102**, xiv, 54-58. **Fruhstorfer, H.**—Eine neue Morphid. Neue *Satyriden* des neotropischen gebiets aus der sammlung Staudinger, **84**, xxix, 31. **de Hennin, G.**—Notes biologiques sur la chenille de "*Hiloicus pinastri*," **84**, xxix,

38. **Hoffmann, F.**—Zur biologie der "Cheimatobia brumata," 216, xxv, 261. **Littlewood, F.**—The early stages of "Eustroma reticulata," 9, 1912, 85-89. **Longstaff, G. B.**—Butterfly-hunting in many lands. Notes of a field naturalist; to which are added translations of papers by F. Muller on the scent-organs of butterflies and moths, Longmans, Green & Co., 1912, 728 pp. **Meyrick, E.**—On the generic name "Rhyacionia," 9, 1912, 89-90. **Mitterberger, K.**—Zur biologie von "Depressaria pelasis," 84, xxix, 25-27. **Rau, P. & N.**—Longevity in Saturnid moths; an experimental study, 184, xii, 179-204. **Schaus, W.**—New species of Heterocera from Costa Rica, XIV, 11, ix, 289-311. A new Megalopygid from French Guiana, 102, xiv, 53. **Schrader, W.**—Inbreeding of "Junonia coenia" under high temperatures through 26 successive generations, 189, iv, 673-677. **Strand, E.**—Funf neue exotische Heterocera, 346, i, 41-44. Was sind "Agaristidae"? 346, i, 57. **Weymer, G.**—Grossschmetterlinge der Erd. Fauna Americana, 241-248. **Zukowsky, B.**—Sammeltage im Herbst und Winter, 166, v, 345-346.

**DIPTERA.** **Brues, C. T.**—New D. of the family Phoridae from Paraguay, 49, ix, 436-442. **Busck, A.**—On the rearing of a "Dermatobia hominis," 102, xiv, 9-11. **Enderlein, G.**—Studien ueber die Tipuliden, Limoniiden, Cylindrotomiden und Psychopteriden, 89, xxxii, 1-88. Zur kenntnis aussereuropaischer Dolichopodiden. I. Tribus Psilopodini, 89, Suppl. xv, i, 367-408. **Johannsen, O. A.**—The Mycetophilidae of North America. Part III. The Mycetophilinae, 240, Bull. No. 196, 249-326 (\*). **Johnson, C. W.**—New North American D., 5, xix, 1-5 (\*). **Kepner, W. A.**—The larva of a Sarcophaga, a parasite of Cistudo carolina and the histology of its respiratory apparatus, 198, xxii, 163-172. **Krober, O.**—Die Thereviden Sud- und Mittelamerikas, 49, ix, 475-529. **de Meijere, J. C. H.**—Ueber die metamorphose von Puliciphora und ueber neue arten der gattungen "Puliciphora" und "Chonocephalus," 89, Suppl. xv, i, 140-154. **Metcalf, C. L.**—Life-histories of Syrphidae, III. "Syrphus americanus," 143, xii, 477-489. **Michl, E.**—Ueber termitophile Dipteren, 302, ix, 53-60. **Pflugstaedt, H.**—Die halteren der Dipteren, 97, c, 1-59. **Schulze, P.**—Entwicklung von "Drosophila rubrostriata" in formol; ein beitrag zur kenntnis der lebenweise der Drosophilalarven, 22, xxxix, 199-202. **Townsend, C. H. T.**—A readjustment of Muscoid names, 10., xiv, 45-53. **Walton, W. R.**—Notes on certain species of flies, 102, xiv, 13-14.

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**K.**—Die sehorgane der larve und imago von "Dytiscus marginalis," **97**, c, 60-115. **Henriksen, K. L.**—Oversigt over de danske Elateride-larver, **303**, 1911, 225-252. **Junk, W.**—Die Coleopterologische literatur. Bibliographia Coleopterologica. **Kerremans, C.**—Monographie des Buprestides V, Livr. 21. **Kraus, E. J.**—A revision of the genus "Lasconotus," **102**, xiv, 25-44 (\*). **McDermott, F. A.**—The light-emission of American Lampyridae: notes and corrections on former papers, **4**, 1912, 73. **Olivier, E.**—Lampyrides faisant partie des collections du Musee de Washington, **35**, lvi, 24-27 (\*). **Pierce, W. D.**—Systematic notes and descriptions of some weevils of economic or biological importance, **50**, xlii, 155-170 (\*).

**HYMENOPTERA.** **Forel, A.**—Formicides neotropiques, **35**, lvi, 28-49. Die ameisen des K. Zoologischen Museums in Munchen, **374**, 1911, 249-303. **Friese und Wagner.**—Zoologische studien an hummeln, **89**, Suppl. xv, i, 155-210. **Gahan, A. B.**—Descriptions of two n. g. and six n. sp. of parasitic Hymenoptera, **102**, xlv, 2-8 (\*). **Girault, A. A.**—On the occurrence of a European species of Mymaridae in North America, **4**, 1912, 88-89. A n. sp. of the mymarid genus "Polynema" from British Columbia, **102**, xiv, 23-24 (\*). **Mace, H.**—The influence of weather on bees, **10**, lxxxix, 62-65. **Mocsary, A.**—Species Chrysididarum novae, **49**, ix, 443-474. **Sladen, F. W. L.**—How pollen is collected by the honey-bee, **10**, 1912, 586-587. **Viereck, H. L.**—Descriptions of five n. g. and 26 n. sp. of Ichneumonidae, **50**, xlii, 139-153 (\*). New genus and species of Hy. of the family Braconidae from Panama, **335**, lix, No. 5, 2 pp.

**BUTTERFLY HUNTING IN MANY LANDS.** Notes by a Field Naturalist. By George B. Longstaff, M. A., M. D., Oxon; F. R. C. P., F. S. A., F. G. S. Late Vice-Pres. Roy. Stat. Soc. Late Vice-Pres. Ent. Soc. Lond., Hon. Memb. Ent. Soc. Lanc. and Ches. Author "Studies in Statistics." To which are added Translations of papers by Fritz Müller on the Scent-organs of Butterflies and Moths; with a note by E. B. Poulton, D.Sc., F. R. S. 728 pages, sixteen plates, seven colored. Longmans, Green & Co., 39 Paternoster Row, London; New York, Bombay, and Calcutta. Price \$7.00 net.

The author had given to him a copy of "World of Insects," bearing the inscription "To a young Entomologist from an old one, William Spence, October 7, 1858." and he says "I was then under ten." The first chapter is devoted to some early reminiscences that are very interesting, interspersed as they are with notes on insects. The excursions after exotic butterflies began in India in 1903 and ended in New Zealand and Australia in 1910.

The other countries visited were Ceylon, China, Japan, Canada, Algeria, South Africa, West Indies, South America, Egypt and the

Soudan. In addition to records and field notes covering all phases of butterfly life, Dr. Longstaff treats of many other kinds of insects and figures some of them. In addition to the natural history of insects he gives interesting descriptions of the general features of the countries visited, their history, geography, flora and inhabitants. The book will appeal as much to those interested in travel as to the naturalist, as it is delightful reading. He comments on many things and even gives some of the "Sea tales" of his shipmates. It is the kind of book that helps make naturalists and we can't have too many of them.

One unfortunate feature of such books is that many interesting records may be overlooked. The non-Lepidopterist will be likely to overlook the matter devoted to other orders and the labor of going over such a book for records and field notes is not to be despised. Dr. Longstaff is a student and exponent of "mimicry" and gives many notes pertaining to that interesting subject.

The last chapter is on butterfly bionomics. The appendix consisting of translations of valuable papers by Fritz Müller, is very useful and indispensable for those not understanding the original language.

There is much to praise and nothing to condemn in the work and it is a valuable addition to the popular works on natural history and travel.—H. S.

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## Doings of Societies.

### ENTOMOLOGICAL SECTION, ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA.

Meeting of January 25th, 1912, Mr. Philip Laurent, Director, presiding. Eleven persons were present.

Mr. Rehn announced having received a collection of Orthoptera numbering about 160, in exchange, from Prof. Kary, of Elbogen, Bohemia.

Mr. George M. Greene presented 65 specimens of Coleoptera taken in the vicinity of Philadelphia.

Dr. Calvert presented 13 specimens, four species of *Glossina* and 6 specimens, four species of *Tabanus* from Africa, received in exchange from the Entomological Research Committee. Seven specimens, 3 species of *Glossina*, gift of Dr. Allen J. Smith, and three specimens of *Cicada septendecim*, from between Almonesson and Blackwood, New Jersey, June, 1911.

Mr. Rehn made some remarks on the Orthoptera collections

of the German Central African Expedition, loaned to him for study by the Berlin Museum, and on which he had spent the greater portion of the past year. The series contained two hundred and twenty-six species, of which eleven genera and subgenera, and eighty-one species proved to be new. An analysis of the relationship of the Orthopterous fauna of the Central African lake region and Uganda showed that the greater portion of the species not peculiar to the region were of West African forest region relationship, the eastern steppe element being less numerically. This proportion has been found to be carried out in a number of groups of animals and plants similarly analyzed. Some idea of the richness of species in certain localities was given, and a number of striking species from the collection exhibited. He also exhibited a collection of Orthoptera from Egypt, sent for study by Edgard Chakour.

Dr. Calvert made some remarks on the collection he had presented, and said he had been giving a course at the University of Pennsylvania on the transmission of disease to human beings by insects. He gave a history of the disease, nagana, conveyed to animals by *Glossina morsitans* and *brevipalpis*, and sleeping sickness conveyed by *G. palpalis*. A rapid way to determine the sex of *Musca domestica* was mentioned. If the flies are boiled in a solution of caustic potash the ovipositors of the females will be extended.

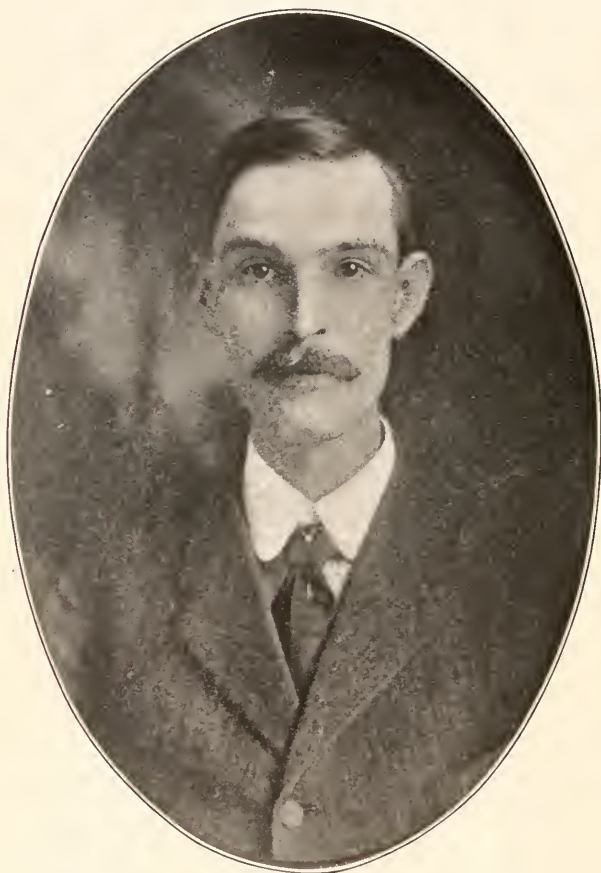
#### BROOKLYN ENTOMOLOGICAL SOCIETY.

At the annual meeting, held January 11, 1912, resolutions of sympathy were adopted for Prof. John B. Smith, whose continued illness prevented what would otherwise be his unanimous re-election as President and Delegate to the Council of the New York Academy of Sciences.

The officers elected were: Wm. T. Davis, President; Wm. T. Bather, Vice-president; Chris. E. Olsen, Treasurer; R. P. Dow, Secretary; S. C. Wheat, Librarian; Geo. Franck, Curator.

The Society is making steady though slow progress on a





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catalogue of Long Island insects of all orders. A surprisingly large number of semi-tropical forms have been discovered.

R. P. Dow, *Secretary*.

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## OBITUARY.

### Professor Thomas H. Montgomery, Jr.

(Portrait, Plate XIII)

Thomas Harrison Montgomery, Jr., Ph.D., Professor of Zoology in the University of Pennsylvania, died on March 19th, at the Pennsylvania Hospital, Philadelphia, after a prolonged attack of pneumonia.

Dr. Montgomery was the son of the late Thomas Harrison Montgomery and Anna Morton, daughter of Samuel George Morton, one of the founders of the sciences of craniology, and president of the Academy of Natural Sciences of Philadelphia. He was born in New York on March 5, 1873, and received his early education at the Episcopal Academy in Philadelphia. After two years as a student in the University of Pennsylvania, 1889 to 1891, he spent three years in the study of Zoology at the University of Berlin and received the degree of Ph. D. at that institution in 1894.

On his return to this country he held a research position at the Wistar Institute for a few years. He was also Professor of Biology and Director of the Museum of the Wagner Institute of Philadelphia. In 1898 he was made Instructor and afterward Assistant Professor of Zoology in the University of Pennsylvania. From 1903 to 1908 he was Professor of Zoology in the University of Texas, but in the latter year he was recalled to take charge of the Department of Zoology in the University of Pennsylvania. Shortly afterward he was intrusted by the University with the chief responsibility for the planning and construction of the new Zoological Laboratory. Into this labor he threw himself with his usual untiring energy, giving personal attention to every detail. The building was completed in 1911, and will stand as a monument to his foresight and his executive ability.

The results of Professor Montgomery's research in the technically difficult problems of cellular structure and its relation to the phenomena of heredity and the determination of sex, in the activities, habits and development of spiders and birds, in the structure and development of various rotifers and insects have been embodied in more than eighty articles. He also published a volume, "Analysis of Racial Descent in Animals," 1906, and has left in manuscript a nearly completed work on cytology.

His chief claim to mention in an entomological journal rests on his work on spiders and on the fact that much of his cytological research was based on insect material.

His taxonomic papers on the Araneids deal with the families Lycosidae, Oxyopidae and Pisauridæ. His studies "On the Spinnerets, Cribellum, Colulus, Tracheæ and Lung-Books" (1909) led him to deny the prevalent view that the Arachnida have developed from the Paleostraca by adaptation to land life. He investigated the embryonic development of *Theridium*, and published many interesting observations on the courtship, mating and cocooning habits of various species, based on spiders which he kept in great numbers of small glass boxes on his tables in the laboratory and at home.

To the News for January, 1902, Prof. Montgomery contributed a list of the Hemiptera Heteroptera of Wood's Hole, Massachusetts, and this group of insects furnished much material for his researches on the sex cells of different families, especially the Pentatomidæ. His discoveries as to the structure and history of the germ cells are many and notable; chief among these may be mentioned the fact, which he first suggested, that the chromosomes (or colorable bodies of the nucleus) unite together in pairs during the ripening of the germ cells, one member of each pair being derived from the father, the other from the mother. Another was of the existence of modified chromosomes in spermatozoa, but not in eggs of the same species. These discoveries have formed the basis of some of the most important recent studies and theories on heredity.

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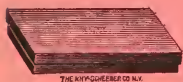
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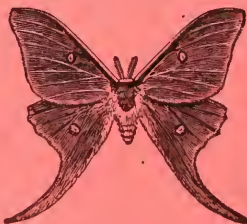
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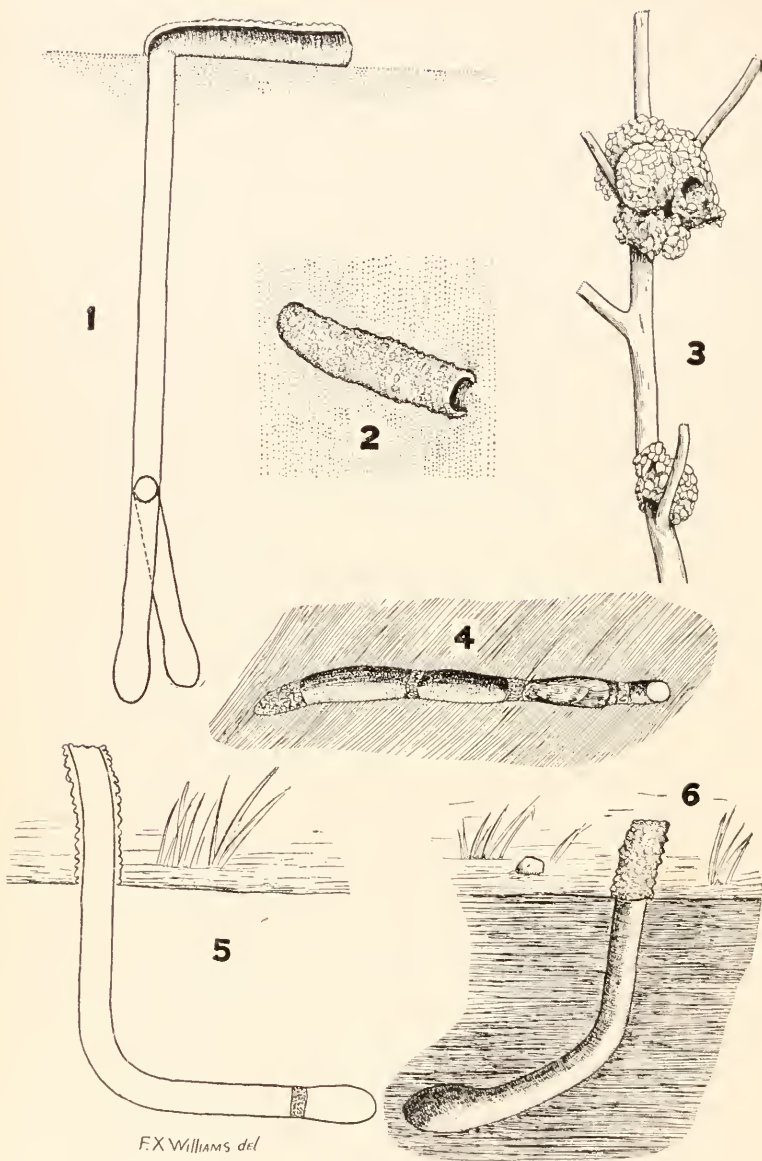
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# ENTOMOLOGICAL NEWS

AND

## PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

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### CONTENTS:

<p>Hungerford and Williams—Biological Notes on Some Kansas Hymenoptera ..... 241</p> <p>Davis—A new Variety of <i>Rihana</i> (<i>Cicada</i>) <i>sayi</i> Grossbeck (Hemip.).. 261</p> <p>Rehn—Two new Species of African Eumastacinae (Orth.) ..... 262</p> <p>Townsend—<i>Vulturopinae</i>, a new Subfamily of the Psocidae; type <i>Vulturopus</i> gen. nov. (Platyp., Corrod.) 266</p> <p>Additions, Amer. Mus. Nat. Hist..... 269</p>	<p>Editorial ..... 270</p> <p>Needham, et al.—Strict Priority in Nomenclature—or Not..... 271</p> <p>Collecting in South America ..... 277</p> <p>New Postal Regulations Concerning Insects ..... 277</p> <p>Entomological Literature ..... 278</p> <p>Review—Walker on <i>Aeshna</i>..... 283</p> <p>Doings of Societies ..... 286</p> <p>Obituary—Dr. N. M. Stevens..... 288</p> <p style="padding-left: 20px;">Shigeru Kuwayama..... 288</p>
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## Biological Notes on some Kansas Hymenoptera.

By H. B. HUNGERFORD and FRANCIS X. WILLIAMS, University of Kansas.

(Plates XIV, XV, XVI)

This paper is based on the collection and field observations made by the authors on the Kansas University Biological Survey to Northwestern Kansas during the summer of 1910.

During the time that we were in the field (June 16 to September 3) a large number of Hymenoptera and other insects were collected, and some interesting notes made on the biology of a few species, particularly on the Fossores (Digger wasps), and the *Diplopteryga* in the Solitary wasps.

Some of the observations are very fragmentary, and have been noted heretofore and published; others we believe are additions to science. We hope that the results of our observations will encourage students to pay more attention to this fascinating branch of entomology.

The Great Plains as represented in Northwestern Kansas, though meager in some groups of insects, have a good repre-

sentation of Hymenoptera and offer excellent facilities for the study of their habits. As the region in question is practically devoid of trees, excepting in some of the richer bottom lands, ground-dwelling bees, wasps and ants are abundant, while wood-borers in this order of insects are rather sparingly represented, and necessarily largely restricted to the margins of streams.

We have derived much information from Peckhams' "Wasps, Solitary and Social" (1905), and "The Instincts and Habits of Solitary Wasps" (Madison, Wis., 1898), and Cambridge Natural History Vol. VI, Insects, as well as from other publications.

Most of the species collected were readily identified by means of the Snow Entomological Collections; doubtful cases of identification and those which could not be determined by us were submitted to specialists.

The photographs were taken by Professor P. A. Glenn, of the Department of Entomology here, and the drawings, made by the joint authors.

### Series HETEROGYNA

#### Family MYRMICIDAE

**Pogonomyrmex occidentalis** Cress. (*Myrmica*), Proc. Ent. Soc., Phil. IV, 426, 1865.

The "Mound-Building Prairie Ant." The hills of this species are familiar objects in Central and Western Kansas and elsewhere on the "Great Plains;" the larger cleared areas in which they are located make such settlements very conspicuous to the traveler.

The covering of the mound depends largely upon the surrounding material, for although they are usually covered with small pebbles or gravel, in the vicinity of railroads cinders are largely employed, giving the nest a black appearance.

Mr. George A. Dean, of the Kansas Agricultural College, at Manhattan, has published his interesting observations in Kansas on this species of ant.\*

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\*Trans. Kansas Acad. Science XIX, pp. 164-170, 1903-04.

He found that the average height of the cones in the grass on the prairies was about nine inches, those in an alfalfa field in Ellis County being about four inches high. The size of the clearings varies also. "The clearings surrounding the nests located in the buffalo grass averaged nine feet; those in the Russian thistles, eleven feet; those in an alfalfa field, thirteen to fourteen feet." From these data it would seem that the extent of the clearings was greatest where the material to be eradicated could be handled with the greatest facility, and of smaller diameter in those localities where the clearings could be effected with difficulty.

The openings to the cones may be single, or rarely several. Although Mr. Dean states: "There is no uniformity in regard to the direction of the gates. However, the tendency seems to be to the East, Southeast and South," we have found that in the many nests examined, by far the larger per cent. have their openings well down on the southeast side, or more toward the east. It might, therefore, be possible that the ants are affected here by some heliotropic influence, which would induce them to construct the openings to their nests in a position where the sunlight would fall.

Several nuptial flights of *Pogonomyrmex occidentalis* were observed in Wallace and Wichita Counties in August during the afternoon when the warm damp weather brought them out by the hundreds. It was very disagreeable to encounter a swarm of these insects which alighted on us by the dozens and crawled about our heads in the most aggravating manner. The queens appeared to be in the minority and one was frequently the center of a ball made up of frantic males, while the workers ran about, tugging and biting in their excitement. Several queens were observed each attempting to found a new colony. Each excavated a hole and piled the soil some little distance away from the burrow.

A few nests of this species were treated with carbon bisulphide to the extent of from one to two and a half tablespoons to each nest. The liquid was either poured down the highest aperture, or the top of the hill was scooped off until a

suitable gallery was found and then all was covered and allowed to remain thus for at least half an hour. The results were not very satisfactory; the poison had the effect of killing some and driving others farther down, and as Mr. Dean has found "these galleries and chambers penetrating the earth to the distance of nine feet," it is probable that a much larger dose and more thorough application of it would be required to make the treatment effectual.

When aroused the ants are quite warlike and fearless but seem to have some special disgust for certain Scarabaeid beetles (*Onthophagus* probably *hecate*) which were placed on their mound at the gallery entrance. The beetles at first resisted when attacked and as many as ten ants took part in the expulsion of each beetle; but when the beetle gave up, only two or three ants were left to the task of removing the obnoxious visitors, and finally but one ant, the original ejector, was left on the job. The several beetles were removed some ten or twelve feet from the cone.

No insect enemies of this ant were observed. Moreover, on a number of occasions the common tiger beetle of the region (*C. punctulata*) was observed to approach one of these ants, but, having ascertained what it was, did not molest it. No nests were inspected for inquilines; however, in Gove and Greely Counties these ants were seen carrying the myrmecophilous beetle (*Cremastocheilus saucius* Lec.).

### Series FOSSORES

#### Family SPHECIDAE

##### *Ammophila* sp.

Much has been written concerning these remarkable wasps, which have attracted the attention not only of naturalists but also of the casual observer.

Frequently, if not as a rule, *Ammophilas* live in colonies, though one may sometimes come across one of these wasps with her burrow at quite a distance from any colony. Flat, sun-baked areas with little or no vegetation are favorable nesting places for these slender wasps.

Kellogg in his "American Insects" gives a good illustrated account of the habits of *Ammophila* sp? which excavates burrows on the saline flats along San Francisco Bay, in California. That species closes its burrow with the disk of salt-incrusted sand which it cut out in the first place to commence the excavation.

The Peckhams in their "Instincts and Habits of Solitary Wasps" have made extended observations on the habits of *Ammophila urnaria*. These close the entrance of their burrows with lumps of earth or small stones and pack down the superimposed dirt with a pebble making all smooth like the surrounding well packed soil.

The genus *Ammophila* stores its burrows with lepidopterous larvae of several species. That described by Kellogg, uses a Geometrid, and *urnaria* a Noctuid. A rather small species observed in Cheyenne County, Kansas, in July, selected a green Noctuid larva. We observed her on the tent roof struggling with a green cutworm she was trying to carry away. It appeared that the larva stuck to the cloth and would neither raise itself nor roll off. The wasp grasping the back of the larva near the head with her mandibles, reached up and inserted her sting in the ventral part of the thorax. This made the larva let loose and after some tumbling the two rolled off the tent to the ground, and *Ammophila* straddling its prey carried it about three feet, then dropping it went off about three inches, scratched away some dirt, removed a lump of baked earth, and went down the hole thereby opened. Emerging she returned to the larva, pulled it to the hole, and descending into the latter backwards, dragged the larva after her. She soon came out, replaced the lid (the lump of baked earth) and carefully scratched dirt upon it, using her head to tamp it down upon the lid. Then picking up a small stick she packed the earth down a little, after which she scratched more dirt over the place. Three times she returned to make the deception more complete. So carefully did she do her work that the onlookers could not positively locate her nest.

A larger species was observed in Rawlins County in the act

of closing its burrow, which was vertical with an enlarged cup-shaped mouth. The hole, about six inches deep, was partly filled with sand-clay, and *Ammophila* was seen pressing the dirt down in the cup, using as a tool the tibia and tarsus of a small Acridiid (*Melanoplus?*). After this tamping work was over, she placed a lump of dry earth and a small piece of lizard excrement in the depression. We dug out the burrow and at the bottom of it found a Notodontid larva with an oblong egg on its side.

#### **Chlorion caeruleum** Drury.

This large and handsome steel-blue wasp was not uncommon in Northwestern Kansas, though little was ascertained concerning its habits.

In Cheyenne County they were seen congregated in some numbers on the branches of an old willow tree. Their attraction to the latter lay in the exudation from some of its limbs, which was evidently caused by borers. A lepidopteron (*Satyrus*), a fly (*Tabanus atratus*), some *Polistes*, and the large cicada-killer (*Stizus speciosus*) were likewise attracted to the exudation, and it was amusing to watch the quarrelsome Chlorions annoy their larger neighbor (*Stizus*). Frequently the latter, desirous of alighting on a choice spot, would be prevented from doing so by a *Chlorion* running up to the place. The Chlorions likewise quarreled among themselves to a considerable extent, and in the ensuing struggle would often fall nearly to the ground. A *Stizus* engaged in lapping up the exudation would be nipped at from behind by the active Sphecid, and in one instance the latter was seen to seize the Cicada-killer in its mandibles and lift it into the air; both then fell to the ground, but the short struggle did not appear harmful to either combatant. An annoyed *Stizus speciosus* would to some extent keep its tormentor at a distance by the threatening motion of its abdomen and sting.

In another portion of the valley, this species was plentiful about slender willows, feeding at the sap exuding from the thickened stems, the flow of sap being produced by a beetle

larva. *Polistes* and Diptera were chased from the coveted spot, the *Chlorion* making short threatening rushes at what it considered intruders. Ants were not in favor either, but were driven away with a show of unwillingness on the part of the wasp, which made gingerly digs at them with its mandibles until the desired object was obtained.

The Peckhams\* have observed *Chlorion caeruleum* storing its nest with the cricket *Gryllus abbreviatus*. At Tribune, Greeley County, Kansas, August 17, 1910, we observed a female of this species running up a clay bank, carrying a mature female *Ceutophilus* near *bruneri* (Locustidae). The wasp was evidently striving to reach a sufficient altitude to fly to its nest with its somewhat heavy burden.

The habits, therefore, of *Chlorion* seem to vary somewhat as regards the provisions used, and though the latter with this species are probably always an Orthopterous insect, the species must to some extent be determined by the abundance or scarcity of certain Orthoptera.

No tunnels of *Chlorion* were dug out; the Peckhams, however, figure one in their book on Solitary Wasps; it is large, trending obliquely and terminates in a pocket.

#### Family BEMBECIDAE

##### *Bembex sayi* Cress.

Atwood, Rawlins County, Kansas, July 19, 1910.

A burrow of this species which was dug out of a sandy slope was about eighteen inches in length, sloped slightly downward and terminated in a chamber, which contained a quarter grown *Bembex* larva abundantly supplied with dead flies, among which were three Tachinids (*Archytas analis* Fabr.), a Stratiomyid allied to *appiculata* and *meigenii*; a Tabanid of the genus *Chrysops*, one *Musca domestica*, two flesh flies and the remains of several other flies.

A species of *Bembex* found in Wichita County was taken from a burrow at the depth of two and a half feet.

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\*Wis. Geol. and Nat. Hist. Surv. Bull. No. 2, Scientific Series No. 1, —pl. 73-4, 1898.

## Family CRABRONIDAE

*Trypoxylon texense* Sauss. (Pl. XVI; fig. 5).

This was found to be a rather common insect in Cheyenne County, frequenting the clayey banks where they made use of deserted bee tunnels for their nidi. Some of these holes were probably those made by the bee *Melitoma grisella*, which occurred in this locality. One burrow dug out was about five inches long, nearly horizontal and terminating in a smooth somewhat inclined cell packed with nine little spiders.

In Greeley County we found this wasp using tunnels made by the large bee, *Anthophila occidentalis*. From one burrow containing three cells we took fifty-one small spiders. *Texense* sometimes makes use of the cell of *Anthophora* and again they will stop up the tunnel a little and enlarge it locally to suit their own fancies.

The nine spiders taken from our cell of a *Trypoxylon* burrow, Cheyenne County, were as follows: *Rucinia aleatorea*, *Argiope trifasciata*, *Xysticus cunctator*.\* The fifty-one spiders taken from three cells of a *Trypoxylon* burrow, Greeley County, were: *Philodromoides pratariæ*, *Argiope trifasciata*, *Metepcira labyrinthea*, *Misumena americana*, *Dendryphantès octavus*, *Phidippus texanus*, thus representing eight genera and eight species.

*Crabro interruptus* St. Farg.

We shall soon see how the Pyralid, *Loxostege sticticalis* Linn., is destroyed in its larval stage by *Odynerus annulatus*. Observations along the Sappa Creek, near the town of Oberlin, Decatur County, have shown that the adult moth also falls a prey to a species of wasp (*Crabro interruptus*), which stores its nest with them.

On July 19th, 1910, a box-elder stump (*Acer negundo*) showing the work of some sort of borers was sliced off until a number of more or less vertical tunnels was revealed in the decaying wood. Some of these at least seemed to be the work of one of the Uroceridae, a larva of which was dug out. Other

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\*Determined by Nathan Banks, of the U. S. National Museum.

holes were evidently the work of Coleopterous larvae, a species of which was taken.

A number of these holes were occupied by the *Crabro*, several adults of which were dug out. The stump was quite soft and it is possible that *Crabro* utilized the galleries of other insects, modifying them according to its needs.

The nests (Pl. XIV, fig. 4) had their several cells separated from one another by partitions of wood dust. Each of the occupied cells had been provided with moths, almost all of the species *L. sticticalis* (for moth see Pl. XVI, fig. 7), perhaps also with *L. commixtalis* Walker, which were not as abundant as the former, and one or two other small species of moths.

No larvae of *Crabro* were found, but several unopened cocoons examined later contained dead adult wasps. The brown, paper-like cocoon itself was enveloped and hidden by the moth wings arranged in a more or less shingled manner and other portions of the consumed moths. The base of the wings of the moth always faced the distal end of the cell, showing that *Crabro* always brought its prey in head first.

Early in 1911, several of the *Crabro* cocoons were opened and two revealed a Hymenopterous larva, evidently one of the Parasitica.

It may be of interest to know that *Loxostege sticticalis* and *commixtalis*, occur in Europe as well as in America, and may be therefore an importation from the Old World. These two moths, particularly the first mentioned, are abundant in Northwestern Kansas and undoubtedly have a wide range in the United States. The larva is considered an alfalfa pest by the farmers, and was found to be very abundant on the obnoxious Russian thistle (*Salsoka kali*), and in Wichita County were observed moving in armies of considerable magnitude.

The Peckhams in their book "Wasps, Solitary and Social," report a *Crabro* sp? as provisioning its nest with white moths which it packs lengthwise of the cell. They found four species of moths in the nests opened.

## Series DIPLOPTERYGA

## Family EUMENIDAE

*Odynerus annulatus* Say.

Leoti, Wichita County, Kansas, August 21st, 1910.

We were fortunate in finding two females of this species in the act of searching for a suitable nesting place. This was shortly before 9 A. M. The ground the wasps were surveying was quite clear of vegetation in areas of several square inches. Russian thistle was abundant everywhere, and at a distance of about 100 yards north and east were small shallow lakes or lagoons. At about 9.05 A. M., the first wasp having chosen its building site, commenced excavating, and at 9.40 the second did likewise. The locations chosen were about six feet apart, and for convenient reference the first *Odynerus* (9.05 A. M.) shall be designated E (East) and the second W (West) in accordance with the positions of their excavations. They went to work as follows:

The spot chosen was moistened, the earth thus softened was removed and arranged around the slight excavation in the form of a circular wall or tube. *Odynerus* worked but for a minute or so when she flew away in the direction of one of the lagoons, to return in an equally short time with her mouth parts glistening with water. More moistened earth was taken out and applied to the wall. In making the latter which is rough exteriorly and smooth inside, *Odynerus* employs her forelegs and mouth parts for the interior work and clings over the side of the tube with her two other pairs of legs. The abdomen is apparently applied to hold back the oncoming wall.

After twenty minutes both wasps had excavated holes as deep as, or deeper than, themselves and constructed a short almost vertical tube over them.\* As the work advances only a part of the pellets of earth extracted from the gallery are used for tube construction, the rest are carried off and dropped several feet away. It is noteworthy that *Odynerus* in disposing of the pellets of earth (which she does when on the wing),

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\*Later investigations show that the tube is often considerably bent.

does not cast them about indiscriminately for it was observed that W dropped them at a distance of from four to six feet east of its nest, while E disposed of hers to a distance of about three feet in a direction W. N. W. from its burrow.

A note made at 10.30 A. M. reads: "W took out three pellets of moist earth in succession, dropped them and then flew away east for water. The tube she was building was over one-half an inch high and taller than that of E, notwithstanding the fact that E had commenced building about half an hour earlier than W." The pellets which are used for tube building are moistened yet more when brought up to the surface.

As the tunnels neared completion the wasps appeared to work less systematically and regularly and stayed away longer. At 10.52 A. M., W seemed to have finished its tube.

On August 22 and 23 the wasps were occasionally watched. At that date, however, their tubes were finished and aside from noting that they took occasional trips (we saw one of the two make seven trips in thirty minutes, and bask in the sun), nothing of interest was observed. However, some of the actions of *Odynerus* must have escaped our notice, for at 8.35 A. M. of the following day (August 24), each wasp was seen to bring in a larva of the Pyralid *Loxostege sticticalis*, which must have been nearly mature, but nevertheless was easily carried in air by the hymenopteron. These larvae were exceedingly common on Russian thistle. A few hundred yards away from our camp we noted an army of these worms composed of thousands of individuals, marching in a northerly direction.

At 9.30 A. M. of the same day (August 24) we caught and killed E and dug out her nest. The tube over the hole was 9-16 inch high, nearly  $\frac{1}{4}$  inch diameter inside measurement, and had an uneven rim (see Pl. XIV, fig. 6). The tunnel was vertical for  $1\frac{1}{4}$  inches and from that depth curved in a westernly direction for  $1\frac{3}{4}$  inches. The terminal cell, which was slightly greater in diameter than the gallery and horizontal, was not yet closed, but contained two *sticticalis* larvae, paralyzed so as to be almost incapable of motion. Evidently *Odynerus* had but begun provisioning its nest. It did not, however, delay laying

its elongate egg so that its progeny would have every advantage of developing successfully in being supplied with the freshest food. The following quotation from the Cambridge Natural History, VI, Insects, pt. 2, p. 75, relates to Fabre's observations on *Odynerus reniformis* and shows the remarkable instinct of the insect in safeguarding its egg: "This insect provisions its cells with small caterpillars to the number of twenty or upwards. The egg is deposited before the nest is stocked with food; it is suspended in such a manner that the suspensory thread allows the egg to reach well down towards the bottom of the cell." By this arrangement there is no danger of the egg being crushed in the mass of caterpillars which may not be completely deprived of motion, which Fabre states is the case in a related genus (*Eumenes*).

At 10 A. M. we dug out the burrow made by W. This wasp was much the faster worker. Fig. 5, Pl. XIV, shows its tube which was 1 1-30 inch tall. We had already filled the cell with nine larvae and had oviposited some time previously, as shown by the small wasp grub within. Some of the imprisoned larvae were capable of considerable activity. The cell was closed with a wad of packed soil 1-5 inch thick.

It is possible that these two *O. annulatus* would have added other cells to their burrows, inasmuch as one such branched hole was located in Scott County. It stands to reason, however, that *Odynerus annulatus* must store several cells, and lay more than one egg to be able to propagate its species.

A closely related species, *O. geminus* Cress, to which we shall now refer, makes a several-celled tunnel but does not construct a tube to the aperture. Sharp, in the Cambridge Natural History VI, Insects, p. 74, in speaking of *Odynerus* mentions the fact that several species of the sub-genus *Hoplopus* "have the remarkable habit of constructing burrows in sandy ground and forming at their entry a curvate, freely projecting tube, placed at right angles to the main burrow, and formed of the grains of sand brought out by the insect during excavation and cemented together." In several localities we noticed on rare occasions much narrower clay tubes than those of *Odynerus an-*

*nulatus*, and very long in proportion. One noted projected freely from the face of a cliff, curved downward and was about two inches long. The architect was not captured.

*O. annulatus* is common in Kansas.

#### *Odynerus geminus* Cress.

Scott County, August 24, 1910.

This wasp was quite common in a bare strip along a roadside near Scott City. A large number of males but no females were seen here.

As heretofore stated, the tunnels of *geminus* (Pl. XV, fig. 7 and Pl. XVI, figs. 1-4) had no mud tubes over them, and a part at least, if not all, of the pellets of earth are deposited within two or three inches from, or even closer to, the entrance of the hole, and this makes their nests more easily discerned than those of *annulatus*. *O. geminus* was not seen making its burrows in Scott County, though in Wichita County an *Odynerus* was seen starting a hole and depositing the pellets extracted therefrom about  $1\frac{1}{2}$  inches away from the excavation.

The tunnels of *geminus*, which were often rather closely associated, were in barren hard soil or more or less sandy loam, with plenty of lagoons and ponds in the vicinity. Several were dug out, one of which is illustrated in Plate XV, figs. 6 and 7 in vertical and in horizontal section. The holes are shallow as in *annulatus* and vertical for some distance. It would appear that *geminus* utilizes its holes for a second brood, possibly enlarging or adding chambers to the old nest, for none of those examined would indicate that they were newly made. One nest contained refuse of old cocoons, one of the latter presumably that of a parasite. Another revealed three small pupal shells of a muscoidean fly and one decaying adult wasp and pupa, while the empty cells had been used at one time. In one nest, however, were two large cells, one containing two Hesperid larvae and the other a Hymenopterous grub. The Lepidopterous larva was probably that of *Pholisora catullus*, which was common in the vicinity. No wasp was taken at this nest, but the latter was one of several tunnels constituting what appeared to be a loose colony of *Odynerus geminus*.

A glance at Plates XV and XVI will show that there is some variation in the nests as regards the number of cells, and the length of the galleries. Some contained as many as eight cells, but in all cases the tunnel starts vertically and may lead to cells at one or more points. As with *O. annulatus* their holes are very neat and smooth, often somewhat widened where branching begins. The diameter of the entrance to the chambers is at this point about one-half that of the enlargement. Some of the holes were frequented by males which, entering them now and then, basked inside the entrance.

A brief comparison of the nest habits of *O. annulatus* and *geminus* may be of interest.

1st. *Annulatus* and *geminus* occur in the same locality but differ somewhat widely in habits, for:

2nd. While *annulatus* constructs a tube over its nest, *geminus* does not.

3rd. *Annulatus*, in disposing of the unused earthen pellets extracted from its burrow, deposits them at a distance of several feet from its nest; *geminus*, on the other hand, drops at least a good proportion of the pellets only an inch or two from its burrow.

4th. *Annulatus* provisions its nest with the larvae of *Loxostege sticticalis* (Pyrilidina), *geminus* with the larvae of *Pholisora catullus* ? (Hesperidae), although the larvae of *sticticalis* was common in the locality frequented by *geminus*.

What advantage the clay tube constructed by *O. annulatus* has over the plain unadorned shaft of *O. geminus* is difficult to explain. Apparently and logically the conditions that would favor the tubed nest would appear to be harmful to a tubeless nest, both situated in similar localities, or vice versa. Would the tube serve as a protection against dust and floods, or to lessen the often intense heat of the plains within the nest? A more plausible explanation for the tube-building habits of *annulatus* would be that the clay device protects the nest from the attacks of insect enemies. Certainly the tube nests are less easily discerned than the plain holes with a small heap of pellets in the immediate vicinity. A Mutillid, for example (which

insects are very abundant in this region) would not be as likely to climb up the clay tube. Perhaps again, *O. annulatus* constructing fewer cells than its near relative, it would be imperative that these should be better protected.

**Odynerus foraminatus** Sauss.

Oberlin, Decatur County, July 19, 1910.

Several of these Eumenids were dug out of the same stump as *Crabro interruptus*, previously referred to. The cells of *foraminatus* were larger than those of *Crabro* and separated by partitions of mud, instead of wood chips as in the case of the latter insect. The brood was apparently just emerging, but what their burrows had been provisioned with was not ascertained.

Family VESPIDAE

**Polistes variatus** Cresson, Trans. Am. Ent. Soc. IV, 247, 1872.

A number of specimens of this wasp were taken near Atwood, Rawlins County, in July. Trees and houses being rather scarce in Northwestern Kansas, the nests of these insects can be found suspended in the tunnels of rodents, exposed by erosion, in the face of cliffs. Such a nest was found five or six inches inside a shallow pocket in a bank. The five adults pertaining to this nest were taken. The comb consisted of thirteen capped and a large number of open cells, the latter surrounding the former.

The genus *Polistes* is well represented in Kansas by at least eight species; these are commoner, however, in the eastern half of the state. During the late fall females are often found indoors in their instinctive efforts to secure a comfortable place for hibernation.

Series ANTHOPHILA

Family ANDRENIDAE

**Halictus occidentalis** Cress.

Rarely met with. We dug out a tunnel of this species from a clay bank in Wallace County. The hole went straight down for 14 inches and ended in three pockets filled with pollen.

## Family MEGACHILIDAE

*Anthidium maculifrons* Smith.= *porteri* Cress

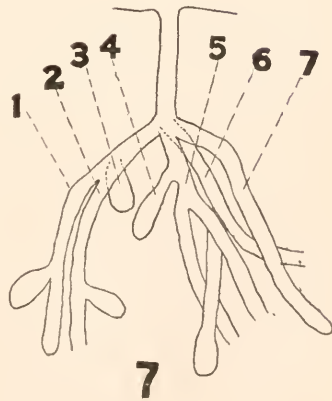
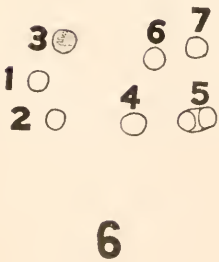
From Wallace, Cheyenne, Rawlins, Wichita and Gove Counties.

Two females of this bee were observed nesting in a bank of coarse quartz sand, near a colony of bembecid wasps. One *Anthidium* had a practically horizontal tunnel five or six inches long, that of the other was about ten inches long and likewise subhorizontal. At the end of the shorter galley the mass of brown pollen was enveloped in a woolly material which seemed to be the tomentum from thistle stems (*Cirsium*), while the pollen in the deeper tunnel was surrounded by some sort of soft pappus, perhaps from the inflorescence of *Cirsium*. This habit of securing cottony material for nidification appears to be a common one in the genus *Anthidium*, as several European species as well have such habits. (See Cambridge Natural History, VI, Insects, Pt. II, 45-6, 1899.)

*Dianthidium concinnum* (?) Cress.

Three females from Sheridan, Cheyenne and Greeley Counties, July and August. Nests were found on twigs in Sheridan, Cheyenne and Lane Counties, and at least that found in Sheridan County belonged to *D. concinnum* (?), since the insect was taken from one of the cells. There is, in addition, a nest in the collection from Beaversville, Okla. (April 28, 1905, C. O. Tannehill, Lot 906), which undoubtedly is the work of *Dianthidium*.

The nest of this insect is composed of pebbles glued together with a resinous cement, which may be derived from the stems of *Helianthus* which are often infested with a small lepidopterous borer that causes an exudation which usually attracts a host of Hymenoptera. The cells of the nest are provisioned with pollen and closed by the adult. (See Plate XIV, fig. 3.) These neat little structures can sometimes be discerned from a distance on twigs when brought up against the skyline. Two nests were found on trees, one on a *Salix*, the second on a *Cerasus*, while the third was on a tall dry mustard plant (*Brassica*).





Sharp (Cambridge Nat. Hist., VI, Insects, II, 47, 1899) speaks of *Anthidium septementatum* of Europe using resin as its working material, and an old snail shell for its nest.

*Dianthidium curvatum* Smith, Syn. *interruptum* Say.

One male and one female from Sherman and Thomas Counties, July.

The genera *Anthidium* and *Dianthidium* differ from each other not only in structural characters, but likewise in habits (that is, as far as we know of the habits of these bees). Cockerell in his Rocky Mountain Bees (Univ. of Colo. Studies VII, No. 3) separates them thus:

"No pulvillus; cottony material used in preparing nests, which are burrows—*Anthidium* Fabr. (P).

"Pulvilli present; nests made of resin, on rocks, etc.—*Dianthidium* Kll. (P)."

*Megachile* sp.

Several bees of this genus were observed nest building. One used a burrow in a sand bank. The hole was five or six inches long and contained the usual leaf nest, somewhat over two inches in length and of several cells.

*Megachile* sometimes invaded our tent in search of a suitable nesting place. One of these bees chose a cork-lined cigar box loosely filled with cotton and built her nest along the edge of the cork and side of the box.

The following are our observations on a species of Leaf-cutting Bee. Atwood, July 23, 1910:

On July 23 a bee was observed carrying bits of leaves from a rose bush to some spot between the folds of one of the blankets at the camp. It was an interesting thing to watch this bee at her work. Alighting on a leaf and opposing herself to the edge of a leaflet she would begin cutting, working her mandibles like a pair of scissors. In five or six clips she would have a portion of the leaflet smoothly cut and neatly rolled into a cylinder, and with this held by her feet beneath her she would fly away to the blanket. Several trips were

watched, then she was left to her work. By 5 P. M. she was not coming to the blanket, so the cell she had constructed was located. It was attached to a fold of the blanket. It was nearly one inch long and something less than half as wide, made of 42 leaf bits overlapping each other and quite firmly held together. Within the little chamber there was a mass of pollen larger than a pea, and as the cell was not closed evidently the work of collecting pollen had not been completed.

#### Family ANTHOPHORIDÆ

*Melitoma grisella* Ckll. & Porter, Syn. *dakotensis* Ckll. & Porter.

This bee (Pl. XVI, fig. 6) which we have found rare in Kansas, has heretofore been taken in this same State by Dr. Snow, who took one male in Wallace County, in 1877 (No. 839). Six additional specimens, 2 ♂♂ and 4 ♀♀, were secured during July and August, 1910 in Rawlins, Cheyenne and Greeley Counties. (A few were found in Grant County the subsequent year).

The nesting habits of this insect were observed to some extent. Near Atwood, in Rawlins County, the tunnel of *grisella* was found in a clay bank. It was five or six inches in length, inclined slightly downwards, quite smooth and forked near the end, each branch terminating in a polished cell, stuffed with a mass of yellowish-white pollen. The bee constructs a long arch or semi-tube of clay, which is secured along the bank, and has its upper end terminating at the tunnel. The arch observed at Atwood and which is figured in Plate XIV, figs. 1 & 2, was an inch and a half in length, of rough exterior and smooth interior.

In Cheyenne County, in the extreme northwest corner of the State, a small and rather dilapidated colony of *M. grisella* was located in a little gully near Republican River. Here three clay arches were seen, with a fourth being constructed or repaired by a bee. Some old deserted holes here, evidently belonging to this species, were being utilized by the Crabronid (*Trypoxylon texense*), which stored spiders in them.

As in *Anthophora occidentalis*, some of the tunnels were not adorned with a clay device. It seems to us more rational to consider these semi-tubes more for protection against predaceous insects or parasites (as Bombyliid flies, which we do not imagine would as readily discover the lateral entrance to the *Mclitoma* burrow as they would an unprotected face tunnel), than for shelter against moisture. The Hymenoptera of the plains are very much subject to the attacks of parasites. The fact that some clay tubes constructed by Hymenoptera, notably *Odynerus*, are often quite vertical would not favor the "protection against moisture theory," though they would offer considerable relief against dust and sand.

***Anthophora occidentalis* Cresson.**

*Anthophora occidentalis*, the "Larger Tube-Building Cliff Bee," is a stout-bodied solitary bee found in large colonies inhabiting clay cliffs. Their tunnels are three-eighths inch in diameter and extend into the bank about eight inches where they end in several cells. These cells are provisioned with pollen and are so made that when dug out they came from the gallery as separate urn-shaped clay nodules of uniform size. (Pl. XV, fig. 3).

The entrance of the tunnel is protected by a curved clay tube of from three-fourths to two inches in length. (Pl. XV, figs. 1 & 2). These tubes bend downwards and very often the top or outer curve is split longitudinally, (probably sun cracked) making the tube resemble the moulted skin of a *Cicada* as it hangs on a tree trunk. Where the tubes were absent from the tunnels, as was often the case, it appeared to be a matter of accident. Viewing the face of a cliff in which there was a colony of these bees, the unprotected holes were the only marks of its presence, the ones protected by the tubes being not at all conspicuous. This may or may not be the reason for the tubes.

As to the life history of these bees, each female has her own burrow. The egg is laid in a cell provisioned with pollen. We found larvae and pupae in cells, June 20th. It was in colo-

nies of these bees that the new species of Meloid beetle, *Hornia gigantea* (Wellman) was found.\* In noting the devastation of this parasite upon one colony of the bees it was evident that the colony was at one time apparently a large and prosperous one of four or five hundred individual insects; but now presented a delapidated appearance, for where dozens of flying bees should be expected, only an occasional specimen was seen. An examination of the cells disclosed many parasites.

## EXPLANATION OF PLATES.

## PLATE XIV.

All about natural size.

- Fig. 1. Horizontal section through tunnel of *Melitoma grisella*.  
 Fig. 2. Dorsal view of clay arch over entrance to tunnel of *Melitoma grisella*.  
 Fig. 3. Nest of *Dianthidium* sp.  
 Fig. 4. Vertical section through tunnel of *Crabro interruptus*.  
 Fig. 5. Vertical section through tube and tunnel of *Odynerus annulatus* (W).  
 Fig. 6. Vertical section through tunnel of *Odynerus annulatus* (E).

## PLATE XV.

Fig. 3. Slightly enlarged, other figures slightly reduced.

- Fig. 1. Clay tubes of *Anthophora occidentalis*.  
 Fig. 2. Lateral view of one of the clay tubes of same.  
 Fig. 3. Clay cell of *Anthophora occidentalis* showing aperture from which the beetle, *Hornia gigantea* Wellman has emerged.  
 Fig. 5. Vertical section through main shaft of a burrow of the wasp, *Odynerus geminus*, showing the smaller apertures to the branches.  
 Fig. 6. Horizontal section through the lower half of Fig. 7.  
 Fig. 7. Vertical section through the burrow of *Odynerus geminus*, with those branches and cells out of the vertical plane brought in.

## PLATE XVI.

Figs. 1, 2, 3 and 4.\* Vertical sections through the burrows of *Odynerus geminus*, with those branches and cells out of the vertical plane brought in. Reduced.

- Fig. 5. *Trypoxylon texense*.  
 Fig. 6. *Melitoma grisella*.  
 Fig. 7. *Loxostege sticticalis*.

\*See Ent. News, XXII, pp. 15-17, Jan., 1911.

## A new Variety of *Rihana* (*Cicada*) *sayi* Grossbeck (Hemip.).

By WM. T. DAVIS, Staten Island, New York.

Through the courtesy of Mr. J. Chester Bradley, of Cornell University, I have examined a number of Cicadas from Georgia, collected principally by him. Among them are 18 examples of *Rihana sayi* Grossbeck, described in ENTOMOLOGICAL NEWS for April, 1907. Ten of these are of the type usually found in the Middle States, namely with the lateral and posterior margins of the pronotum nearly all black with a green spot on each side of the center of the latter. In the author's collection there are 86 examples from New York, New Jersey, Ohio, North Carolina and Rabun Co., Ga., that follow this pattern quite closely; in several, however, the posterior margin of the pronotum, or collar, is wholly black.

There is a southern race more green in color than typical *Rihana sayi* which may be called

### **australis** n. var.

In this the pronotum is nearly all green, the two black triangular spots near the anterior margin are reduced, the collar is green, touched with black at the lateral angles, and is narrowly margined in front with the same color. There is also a black line in the center about 1 mm. broad. The mesonotum is green, fulvous and black.

Typical examples are from Albany, September, 1910; Bainbridge, July 1909, September, 1910 and Spring Creek, Decatur Co., June, 1911; all collected by Mr. Bradley in Southern Georgia.

Fresh specimens of this variety are quite beautiful in color. Two examples from Atlanta and one from Austell, Ga., approach the variety, but lack the green on the thorax. One of the 86 specimens mentioned above, and collected on Staten Island, N. Y., has the collar nearly all green, but lacks the green on the thorax.

By way of recording distribution it may be well to state that Mr. Bradley's collection contains two *Rihana davisii* Grossbeck, from Atlanta, Ga., September, 1909, and August, 1910, and two *Rihana engelhardti* Davis, from Atlanta, Ga., July, 1910.

Of most interest is a male *Rihana similaris* Grossbeck, from Bainbridge, Ga., September, 1910. The only other recorded specimen is the type from Fernandina, Florida, in the collection of the United States National Museum. This species closely resembles *Rihana lyricen*, but differs greatly in the genitalia of the male. We also note the longer opercula, which extend to the third abdominal segment as mentioned in the original description. In the Georgia specimen the inner half of each operculum is dark colored and the band of black on the ventral surface of the abdomen is broader than in any of the *lyricen* examined.

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## Two new species of African Eumastacinae (Orth.).

By JAMES A. G. REHN, Philadelphia, Pa.

*Brachytypus burri* n. sp.

Type: ♀; Mossamedes Province, Angola. Acad. Nat. Sci. Phila., type no. 5184.

Closely related to *B. insularis* Burr\* from Sokotra, but differing in the much larger size and proportionately smaller pronotum. From the remaining species of the genus, *B. rotundifrons* (Burr) from Mombasa, the new form can readily be separated by having the metanotum exposed.

Size medium; form strongly compressed. Head well seated in the pronotum; vertex very steeply declivent and gently passing into the frontal costa, lateral margins of same slightly compressed dorsad of insertion of antennae and regularly converging ventrad of the same, frontal costa and contiguous portions of vertex rather deeply sulcate; antennae hardly longer than the eye, eleven-jointed; eyes subovate in outline, slightly longer than the infra-ocular portion of the genae, not at all prominent.

Pronotum with the greatest length contained nearly one and one-half times in the greatest (caudal) depth of same; dorsal carina moderately arcuate, ascending caudad; cephalic margin obtuse-angulate, caudal margin moderately emarginate mesad; lateral lobes with the ventral margin oblique sinuate, ventro-cephalic angle very faint, ventro-caudal angle marked, nearly rectangulate, caudal margin of lobes slightly arcuate dorsad and ventrad, nearly straight in the middle.

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\*Bull. Liverpool Mus., II, No. 2, p. 44.

Mesonotum with dorsal margin projecting caudad of pronotum nearly half the dorsal length of the latter.

Metanotum surpassing the mesonotum by slightly more than half the length of latter.

Proximal abdominal segment compressed cristato-carinate as in the thoracic segments, exposed portion equal to that of the mesonotum; remaining abdominal segments not elevated and hardly even carinate dorsad.

Cephalic and median limbs rather short. Caudal femora compressed, robust, dorsal carina with eight spiniform serrations becoming elongate spines distad, spine on dorsum of genicular region decided, caudal extremity of genicular arches and genicular lobes spiniform, remaining femoral carinæ simple; caudal tibiæ armed with fifteen spines on each margin.

General color (specimen mounted from alcohol) clay color, eyes ochraceous, limbs washed with broccoli brown; genicular arches, tips of spines on dorsal carina of caudal femora, genicular region of caudal tibiæ and an area on the keel of the mesonotum blackish; tibial spines black with yellow bases.

#### MEASUREMENTS.

Length of body .....	18.5 mm.
Length of pronotum .....	6.5 mm.
Greatest (caudal) depth of pronotum .....	9.5 mm.
Length of caudal femur .....	11.8 mm.

Four paratypic females have been examined in addition to the type. One specimen is slightly below the average size of the remainder of the series, but otherwise no points of difference are noted.

We take pleasure in dedicating this species to Dr. Malcolm Burr, the eminent English Orthopterist, in token of appreciation of his valued work on the Eumastacinæ.

#### *Thericles macropygia* n. sp.

1904. *Thericles gnu* Rehn (not of Karsch, 1896) Proc. Acad. Nat. Sci. Phila., 1904, p. 676. (Luebo, Congo.)

Type: ♂; Luebo, Congo. (D. W. Snyder.) [U. S. N. M.] Allied to *T. zebra* Gerstaecker, described from the Cameroons, but differing in the more produced ventro-caudal angle of the lateral lobes of the pronotum, the much more recurved and inflated apex of the male abdomen, the more elongate subgenital plate of the same sex and the slightly greater size.

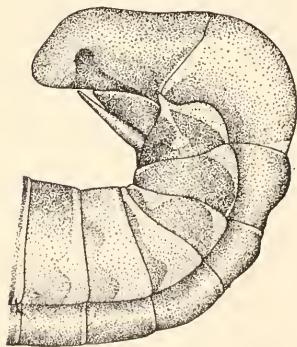
Having recently had an opportunity to examine a topotypic female specimen of Karsch's *T. gnu*, I find the Luebo individuals to be quite distinct, the female sex of the new form differing in the characters previously noted (*vide supra*) and also in the strongly compressed frontal costa, the margins of which are contiguous through nearly their entire length.

The female which we have associated with the male type shows some affinity with *T. quagga* Karsch and *T. depressifrons* Bolivar, both known only from the female sex, but the coloration, which is of great importance in the Eumastacinae, shows a number of differences.

♂ Size small; form distinctly compressed; surface of dorsum of thoracic and proximal abdominal segments finely rugulose.

Head with the dorsum considerably elevated dorsad of that of the pronotum, when seen from the side subobtusangulate at the highest portion of the eyes, fastigium decidedly declivent, rounding into the decidedly retreating facial line, the latter slightly concave; occiput with distinct median and strongly divergent lateral carinae, the lateral ones contiguous between the eyes and passing into the almost entirely contiguous carinae of the frontal costa, the latter very slightly separated for a short distance on the fastigium; antennae but little longer than the depth of the eye; eyes very large, moderately prominent.

Pronotum with the dorsal carina distinct but not elevated; lateral lobes of pronotum about as deep as long, cephalic margin strongly arcuate ventrad, ventro-cephalic angle obtuse, ventral margin arcuato-emarginate cephalad, ventro-caudal angle slightly produced, well rounded.



*Thericles macrophygia* n. sp.—Lateral view of apex of abdomen.  $\times 10$ .

Proximal abdominal segments carinate; apex of abdomen strongly recurved, subinflated; supra-anal plate with a pair of mesially constricted carinae, apex subtruncate; cerci elongate, styliform, apex blunted; distal ventral abdominal segment bullate, the outline regularly arcuate when seen from the side; subgenital plate elongate, sub-cylindrical, the apical margin slightly produced laterad and regularly arcuate in shape, when seen from the side distinctly depressed distad.

Caudal femora very considerably

exceeding the apex of the abdomen, moderately robust, median carina well spined, dorso-lateral carina with six spines, genicular lobes and median and lateral angles of the genicular region well spined.

General color black, variegated with saffron yellow as follows: a narrow medio-longitudinal line from the fastigium to the curve of the abdomen, also continued over the face to the clypeal suture, slightly expanding on the ventral section of the face; the two proximal antennal joints and a broad, oblique subocular bar on the genæ, a narrow bar along the cephalic margin of the lateral lobes of the pronotum, a broad patch on the caudal section of the same lobes, involving a portion of the mesonotum, and the median and distal portions of the abdomen margined with the paler color. Cephalic and median limbs saffron yellow, becoming subrufescent on the feet. Caudal femora ochraceous with the carinal spines and the genicular extremity, except the median carina and a distinct yellow margining to the genicular lobes, black. Antennæ except the two proximal joints brownish.

#### MEASUREMENTS.

Length of body .....	11.5 mm.
Length of pronotum .....	2.3 mm.
Length of caudal femur .....	9.2 mm.

♀. The female specimen which we have associated with the male type differs from it only in such characters as are essentially sexual and in the color, aside from the number of spines on the dorso-lateral carinæ of the caudal femora being five instead of six.

The ovipositor jaws have the teeth quite robust, while the supra-anal plate has the paired carinæ much as in the male.

The general color was probably yellow (much altered by immersion in spirits), the cephalic and median limbs and distal half of the caudal femora, exclusive of a yellowish line on the median carina of the genicular region and the margins of the genicular lobes, and the greater portion of the caudal tibiæ black. The pre-genicular region of the caudal tibiæ is indistinctly glaucous and the distal extremity and the bases of the spines of the same are more or less yellowish. The antennæ are colored as in the male.

#### MEASUREMENTS.

Length of body .....	17. mm.
Length of pronotum .....	3.3 mm.
Length of caudal femur .....	11.5 mm.

The pair described above are the only representatives of the species seen by us.

**Vulturopinae, a new Subfamily of the Psocidae; type  
Vulturops gen. nov. (Platyp., Corrod.).**

By CHARLES H. T. TOWNSEND, Piura, Peru.

The following very interesting insect was found by me some time ago in Piura, in north-western Peru. It evidently forms the type not only of a new genus but of a new subfamily. New forms of the lower and more primitive types of insects, like the present, coming from the west coast region of South America, possess a greatly added interest from the fact that they will quite certainly throw much light on early land connections between South America, Africa and Australasia, when the faunas of all three regions shall have been more thoroughly investigated.

Aside from the novelty of this form, and the biogeographic interest attaching to it, it is remarkable as being termitophilous in habit. In view of all these facts, I venture to describe it for the purpose of record.

VULTUROPINAE new subfamily.

Differs from the Psocinae as follows:—

A pair of subanal cerci present, with a tubercle just above them; these and end of abdomen with hairs. Abdomen subglobular, apparently of ten segments; thorax and abdomen stout, rather suggestive of the form of *Sminthurus*. Only one pair of wings developed, the anterior pair, the costa and veins heavy and sparsely set with long curved spine-like bristles; posterior wings atrophied, calypter-like or mere pads.

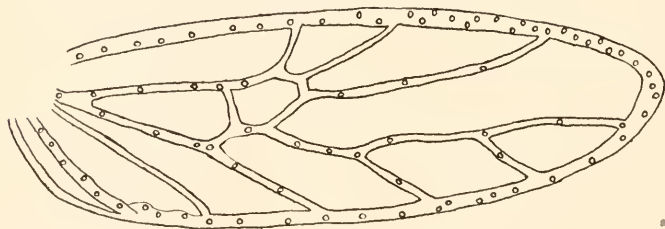


FIG. 1.—*Vulturops termitorum* n. sp.—Right anterior wing, upper surface, the bristles all detached.

Venation and form of wing unlike any of the Psocinae (see figure 1); one six-sided discal cell present, bounded by six cells which are contiguous to it. Wings non-functional as to flight. All the legs long but hind legs especially elongate, fitted for jumping; the hind tibiae very long, twice as long as others. Larva and nymph with only two tarsal joints, adult with three. First tarsal joint very elongate, others subequal and very short. Coxae all elongate but especially so the hind coxae, which are much larger and longer than the others. (The hind coxae seem to fit into an elongate vertical pleural furrow.) Tibiae and tarsi spined, femora with only fine hairs. Jumps like the Collembola.

*Type*, the following new genus:—

**Vulturops** gen. nov.

Face in profile like a vulture's beak with large fleshy protuberance at base; this appearance is due to the large, wide, rounded, convex facial tubercle, which is present as well in both larva and nymph. Crown of the head with long bristly hairs, covering also upper portion of facial tubercle. Eyes



FIG. 2.—Mandible.



Fig. 3.—Maxillary fork

*Vulturops termitorum* n. sp. (Greatly enlarged.)

faceted, no ocelli. Antennae with bristly hairs, about 25-jointed, last thirteen joints shorter than others, scape thickened, Mandibles strong, combining certain characters of *Troctes* and *Peripsocus*. Maxillary forks trifid, long, not stout, slightly curved (see figures 2 and 3). Maxillary palpi 4-jointed, much like those of *Peripsocus californicus*; the terminal joint flattened, spatulate, truncate and widened apically. Labial palpi 2-jointed, the terminal joint appearing somewhat flattened. Oesophageal sclerite and lingual glands rather similar to those of *P. californicus*.

Neck serrate above in profile, showing about eight or more notches and teeth. Prothorax reduced, shortened and narrowed; mesothorax and metathorax successively larger, both very high, about as wide as base of abdomen; all three divisions of thorax short. Nymph with abdomen and thorax quite same as in adult, and hardly to be described as thysanuriform. Larva and nymph not so bristly as adult, and showing no anal cerci. One adult shows a globular bladder-like sac attached to venter.

Wings (anterior) hemelytral both in appearance and function, about three times as long as wide, with strong heavy veins and complete strong costa extending entirely around border, appressed to the abdomen which they cover except anal end when abdomen is much swollen. One closed basal and one discal cell present; five longitudinal veins. Nymph with wings pad-like; larva without trace of them. Venation faintly visible in nymph.

All the tibiae with a pair of apical spurs. Tarsi 3-jointed, with a terminal pair of claws. The first tarsal joints not so strongly elongate in nymph as in adult. A pair of minute short spines on inside of middle of last tarsal joint of both larva and nymph shows where the joint becomes divided in adult into two joints.

Other characters as given above under family heading.

*Type*, the following new species:—

**Vulturops termitorum** sp. nov.

Length, about 1.25 to 1.5 mm. Color pale grayish-whitish, shading to straw-color on head and anal end of abdomen, mandibles and mouth parts more or less of deeper color. The wings, antennae, tibiae and tarsi with a fuscous shade, due to the armature of dusky bristles. Eyes brown.

Type and cotypes deposited in U. S. N. M.

Found in covered runways of *Hamitermes* sp. (det F. Silvestri) on outside of post, under house, Piura, Peru, January 18, 1911. Nine specimens, one being a larva, one a nymph, and seven adults. An adult was found at Payta, Peru (on the coast), January 3, 1911, indoors, where it had probably issued from termite galleries. Occasional individuals have since been found indoors at Piura, where all houses are badly infested with termites.

The curious wings of this form, quite unlike any flight-functioning wings known, both in their shape and in their veins, costa and bristle characters, are evidently functional as protectors of the soft globose abdomen. That such is the case is indicated by the erect curved bristles that spring from their upper surface. They have no doubt been developed in accordance with the termitophilous life-habit of the insect. This explains also why only the anterior wings are developed, while the posterior pair is atrophied and without any function whatever.

It may be said in this connection that search in South Africa for termitophilous Corrodentia should yield important results, since in that region termite evolution reaches its acme and the other forms of life bear much affinity with those of Australasia and South America.

The drawings were made with camera lucida, by Miss Helen T. Townsend, from mounts.

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ADDITIONS TO THE INSECT COLLECTION OF THE AMERICAN MUSEUM OF NATURAL HISTORY.—Mr. C. W. Leng has put his valuable collection of "long horned" beetles at the disposal of the American Museum of Natural History, New York City, for use in filling gaps in its collections. This means a gift of some 870 specimens covering nearly 300 species not hitherto acquired. Mr. John A. Grossbeck, who has been specializing for some time on the Geometridæ, has given to the museum his entire collection of these moths in addition to the series previously donated.—*Science*, April 26, 1912.

# ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

TO CONTRIBUTORS.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, four weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form and without covers, will be given free, when they are wanted; if more than twenty-five copies are desired, this should be stated on the MS. The receipt of all papers will be acknowledged. Proof will be sent to authors for correction only when specially requested.—Ed.

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PHILADELPHIA, PA., JUNE, 1912.

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Up to the date of reading the second proofs of the present number of the NEWS (May 22), 84 North American entomologists have sent in their ballots that the law of priority in nomenclature should be strictly applied in all cases. On the other hand 173 North American Entomologists have informed us that they vote against the strict application of the law of priority in all cases and express the desire that the most important and generally used names should be protected against any change on nomenclatural grounds.\*

In our July number we propose to print the names of those in favor of each one of these alternatives. In the meantime we hope to receive votes from others who have not yet responded to our invitations to take part in this "preferential ballot." Some additional contributions to the discussion of the nomenclature question will be found under the caption "Notes and News," on another page.

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As the Editor expects to be away from Philadelphia during the summer, part of the time in attendance on the International Congress of Entomology at Oxford (where he hopes to see many of his American colleagues), all communications respecting the NEWS should be addressed to the Associate Editor, at the Academy of Natural Sciences, from June 15 to October 1, 1912.

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\*The *Zoologischer Anzeiger* for April 10, 1912, page 365, announces the result of the votes of the German Zoologists (see the NEWS for May, p. 227) as 11 for, and 115 against, strict priority.

## Notes and News.

### ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

STRICT PRIORITY IN NOMENCLATURE—OR NOT?—It is not without misgivings that I signed the statement favoring *nomina conservanda*. I signed it because it clearly means, not sanction to individual initiative in the adoption or rejection of names, but mutual agreement expressed through properly constituted official action. My misgivings grow out of two considerations: One, in the present unintegrated state of organization of biological science there is no satisfactory means of getting opinion. I take it, this referendum vote, now proceeding at home and abroad, will show how far existing nomenclatural agencies have come from representing the opinion of zoologists at large. Two, the proposal, if successful in allaying the most pressing causes of present confusion, may tend to perpetuate the burden of nomenclature, which would still be too grievous to be permanently borne.

I am moved to sign the statement by these considerations: The confusion is growing ever more confounded with divers and sundry applications and extensions of the law of priority, and I would like to see saved: (1) Names of genera that are types of families, thereby saving the family names. (2) Names of genera that are bound up with important monographs, and that must continue in use in morphology, ecology, or other branches of biology. (3) Names of species well known in popular literature, in dealers' catalogues, etc.

In the second place, I think that the names likely to be thus conserved are those that no rational body would wish to sacrifice under any plan, and in the third place, I shall live in the hope that there may come another lucid interval when further progress by mutual agreement may be made.—JAMES G. NEEDHAM.

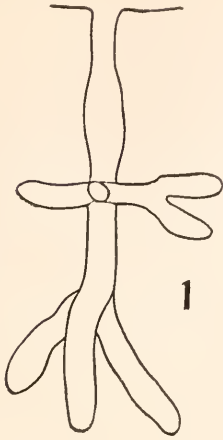
I am giving my preference for strict priority. It is a bit unfair to have the question put in such an unqualified way because the nomenclatural commissions of succeeding zoological congresses have not stood by the code as originally devised. Every change and qualification that has been adopted has simply made matters worse by introducing contradictions. If at every congress the rules are going to be changed it will be much better to ignore them and follow the dictates of one's own conscience. I am for a logical and sane application of priority. I cannot accept genera without species, like Meigen's of 1800. These must date from the time they had species included in them and be credited to the person who first did so.

A word regarding your list of names to be conserved in the last number of the News. As I have understood it, these lists are solicited from "specialists" in their respective groups. Some of us who are working in these groups and are confronted by some of these names

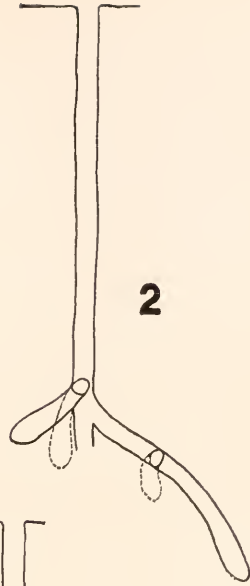
almost daily have a right to know who these "specialists" are. The aim, I believe, is to preserve generic names that have been in constant use regardless of priority. But, to take an example from your list what is done in the case of *Corethra*? The name as it stands in that list is not in the sense in which it has been generally used. There is a large classic literature on "*Co ethra*" in the opposite sense (that is, with *plumicornis* as type) which is very familiar and very important to those who are something more than systematists. Moreover, I am not aware that anyone has checked up Mr. Coquillett's results regarding the status of this genus. Again, take the genus *Stegomyia*. The concept of this genus is an absurdity. It was made to include species which are unrelated and which are united on mere colorational similarities. But the name gained great popularity because it was applied to the species of mosquito proved to be the transmitter of yellow fever. Medical literature, entomological literature, and above all popular pseudoscientific literature, immediately became flooded with mentions of "*Stegomyia fasciata*" and "the *Stegomyia*." Evidently the standing of the genus from the scientific standpoint means nothing to these conservators, the fact that it has been much used makes its retention imperative! Incidentally, the type of the genus is *Culex fasciatus* Fabricius. We shall soon arrive at the point where there will be zoologists and nomenclaturists; it will then be better to let these latter go their way.—FREDERICK KNAB.

[The statement of the alternatives on which we have been asking votes was adopted verbatim from that on which the Scandinavian and German naturalists voted, for the sake of a uniform international vote. The responsibility for the generic names of Diptera published in the May News, pp. 229-232, rests entirely with Dr. Stiles and his coadjutors. The list was referred to in our May editorial in illustration of a method by which an interational selection of *nomina conservanda* might be made, but we do not presume to say whether the types have or have not been correctly determined. That is for the Dipterists to decide.—Ed.]

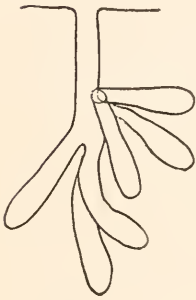
IT OCCURS TO me that the method applicable to one group might not be advantageous when applied to others. Would it be practical to assign some future date as a date from which well established names (I refer to generic names) should not be changed on grounds of priority from obscure and remote sources? For example, in ornithology, say in five or ten years, names of general and unquestioned use up to that time, should not be changed. In sciences dealing with more obscure groups which have received a more limited study, possibly the time should be longer, e. g., the time for fixing names of stone flies might be postponed for twenty-five years. I realize, of course, that the groups to which little study has been given have a limited litera-



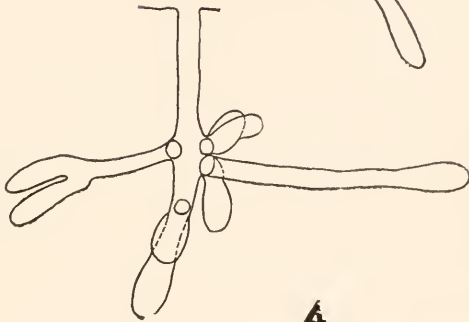
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ture, and relative exactness might be attained in a shorter time, but I have suggested this longer period because the limited literature of these obscurer groups may be the work of a very few individuals, and others should have a chance to pass on the names. If there is any hope of digging up all the names in the next twenty-five or fifty years, I am in favor of strict priority, but if this unearthing is to go on indefinitely I am in favor of making exceptions to the strict application of the law. As a matter of fact I don't believe these changes in nomenclature bother anybody much but those making them. The long-suffering morphologist, who, we are given to understand, is at a loss to name the one species he is working on, can usually settle his trouble by writing one letter.—E. B. WILLIAMSON.

At one time I was greatly in favor of the retention of certain generic names which were of primary importance in economic entomology, that is to say, such names as had been adopted by non-entomologists as common names of insects. However, since the movement along this line has reached the point where it seems to be merely a movement for the preservation of all names now in common (systematic) use, I have changed my mind, and am strictly for the law of priority. In cases such as I have mentioned the economic entomologists could well use the preoccupied name in their literature and it would make no difference at all to the systematist, as he would know the synonymy and could record the records in the proper place. This would allow the use of such names as *Stegomyia* in economic and popular literature and still allow the systematist to use the correct name.—J. C. CRAWFORD.

The above expresses my sentiments so well that I wish to subscribe.—H. L. VIERECK.

As ONE WHO has given a great deal of attention to this matter, I wish to say that there is no rule which is not open at times to exceptions, and that in the interest of a stable nomenclature there should be power vested in the Commission on Zoological Nomenclature created by the action of past Zoological Congresses and in the Commission on Nomenclature of the International Entomological Congress, by a unanimous vote, in a certain limited number of cases, to adopt a name which has been current, say for a century, as the generic designation of a well-known form, even though antiquarian research may show that some obscure writer in some obscure journal may have applied to that form another name. The number of such cases is in my judgment extremely limited. There are, however, a few of this sort. I am thoroughly in sympathy with the thought of those who clamor for a fixed and stable nomenclature. I think, however, that the difficulties which they foresee as likely to arise by the enforcement of the law of strict priority are

exaggerated. It is, in my judgment, of fundamental importance as soon as possible to have these disputed questions settled authoritatively for all time, and the creation of the Commissions already alluded to, in my opinion, is a step in advance, which has been taken none too soon. We are providing in these Commissions a court of last appeal, and their decisions should be accepted and adopted universally. No class of biological students is confronted with a huger and more entangled nomenclature than are students of entomology. As we all know, there are more living forms belonging to the class *Insecta* than belong to all the other classes in the animal kingdom combined. Thousands of new generic names have been created within the last decade for *Insecta*. The nomenclature is increasing so rapidly and so large a number of students are engaged in investigating the nomenclature of the past that it is no wonder that men who have not access to large libraries and all the existing apparatus for determining disputed questions are at times somewhat bewildered. I trust that a conscientious resolve will be formed by all working entomologists to refer questions in doubt to the nomenclatorial Commission of the Entomological Congress, that having been passed upon by this body their decisions may be submitted to the decision of the Commission of the Zoological Congress, and that thus ultimately there may emerge, as the result of their combined efforts, an entomological nomenclature which will be accepted universally as final and therefore stable. In this work the law of strict priority will have to dominate, though as I have already intimated, there may be some possible exceptions in the application of this rule to be left for final adjudication upon well-established principles by the members of this Commission.

In this connection it may be said that it is eminently desirable that there should be some concerted effort made to establish a recognized series of rules or principles governing the matter of founding genera. Our camps are divided into two groups, as we all know, the "Splitters" and the "Lumpers." Both have their faults and their virtues. For my part, I have the feeling, which has been growing, that the "Splitters" have been entirely too active of late, and the results of their diacritical investigations have had entirely too much respect accorded them. The establishment of a new genus upon the basis of a slight modification in the neuration of a wing, the presence or absence of a tubercle on the epidermis of a larva at a given place, is something with which I confess I have no sympathy. This is, however, aside from the main question.

Let us by all means have a stable nomenclature. In my judgment, however, the only way to rightfully attain this end is by respecting the law of strict priority save in a very small and limited number of cases, which should be very carefully considered and acted upon.—  
W. J. HOLLAND.

I AM AGAINST the strict application of the rule of priority, because there seems to be no end to the changes arising under it.

Take the birds of North America, some 700 species, if I remember rightly. The American Ornithologists' Union has had a committee working on them for over thirty years, and every supplement to the original check list has an increasingly large number of changes of names, owing to the application of this law. In fact, the common names of the birds have been stable, and the scientific ones unstable. Now, if a committee of experts working for thirty years on the birds of one country only cannot reach stability, by the application of this rule, how can we ever reach it in larger groups for the whole world?

I heartily agree with Mr. J. Chester Bradley's letter in the May News.

Furthermore, I think that where anyone proposes a change of name of any species, that change ought not to go into effect, until a year after the proposer of the change has published his reasons for thinking the change ought to be made. I have seen names changed in one publication and changed back again in the next issue. I have seen a name changed by the discovery of a new name for the species in an obscure publication, and the change upset by further research in the very same book.

Lastly, I think a great many name changes, new species, sub-species and varieties are due at the bottom, simply to the unconscious vanity of the author who desires to see his name in print as much as possible. Let us all guard against too much subconscious cerebration of this sort.—C. S. BRIMLEY.

IT MAY NOT be amiss to call attention to the fact that much confusion in the nomenclature of insects is not due to the law of priority, but to entomologists who do not follow that law, to entomologists who follow *nomina conservanda*, conserving and using names that they know to be synonyms when the majority of their colleagues are following priority.

There is no way of enforcing any law in nomenclature. No principle of nomenclature ever had more support and authority back of it than the law of priority. Ever since 1842, every congress and code have stood by it; will *nomina conservanda* receive more support?

No one more than the specialist dislikes to change names; the change of *Conocephalus* to *Xiphidium* will be of more annoyance to Mr. Caudell and a few other systematists in Orthoptera than to all the professors of Zoology in the country. But in recent years many systematists have realized the truth of the statement made seventy years ago by a committee of conservative English Zoologists, "The

name originally given by the founder of a group, or the describer of a species, should be permanently retained to the exclusion of all subsequent synonyms." (Rule 1, Brit. Assoc. Code, 1842. Westwood, Waterhouse and Shuckard were the entomologists on that committee, later (1860) Stainton and Wallace concurred; Darwin was a member.) Therefore many are willing to do what systematists over and over again have neglected to do, to follow a principle rather than personal desire. Ten years ago I knew as well as I know to-day that *Parasitus* should replace *Gamasus* but in my Treatise on Acarina (1904) I did not change; now with practically all European acarologists using *Parasitus* I shall adopt it, though the change is much more annoying to me than to all the anatomists in the world.

The refusal of many Dipterists to use certain names is not because of priority but for an entirely different reason; generic names without species. In Lepidoptera dozens of genera and hundreds of species have been changed because of priority by all leading Lepidopterists. In Odonata both the Kirby and the Muttkowski catalogues (all we have) accept priority. That list of names of Diptera to be preserved is based on strict priority, while in the list to be excluded are many names which have been continuously in use for fifty years and more, and which almost all Dipterists would like to have conserved.

*Nomina conservanda* is an utopian dream, the substitution of personal convenience for a definite principle. What will be conserved? One wants this, another does not. No committee meeting now has any more authority than committees meeting ten, twenty or fifty years hence. They will be controlled by other zoologists with other desires, and conserve other names.

I learned to know a common dragon-fly by the name of *Plathemis trimaculata*. Can I have it conserved? I learned to know a scale insect by the name of *Mytilaspis pomorum*. Can I have it conserved? Yet all the changes possible in Apidae which Prof. Cockerell fears will not be of one half the annoyance to entomologists in general as was that change of *Mytilaspis pomorum* to *Lepidosaphes ulmi*. Hundreds of the worst changes in many groups are already in all degrees of acceptance. Will these be nullified? No! priority will hold and will always hold simply because it is a principle while *nomina conservanda* is simply personal desire. Much of the confusion in nomenclature arises from an entirely different source. One entomologist writes *Papilio ajax*, another *Iphiclidides ajax*. This is the recognition by one of groups as genera, which another entomologist will not recognize as of even subgeneric rank. Neither priority nor *nomina conservanda* will help this.—  
NATHAN BANKS.

COLLECTING IN SOUTH AMERICA.—L. A. Williamson, E. B. Williamson and B. J. Rainey, of Bluffton, Indiana, left New York City by steamer on January 15th for British Guiana, and returned to New York March 19th. On their trip south their first stop was at Barbadoes, where they made only a brief stay, and from there they went to Georgetown, British Guiana, and with very slight delay struck into the interior, ascending the Demarara River sixty miles to Wismar, where they spent a few days in the collection of dragon flies, the main purpose of the expedition, which was organized by E. B. Williamson. From Wismar they crossed the country to Rockstone, on the Essequibo River, and collected flies for several days along that stream. Their next objective point was Tumatumari, on the Potaro River, about 150 miles from the coast, and in their collecting expeditions in that vicinity they ascended the river still twenty miles farther. From there they returned over about the same route to Georgetown.

From Georgetown the three gentlemen went to Paramaribo, the capital of Dutch Guiana, and also visited New Amsterdam in that country, adding to their collections at both points. This completed their collecting tour in South America and they then took a steamer to the Island of Trinidad, where they spent two weeks in collecting before they took up the return journey to New York.

They secured a total of about 4,100 dragon-flies, of 135 species, and in addition about 500 insects of other orders.

The dragon-flies secured in South America by Mr. Williamson will be added to a collection of about 23,000 he had made previously, which includes about 1000 species secured on former expeditions to many points in the United States, Canada, Mexico, and Central America.—*Bluffton Evening News*, March 21, 1912.

NEW POSTAL REGULATIONS CONCERNING INSECTS.—[I enclose copies of Orders Nos. 6158 and 6242 of the Postmaster General, and call your attention especially to paragraphs 7 and 8. No. 8, you will notice, is a new section, No. 7 being modified from the old one. L. O. HOWARD.]

OFFICE OF THE POSTMASTER GENERAL,  
WASHINGTON, March 23 and May 3, 1912.

ORDERS Nos. 6158 and 6242.

Section 496, Postal Laws and Regulations, is amended by amending paragraph 7 and adding new paragraph 8, as hereinafter stated, and by renumbering old paragraphs 8, 9, 10, 11 and 12 as paragraphs 9, 10, 11, 12 and 13.

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7. Queen bees and their attendant bees, when accompanied by a copy of a certificate of the current year from a State or Government apiary inspector to the effect that the apiary from which said queen bees are shipped is free from disease or by a copy of a statement by the

bee-keeper made before a notary public or other officer having a seal that the honey used in making the candy used in the queen mailing cage has been diluted and boiled in a closed vessel; beneficial insects, when shipped by departments of entomology in agricultural colleges and persons holding official entomological positions; other live insects, when addressed to the Bureau of Entomology of the United States Department of Agriculture, to departments of entomology in State agricultural colleges, and to persons holding official entomological positions, and dried insects and dried reptiles may be sent in the mails when so put up as to render it practically impossible that the package shall be broken in transit, or the persons handling the same be injured, or the mail bags or their contents soiled.

8. Nursery stock, including field-grown florists' stock, trees, shrubs, plants, vines, cuttings, grafts, scions and buds (which may carry injurious insects) may be admitted to the mails only when accompanied by a certificate from a State or Government inspector to the effect that said nursery stock has been inspected and found free from injurious insects.

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FRANK H. HITCHCOCK, Postmaster General.

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## Entomological Literature.

COMPILED BY E. T. CRESSON, JR., AND J. A. G. REHN.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), excluding Arachnida and Myriapoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species, will be recorded. The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published, and are all dated the current year unless otherwise noted. This (\*) following a record, denotes that the paper in question contains description of a new North American form.

For record of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington.

4—The Canadian Entomologist. 7—U. S. Department of Agriculture, Bureau of Entomology. 8—The Entomologist's Monthly Magazine, London. 9—The Entomologist, London. 14—Proceedings, Zoological Society of London. 38—Wiener Entomologische Zeitung. 44—Verhandlung, K. k. zoologisch-botanischen Gesellschaft in Wien. 50—Proceedings, U. S. National Museum. 68—Science, New York. 86—Annales, Societe Entomologique de France, Paris. 89—Zoologische Jahrbucher, Jena. 97—Zeitschrift fur wissenschaftliche Zoologie, Leipzig. 119—Archiv fur Naturgeschichte, Berlin. 153—Bulletin, American Museum of Natural History, New York. 161—Proceedings, Biological Society of

Washington. 166—Internationale Entomologische Zeitschrift, Guben. 179—Journal of Economic Entomology. 195—Bulletin, Museum of Comparative Zoology at Harvard College, Cambridge, Mass. 244—Zeitschrift, Induktive Abstammungs und Vererbungslehre, Berlin. 250—Delaware College Agricultural Experiment Station, Newark. 257—Bulletin, Public Museum of the City of Milwaukee. 259—Publications, Carnegie Institution of Washington. 285—Nature-Study Review, Urbana, Illinois. 351—Zeitschrift für Allgemeine Physiologie. Herausgegeben von Max Verworn, Jena. 365—Collections Zoologiques du Baron Edm. de Selys Lonchamps, Bruxelles. 368—The Monthly Bulletin of the State Commission of Horticulture, Sacramento, Cal. 375—Ergebnisse und Fortschritte der Zoologie herausgegeben von Dr. J. W. Spengel, Jena. 376—Zoologica. Scientific Contributions of the New York Zoological Society. 377—Neununddreissigster Jahresbericht des Westfälischen Provinzial-Vereins für Wissenschaft und Kunst. 378—Proceedings of the Fruit-Growers Convention of the State of California, Sacramento.

**GENERAL SUBJECT.** Burgess, A. F.—Some shade tree pests in eastern Massachusetts, 179, v, 172-180. Demoll & Scheuring—Die bedeutung der ocellen der insecten, 89, xxxi, 519-628. Herrick, G. W.—Notes on three shade tree pests, 179, v, 169-172. Hunter, W. D.—Results of experiments to determine the effect of roentgen rays upon insects, 179, v, 188-193. Knab, F.—Unconsidered factors in disease transmission by blood-sucking insects, 179, v, 196-200. Pierce, Cushman & Hood—The insect enemies of the cotton boll weevil, 7, Bul. No. 100. Schleip, P. W.—Geschlechtsbestimmende Ursachen im Tierreich, 375, iii, 165-328. Schlutter, C.—Beiträge zur physiologie und morphologie des verdauungsapparates der insecten, 351, xiii, 155-200. Smith, J. B.—Obituary by A. Gibson, 4, 1912, 97-99. Obituary by H. Osborn, 179, v, 234-236. Welch, P. S.—The insect life of pond and stream, 285, viii, 139-144 (Cont.) Zawarzin, A.—Histologische studien ueber insecten. II. Das sensible nervensystem der Aeschnalarven, 97, c, 245-286.

**APTERA AND NEUROPTERA.** Enderlein, G.—Embiidinen Monographisch Verarbeit., 365, Fasc. iii. 121 pp. Hood, J. D.—New genera and species of N. Am. Thysanoptera from the south and west, 161, xxv, 61-76. Kellogg, V. L.—Mallophaga from the Hoatzin, 376, i, 117-121. Merrill, G. E.—Pear thrips, 378, xl, 24-33. Parrott, P. J.—The occurrence of the pear thrips in New York, 179, v, 184-188.

**ORTHOPTERA.** Cameron, A. E., Structure of the alimentary canal of the stick-insect (*Bacillus rosii*); with a note on the parthenogenesis of the species, 14, 1912, 172-182. Caudell, A. N.—A new

mantis from British Guiana, **376**, i, 123-124. **Chopard, L.**—Contribution a la faune des Orthopteres de la Guyane Francaise, **86**, lxxx, 315-350. **Gillette, C. P.**—Grasshopper conditions in Colorado, **179**, v, 121-123. **Karny, H.**—Discriptiones Conocephalidarum novarum, **44**, lxi, 334-347. **Meissner, O.**—Ergebnisse einer Dixippus-zucht aus moglicherweise befruchteten eiern, **166**, vi, 13-14. **Milliken, F. B.**—The position assumed by female grasshoppers when ovipositing, **179**, v, 232. **Washburn, F. L.**—Grasshopper work in Minnesota during the season of 1911, **179**, v, 111-121.

**HEMIPTERA.** **Abbott, J. F.**—A new type of Corixidae (*Ramphocorixa balanodis*, n. gen., et sp.) with an account of its life history, **4**, 1912, 113-121 (x). **Essig, E. O.**—The walnut plant louse (*Chromaphis juglandicola*), **368**, i, 190-194. Plant lice, **378**, xl, 11-19. **Hunter, W. D.**—The cotton stainer (*Dysdercus sutrellus*), **7**, Circ., No. 149. **Watson, J. R.**—Utilization of fungus parasites of Coccidae and Aleurodidae in Florida, **179**, v, 200-204.

**LEPIDOPTERA.** **Borggreve, H.**—Geschlechtsdimorphismus einheimischer schmetterlinge, **377**, 1910-11, 47-54. **Chittenden, F. H.**—The larger canna leaf-roller. (*Calpodes ethlius*), **7**, Circ. No. 145. A little-known cutworm (*Porosagrotis vetusta*), **7**, Bul. No. 109, 47-51. **Chittenden & Marsh**—The imported cabbage webworm (*Hellula undalis*), **7**, Bul. No. 109, 23-45. **Clemence, V. L.**—Notes on "Melitaea alma," **4**, 1912, 102. **Dyar, H. G.**—New species of *L.* from British Guiana, **376**, i, 125-138. **Goldschmidt, R.**—Erblichkeitsstudien an Schmetterlingen I., **244**, Bd. vii, heft, 1, 62 pp. **Houghton, C. O.**—The apple leaf-miner (*Tischeria malifoliella*), **250**, Bul. No. 87, 1-9. **Hunter, W. D.**—The outbreak of "Alabama argillacea" in 1911, **179**, v, 123-131. **Moulton, J. C.**—On some unintentional evidence in support of the mimicry theories, supplied by a small collection of Bornean butterflies, **8**, 1912, 79-84. **Sheldon, W. G.**—Notes on the life-history of "*Colias nastes* var *werdandi*" with description of ova and larva, **9**, 1912, 122-125. **Strand, E.**—Sechs neue exotische grossschmetterlinge, **119**, 1911, Bd. 1, Suppl. 4, 98-102. **Vogel, R.**—Ueber die chordotonalorgane in der wurzel der schmetterlingsflugel, II., **97**, c, 210-244. **Walsingham, L.**—Correction of impossible names, **8**, 1912, 87-89. **Weymer, G.**—Die grossschmetterlinge der erde Fauna americana, pp. 249-256.

**DIPTERA.** **Aldrich, J. M.**—(Meigen's 1800 paper), **4**, 1912, 104. **Carnes, E. K.**—Mediterranean fruit fly (*Ceratitis capitata*), **378**, xl, 71-78. **Houser, J. S.**—The gooseberry gall midge or bud deformer (*Rhopalomyia grossulariae*), **179**, v, 180-184. **Knab, F.**—The habits of flies of the genus *Cordylobia*, parasitic on man in Africa, **68**, xxxv, 662-663. **Kraatz, W.**—Chironomidenmetamorphosen, **377**, 1910-11, 71-114. **Muir, F.**—Two n. sp. of Ascodipteron from East

Indies, 195, liv, 351-366. Webster, F. M.—The alfalfa gall midge (*Aspondylia miki*), 7, Circ. No. 147.

**COLEOPTERA.** Bernhauer, M.—Zur Staphylinidenfauna von Sudamerika (9, Beitrag), 38, xxxi, 68-82. Coblentz, W. W.—A physical study of the firefly, 259, Pub. No. 164, 45 pp. Fenyés, A.—Remarks on "*Gnypeta thoms*," 4, 1912, 105-112. Reitter, E.—Uebersicht der untergattungen und der artengruppen des genus "*Otiorynchus*," 38, xxxi, 45-67. Spaeth, F.—Beschreibung neuer Cassididen nebst synonymischen bemerkungen, 44, lxi, 241-277. Webster, F. M.—The so-called "curlew bug" (*Sphenophorus callosus*), 7, Bul. No. 95, 53-71. Wickham, H. F.—On some fossil Rhynchophorous Coleoptera from Florissant, Colo., 153, xxxi, 41-55 (x).

**HYMENOPTERA.** Cockerell, T. D. A.—Names applied to bees of the genus "*Osmia*" found in No. Am., 50, xlii, 215-225. Fernald, H. T.—Description of certain species of wasps of the family Sphecidae, 50, xlii, 257-259. Ferton, C.—Notes detachees sur l'instinct des H. Melliferes et ravisseurs (7e Serie), 86, lxxx, 351-412. Graenicher, S.—Bees of northwestern Wisconsin, 257, 1, 221-249 (x). Houghton, C. O.—The blackberry leaf miner (*Scolioneura capitalis*), 250, Bul. No. 87, 10-15. Phillips & White—Historical notes on the causes of bee diseases, 7, Bul. No. 98. Schmiedeknecht, O.—Opuscula Ichneumonologica. Fasc. xxx. Tryphoninae, pp. 2323-2402.

#### RECENT ENTOMOLOGICAL LITERATURE.

Last year (*Annals Ent. Soc. Amer.* IV., p. 192) the writer suggested a few simple rules to govern entomological publications; rules which might, it seemed, be made to apply to all taxonomic papers, with the result of avoiding much inconvenience and confusion hereafter. It was thought that in time Entomologists might come to be as exact in presenting their taxonomic results as botanists are today, and this without any great difficulty or effort. The faults intended to be connected by the rules referred to result wholly from poor methods or indifference to matters which experience shows to be important. Thus, in describing a new genus, it is as easy to cite a type species as not; in describing a new species, it is perfectly simple to indicate the type locality. To compare new genera and species with their allies, or state explicitly the characters separating them from others, is a matter of more difficulty; but certainly no one should describe a new genus or species if he has not made the necessary comparisons, and having made them, it should be easy to state them.

In order to call attention to existing deficiencies, and so perhaps stimulate reform, it is proposed to enumerate from time to time recent publications which fail to come up to desired standards. Many or most of these papers are of course extremely valuable contributions

to Entomology, and no criticisms will be directed against their scientific contents; it is obvious, however, that the more valuable the papers, the more to be regretted are any faults in methods of presentation.

*Transactions American Entomological Society, Vol. 37, 1911.*

A. A. Girault on Trichogrammatidæ. *Trichogrammatoidea* n. g., p. 15. It is a good rule that a generic name should not contain more than six syllables, at most.

C. W. Metz on *Prosopis*: pp. 85-156. *P. conspicua* n. sp., p. 114; no collector given (doubtless collected by Baker). *P. rudbeckiae* n. var. *granulatus*, p. 114; no locality or collector. In other cases the omission of the collector's name is probably due to lack of information.

H. J. Franklin on Bombidæ, pp. 157-168. *Bombus fernaldi*: n. sp. is elaborately described, but the type is deliberately made to be the insect which Fowler referred to *edwardsii*, and defined only by a few words in a table, "first segment yellow" being the only words applicable to this alone! Franklin himself says: "Can those specimens be identified with certainty?" *B. mormonum* n. sp., no collector. *B. mexicanensis* n. sp., no data of locality etc. nearer than "Mexico" (perhaps not available). Two new *Psithyrus* described with numerous localities; no type-localities given, and names of collectors omitted, though in many cases known to the author.

N. Banks on Neuropteroids, pp. 335-360. Numerous species described, many without comparison with allies. Collectors' names omitted in some cases when they must have been known to the writer.

*Annals of Queensland Museum, No. 10. Nov., 1911.*

A. J. Turner on Australian Lepidoptera, pp. 59-135. Very numerous new species, with frequently no reference to allies.

*Canadian Entomologist, Vol. XLIII, 1911.*

H. Bird on *Papaipema* and *Hydraecia*. *P. rubiginosa*, p. 40, published as a binomial, but said to be a "new aberration." So also *P. fluxa*, p. 44. Type localities not distinguished. On p. 47 *H. repleta* n. sp. is said to come from "Chinis Mts.," Ariz. This is evidently from one of the Schwarz labels, "Chiric. Mts.," i. e. Chiricalhua Mts. This unfortunate abbreviation crops up in many places.

N. Banks on Asilidæ, p. 128. Four n. spp., two without comparison with allies.

C. S. Ludlow on *Culex*, p. 178. *C. borealis* n. sp. from "Alaska;" no exact data, no collectors' names, though these must have been available.

E. D. Ball on Homoptera, p. 107. Entomologists might learn how to spell Schwarz! The new species should be *Thamnotettix schwarzi*, and Ash Fork must be regarded as the type locality.

R. F. Pearsall on Geometrids, p. 205. Two new species, and numerous new records; no collector given.

E. M. Ehrhorn on Coccidæ, p. 275. Several new species; no comparison with allies.

A. D. Macgillivray on *Empria*, p. 305. 21 new species; no comparison with allies. More species on p. 341 et seq.

Barnes & McDunnough on *Cea* on p. 318. Two new species; no collectors given. One has two localities, type locality not stated.

C. R. Crosby on *Derostenus*, p. 414. New species; no comparison with allies.

T. W. Fyles on *Gnorimoschema*, p. 422. New species; no comparison with allies.

T. D. A. COCKERELL.

THE NORTH AMERICAN DRAGONFLIES OF THE GENUS *AESHNA*. By E. M. Walker, B.A., M.B., Lecturer in Zoology in the University of Toronto. University of Toronto Studies, Biological Series, No. 11, University of Toronto Library: Published by the Librarian, 1912. Pp. viii, 213. 28 plates (6 of them in colors). Received April 20, 1912. Price, \$2.00.

This monograph, by the Editor of *The Canadian Entomologist*, deals with the species of *Aeshna*, in the narrower sense (excluding those referred to *Coryphaeschna* Williamson), which have been found north of Mexico. It is doubtful whether anyone hitherto has produced a work treating of so many aspects of a group of Odonata as this one does. The systematic portion occupies pages 56-202. Preceding it is a discussion of the taxonomic characters of adult and of nymph; the variations of the adults, climatic, colorational and geographic; and the general life-history.

The discussion of the taxonomic characters devotes much space to descriptions of the color-pattern and external genitalia of the adults and to the relationships of the Aeshninae of the world *inter se*. The author's views on this latter subject are summarized in a phylogenetic tree (p. 24), according to which *Gomphaeschna*, *Jagoria*, *Linaeschna*, *Boyeria*, *Allopetalia*, *Basiaeschna*, *Oplonaeschna* and *Aeshna* are placed as the most generalized of living genera. *Aeshna* is thought "to suggest a polyphyletic origin from several parent genera resembling *Basiaeschna* and *Oplonaeschna*," while *Anax* is considered to be in most respects "very highly specialized."

The climatic variations noted are that "with an increase of the mean summer temperature there is an increase in the length and a decrease in the depth of [abdominal] segment 3, and an increase in the length of the female appendages." (p. 29.)

The color variations are exhibited by the females which, as in some other Odonata (*e. g. Ischnura*), are often of two types in the same species, one (homoeochromatic) resembling, the other (heterochromatic) differing from, the colors of the male. "These two color phases are, however, not sharply marked off from one another, but are connected by intermediate forms."

Geographical variation is best shown in the western half of the continent and it is suggested that this is due to the varied topography of that region.

The section on the general life-history contains many notes on the general ecology of the imagos and nymphs. Some additional details on the copulatory position are furnished and illustrated in plate 2. Detailed accounts of oviposition in two species are given and figured (plate 3). Differences in the eggs of various species are recorded (p. 46); the ovaries of a female *Ae. umbrosa* were found to contain 839 eggs. The wing-buds appear on the exterior of the nymphs when the latter are about 1 cm. long. How many instars precede this appearance was not determined, but "it appears probable that there are three or four ecdyses." Beginning with the stage when the wing-buds are barely indicated, "the nymph apparently moults eight times before emerging as the adult insect . . . making a probable total of twelve or thirteen stages." Characters for distinguishing the last eight instars are given. The length of nymphal life in Southern Canada and the Northern United States is probably three years. A description of the transformation of *Ae. canadensis* is illustrated by eight figures (plate 5).

The systematic portion of the work opens with separate keys to the male and female imagos of the 20 species recognized within the geographical limits mentioned. The nymphs of no less than twelve of these species are distinguished in a following key. The specific descriptions are detailed and frequently run to six or more pages. Dr. Walker has been careful to give a minute list of the material determined for each species, the total number of imagos examined having been about 1720.

The plates, reproduced by the Heliochrome Co., Boston, from Dr. Walker's own beautiful drawings (some of which we had already seen) illustrate the structural and color characters of both sexes of the adults and also, as far as possible, of the nymphs. On behalf of odonatologists and entomologists generally, we will presume to thank the author's father, Sir Edmund Walker, for the publication of these plates, since he has met their cost, as Prof. R. Ramsay Wright states in the prefatory note.

The number of North American species of *Aeshna* admitted by writers at different times affords a curious study of the psychology of "lumping

and splitting." Hagen, in his Synopsis of 1861, recognized 12 species within the limits of Dr. Walker's monograph, 3 of the 12 being unknown to him and cited, without descriptions, from de Selys' collection. At the same time he admitted two North Asiatic forms (*crenata* and *palmata*) as distinct. Scudder, in 1866, described *propinqua* and *eremita* as additional species. In 1875, Hagen listed 13 species relegating two of the three undescribed species of 1861 to the synonymy, identifying *palmata* Hag. with *constricta* Say, *crenata* Hag. with *eremita* Scud., scattering *propinqua* among three previously described species and adding two *nomina nuda*. The climax in the lumping process was attained by the reviewer whose heinousness is thus dispassionately described by Dr. Walker (p. 127). "This species [*eremita*] was thought by Hagen ('75) to be the same as the Siberian *Ae. crenata* Hag., and Calvert ('94), accepting this view, attempted to show the identity of *Ae. eremita* Scudd. with *Ae. clepsydra* Say. This study was based upon forty male specimens, including at least four species [!!\*], but, although a careful piece of work, it takes no cognizance of the important characters found in the accessory genitalia of the males and the thoracic color-pattern."

Martin (Catal. Coll. Zool. Selys, 1908), adopting nearly all the extreme views of Hagen and of Calvert, could list but nine species in question. Then the tide turned with the appearance of Dr. Walker's paper in the *Canadian Entomologist* for November and December, 1908, separating again several of the forms which Hagen and his followers had united, such as *palmata* and *crenata*, adding several new ones and recognizing a total of nineteen. That paper was an outline, taxonomically, of the work now under review where (p. 8), Dr. Walker has accounted for the existence of the "lumping" thus: "The color-pattern in the genus *Aeshna* is on the whole very uniform, remarkably so in the North American species, and in the ordinary cabinet specimens the appearance of uniformity is exaggerated by the disappearance of the natural colors and the frequent obscurity of the markings. Hence Odonatists generally have relied almost exclusively upon structural features in characterizing the species of this genus, particularly upon the abdominal appendages of the male, with the result that the species of *Aeshna* have been 'lumped' to an unusual degree and the belief has become prevalent that the coloration, though relatively uniform for the genus, is very variable within the limits of a given species."

From the zoogeographical standpoint, we may call attention to Dr. Walker's remark (p. 56): "Although the number of described North American species of *Aeshna* is somewhat greater than that of the Palae-

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\*These indicate *our own* sense of horror.

arctic species, the latter are more diversified in size, structure and color-pattern and represent a larger number of groups."

The list of literature cited occupies the last ten pages. The only serious lack in the volume is that of an index, although its absence is somewhat compensated for by a two-page table of contents.

All in all, the work is of the highest value and we heartily congratulate Dr. Walker on his achievement.—P. P. C.

---

## Doings of Societies.

### FELDMAN COLLECTING SOCIAL.

Meeting of January 17, 1912, at 1523 South Thirteenth Street, Philadelphia, Pa. Eleven members were present. Mr. L. H. Traunweiser, of this city, visitor. President Haimbach in the chair.

The President read his annual address which was ordered to be incorporated in the minutes.

The following officers were nominated and elected to serve for the year 1912: President, Frank Haimbach; Vice-President, H. A. Wenzel; Treasurer, H. W. Wenzel, Secretary, Geo. M. Greene; Ass't-Secretary, Chas. T. Greene.

Mr. Harbeck said he had received a letter from Mr. Manee which contained a very well-executed sketch of a fly, thinking it was a new genus and species, and suggested names for it, but it was a Stratiomyid, *Hermetia illucens* Linn.

Mr. Wenzel, Sr., stated that he had put into his collection all the species collected in Southwestern Texas by Mr. Wenzel, Jr., except those unknown to him which he had put aside. These were exhibited. The genus *Zygops* was only represented by one species, *seminivens* LeC., until Casey described a new one, *suffusus*, of which Mr. Wenzel, Jr., succeeded in getting a single specimen in the Chisos Mts., VII, 21. This was exhibited with a specimen of the former species, also collected by Mr. Wenzel, Jr., in the Huachuca Mts., Arizona, VII, 10.

Dr. Skinner said that for some time he had been thinking over a subject that had bothered him considerably and at present he saw no solution of the problem. Namely, what are we going to do about getting specimens named? Some time

ago a brief article appeared in ENTOMOLOGICAL NEWS in regard to this subject, and individuals and institutions were criticised for being derelict in this respect. A letter was received from Dr. Howard in relation thereto, in which he contended that the number of collectors had greatly increased and that the old conditions had materially changed.

Dr. Skinner said he believed that the specialists and systematists had increased proportionately. He cited the older men as doing an immense amount of identification work and they were nearly all engaged in pursuits other than entomology for a livelihood. He cited Osten Sacken's Memoirs, where the author mentioned naming material from all over the country and at that time the Baron was a busy diplomat, traveled much and had many social obligations. Drs. LeConte and Horn were mentioned as doing a large amount of work in this particular for men and institutions all over the United States. Mr. E. T. Cresson, W. H. Edwards, Dr. John B. Smith and Dr. James Fletcher were also examples. Dr. Fletcher acted as the good father of all Canadian entomologists, named their material and encouraged them in every way, often working into the small hours of the night for this purpose, after his day's work was done. He thought the entomologists should take up this matter and have it rectified in some way.

This led to a general discussion on the subject and Mr. Wenzel, Sr., read a letter from Thomas B. Ashton, dated Feb. 8, 1895, relative to Dr. Horn and this subject.

Mr. Laurent exhibited a specimen of *Calosoma sycophanta* Linn. (Col.) from Berlin, Germany, V-10, collected by P. Albrecht, and referred to a late paper on the subject from the Bureau of Entomology.

Mr. Kaeber exhibited a specimen of *Monohammus titillator* Fabr. (Col.) picked up on the city streets, IX-30-11. Mr. Wenzel, Sr., said it had most probably bred from pine kindling wood.

Adjourned to the refectory.

GEO. M. GREENE, *Secretary.*

**OBITURY.****Dr. Nettie M. Stevens.**

In the death of Dr. N. M. Stevens, which occurred on May 4, 1912, in the Johns Hopkins Hospital, Baltimore, American zoology loses a distinguished, patient and industrious investigator. Her researches for the most part lay outside the field of entomology, but, like the late Professor Montgomery's as pointed out in our May number, her cytological material was often drawn from insects. Like Professor Montgomery also, she was among the first in the study of the chromosomes of the germ cells and their relation to differences in sex. In at least ten papers, between 1905 and 1911, she dealt with these structures in Termites, Orthoptera, Coleoptera, Aphids and Diptera.

Miss Stevens was born at Cavendish, Vermont, July 7, 1861, received her early education at Westford and Westfield, Massachusetts, and subsequently taught school in that part of the State. Removing to California, she entered Leland Stanford Junior University, where she obtained the bachelor's and master's degrees in 1899 and 1900. Graduate work in zoological subjects at Stanford, Bryn Mawr, Wood's Hole and Wurzburg followed, and in 1903 she received the Ph. D. from Bryn Mawr, where she has since served first as Reader (1904-05) and then as Associate in Experimental Morphology (1905 on).

Undaunted by the presence of one of the most dreaded of human diseases, she directed the work of her students from the Hospital until within a few days of the end; unyielding as long as consciousness remained, she confidently looked forward to renewing her researches.

P. P. C.

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**Shigeru Kuwayama.**

In reply to a request for a copy of "Die Psylliden Japans I and II" by Shigeru Kuwayama, I have received word from his father (who sent the papers) at Sapporo that "my eldest son Shigeru Kuwayama, who was a Bachelor of Agriculture here, passed away calmly this year on February 17th."

May 8, 1912.

EDITH M. PATCH.

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*S. Haldeman 1866.*

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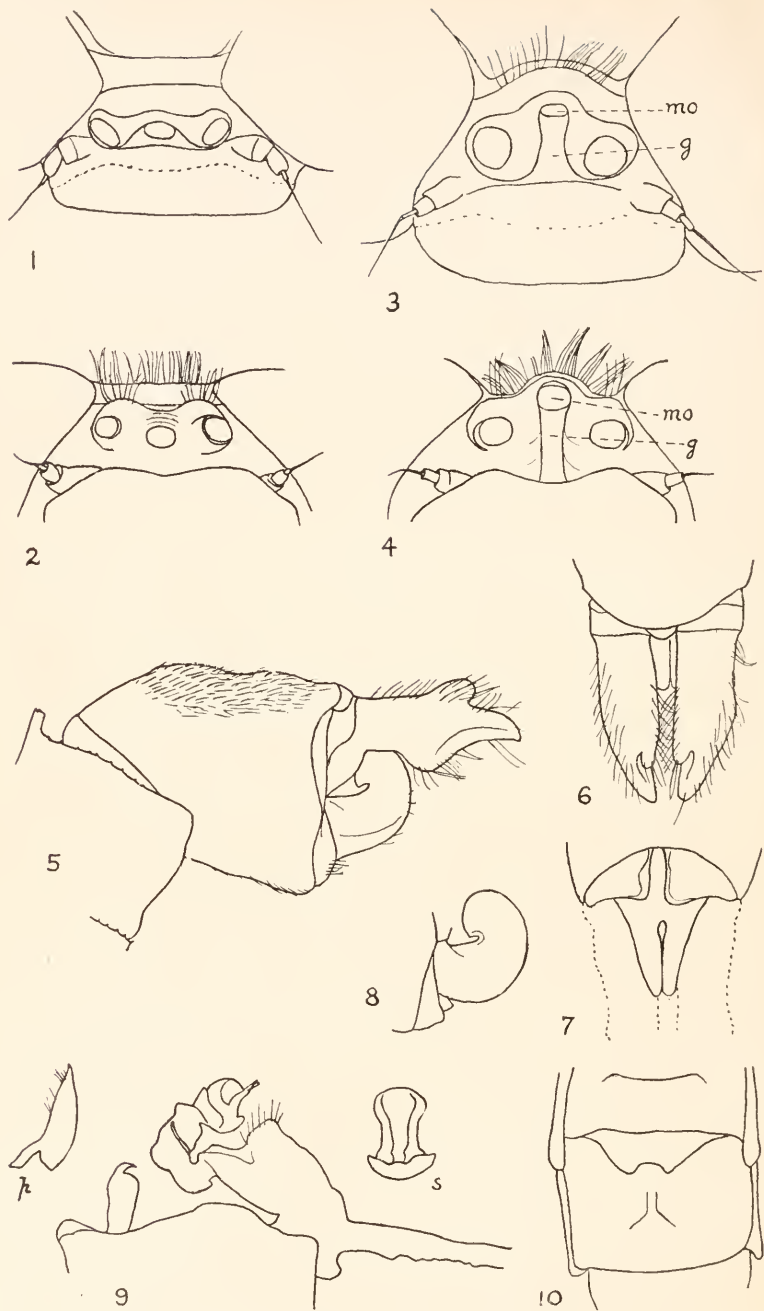
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VOL. XXIII.

JULY, 1912.

No. 7.

### CONTENTS:

Calvert—Studies on Costa Rican Odonata .....	289	Coleoptera .....	320
Girault—Notes on the Hymenoptera Chalcidoidea .....	296	Editorial .....	324
The Vote on Priority in Nomenclature .....	300	Headlee, et. al.—Strict Priority in Nomenclature—or Not? .....	325
McGregor—A new Mallophagan .....	305	Americans at the International Congress of Entomology .....	327
Angell—Two new North American species of Necrophorus (Coleop.) .....	307	Cockerell—Food Plant of <i>Dysdercus mimus</i> Say .....	327
Fisher and Kirk—Cerambycidae from Harrisburg, Penna., and vicinity, with notes (Coleop.) .....	308	Entomological Investigation of Okefenokee Swamp .....	327
de la Torre Bueno— <i>Nezara viridula</i> Linne, an Hemipteron new to the Northeastern United States .....	316	Porter—Collecting in Tropical America .....	328
Cockerell—A new Chalcidid from Guatemala (Hymen.) .....	318	Westcott—Scarcity of Early Insects .....	328
Fall—A new Tetroplium, two new Bruchides, with brief notes on other		Rohwer—One Reason for the Change of Names .....	329
		Holloway—An Experiment on the Oviposition of a Hymenopterous Egg Parasite .....	329
		Entomological Literature .....	331

### Studies on Costa Rican Odonata.

#### IV. *Erpetogomphus* in Costa Rica, with Descriptions of a New Species Having Complex Structural Mating Adaptations.

By PHILIP P. CALVERT, PH.D., University of Pennsylvania, Philadelphia, Pa.

(Plate XVII)

The following summary of the geographical distribution of the genus *Erpetogomphus* was published in 1905 (Calvert, 1901-1908, p. 159): "A very characteristic genus of the present [Mexican-Central American] fauna. Eleven species are now known, ten of which have actually been found in Mexico or Central America. The eleventh, *E. compositus*, is known from Texas and Arizona, and will doubtless be found in Mexico; it has been reported from the Yellowstone and Oregon, which, with Ohio and Indiana (*E. designatus*), are the most northern known limits of *Erpetogomphus*. To the south, Guatemala is at present the known limit; there is, however, a very doubtful record from Brazil."

In 1907, in the supplementary part of the same volume (p. 398), it was possible to say: "The most southern locality for this genus certainly known is now San José, in Costa Rica, as

cited below under *E. elaps*"—a single male taken by the late Professor Biolley, in May, 1905, now in the British Museum of Natural History as part of the Godman-Salvin collection.

During the year which I spent in Costa Rica, I only once saw an insect which I thought might have been an *Erpetogomphus*. This was on the southern edge of Cartago, but I was unable to capture it, and repeated visits to the same spot on subsequent days failed to rediscover it. Its identity is therefore entirely uncertain.

In July, 1911, Professor J. Fidel Tristán, Senora Tristán and Senor C. Picado, went to Oricuajo, a farm belonging to Senor Santiago Guell, on the Pacific side of Costa Rica, between the Rivers Machuca and Jesus Maria, where they unit. Professor and Senor Tristán were here from July 5-10, and made a collection of Odonata which Professor Tristán subsequently sent to me. Among them was a male and a female *Erpetogomphus*, enclosed in the same envelope, so presumably taken pairing. This pair not only confirm the existence of the genus in Costa Rica, but are of an undescribed species which, in honor of my friend and companion on many a delightful excursion, I herewith describe as

*Erpetogomphus tristani*, n. sp. (Plate XVII).

♂ Vertex, clypeus, labrum, occiput and genae dark brown. Frons bright green, except for a superior transverse dark brown stripe in front of the antennae which is confluent in front of each eye with a narrower transverse dark brown stripe along the inferior margin. Labium, maxillae and bases of the mandibles pale yellow, but the apices of all brown or black. A nearly straight transverse ridge on the vertex behind the ocelli, forming a tubercle bearing some long dark hairs behind each lateral ocellus, but concealing only a small part of the occiput when the head is viewed from in front (Fig. 2). Hind margin of the occiput almost straight, curving slightly upward at each eye, with a row of moderately long dark hairs.

Fore and hind lobes of the prothorax pale green, the former tinged with pale brown on the sides. Middle lobe pale brown, a pair of sub-median dorsal dots and a larger spot each side pale green.

Thorax (meso-metathorax) with the mid-dorsal carina, borders of the ante-alar sinus, a mid-dorsal and a humeral stripe, and stripes on the first and second lateral sutures and along the ventral margin of the metepimeron, dark maroon brown. The median brown stripe is

narrowed at the antealar sinus (where it is narrowly confluent with the upper end of the humeral stripe of each side) and still more so at the transverse anterior mesepisternal carina, in front of which it widens anteriorly and is confluent on the mesinfraepisterna with the lower end of each humeral stripe. The pale antehumeral stripe is bright green, is wider at both ends than at its middle, where it is about two-thirds as wide as the brown median stripe and half as wide as the brown humeral stripe at the same level. The brown humeral stripe is constricted to half its width at its upper end where, as well as at its lower end, it is narrowly confluent with the brown stripe of the first lateral suture. This latter is twice confluent in its uppermost fourth with the brown stripe of the second lateral suture, which in its turn is confluent above (very narrowly) and below with the metepimeral brown stripe. The pale color of the sides of the thorax is more yellowish than the pale antehumeral stripe and is wider in each of its three divisions than the brown stripe which bounds each division posteriorly. Inter-alar dorsal sclerites pale green. Pectus pale obscure yellowish.

Abdomen brown, darker on segments 3-8, marked with pale yellowish-green as follows: most of 1; the auricles and two (?) posterior spots, one lateral (the other dorsal?), on 2; a narrow mid-dorsal stripe or line beginning at the anterior end of each of segments 3-7 but not reaching the hind end of any of them; a spot on each side in the foremost fourth on 3 or sixth on 4-6 (or 7?). Segments 9 and 10 are of a more reddish-brown than those preceding and bear a greater number of delicate pale hairs.

Abdomen widest at segment 1 and again at the articulation of 9 and 10. A tuft of pale hairs on a brown spot at the hind margin of 1 where dorsal and lateral surfaces meet. Auricles on 2 well-developed, decidedly projecting, with about eight minute denticles on the posterior margin. Segments 7-9 successively shorter, 10 longer than 8 or 9 but shorter than 7. Hind margin of 9 angularly produced into a mid-dorsal posteriorly-directed process. The hind dorsal margin of 10 is rounded and produced into a small rounded median tubercle which fits between the superior appendages.

Genitalia of 2 (Fig. 9) black; anterior hamules shorter than the posterior, rounded and hooked at tip, posterior hamules tapering to the acute straight tips. Each of the two antero-lateral angles of the vesicle of the penis terminating in a lamellate process.

Superior appendages three-fifths as long as 10, pale green, blackish at extreme base and at apex, with many hairs half as long as, or longer than, each appendage is thick. In dorsal view (Fig. 6) almost straight and parallel, the posterior half of each obliquely truncated from the outer side inward (mesad) and backward (caudad); at two-

thirds length is a stout dorsal tooth on the inner (mesial) margin. In profile view (Fig. 5) each appendage at its base is almost half as high as the hind margin of 10 but contracts its height by one half on the ventral side of the proximal fifth; at one-half length is a strong tubercular ventral tooth directed ventrad, distad to this tooth the ventral edge is concave; the fourth sixth of the appendage's length on its dorsal edge is occupied by a stout tooth directed dorsad and caudad; from this tooth the thickness of the appendage gradually decreases to the apex which is obtuse and bent very slightly downward (ventrad). Viewed from below, each appendage has a ventral longitudinal carina in its proximal sixth and again in its distal half.

Inferior appendage shining blackish brown, its hairs fewer and shorter than those of the superiors. Viewed in profile (Figs. 5, 8), it does not quite attain the level of the inferior tooth of the superiors; it is curved strongly dorsad, then cephalad and finally, at its apex, ventrad, decreasing gradually in thickness throughout its length. Viewed from below (Fig. 7), its width decreases from the base; it is divided into two branches from almost the base, the branches closely oppressed throughout and forming between them a deep ventral groove.

Femora dark brown, those of third legs redder, inner (lower) surface of first femora and a distal spot on inner surface of second pale green. Tibiae and tarsi black.

♀. Differs from the male as follows: Vertex with a deep median longitudinal groove on the posterior wall of which is situated the median ocellus; as a result, when the head is viewed from in front (Fig. 4), the median ocellus is above the level of the two lateral ocelli, and in dorsal view (Fig. 3) the median ocellus is completely posterior to the level of the other two. In the male, as in most Gomphinae, and indeed in Odonata generally, the median ocellus is below and at least not posterior to the level of the other two ocelli in these two views respectively (Figs. 2, 1). As a further result of the presence of this groove, the transverse ridge on the vertex behind the ocelli is produced in the middle dorsad and caudad as a marked convexity which conceals all of the occiput except its hind margin, when the head is viewed from in front. Dorsal surface of the occiput very much reduced antero-posteriorly, its hind margin strongly convex and fringed with dark hairs; posterior surface swollen in the middle, which is not the case in the male, and with a distinct socket on each side adjoining the compound eye. Front shallowly and widely grooved antero-posteriorly in the middle of its superior surface; this feature less marked in the male.

Mid-dorsal mesothoracic carina pale green; brown markings of the thorax paler, redder; green antehumeral stripe at mid-height half as wide as the brown mid-dorsal stripe.

Abdominal segment 2 with a mid-dorsal, and on each side a longitudinal, yellow stripe occupying the greater part of the length of the segment. Greatest width of the posterior half of the abdomen at the articulation of 8 and 9. Auricles on 2 very much smaller and not denticulated, as usual in this sex. Segments 7-10 successively shorter. Mid-dorsal posterior process of 9 shorter than in the male. Hind dorsal margin of 10 nearly straight, not produced. Eleventh segment a little shorter than the tenth, its tergite and sternites sub-equal. Terminal abdominal appendages as long as 10, pale brown, straight, conical, apices acute.

Vulvar lamina one-third as long as 9, its apical margin one-third as long as its base, shallowly concave (Fig. 10).

♂ ♀. Wings slightly smoky, tinged with faint yellow at the extreme base. Front wings with 14 (♂)-15 (♀) antenodals, 12-14 postnodals. Hind wings with 11 antenodals, 12-13 postnodals, anal triangle of ♂ 3-celled. Stigma dark brown.

*Dimensions.* Total length, ♂ 42, ♀ 44. Abdomen ♂ 31.5, ♀ 33.5. Hind wing, ♂ 28, ♀ 29. Costal edge of stigma, front wing ♂ 3, ♀ 3.5. Width of head ♂ 6, ♀ 6.3 mm.

*Hab.* Costa Rica, Oricuajo (Pacific side), July, 1911, by Prof. J. F. Tristán, 1 ♂, 1 ♀, now in the collection of the writer at the Academy of Natural Sciences of Philadelphia.

*Type.* The male above mentioned.

This pair show the following differences from the generic characters of *Erpetogomphus* as given in Biol. Centr.-Amer. Neur., pp. 146-147:

There are 9 (10 on the left side of the ♂) marginal cells on the front wings between M<sub>4</sub> and Cu<sub>1</sub> (short sector and first sector of the triangle) instead of 6-8 cells. I find in my notes, however, mention of a female *E. designatus* from Texas with 9-10 marginal cells.

There is but one row of cells in the anal and second cubital areas (postcostal area of de Selys) of the front wings from the base to beyond the level of the triangle; there are only two rows of cells at any point between Cu<sub>2</sub> (second sector of the triangle) and the hind margin in the male, but there are three rows for three (right) or four (left) cells in the female. These variations were met in the Biol. Cent. Amer. material also.

While the arculus is at or proximal to the second *subcostal* antenodal in seven out of the eight wings, it is not necessarily at or proximal to the level of the second *costal* antenodal, as the second subcostal antenodal is not coincident with the second costal antenodal in six out of the eight wings, but distal thereto. This lack of coincidence is often to be seen in this genus.

The sixth (instead of the fifth) antenodal is thicker on the left front wing of the female.

The abdomen of the male is widest at segment 9.

*Erpetogomphus tristani* ♂ falls under rubric AA of the key to the species of this genus (*Biol. Centr.-Amer. Neur.*, p. 160) so far as the superior appendages of the male are concerned, but the face has distinct dark markings. It is also allied to *E. ophibolus* of rubric A in possessing a superior tooth on the same appendages. In possessing both a superior and an inferior tooth, both well-developed, and such a strongly recurved inferior appendage, it differs\* from all other described species of *Erpetogomphus*.

The female *tristani* falls under rubric BBB of the same key (*l. c.*, p. 162) and in its occipital characters and brown antehumeral (+ humeral) stripe comes nearer to *diadophis* than to *designatus*, but differs from these and all other known species by the peculiar structure of the vertex, which deserves fuller mention.

Mr. Williamson (1899) first pointed out that in the Odonata Anisoptera, in pairing, the inferior appendage of the male rests on the top of the head of the female and the superior appendages of the male on the rear of the head of the female. He was able (1906) to make positive observations to this effect in the genus *Gomphus*, among others. Calvert (1906), in confirmation, figured the two sexes of *Aeshna constricta* [= *umbrosa*, E. M. Walker] in this position. There is no reason to think that the mating position in *Erpetogomphus* is different. In the above description and in the figures (Figs. 3, 4) of the vertex of the head of *E. tristani* female, mention is made of a deep median longitudinal groove (*g*), and of the great reduction of the dorsal surface of the occiput. On placing the head of the female and the hind end of the male abdomen side by side in the same field of the microscope, it is evident that the recurved terminal part of the inferior appendage of the male (Fig. 8) is sufficiently narrow transversely to be received into the median vertical groove of the female. It seems inevitable that the inferior appendage should fit into this groove when pairing takes place. It is also likely that the ventral tooth of each

superior appendage of the male is received into the socket on each side of the posterior surface of the female's occiput, and that the dorsal tooth of the same appendage is braced against her prothorax. *E. tristani* therefore furnishes one of the most complex structural mating adaptations hitherto noticed in the Anisoptera. In looking over the plates of de Selys & Hagen (1858) nothing so complicated is to be found in any species of this family figured therein.\*

## LITERATURE QUOTED.

CALVERT, P. P. 1901-1908. Biologia Centrali-Americana. Insecta Odonata. London.

Id. 1906. Copulation of Odonata. Ent. News, XVII, pp. 148-150, pl. VII.

DE SELYS LONGCHAMPS, E. et. HAGEN, H. A. 1858. Monographie des Gomphines. Bruxelles, Leipzig, Paris.

WALKER, E. M. 1912. The North American Dragonflies of the Genus *Aeshna*. University of Toronto Studies. Biological Series, No. 11.

WILLIAMSON, E. B. 1899. A Note on Copulation among Odonata. Ent. News, X, pp. 42-43.

WILLIAMSON, E. B. 1906. Copulation of Odonata. Ent. News, XVII, pp. 143-148.

## EXPLANATION OF PLATE XVII.

All the figures are of *Erpetogomphus tristani* n. sp. and have been drawn with the aid of the compound microscope and camera lucida. The magnification is the same in all, x 12.

Figs. 1 and 2. Dorsal and anterior views respectively of the vertex and occiput of the male. The dotted line in 1 shows the boundary between green and black on the superior surface of the frons.

Figs. 3 and 4. The same of the female. *g*, the vertical groove, *mo*, median ocellus.

Fig. 5. Left profile view of the apex of the male abdomen.

Fig. 6. Dorsal view of the superior abdominal appendages of the male.

Fig. 7. Ventral view of the inferior abdominal appendage of the male. Dotted lines show the proximal parts of the superior appendages.

Fig. 8. Left profile view of the inferior abdominal appendage of the male.

Fig. 9. Right profile view of the genitalia of the second and third abdominal segments of the male. *h*, posterior hamule and *s*, sheath of the penis, separated from the rest, *p* in lateral, *s* in posterior view.

Fig. 10. Ventral view of the 9th, and adjoining parts of the 8th and 10th, abdominal segments of the female.

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\*Since this paper was written, Dr. E. M. Walker's superb monograph of the North American Aeshnas has appeared (1912), in which he discusses (pp. 39-42) and figures (Plate 2) the copulatory position of *Aeshna*, *Gomphus* and other Odonata.

## Notes on the Hymenoptera Chalcidoidea.

By A. A. GIRAULT, Brisbane, Queensland, Australia.

### I. A NEW TRICHOGRAMMATID FROM THE UNITED STATES.

In the Transactions of the American Entomological Society, Volume XXXVII, 1911, pp. 2-6, pl. I, figs. 1-2, a new genus and species of the Chalcidoid family Trichogrammatidæ was described with the name of \**Aphclinoidea semifuscipennis* Girault. Recent additions to this genus comprising four new species discovered in Australia lead me to review the group and I now find that in the material upon which was based the description of the type of the genus two distinct species were represented instead of but the one. This error came about very naturally by supposing the two distinct forms represented in the description of *semifuscipennis* to be the two sexes of that species. If the original description of the genus be consulted, it will be seen that the male was described as differing from the female by a very striking characteristic, a kind not usually sexual, namely the presence of a broad naked path across the fore wing. Later examination of one of the so-called males upon which the description was based (captured at Urbana, Illinois, July 27, 1910) led to the discovery that it was a female, evidenced by the fact that the genitalia could not be distinguished from that of the females of the genus, though the actual presence of an ovipositor could not be demonstrated. Nevertheless the reasoning stands thus:

(1) This specimen could not be distinguished structurally from the females of the other four species and its ovipositor was probably concealed within its valves, which were visible.

(2) Males of the genus with the exception of the two so-called of *semifuscipennis* are unknown (about forty specimens of the genus have been captured, all females).

(3) Secondary sexual characters in the family are usually confined to antennal structures (or some more fundamental change than that mentioned previously), and

(4) Differences in degree of wing fumation and arrangement of the discal ciliation are known to be specific characters

in this genus, while the secondary sexual characters remain unknown. That two species are represented by the material in question is thus so nearly certain that I do not hesitate at all, but forthwith describe the second American species of the genus.

**Aphelinoidea plutella** new species.

*Aphelinoidea semifuscipennis* Girault, *male*, in Girault *l. c.*

*Female*.—Similar to the type species of the genus excepting as already pointed out in the place cited. The specimen before me differs also in color, however, the whole of the thorax and head ochraceous not blackish, the base of the abdomen yellowish suffused with orange. Discal ciliation confined to the distal half of the fore wing and separated from the apex of the venation by a clear path which is naked; the fumation of the fore wing extends only to the end of the marginal vein. The proximal joint of the club is less than a third of the length of that segment.

*Habitat*: United States of America—Illinois (Centralia and Urbana).

*Type*: Accession No. 41,680, Illinois State Laboratory of Natural History, Urbana, Illinois, one female in xylol-balsam (mounted with the type female of *semifuscipennis* Girault).

There are now known six species of *Aphelinoidea*, four of them from Queensland, Australia, but as yet undescribed.

2. ANTHEMILLA GIRAULT EQUALS PARALLELAPTERA ENOCK.

In the Proceedings of the Entomological Society of Washington, Volume XIII, 1911, pp. 185-187, a new genus and species of Mymaridæ is described from North America under the name *Anthemilla rex* Girault. This genus was thought to be different from any Mymarid genus then known, but it was recognized that it was closely allied with *Anthemus* Howard from which it differs markedly in venation only. I have been considerably surprised, therefore, in finding later on that the genus had already been described by Enock for *Parallelaptera panis* Enock (Transactions of the Entomological Society of London for the year 1909, December, p. 454, pl. XIII, figs. 1-5). But Enock, in the original description of the genus gives no characteristics of it and its position is unstated; we learn from the description, however, that the male antennæ

are 11-jointed, the only characteristic mentioned that would serve to show that the genus was different from *Anthemus* Howard. However, there now being no doubt as regards the identity of *Anthemella* with *Parallelaptera*, the characteristics of the latter become more evident, since the former name was proposed especially for the reason that its type species bore a long marginal vein in the fore wing (about seven times longer than broad, in the type *Anthemus* only about twice longer than its width). Hence *Parallelaptera* Enoch differs primarily from *Anthemus* Howard in bearing a longer marginal vein of the fore wing and in having 11-jointed antennæ in the male; secondarily in having longer funicle joints and nearly naked fore wings (as regards discal ciliation).

*Parallelaptera rex* (Girault) differs from *P. panis* in general coloration, being black marked with golden yellow, in having funicle joints 1 and 2 unequal and doubtless in other details but I am unable to detect these from the descriptions.

### 3. SOME NECESSARY CORRECTIONS TO PREVIOUS PAPERS ON THE MYMARIDÆ.

(1). In the paper titled "A New Polynema from Mexico," published in ENTOMOLOGICAL NEWS, Philadelphia, Volume XXII, October, 1911, p. 358, last line *female* should read *male*.\* This paper describes *Polynema aspidiotti* Girault.

(2). In the paper titled "Descriptions of North American Mymaridæ with Synonymic and Other Notes on Described Genera and Species," published in the *Transactions of the American Entomological Society*, Philadelphia, Volume XXXVII, pp. 253-324, the following:

Page 278, line 21, *Anthemis* read *Anthemus*.

Page 284, line 10, *nigellus* read *nigrellus*.

Page 291, paragraph 8—In regard to *Anagrus columbi* Perkins, I should state that I have seen the type or at least original specimen which is mounted in balsam and in the collections of the Experiment Station of the Hawaiian Sugar Planters' Association at Honolulu; an examination of it does not lead me to change the opinion concerning its status as expressed in this paragraph.

Page 300, line 4, *howardii* read *striaticorne*.

Page 301, lines 10 and 29, *or* read *on*.

Page 308, line 5, *consobinus* read *consobrinus*.

Page 319, line 26, *second* read *first*.

[\* In Mr. Girault's MS. the word is *female*, as was printed in the NEWS.—ED.]

Page 323, in the added list of names *Anaphes pratensis* Foerster is erroneously omitted, subsequently found to occur in North America. *Camptoptera clavata* Provancher should have been omitted as later it was found to belong to a different group of the Hymenoptera.

Page 324, line 6, *Discopus* read *Dicopus*. The *longipes* mentioned in line 9 is a *Polynema*. The three species in lines 5, 6 and 7 have now been described and are valid.

Unfortunately the publication of this paper was somewhat delayed so that other papers which should have followed it in point of time appeared at the same time or even somewhat earlier; this state of affairs causes a few nomenclatorial incongruities, none of which, however, are of much consequence. The three papers on Mymaridae published by myself in ENTOMOLOGICAL NEWS for October, 1911, the two in the *Proceedings of the Entomological Society of Washington*, Volume XIII, 1911 (pp. 120-123 and 185-187), the one appearing in the *Journal of the New York Entomological Society*, September, 1911 (and the one on *Stephanodes psecas* Girault to appear later in the same journal but which should have appeared before the September article), and the article appearing in the *Archiv für Naturgeschichte*, Berlin, 1911, pp. 119-140, should all have been published later than the above paper.

#### 4. NECESSARY CORRECTIONS TO SOME OTHER PUBLISHED PAPERS ON THE CHALCIDOIDEA.

(1). In the paper entitled "Synonymic and Descriptive Notes on the Hymenoptera Chalcidoidea with Descriptions of Several New Genera and Species," published in the *Archiv für Naturgeschichte*, Berlin, 1911, the following errors occurred:

Page 119, after the paragraph on *Uriella rufipes* the family heading *Eulophidae* was omitted.

The footnote signal 2 should be in the next line after *Ashmead*.

Page 121, line 8, *larg* should be *long*.

Page 128, line 4, insert the word *four* before *male*.

Page 130, line 29, *Uscanagtammattella* should read *Trichogrammatella*.

Page 139, line 41, insert *and* between *color* and *wings*.

(2). In the paper published in the *Canadian Entomologist* for 1911, pp. 346-354, 370-377 and following, these typographical errors occurred:

Page 346, line 5, insert *of* after *subgenus*.

Page 351, line 1 of footnote, *the* read *this*.

Page 375, line 6 from bottom, *Perovea* read *Peronea*.

Page 376, line 7, *Semeotellus* read *Semiotellus*.

Lines 11 and 12, *Mason* read *Nason*.

Line 9, the semicolon after 1897 should be omitted and the word *and* inserted.

### The Vote on Priority in Nomenclature.

The Editorial in the NEWS for March, 1912, page 128, called attention to a vote taken among the zoologists of Denmark, Finland, Norway and Sweden, as to their preferences on the question of the strict application of the law of priority in nomenclature, and stated that the NEWS would be glad to receive and print the votes of American entomologists and zoologists on the same alternatives as were submitted to the Scandinavian voters.

Some discussion of the question appeared in our issues for April (pages 181-182) and May (pages 226-228) and Professor J. Chester Bradley sent us the results of a vote taken in the Entomological Laboratory of Cornell University. The total number of ballots received was very small, however, so that we sent out postal cards to the working entomologists of North America with a statement of the two Scandinavian alternatives (in order that the vote here might be strictly comparable with that taken on the other side of the Atlantic) and a request for a vote on them.

The list of those to whom these cards were sent was compiled from the lists of American entomological contributors to the journals of the last two years, especially the *News*, the *Transactions of the American Entomological Society*, the *Canadian Entomologist*, the *Proceedings of the Entomological Society of Washington*, the *Journal of Economic Entomology*, *Psyche*, the *Journal of the New York Entomological Society*, the *Annals of the Entomological Society of America*, the *Reports of the Entomological Society of Ontario*, and the publications of the Bureau of Entomology, United States Department of Agriculture. About 400 cards were sent out to all of the authors on these lists whose present addresses could be ascertained. As announced in the June number, page 270, we print below the names of those from whom votes have been received.

To complete the bibliographical references to this question, the editorial in the May NEWS, page 224, and the discussion by a number of writers in those for June, pages 271-276, and July, pages 325-327, may be mentioned.

A. The following vote that *the law of priority should be strictly applied in all cases*:

J. F. Abbott,  
 A. C. Baker, C. F. Baker, E. D. Ball, N. Banks, H. G. Barber, W. Barnes, H. E. Burke, A. Busck,  
 A. N. Caudell, F. H. Chittenden, G. C. Crampton, V. L. Clemence,  
 A. J. Cook, E. N. Cory, A. Cosens, J. C. Crawford, R. P. Currie,  
 W. M. Davidson, W. T. Davis, H. G. Dyar.  
 C. R. Ely, G. P. Engelhardt,  
 E. P. Felt, A. Fenyes, C. H. Fernald, H. T. Fernald, W. J. Fox (1),  
 G. H. French, D. T. Fullaway,  
 A. B. Gahan (2), W. J. Gerhard, C. P. Gillette, J. A. Grossbeck, C. F. Groth,  
 H. S. Harbeck, R. W. Harned, C. A. Hart, M. Hebard (3), O. Heide-  
 mann, W. J. Holland, C. W. Hooker, W. A. Hooker, V. A. Huard, J. A. Hyslop,  
 P. R. Jones,  
 W. D. Kearfott, W. A. Kepner, G. B. King, F. Knab, R. E. Kunze,  
 P. Laurent, C. W. Leng, F. E. Lutz (4),  
 F. R. Mason, I. Matausch, J. McDunnough (5), L. W. Mengel, C. W. Metz,  
 L. J. Nickels, S. D. Nixon, A. H. Norton, F. W. Nunenmacher,  
 W. D. Pierce (6), H. Pinkus, C. R. Plunkett, C. L. Pollard, H. S. Pratt,  
 A. L. Quaintance,  
 P. Rau, G. S. Reeves (7), J. A. G. Rehn (8), C. Robertson, S. A. Rehwer, H. M. Russell,  
 G. E. Sanders, P. A. Schroers (9), E. W. Scott, H. C. Severin, F. L. Simanton, J. M. Swaine, M. H. Swenk, L. W. Swett,  
 J. K. Thibault, Jr., P. H. Timberlake, E. G. Titus,  
 R. A. Vickery, H. L. Viereck,  
 J. L. Webb, G. P. Welden, C. Wellman, A. B. Wolcott, F. H. Wolley  
 Dod, C. W. Woodworth,  
 J. F. Zimmer.

Total, 95.

The following qualifications or comments were appended to the ballots numbered in parentheses above:

(1) in view of the fact that there are no fixed rules for the carrying out of the other proposition.

(2) where the synonymy is not open to question.

(3) subject to the ruling of the International Entomological Congress.

(4) The prior names will be "generally used" some day if A be followed.

(5) It appears to me that the muddle in nomenclature is largely due to the slipshod revisions of the last 20 or 30 years, and the sooner the Law of Priority is *strictly* applied, the sooner the trouble will cease. I even strongly advocate the 'first species' principle in establishing generic types. Clause B would at once bring in the personal equation in the application of the words "most important."

(6) This proposition [B] is full of danger. I could not vote for such a proposition without knowing what was intended.

(7) provided the existing uncertainty as to what constitutes priority can be removed, *e. g.*, Meigen's 1800 paper.

(8) In voting I wish to record my adherence to the International Code.

(9) It [A] is the only method that offers a chance of a uniformity of opinion. The second would lead to endless discussions and controversies.

B. The following vote *against the strict application of the law of priority in all cases and express the desire that the most important and generally used names should be protected against any change on nomenclatural grounds.*

C. C. Adams, C. F. Adams, C. N. Ainslie, J. M. Aldrich, C. P. Alexander, G. G. Atwood,

C. J. S. Bethune (1), F. C. Bishopp (2), S. C. Bishop, F. E. Blaisdell, Sr. (2a), W. S. Blatchley, D. Bodine, F. C. Bowditch, J. C. Bradley, A. F. Braun, H. H. Brehme, C. S. Brimley, W. E. Britton, F. E. Brooks, C. T. Brues, L. Bruner.

L. Caesar, P. P. Calvert, T. L. Casey (3), D. M. Castle, G. Chagnon, J. W. Chapman, C. W. Collins, J. H. Comstock, W. P. Comstock (4), I. J. Condit, E. C. Cotton (5), E. T. Cresson, E. T. Cresson, Jr., N. Criddle, C. R. Crosby,

V. A. E. Daecke, A. Davidson, J. J. Davis, H. Dean, E. L. Dickerson, W. G. Dietz, G. Dimmock, R. W. Doane, S. B. Doten, R. P. Dow, I. M. Eliot, M. J. Elrod, G. C. Embury, H. Engle, J. D. Evans, H. E. Ewing,

H. C. Fall, W. L. W. Field, Adele M. Fielde, J. W. Folsom, S. A. Forbes, W. T. M. Forbes (6), S. W. Foster, H. Fox, H. J. Franklin, C. A. Frost, W. D. Funkhouser,

J. H. Gerould, A. Gibson, W. H. Goodwin, H. A. Gossard (7), E. L. Graef, S. Graenicher, F. Grinnell, Jr.,

J. C. Hambleton, A. G. Hammar, W. H. Harrington, J. R. Haskin, T. J. Headlee, J. L. Healy, E. F. Heath (8), R. W. Hegner, S. Henshaw, G. W. Herrick, P. H. Hertzog, C. G. Hewitt, M. M. High, W. E. Hinds, E. F. Hitchings, H. E. Hodgkiss, T. E. Holloway, R. Hopping, C. O. Houghton, I. O. Howard (9), S. J. Hunter, W. D. Hunter,

- O. A. Johannsen, C. W. Johnson (10), F. M. Jones,  
E. O. G. Kelly, T. Kincaid, V. King, W. V. King (11), W. Knaus,  
C. Liebeck, H. W. Lohrenz, J. H. Lovell, C. S. Ludlow,  
A. D. MacGillivray, P. B. Mann (11a), W. M. Mann, C. L. Marlatt,  
F. Marloff, H. O. Marsh, W. S. Marshall, R. Matheson, W. L. McAtee,  
J. F. McClendon, F. A. McDermott, E. P. Meiners, Z. P. Metcalf, J.  
T. Monell, A. H. Morgan, A. W. Morrill, M. E. Murtfeldt, R. A. Mutt-  
kowski,  
W. A. Nason, J. G. Needham, J. A. Nelson, H. H. Newcomb, W.  
W. Newcomb, E. J. Newcomer, W. Newell,  
O. W. Oestlund, W. C. O'Kane, C. E. Olsen, H. Osborn (11b), R.  
C. Osburn,  
G. H. Parker, P. J. Parrott, E. M. Patch, R. F. Pearsall (12), A.  
Petrunkevitch, E. F. Phillips, W. J. Phillips, C. V. Piper, C. H. Popenoe,  
P. B. Powell,  
H. D. Reed, W. Reiff, W. A. Riley, C. H. Roberts, D. M. Rogers,  
R. R. Rowley,  
J. G. Sanders (13), C. Schaeffer, W. J. Schoene, E. A. Schwarz,  
L. L. Scott, V. E. Shelford (14), A. F. Shull, C. A. Shull (15), H.  
Skinner, A. T. Slosson, H. E. Smith, P. E. Smith, E. A. Smythe, Jr.,  
T. E. Snyder, C. G. Soule, H. A. Surface,  
Y. H. Tsou, E. S. Tucker, C. H. Turner,  
P. R. Uhler, F. W. Urich,  
D. L. Van Dine, E. P. Van Duzee (16),  
B. H. Walden, E. M. Walker, L. B. Walton (17), W. R. Walton, F.  
M. Webster, R. L. Webster, A. J. Weidt, O. S. Westcott, W. M.  
Wheeler, H. F. Wickham, F. X. Williams, S. W. Williston, H. F. Wil-  
son (18), G. N. Wolcott, H. P. Wood, A. H. Wright, W. G. Wright  
(19),  
W. W. Yothers,  
Total, 191.

The following qualifications or comments were appended to the 'B ballots, as numbered in parentheses above:

(1) Any name in general use for, say, 25 years should not be changed  
(2) I should prefer to vote for a proposition between A and B, *i. e.*, that the Law of Priority should be generally applied especially when there is any dispute as to the name to be adopted.

(2a) Any modification to be controlled by a committee and care taken to avoid any injudicious or unscientific tendencies.

(3) provided they may have been the only names used during a period continuously of 60 years or more succeeding the epoch of the first comprehensive paper in which they were employed in what may have been a new sense. P. S. In other words if a name has not been rectified or challenged in 60 years it should stand permanently.

(4) I concur with the statement of Mr. J. C. Bradley, Ent. News, vol. XXIII, pp. 226-227.

(5) General use for several years should count for more than priority.

(6) also names of secondary importance so far as established by general usage.

(7) Whole matter should be determined by Committee of International Congress of Entomologists and names chosen by Committee should be adhered to unchangeably.

(8) Absurd. Leads to endless confusion to no practical end [appended to crossed out alternative A].

(9) but believes that the rulings of the Committee on Zoological Nomenclature of the International Zoological Congress should be adopted universally even if they hold for strict priority.

(10) Meigen's first paper is the cause of my conviction.

(11) Provided a rational method is adopted.

(11a) unless for special good reasons.

(11b) but so safeguarded that it will apply only in most essential cases and with very general consent.

(12) and would suggest that where the type is in existence, the author's name be retained for it in all cases, except his name be pre-occupied in the same family group.

(13) by decision of a committee (general), such fixed names to be indicated by a hyphen or + or × signs, viz. *Pontia* × *rapae*, *Pontia* + *rapac*.

(14) provided that generally used names be established by majority vote at international congresses.

(15) However, where names are not long time-honored, generally used names, I do favor the Law of Priority as giving us the only permanent basis of nomenclature.

(16) Would vote A if certain 'freak' books could be eliminated.

(17) as determined by a general committee on nomenclature.

(18) Provided three or more specialists of any group have an opportunity afforded them to place before the committee such proof as they may see fit. The opinions of all workers should be solicited.

(19) No generally used old name to be changed nor new name (as of a new species) used without approval of supervising board.

Prof. T. D. A. Cockerell declines to vote for either A or B but votes: That the rules should be so amended as to reduce nomenclatural changes to a minimum (many of the changes are not due to priorities such but to special methods of selecting generic types, etc, also, especially by throwing out genera without species designated or implied, by enforcing the rule that generic names are not homonyms unless spelled alike, many changes will be avoided). When all has been done that is possible in this way, it may be proper to consider whether a certain number of names should not be conserved by special international vote.

## A New Mallophagan.

By E. A. MCGREGOR, U. S. Bureau of Entomology, Batesburg, S. Carolina.

Several male specimens of a somewhat curious *Colpocephalum* were taken from the screech owl *Otus asio maccalli* at Dallas, Texas, by the writer in January of 1911. Professor Kellogg validated my convictions that the species was new to science in a communication in part as follows: “\* \* \* but it has such produced and amputated temples and such marked differences in the thorax, that it cannot be put with *C. subpachygaster* \* \* \*.” The latter species is a well distributed owl *Colpocephalum* with broad head and broad abdomen and is perhaps closest to the present species.

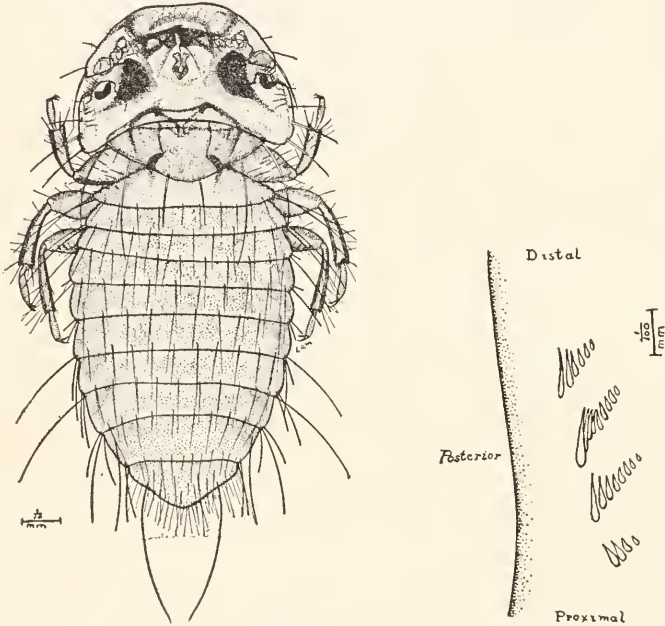
### *Colpocephalum painei* sp. nov.

*Male*.—Length 1.30 mm., width across abdomen .57 mm. Pale yellow in color with no pronounced markings.

Head. Length .39 mm., width .53 mm., being thus almost half again as wide as long. Front blunt, very slightly emarginate with no trace of hairs or spines. One long, strong hair on the very prominent angle in front of the deep ocular emargination and two shorter, weaker hairs on the sides before it. Neither the antennæ nor the palpi normally projecting. The eye is large, prominent, with a large, black fleck. A narrow, chestnut-yellow, bow-shaped clypeal band. Ocular blotches deep-chestnut, inflated-comma-shaped. The ocular fringe extends to the angle of the temples and is continued onto the latter by a line of four or five short bristles. Temples nearly parallel to one another with two long, very strong hairs near the hinder angle preceded by a shorter, weaker one. Occiput strongly concave, for the most part pale, with a short, transverse, bow-shaped bar connecting laterally with the enlarged ends of two bands which arch obliquely backward to the occipital margin. Occipital bands wanting.

Thorax. Length .25 mm., width .52 mm. Prothorax semi-lenticular, the anterior margin rounded, while the posterior margin is much more angulated. The latter bears a long hair at each lateral angle, another pair about half way to the middle, and a pair of somewhat shorter hairs near the rounded median angle. The transverse bar is narrow and indistinct, and the curving chestnut-yellow, longitudinal lines beyond the ends are clearly defined and are continuous with the oblique bands of the occiput. A small, crescent-shaped marking occurs on each side at the junction of the pro- and metathoracic margins and encroaches slightly on the latter segment. Metathorax short, in shape that of an anteriorly emarginated trapezium, with flatly-convex pos-

terior margin which bears a row of about ten longish hairs, and with two long hairs at each posterior lateral angle. The lateral margin bears about six short hairs. Legs pale, but with darker marginal markings which are sharply defined on all the tibiae. Numerous hairs occur on the femora and tibiae, most of which are disposed on the outer edge. A series of four parallel combs on each of the hind femora near their posterior margin. These consist of short, attenuate spines placed side by side of which the first comb has three, the second eight, the third nine, and the distal six.



*Colpocephalum painei* n. sp.

FIG. 1.—Dorsal view, entire insect. FIG. 2.—Combs on dorsal surface, hind femur.

Abdomen. Ovate, broad in front, abruptly pointed behind. Length .75 mm. Two hairs at the posterior angles of segments one, two, three, four and eight; three hairs at the posterior angles of five, six and seven. Of the above the following hairs are very long, two at segment one, one at segments two, five, six and seven. The terminal segment is triangular, is supplied with two very long bristles and many fine, shortish hairs. Each of the remaining segments are supplied posteriorly with a row of about ten longish hairs.

Type in Museum, Leland Stanford, Jr., University.

Named for Mr. John H. Paine who, as junior author with Prof. V. L. Kellogg, has described a number of species of this group.

## Two New North American Species of *Necrophorus* (Coleop.).

By JOHN W. ANGELL, New York City.

A study of the North American forms of the genus *Necrophorus* in my cabinet has resulted in the discovery of two species new to our fauna, one from Tuba, Arizona, and the other from California. These species may be described as follows:

### *Necrophorus mysticallis* sp. nov.

Form moderately robust, black, shining, epipleurae at base and antennal club orange red, tarsi more or less fuscous. Head coarsely punctured, lateral impressions deep. Thorax oboval, widest at anterior third, narrowed behind, anterior angles broadly rounded, sides behind anterior third only very slightly sinuate, base arcuate and broadly margined, finely and densely punctured, disk sparsely punctured, median impression linear and strongly marked. Elytra not wider than thorax, slightly longer than wide, feebly divergent posteriorly, apex squarely truncate, surface shining, coarsely punctate and wrinkled, body beneath shining, sparsely and finely punctate, middle and posterior tibiae slender at base, broadened at apex, posterior tibiae arcuate.

Length 25 mm.

Described from a single male in my cabinet taken in Tuba, Arizona, by Mr. Woodgate. This species resembles an immaculate example of *N. carolinus* but is more robust, more shining, and the thorax is more finely punctured.

### *Necrophorus grandior* sp. nov.

Form moderately elongate, black, epipleurae and median spot on elytra, orange red. Head coarsely punctured, lateral impressions moderately deep. Antennae black. Thorax transversely cordate, broader than long, apex truncate, broadly rounded in front, very slightly sinuate behind, and broadly rounded at base, sides broadly margined, finely punctate, anterior transverse line only moderately impressed, median line feeble. Elytra narrower at base than thorax, gradually wider posteriorly, sides slightly sinuate, base sinuately truncate, surface coarsely and densely punctate with two faintly marked costate lines on each elytron. A single orange red spot at basal third of each elytron. Abdomen densely punctured above and below. Middle and posterior tibiae gradually broader to tip, not arcuate.

Length 26 to 30 mm.

Described from two males of my cabinet, labelled "California" without more definite locality. Readily distinguished from *N. guttula* by the larger and more oval thorax, the lateral margins of which are as wide as the basal margins, and also by the less strongly impressed transverse line.

## Cerambycidae from Harrisburg, Pennsylvania, and vicinity, with notes (Coleop.).\*

By W. S. FISHER and H. B. KIRK, Harrisburg, Pa.

Having accumulated notes and data on collecting and rearing longhorn beetles, we give the results, thinking they may be of some interest to others.

The region about Harrisburg is quite variable, affording a great variety of food plants. Here and there are small groves of dying hickory trees which are ideal for night collecting, and on the mountain sides along the edge of woods are patches of wild hydrangea, rose and Jersey tea. When these plants are in bloom, they are visited by a number of species, especially the tribe Lepturini, and on a warm day the blossoms are swarming with insects feeding on the pollen. Near Harrisburg a pipe line has been laid across the mountains and the trees have been cut down for a number of feet on each side of this line, leaving an open space through the dense woods. A great many insects are attracted to this open space from the surrounding woodlands and are found during the warm part of the day swarming over the blossoms, or nesting on the upper side of the leaves, apparently indulging in the luxury of a sun bath.

A great deal of our collecting was done in the usual way, by sweeping flowers and beating dead branches, but the most interesting was the collecting at night with an acetylene light. A number of the species that are seldom taken during the day time, and which seem apparently rare, were secured in numbers by this method of collecting. Some of the species were found running up and down the tree trunks, while others were ovipositing in the dying trees. When the light was thrown on the tree trunks, the insects on them would remain motionless until the light was removed, when a slight touch would cause them to fall into the cyanide bottle.

During the early months when the ground was still frozen

\*Contributions from the Division of Zoology, Dept. of Agriculture, Harrisburg, Pa.

and very few insects could be collected, we devoted most of our time collecting the dead limbs, twigs and sections of trees that were infested, and placed them in cages for rearing. By collecting material from a variety of trees in different localities, we were able to get a number of interesting rearing notes. So far, most of our rearing has been from material from deciduous trees.

In all cases, unless otherwise stated, the material was collected by the authors.

#### ORTHOSOMA Serv.

**brunneum** Forst.—Highspire, VIII—17—07 on oak stump; Ingle-nook, VIII—16—08 in rotten log.

#### PRIONUS Geoff.

**laticollis** Dru.—Harrisburg, VII—23—08, VII—15—10; only females taken at night; ovipositing in oak trees.

**imbricornis** Linn.—Heckton Mills, VI—22—10 on chestnut tree.

#### TRAGOSOMA Serv.

**harrisii** Lec.—Carlisle Jc., VII—4—08 flying along pipe line.

#### SPHENOSTETHUS Hald.

**taslei** Buq.—Harrisburg, VIII—1909 on beech tree (Coll. by A. B. Champlain).

#### CRIOCEPHALUS Muls.

**agrestis** Kirby—Harrisburg, VII—18—08 flying.

**obsoletus** Rand.—Harrisburg, VII—7—10 flying along street in city; VI—20—11 (J. A. Smith).

#### SMODICUM Hald.

**cucujiforme** Say.—Harrisburg, VII—6 to VII—20 on fallen oak trees at night and under bark during the day time; Highspire, VII—10—09, beating.

#### PHYSOCNEMUM Hald.

**brevilineum** Say.—New Cumberland, VII—4 to VII—11; West Fairview, VII—2—10, running on trunks of living elm trees during the day time; Harrisburg, V—7—10, pupa under bark of fallen elm tree.

#### RHOPALOPUS Muls.

**sanguinicollis** Horn.—Heckton Mills, VI—21—09, on pitch pine.

#### HYLOTROPUS Serv.

**bajulus** Linn.—Carlisle Jc., VI—27—09, on pine log; Highspire, V—30—06, on hickory; Harrisburg, VII—19—07; Mechanicsburg, VI—20—08.

**ligneus** Fab.—Mount Gretna, VII—20—06, on cedar stump.

**PHYMATODES** Muls.

*variabilis* Fab.—Harrisburg, VI—12—08; New Cumberland, VI—4—08; Heckton Mills, VI—15—09; Highspire, VI—15—09, on poplar tree.

*amoenus* Say.—Harrisburg, V—30—09; Highspire, VI—19—09; Camphill, V—31—09; reared in numbers from dead wild grape collected in various localities.

*varius* Fab.—Heckton Mills, V—31—09, beating.

**CALLIDIUM** Fab.

*aereum* Newm.—Carlisle Jc., VI—22—09, on chestnut shoots.

**CHION** Newm.

*cinctus* Dru.—Harrisburg, VI—18—07, at arc light.

**EBURIA** Serv.

*quadrigeminata* Say.—Harrisburg, VII—15 to VIII—4, on oak tree at night; Craighead, VII—18—08, on hickory tree; Highspire, VII—27—07.

**ELAPHIDION** Serv.

*mucronatum* Fab.—Harrisburg, VI—24 to VII—15, on hickory trees at night; Perdix, V—2—11; reared from walnut, poison ivy and wild grape.

*incertum* Newm.—Heckton Mills, VI—25—08; Harrisburg, VII—11 to VIII—19, in numbers on mulberry tree, and frequently on hickory at night. Found breeding abundantly in mulberry tree.

*villosum* Fab.—In all localities; common. Frequently injurious to fruit and shade trees; reared from wild grape.

*unicolor* Rand.—Harrisburg, VII—21—09, on mulberry; Heckton Mills, VI—25—08, on wild grape; Highspire, VI—30—05.

**TYLONOTUS** Hald.

*bimaculatus* Hald.—Harrisburg, VI—20 to VII—30, on ash trees at night.

**HETERACHTHES** Newm.

*quadrimaculatus* Newm.—Harrisburg, VII—12—09, on hickory tree at night; Rockville, VII—4—09; reared from hickory.

**PHYTON** Newm.

*pallidum* Say—Lemoyne, reared from hackberry (A. B. Champlain).

**OBRIMUM** Serv.

*rufulum* Gahan.—Highspire, VII—11—08, beating; Lemoyne, reared from dead ash twigs.

**MOLORCHUS** Fab.

*bimaculatus* Say—Rockville, V—6—09; Camphill, V—31—09; Lemoyne, III—12—11, adult cut from dead hackberry; Camphill, XI—3—11, adult cut from red bud.

**RHOPALOPHORA** Serv.

**longipes** Say—Rockville, VII—4—09; Harrisburg, VII—9—10, on flowers.

**PURPURICENUS** Serv.

**humeralis** Fab.—Carlisle Jc., VI—27—09, VII—4—08; Harrisburg, V—3—08, VI—25—09; Highspire, VII—4—07, female ovipositing in oak stump.

**axillaris** Hald.—Carlisle Jc., VII—4—08.

**BATYLE** Thom.

**suturalis** Say—In all localities on flowers; common.

**CYLLENE** Newm.

**caryae** Gahan.—In all localities from III—25 to V—10, on wood piles; Lemoyne, reared from wild grape.

**robiniae** Forst.—In all localities from VIII to X; common on golden rod flowers; breeds in locust.

**CALLOIDES** Lec.

**nobilis** Say—Highspire, VI—6—08, on cultivated grape; Carlisle Jc., VI—27—09.

**ARHOPALUS** Serv.

**fulminans** Fab.—Carlisle Jc., VI—27—09; Harrisburg, VI—12—09, flying along street, VII—13—09, at arc light; Rockville, VII—23—10, on fallen oak tree at night.

**XYLOTRECHUS** Chev.

**colonus** Fab.—In all localities, common; reared from hickory bark, elm, thorn and other trees.

**sagittatus** Germ.—Mount Hope, VIII—27—07, flying.

**quadrimaculatus** Hald.—Inglenook, VI—20—09; Highspire, reared from Norway maple limb.

**undulatus** Say—Inglenook, VI—20—09.

**nitidus** Horn—Highspire, VI—19—10; Inglenook, VI—11—11.

**NEOCLYTUS** Thom.

**scutellaris** Oliv.—Harrisburg, VII—15—10, on oak tree.

**luscus** Fab.—Harrisburg, VII—7—08, on hickory trees at night; reared from hickory limbs.

**caprae** Say—Highspire, V—8—09; Lemoyne, III—29 to IV—23, on ash wood pile.

**erythrocephalus** Fab.—In all localities, common, breeds in all kind of wood.

**longipes** Kirby.—Lemoyne, IV—17—09, on ash wood pile.

**CLYTANTHUS** Thom.

**ruvicola** Oliv.—Perdix, V—27—11, VI—1—11; Inglenook, V—28 to VI—26; Carlisle Jc., VI—24—10; on flowers.

**albofasciatus** Lap.—Camphill, X—1—10, running on rotten log; Lemoyne, Harrisburg, reared from wild grape.

**CYRTOPHORUS** Lec.

**verrucosus** Oliv.—Highspire, V—3—08; Rockville, IV—16—10; Harrisburg, XII—18—09, hibernating in dead limb.

**EUDERCES** Lec.

**picipes** Fab.—In all localities on flowers; common.

**DISTENIA** Serv.

**undata** Oliv.—Harrisburg, VII—7 to VII—15, on hickory trees at night.

**DESMOCERUS** Serv.

**palliatu**s Forst.—In all localities on elder; common.

**NECYDALIS** Linn.

**mellitus** Say.—Harrisburg, VI—13—08; New Cumberland, VI—30—09 (Coll. by W. R. Walton).

**ENCYCLOPS** Newm.

**caeruleus** Say.—Inglenook, V—28—11, on flowers; Camphill, V—31—09, on hickory tree (Champlain).

**RHAGIUM** Fab.

**lineatum** Oliv.—Rockville, II—22—09, under pine bark.

**CENTRODERA** Lec.

**decolorata** Harr.—Carlisle Jc., VII—4—08, on flowers of Jersey tea.

**picta** Hald.—Inglenook, VI—11—11.

**TOXOTUS** Serv.

**trivittatus** Say.—Heckton Mills, V—31—09, on hackberry foliage; in all localities on flowers, V—26 to VI—21.

**cylindricollis** Say.—Inglenook, VI—17—11.

**cinnamopterus** Rand.—Camphill, V—31—09 (Champlain).

**PACHYTA** Serv.

**monticola** Rand.—Carlisle Jc., VII—4—08, on flowers.

**ACMAEOPS** Lec.

**directa** Newm.—In all localities on flowers; common.

**GAUROTUS** Lec.

**cyanipennis** Say.—In all localities, common; found in numbers ovipositing in fallen cherry tree.

**BELLAMIRA** Lec.

*scalaris* Say.—Inglenook, VI—9—11; Harrisburg, VI—12—11; Perdix, VI—10 to VII—1 on flowers.

**STRANGALIA** Serv.

*famelica* Newm.—In all localities on flowers; common.

*acuminata* Oliv.—Harrisburg, VI—17 to VI—26; Carlisle Jc., VI—24 to VII—4; on flowers.

*luteicornis* Fab.—In all localities on flowers; common.

*bicolor* Swed.—Carlisle Jc., VI—24 to VII—9; Inglenook, VI—11 to VII—18, taken mostly on wild rose flowers, not rare.

**TYPOCERUS** Lec.

*lunatus* Fab.—Carlisle Jc., VI—27—08, on Jersey tea blossoms.

*velutinus* Oliv.—In all localities on flowers; common.

*lugubris* Say.—In all localities on flowers; not rare.

**LEPTURA** Serv.

*emarginata* Fab.—Highspire, VIII—31—10, flying.

*subhumata* Rand.—Inglenook, VI—26—10, on dead hemlock.

*lineola* Say.—In all localities on flowers; common.

*nitens* Forst.—In all localities on chestnut and flowers; common.

*cordifera* Oliv.—Carlisle Jc., VI—24—10; Highspire, VII—27—07; Inglenook, VI—25—11; Heckton Mills, VII—4—09; on flowers.

*rubrica* Say.—In all localities on flowers; common.

*vagans* Oliv.—Carlisle Jc., VI—24 to VII—4, on flowers; Harrisburg, reared from hemlock.

*proxima* Say.—Inglenook, V—26 to VI—21; Linglestown, VI—6—09; Perdix, VII—1—10; not rare on flowers.

*biforis* Newm.—Carlisle Jc., VI—29—10, on chestnut; Inglenook, VI—20—09; Rockville, VII—4—08.

*octonotata* Say.—Inglenook, V—28 to VI—24; Linglestown, VI—6—09; on flowers.

*vittata* Germ.—In all localities on flowers; common.

*pubera* Say.—Inglenook, V—26—11, VI—20—09; on flowers.

*ruficollis* Say.—Carlisle Jc., VI—22—09, on flowers.

*vibex* Newm.—Inglenook, VI—20—10, V—28—11; on flowers.

*aurata* Horn.—Carlisle Jc., VI—22—09; on flowers.

*mutabilis* Newm.—Inglenook, V—26 to VI—17; Perdix, V—27 to VI—1; Linglestown, VI—6—09; on flowers.

**CYRTINUS** Lec.

*pygmaeus* Hald.—Carlisle Jc., VI—22—09, sweeping.

**PSENO CERUS** Lec.

*supernotatus* Say.—Camphill, V—31—09; reared in numbers from climbing bitter sweet collected in various localities.

**MONOHAMMUS** Serv.

*titillator* Fab.—Inglenook, V—28—11; Harrisburg, VII—18—10. VII—22—09.

*scutellatus* Say.—Harrisburg, V—27—07, on street in city.

*notatus* Dru.—Highspire, VII—18—11, VII—30—10; Perdix, VI—1—11; Harrisburg, VII—24—08, at arc light (Walton).

**DORCASHEMA** Lec.

*wildii* Uhler—Harrisburg, VI—26—09, on mulberry tree (Champaign).

*alternatum* Say.—Harrisburg, VI—12 to VII—6, on mulberry tree.

*nigrum* Say.—Highspire, VI—6—09; Eberlys Mill, VI—9—09; Harrisburg, VI—4—11; New Cumberland, reared from hickory.

**HETOEMIS** Hald.

*cinerea* Oliv.—Harrisburg, common on Mulberry; New Cumberland, reared from hickory.

**GOES** Lec.

*pulchra* Hald.—Harrisburg, VI—14—11, on hickory.

*pulverulenta* Hald.—Harrisburg, reared from dead elm.

**ACANTHODERES** Serv.

*quadrigibbus* Say.—Perdix, VI—18—11; Inglenook, VI—20—09.

*decipiens* Hald.—Harrisburg, VII—6—08, reared from cherry; Enola, VII—5—09.

**LEPTOSTYLUS** Lec.

*parvus* Lec.—Rockville, reared from climbing bitter-sweet.

*macula* Say.—In all localities; not rare.

**LIOPUS** Serv.

*variegatus* Hald.—Harrisburg, VI—24—07, at arc light; Lemoyne, reared from hackberry; Rockville, reared from climbing bitter-sweet; Harrisburg, reared from Virginia creeper.

*alpha* Say.—In all localities on sumac; common.

**DECTES** Lec.

*spinosus* Say.—In all localities on rag-weed; common.

**LEPTURGES** Bates.

*symmetricus* Hald.—Harrisburg, reared from hickory; Lemoyne, reared from walnut.

*signatus* Lec.—Highspire, VI—26—08, on hickory; Lemoyne, reared from hackberry; Rockville, reared from climbing bitter-sweet.

*querci* Fitch—Highspire, VII—13—08; Harrisburg, VI—2—11; Rockville, reared from climbing bitter-sweet.

*facetus* Say—Highspire, VII—13—07, beating.

**HYPERPLATYS** Bates.

**aspersus** Say.—Highspire, VII—2—09, on cherry tree; Harrisburg, VI—21—08.

**maculatus** Hald.—Harrisburg, V—19—09; Highspire, V—19—09, VI—22—07, on oak; New Cumberland, V—30—09.

**GRAPHISURUS** Kirby.

**fasciatus** DeG.—Common about Harrisburg on hickory, oak and beech.

**ACANTHOCINUS** Steph.

**obsoletus** Oliv.—Harrisburg, VII—6—08.

**HOPLOSIA** Muls.

**nubila** Lec.—Eberlys Mill, V—30—08 (Champlain.)

**ECYRUS** Lec.

**dasycerus** Say.—Harrisburg, VII—4—09; Inglenook, VI—9—11.

**EUPOGONIUS** Lec.

**vestitus** Say.—Highspire, reared from oak; Rockville, reared from climbing bitter-sweet; Harrisburg, reared from Virginia creeper.

**subarmatus** Lec.—Harrisburg, VI—27—08 on mulberry. Rockville, reared from climbing bitter sweet.

**HIPPOPSIS** Serv.

**lemniscata** Fab.—In all localities, collected by sweeping.

**SAPERDA** Fab.

**calcarata** Say.—Harrisburg, VII—10—07 at arc light (Walton).

**candida** Fab.—Inglenook, V—26—11; Perdix, VI—10—11; Highspire, VI—27—10; common on apple.

**vestita** Say.—Harrisburg, VI—1 to VI—11 on linden.

**discoidea** Fab.—Harrisburg, VI—2 to VIII—19, only females taken at night, ovipositing in dying hickory trees, both sexes taken by beating during the day time. Reared from elm bark and hickory.

**tridentata** Oliv.—Harrisburg, V—7—10, VII—14—11; New Cumberland, reared from elm bark.

**imitans** Jout.—Rockville, V—20—10 (Walton); Harrisburg, VI—1 to VI—7 on linden and hickory.

**lateralis** Fab.—In all localities on hickory shoots; common.

**puncticollis** Say.—Harrisburg, reared from Virginia creeper.

**OBEREA** Muls.

**bimaculata** Oliv.—In all localities on blackberry, common.

var. **tripunctata** Fab.—In all localities; common.

var. **basalis** Lec.—In all localities; common.

var. *affinis* Harr.—In all localities; common.

**ocellata** Hald.—Carlisle Jc., VII—4—08 on sumac; Heckton Mills, VI—22—10; Harrisburg, VI—11—10, VI—22—10.

**tripunctata** Swed.—In all localities; common.

var. *myops* Hald.—Heckton Mills, VI—25—08 flying; Inglenook, VI—21—10; Brandtsville, VI—14—10.

var. *mandarina* Fab.—In all localities; common.

**gracilis** Fab.—Carlisle Jc., VI—24—10; Heckton Mills, VI—21—09.

**ruficollis** Fab.—In all localities on sumac; not rare.

#### TETROPS Steph.

**juvunda** Lec.—Inglenook, VI—21—10 flying.

#### TETRAOPES Serv.

**canteriator** Drap.—Rockville, VII—29—06 on milk-weed.

**tetraophthalmus** Forst.—In all localities on milk-weed.

#### DYSPHAGA Lec.

**tenuipes** Hald.—Harrisburg, reared from beech twigs. Found in the pupa stage during winter.

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## Nezara viridula Linné, an Hemipteron new to the Northeastern United States.

By J. R. DE LA TORRE BUENO, White Plains, New York.

*Nezara viridula* was one of the species included by Linné in his comprehensive genus *Cimex*, in the tenth edition of the great *Systema Naturae*. Owing to its variable nature and world-wide distribution it has been redescribed under no less than twenty-one different specific names cited by Distant in the first volume of the Hemiptera part of the *Biologia Centrali-Americana*. It is recorded from the whole of Europe, except the extreme North, Asia, Africa, Malaysia, Australia, New Zealand, South America, at least in the north, Central America and enters into the United States at the south, being found in Texas and Florida; the former mentioned by Stal and the latter by Van Duzee.

It has been my good fortune to come into possession of a specimen taken in a greenhouse in Brooklyn, on December 10, 1911. So far as can be ascertained, this is the first authentic

record of this species from so high a latitude in North America. It is in all likelihood an adventitious visitor, very probably imported in nursery stock from Europe, either as an egg or a nymph, or else possibly brought from Florida. The specimen is quite typical, and varies no more than in the usual degree from the more clearly marked individuals that I have seen. It lacks the 3 or 5 white points at the base of the scutellum along the edge of the pronotum, although there are indistinct smooth colorous spots where they are usually to be found.

It might seem that there is no reason why this form should not be able to establish itself here, as it is quite at home in Germany and Russia, where certainly the winters are no warmer than in the United States. We therefore have in the North Atlantic States three species of *Nezara* to look out for, namely *Nezara hilaris* Say, *pennsylvanica* De G. and possibly *viridula* Linné. They may be separated as follows:

1 (2). Osteolar canal short, truncated, scarcely extending in a ruga. (S. g. *Nezara* A. & S.)

*N. viridula* Linné.

2 (1). Osteolar canal extending in a long narrowing ruga.

(S. g. *Acrosternum* Lieb.)

3 (4). Anterior sides of pronotum rounded; rostrum scarcely reaching the middle coxae; species broad oral.

N. (A.) *pennsylvanica* DeGeer.

4 (3). Anterior sides of pronotum straight; rostrum reaching hind coxae; species elongate oval.

N. (A.) *hilaris* Say.

In addition to these characters, *N. viridula* has a black dot at each basal angle of the scutellum, and the 2d and 3d antennae joints subequal, while in *hilaris* the dot is absent and the second joint is slightly longer than the 3d. *N. pennsylvanica* in addition to the characters given has broad head slightly blunt and incised in the middle, characters absent in the other two. *Viridula* is a duller insect; the other two more polished.

*N. viridula* is recorded as feeding on orange, *Celtis*, mulberry, rice, sugar-cane, cotton, maize, potato and *Gynandropsis pentaphyllum*; *hilaris* also feeds on orange, cotton, bass-wood, trumpet-creeper, cowpeas and tomatoes, all these according to

Kirkaldy. I have secured *hilaris* abundantly on golden rod, and have beaten it from wild cherry. Of course, it does not necessarily follow that these are the food plants. Of *N. pennsylvanica* nothing appears to be known.

In connection with this finding of a European species thus far North, I venture to comment on the record of *Pyrrhocoris apterus* from New Jersey. If the fact be taken into consideration that it was found not far from the landing place of European vessels, the explanation of its presence there is simple. What more natural than that a few ova, or even hibernating adults, may have been brought over in hay or straw, which, thrown overboard, drifted to a favorable location and breeding ensued. It would be interesting to ascertain if the bug has succeeded in establishing itself in the locality of its capture, a thing possible to any of our enthusiastic New Jersey friends.

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### A new Chalcidid from Guatemala (Hymen.).

By T. D. A. COCKERELL, University of Colorado, Boulder, Colo.

Although Mrs. Cockerell brought home a large number of bees and wasps from Guatemala, she obtained only a single species of Chalcididae, but this a very remarkable form, with the abdomen greatly produced. When I undertook to determine the genus with the aid of Ashmead's tables, I failed to place it; it clearly belonged to the Smicrini, but according to the Ashmeadian system, the genus appeared to be new. I prepared a description, and sent the type to the National Museum. Immediately after doing this, I received a specimen from Mr. J. Rodriguez, of Guatemala City, with the statement that he had raised a number from a lepidopteron, and had sent some to London, where they were said to belong to a new species of *Conura*. I was satisfied that the insect could not go in *Conura*, which is not one of the Smicrini at all, and Mr. J. C. Crawford is entirely of the same opinion. Mr. Crawford writes, however, that he would place the insect in *Eus-typiura* Ashm., with which it agrees, except for the fact that

the basal member of the series of teeth on the hind femora is not enlarged. In Mr. Crawford's opinion, this is not more than a specific character. Mr. Crawford has also kindly ascertained that it is different from the described species of *Eustypiura*, and also has kindly searched Cameron (*Biologia Cent. Am.*) and Cresson to see if it might have been described under *Smicra* or *Spilochalcis*, but without result. It seems certain that it is new, and I venture to call it after Mr. Rodriguez, who has collected so many new insects in Guatemala.

***Eustypiura rodriguezi* sp. n.**

♀.—Runs in Ashmead's tables (*Classif. Chalcid Flies*), p. 251-252, to 16, and runs out because the hind femora have 12 small teeth. Antennæ 13-jointed, (last two joints short), inserted about level with upper end of lower third of eye; head broad, eyes extremely prominent; clypeus extremely small; front depressed in middle but with a slender median carina on lower half; ocelli large and prominent, in a low triangle; scape long; prothorax large, with a vertical transparent keel on each side anteriorly; thorax rugose, middle of mesothorax with transverse ridges; parapsidal grooves entire, deep; scutellum large, briefly and obtusely pointed posteriorly, with on each side a hyaline transverse keel; pleura with a broad transversely ridged groove; metathorax posteriorly with four small teeth on each side; wings large, hairy, postmarginal vein long; anterior and middle legs slender; middle tibia with one short but well-formed spur; hind coxæ extremely long, about as long as their femora, with a small transverse projection above near end; hind femora much swollen though not subglobose, with 12 small black-tipped teeth on lower edge, but no large tooth; hind tibiæ arcuate, sharply pointed at end; abdomen with a very short petiole-joint, deeper than long; remaining part elongate, compressed, with a very long sparsely hairy ovipositor-sheath, from which the ovipositor projects for a short distance.

Length about  $11\frac{1}{2}$  mm., of which nearly 9 is abdomen; head and thorax lemon-yellow marked with black; eyes reddish; face below antennæ all yellow, above with a thick rather H-shaped black mark; vertex and cheeks yellow, occiput black; scape yellow in front; flagellum reddish, infuscated above; thorax with the sutures broadly black, the prothorax with a median dark mark and one on each side; the mesothorax dark with a large yellow V, broken at apex (posteriorly) and a yellow C on each side (marginal); scutellum with a black band down middle; metathorax mainly black, with a pair of large yellow marks; wings slightly stained with yellow, dusky gray apically, nervures testaceous; legs yellow suffused with reddish, hind femora with about the basal two-thirds black on inner side; abdomen yellow, the segments with rather poorly defined broad ferruginous bands; tip of ovipositor black.

*Hab.*—Guatemala City, Guatemala (*W. P. Cockerell; J. Rodriguez*).

## A new *Tetropium*, two new *Bruchides*, with brief notes on other *Coleoptera*.

By H. C. FALL, Pasadena, California.

The following undescribed and very distinct species of *Tetropium* has recently been sent me by Mr. Ralph Hopping of the Forestry Service in the Sequoia National Park of California, with the statement that it is very destructive to both white and red fir (*Abies concolor* and *A. magnifica*.) Mr. Hopping requests that it be given a name in order that he may better refer to it in a forthcoming report.

### *Tetropium abietis* n. sp.

Dark brown varying to pale brown, but concolorous throughout. Head and prothorax shining and not densely pubescent, the former numerous simply punctate with distinct median sulcus, the latter quite strongly granulate punctate, and with a strongly marked sub-oval impression, which is narrowly smooth and slightly elevated at middle posteriorly. Elytra obviously wider than the prothorax, parallel or slightly narrowed posteriorly, with the usual fine and short appressed pubescence; luster dull, the discal raised lines distinct but fine; sculpture exceedingly fine, subgranulose or asperate punctate. Beneath shining, finely punctate, and with longer sparser pubescence. Length, 13—17 mm.; width, 3.5—4.5 mm.

*Male*: Antennae about five-sixths as long as the body, slender, all joints linear or nearly so, second slightly gradually wider apically, twice as long as wide; third nearly or quite twice as long as the second and more than four times as long as wide. Prothorax varying from distinctly transverse to barely perceptibly so, subangularly rounded at or a little in advance of the middle; femora stout; pygidium obliquely narrowed behind, the apex rather broadly truncate.

*Female*: Antennae scarcely longer than half the body, a little more slender than in the male but similarly formed; prothorax with sides more evenly rounded; femora less stout; pygidium with apex broadly evenly rounded in nearly circular arc.

Described from a series of a dozen specimens taken at Huckleberry Meadow, Fresno Co., California, all bearing date July 19, 1910. This is the most strongly characterized *Tetropium* in our fauna, and at once distinguished from all others by its granulose sculpture and the strong oval prothorac impression, the latter somewhat suggestive of *Nothorina*.

### *Bruchus julianus* Horn.

This species was described in 1804 from San Julio and San Ignacio, Texas. Later, larger specimens from Brownsville were held to be identical and so distributed, and upon these

my conception of the species was based. Mr. Wenzel now announces—*Ent. News*, 1912, p. 140—that a series taken recently by H. A. Wenzel in Western Texas are typical *julianus* and quite distinct from the Brownsville species. Specimens sent to me by Mr. Wenzel prove to be my recently described *ochreolineatus*, which name therefore falls into synonymy. This leaves the big Brownsville species without a name, and I would propose for it the specific name

***Bruchus major* n. sp.**

The two species are much alike in structure and markings, but the ochreous lines of pubescence on the elytra of the smaller species are more conspicuous, the second antennal joint is relatively shorter as compared with the third, and the number of blackish joints of the antennæ is two or three greater than in *major*. *Julianus*, according to Mr. Wenzel, is always found on a low shrub near the ground, while *major* breeds abundantly in the seed pods of the tree *Acacia flexicaulis*.

The two following species were represented in my collection at the time of my recently published tables of *Bruchus*.\* The first was held back thinking it might possibly have been described from Cuba, and the second was known to me only by a unique specimen. Recently Mr. Schwarz has seen the Florida specimens and pronounced them different from anything known to him from either Cuba or Mexico; and of the second I have just received additional specimens from Dr. Blaisdell.

***Bruchus depressus* n. sp.**

Form strongly depressed, black, shining, lateral half of elytra red, varying through the reduction of the red area to entirely black; antennæ black, basal four or five joints pale; legs entirely red, or with the hind thighs blackish at extreme base; pubescence thin, short and inconspicuous, ochreo-cinereous in color. Antennæ moderately incrassate; fifth joint as long as wide, following moderately transverse. Eyes separated by about their own width as viewed from the front; head finely closely punctate; front feebly obtusely carinate. Prothorax subconical, wider than long, impressed before the scutellum, rather coarsely and closely punctate with intermixed finer punctures. Elytra as long as wide; sides parallel and broadly evenly arcuate, depressed along the suture; striae rather strong and strongly punctate

\* *Trans. Am. Ent. Soc.* XXXVI, 1910, p. 160.

basally, intervals subrugose and each with a somewhat irregular and indistinct series of coarser punctures. Pygidium oblique, rather coarsely and closely but not deeply punctured. Hind thighs armed with a single long acute tooth on the inner margin; terminal spur of hind tibiae very short, not longer than the other marginal denticles. Length, 2—2.2 mm.; Width, 1.2—1.35 mm.

Florida (Orlando?). Three examples bearing date March 14, 1894, collected and given me by Mr. Frank S. Daggett. This species belongs to Horn's Group V, and in my recently published table may best follow *discopterus*, differing in its even more depressed form, more shining surface, dark antennae and differences in elytral coloration.

**Bruchus brunneostictus** n. sp.

Form of *pauperculus*, *pullus* and allies, and agreeing in all respects with *pullus* except as follows: Size much larger, the cinereous pubescence denser, the livid spots contrasting more strongly. In fully maculate specimens the spots are arranged in three transverse series on the elytra. Those of the apical series seem most likely to disappear, then the basal ones, and in one example there remains only the sub-lateral median spot external to the pale line on the third interspace. Length, 2.35—2.9 mm.

California. Alhambra Valley, Contra Costa Co. (Blaisdell), type. Santa Clara Co. (Baker.) This is possibly only a large and finely developed race of *pullus*, but I have seen no intermediates and it certainly seems worthy of a name.

**Anillus.**

In Blatchley's *Colcoptera of Indiana*, page 79, the author records the taking of two specimens of an *Anillus* identified by him as *A. fortis* Horn, from beneath stones on a wooded slope near Wyandotte Cave in the extreme southern part of the state. On the 15th of July, 1910, several specimens of *Anillus* were taken by Mr. Blatchley and the writer under precisely similar conditions near the town of Mitchell, Indiana, about one hundred miles south of Indianapolis. These, as we expected, proved to be identical with the Wyandotte examples. On returning to California and comparing my captures with specimens of *fortis* from North Carolina, it became evident at once that the Indiana species was something else. On investigation it was found to agree well with the description of *A. affabilis* Brues\* from Austin, Texas, and a recent direct comparison with Mr. Brues' types shows

\* Am. Naturalist XXXVI, p. 366.

that the two forms are too close to separate with safety. Mr. Brues has very generously placed in my collection one of the three specimens from which his description was drawn. This specimen is evidently of narrower form than any of the Indiana ones but, if my memory serves me, it is also more slender than either of his two remaining types; the difference therefore is likely to be sexual or possibly merely individual. Aside from it, there is scarcely anything to distinguish the Indiana specimens from the Texan ones.

**Hyperaspis wolcotti** Nunenmacher, Ent. News, 1911, p. 73.

This is a *Hyperaspidium*. A series sent me by Mr. Wolcott shows great variation in color. The species seems to be distinct from any previously described *Hyperaspidium*, but of this I am not entirely sure.

**Lytta (Cantharis) nunenmacheri** Wellman, Ent. News, 1912, p. 36.

Typical specimens kindly sent me by Mr. Nunenmacher show that this is precisely *Cantharis incommoda* Horn. No reference is made by the author to the important sexual characters, a knowledge of which is necessary in order to place the species in our present tables. The comparison with *blaisdelli* is apropos for no other reason than that the two species occur in the same region, since they belong to two different sections of the genus.

**Lytta arborea** Wellm. *ibid.* p. 34.

A specimen of this from Mr. Nunenmacher, who collected the type series, indicates a species closely allied to *stygica*. It is smaller and more slender than any specimen of *stygica* in my collection, but otherwise possesses scarcely anything in the way of definite characters. I cannot believe that the occurrence of the specimens on trees has any special significance. Any species of *Cantharis* is likely to, and many certainly do, climb to considerable heights on plants and bushes.

**Lytta hoppingi** Wellm. *ibid.* p. 35.

This species should be placed near *lugens* in our tables. It is structurally quite similar, but is very distinct and at once recognizable by the color, and the very narrow, shining, sparsely punctured thorax. I owe a good series to the kindness of Mr. Hopping.

# ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

TO CONTRIBUTORS.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, four weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form and without covers, will be given free, when they are wanted; if more than twenty-five copies are desired, this should be stated on the MS. The receipt of all papers will be acknowledged. Proof will be sent to authors for correction only when specially requested.—Ed.

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PHILADELPHIA, PA., JULY, 1912.

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With the present number of the NEWS our discussion on priority in nomenclature closes for at least two calendar months. Whether it be reopened depends on future events and our contributors. Elsewhere in this issue we give the results of the vote of North American entomologists on this question. The results throughout the world, as at present known to us, are:

	For strict Priority	Against strict Priority
Scandinavian Zoologists	2	120
German Zoologists	11	115
American Entomologists	95	191
Total	108	426

So far as the ballot instigated by the NEWS is concerned, we believed it was desirable to determine whether strict priority or the preservation of commonly used names was approved by the majority of working entomologists. When this is decided, the ways and means of carrying the decision into effect can be devised.

Some of the views expressed in the course of the discussions in our previous issues lead us to remark that there are many ways of selecting *nomina conservanda*. Just as a certain edition of Linnaeus's *Systema Naturae* has been accepted as a starting point in our nomenclature, so a catalogue of Coleoptera of 186— or a check list of Orthoptera of 190—, approved by the Nomenclatorial Commissions of Entomological and Zoological Congresses, can be made final standards for the nomenclature of those groups back of which we shall not go. Conserved names are even more for the present and the future than for the past, and the standard adopted for any group may, or may not, have been prepared on the basis of strict priority.

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No numbers of the NEWS are issued for August and September.

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## Notes and News.

### ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

STRICT PRIORITY IN NOMENCLATURE—OR NOT?—I am in favor of protecting the most important and generally used names against changes, because I believe that this method would greatly lighten the labor of the economic entomologist. The waste labor involved in looking up nomenclature for the species the economic entomologist desires to discuss is a useless tax on his time. Of course, when the same name is in use for two species or when the name is for some other reason unfit, changes should be made, but even then these changes should be made by a representative board and not by the isolated taxonomist.—  
T. J. HEADLEE.

STRICT PRIORITY IN NOMENCLATURE—OR NOT?—I write as an upholder of the Code, though I cannot understand all the commission's methods and I am much interested in reading your Editorial in the May number of this magazine. I feel that as civilized beings, we are almost bound to accept and work under a code of laws; therefore, I work under the International Code and hope to get it altered and improved where experience shows it is necessary.

You, Mr. Editor, say, "that the Law of Priority has not given the stability it was expected to give." For my part, I did not expect stability *in my generation*; it is too much to expect. We shall not get

stability until all the genera and species of the early authors are monographed by specialists, but *the law* is a means to an end, and it is working slowly but surely to that end; the real question is this: which is the best scientific basis to adopt, the principle of *Nomina conservanda* or the Law of Priority?

For general zoologists, especially perhaps professional zoologists and biologists, no doubt the former would be the more convenient. A short time ago one of the most eminent entomologists in England said to me, "of course *Passer domesticus* will always be *Passer domesticus* to me." He was not an ornithologist, and naturally the names we have known species by for many years remain remembered, simply because we are not working at that group. That gentleman, however, is a strict "Priorist" and it is quite impossible for a systematist and a specialist to be otherwise. When we monograph a group, we must look up all the old literature on the subject and find out if they had previously described any of the species we are working at. This is not antiquarianism—it is scientific investigation. If they had I for one should feel obliged to adopt the oldest name up to the 10th edition of the *Systema Naturae* (1758). By this process we gradually bring Kosmos out of Chaos, to use an extreme phrase, and we are working to put the next generation on solid ground. I think Mr. Caudell is largely right when he says that "priority is certain of more unanimous consent," for I feel sure this will be so among systematists and specialists.

I cannot, however, understand for what reason the commission sent round a note of inquiry about Meigen's names; they appear to have forgotten their own laws. The adoption of that list of names is absolutely contrary to article 25 b; it breaks the very first law of "The Law of Priority" which reads: "The valid name of a genus or species can be only that name under which it was first designated on the condition that the author has applied the principles of binary nomenclature."

Meigen did not apply the principles of binary nomenclature, therefore, the whole of that list published in 1800 is invalid and cannot be adopted—if three years later he adopts some of those genera and indicates their species as well, then, but only then, does he comply with the code, and therefore the names date from 1803 not 1800, and as a consequence some of Latreille's names dating from 1802 have precedence over Meigen's, which can only date from the time when he conformed to the principles of binary nomenclature. My view of this is, that the commission cannot break their own laws and if they want to rule in favor of Meigen, they must amend article 25; this I sincerely trust they will not do. Of course the commission may say that they have only ruled in favor of those names where they are found valid

under the code, but my point is that the whole of that list is absolutely invalid so far as the date 1800 is concerned, and 1800 cannot be a date that gives precedence.

Some of the laws of the code lack definiteness and I am glad to think that the subject is to be brought before the Oxford Congress, for we must remember that the number of species entomologists have to deal with is much greater than that of all the other branches of Zoology combined, and I trust that one of the results of that congress will be the establishment of an Entomological Council for nomenclature, who should carefully revise the present code and bring it up to present needs so far as we are concerned, after which the International Commission should be approached so as to try and bring the two bodies into some working agreement with the object of bringing out an amended code binding on all zoologists who are not a "law unto themselves."—G. T. BETHUNE-BAKER, Edgbaston, England.

AMERICANS AT THE INTERNATIONAL CONGRESS OF ENTOMOLOGY.—In addition to those mentioned on page 178 of the April News, we are informed that the following will attend the meeting at Oxford, August 5-10, 1912; Prof. S. A. Forbes, Urbana, Illinois; Dr. C. Gordon Hewitt, Dominion Entomologist, Ottawa; Dr. A. Fenyés, Pasadena, California; Mr. Charles T. Ramsden, Guantanamo, Cuba; Prof. G. C. Crampton, Amherst, Massachusetts; Dr. L. O. Howard, Washington; Prof. W. M. Wheeler, Harvard University; and Prof. J. G. Needham, Cornell University.

FOOD PLANT OF *DYSDERCUS MIMUS* Say.—The genus *Dysdercus* is well known for its attacks on cotton and other malvaceous plants, but although *D. mimus* is widely distributed, I do not find any reference to its food plant in the literature I have examined, including Mr. Ballou's apparently complete review of the subject in the West Indian Bulletin, 1906. It may therefore be worth while to report that in February of this year my wife found both young and adults of *D. mimus* at Gualan, Guatemala, living on *Iresine paniculata* (L.), one of the Amaranthaceae. The insects were kindly determined by Dr. Van Duzee, and the plant by Captain Donnell Smith.—T. D. A. COCKERELL, Boulder, Colo.

ENTOMOLOGICAL INVESTIGATION OF OKEFENOKEE SWAMP.—A party left Cornell University, May 25th, for the purpose of investigating the biology of the Okefenokee Swamp in southeastern Georgia. The fauna and flora of this extensive and in many respects unique swamp have heretofore almost entirely escaped the attention of naturalists. The eastern part of the swamp consists of vast inundated "prairies," while on the western side there are extensive heavily

wooded islands. Much of the swamp is a sphagnum bog, whence the Indian name, originally spelled "Ouaquaphenogaw," meaning "trembling-earth."

The personnel of the party consists of Professors C. R. Crosby and J. Chester Bradley, Dr. A. H. Wright, Messrs. M. D. Funkhouser, M. D. Leonard, A. R. Cahn and S. C. Bishop of Cornell University, and E. Lee Worsham, State Entomologist of Georgia. Dr. Wright and Mr. Cahn will give their attention to the vertebrates, and Mr. Cahn also to collecting fleas and Mallophaga. An extensive series of blood smears will be made, for the detection of blood-parasites. The other members of the party will devote their attention to insects, especial attention being given to aquatic forms. The party expect to remain in the swamp from eight to ten weeks.

COLLECTING IN TROPICAL AMERICA.—As foreshadowed in the NEWS for November, 1911, page 423, Messrs. A. F. Porter and John M. Geddes have enjoyed about eight months collecting in the tropics. "We touched at St. Thomas, St. Croix, St. Kitts, Antigua, Barbuda, Guadeloupe, Dominica, Martinique, St. Lucia, Barbados and then down to the main land of South America in British Guiana. We collected usually two weeks in each of the islands and secured some nice things. As a whole the islands proved very unproductive in Lepidoptera, but when we got out into the bush in British Guiana, we were indeed surprised at the great numbers of moths taken at night by light. We used an auto headlight and several lamps and would secure from 50 to 300 specimens on a single evening, or rather all night, for we usually worked all night long. Butterflies were not so plentiful, but the difference in species was very gratifying. I had no sickness of any kind during my entire trip and never spent such an enjoyable outing and collecting trip before. It is wonderful the different number of species one will take on a good night at light. On one of my best nights, I, myself, took 304 specimens and out of that number 267 were different species and besides Mr. Geddes secured about the same number of specimens, but I did not look over the material to see how many new species he could add to my list of different species. In all I think we took probably 10,000 specimens during our trip and if one is looking for exciting and interesting collecting, let him go to British Guiana."—A. F. PORTER.

SCARCITY OF EARLY INSECTS.—Insect life here this year is wonderfully scarce. I have a large trap in which I have taken many hundreds of insects that come to light. I have set it thirteen evenings in April and three times in May and have captured absolutely nothing. To-day it is fairly warm and I have taken a score or so of wild bees and a

lonesome *Calliphora vomitoria* cavorting on my window pane. I noticed also *Pyrameis atalanta* in my garden. Before to-day there has been nothing. I have thought that a winter of changeable temperature, when we get alternate thawing and freezing, was specially destructive to insects, but maybe so severe a winter as we have had, followed by so late a spring, has been equally unfortunate for them.—O. S. WESTCOTT, Oak Park, Illinois. May 3, 1912.

ONE REASON FOR THE CHANGE OF NAMES.—At this season when so much of the NEWS is given to nomenclatorial matters it may not be out of place to call attention to some reasons for the change of names. One of the chief reasons is, the obscure ways in which many names are proposed.

As an example of the way names should not be proposed, one may look on page 228 (15th line from the bottom of the page) and page 232 (19th line from the top of the page) of May, 1912, ENTOMOLOGICAL NEWS. Here two new generic names are proposed. They are not set off any more than any old specific name would be; they are not in the "contents"; and they stand a fine chance of being overlooked until some one has proposed another name, when they may be recalled and the literature "upset" again, so those who favor *nomina conse vanda* will have another "example." Of course they may be in the index, but who reads indices for new names? It is to be hoped that those whose fault it was that these names appeared in such an obscure way will read this notice; and that they will see that new names are set off so they can easily be seen by catalogers or those interested. A number of changes, in the generic names of sawflies, were necessary because new names were proposed or new genera described in just such obscure ways.—S. A. ROHWER.

[Mr. Rohwer's suggestions, in so far as they refer to the editorial side of the matter, will be adopted, although we can not excuse him from looking into indexes.—Ed.]

AN EXPERIMENT ON THE OVIPOSITION OF A HYMENOPTEROUS EGG PARASITE.\*—While experimenting with the Hymenopterous egg parasite, *Trichogramma minutum (pretiosa)* Riley, during the summer of 1911, I exhausted my supply of the moth eggs which this parasite attacks, and was forced to examine many plants in the field for eggs to serve as hosts for the adult parasites which I had on hand. For some reason, however, there was a temporary scarcity of moths, and no eggs were found. In searching for *Heliothis* eggs on okra plants, I noticed the partially solidified globules of juice which had been exuded from the fruits and stems, and the thought occurred to me to

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collect some of these globules and give them to the parasites as a substitute for their accustomed host eggs. The idea seemed so absurd, however, that only after a complete failure to obtain moth eggs was it put into execution.

Twenty of the juice globules were collected, some of them a little smaller, some a little larger than the eggs of the bollworm, *Heliothis obsoleta*, a favorite host of *Trichogramma*. These were placed in a small glass vial, and a female *Trichogramma* which had been in a tube with males of the same species was introduced. She quickly went to a globule and soon oviposited three times in it. There was a short interval between each two ovipositions. She then oviposited in each of four other globules. Then after running about for a few seconds she rested on the side of the vial. The vial being shaken slightly, she ran about again, got on a globule, but did not oviposit. In a few seconds she became motionless. The tube was slightly moved, and the parasite ran about but did not oviposit. She soon came to a resting position on the side of the vial, and was not observed to oviposit again.

The globules were observed carefully for several days, and, as may be expected, they all dried up without the emergence of any parasites.

The female of *Trichogramma* is usually represented as carefully inspecting the host egg to learn if it is suitable for oviposition, and I have often observed females walking over the eggs and touching them many times with the antennae, but it seems from these observations that the female is unable to ascertain whether the egg is suitable or not.

Unless it be admitted that the mature female is impelled to oviposit in anything like a moth egg which is at hand, it seems clear that she is unable to learn not only whether or not a host egg is already parasitized, unless it has turned black, but even whether it is of a suitable species or whether it is an egg at all. The parasite under consideration is known to have some forty-three hosts, and is supposed to oviposit in any soft-shelled egg, within certain limits as to species. The globules of okra juice were surrounded by a film formed by the exposure of the juice to the air, and were fairly good as an imitation of the egg of a Noctuid. It seems probable that *Trichogramma* oviposits in many unsuitable eggs, at least under conditions of scarcity of its usual hosts.

The reason for the careful examination of the egg by the female is a subject for further speculation. Possibly the examination serves merely to locate a suitable place for the insertion of the ovipositor.—T. E. HOLLOWAY, U. S. Bureau of Entomology, Audubon Park, New Orleans, La.

## Entomological Literature.

COMPILED BY E. T. CRESSON, JR., AND J. A. G. REHN.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), excluding Arachnida and Myriapoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species, will be recorded. The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published, and are all dated the current year unless otherwise noted. This (\*) following a record, denotes that the paper in question contains description of a new North American form.

For record of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington.

- 1—Proceedings, Academy of Natural Sciences of Philadelphia.  
 2—Transactions, American Entomological Society, Philadelphia.  
 4—The Canadian Entomologist. 5—Psyche, Cambridge, Mass.  
 6—Journal, New York Entomological Society. 7—U. S. Department of Agriculture, Bureau of Entomology. 8—The Entomologist's Monthly Magazine, London. 9—The Entomologist, London. 10—Nature, London. 11—Annals and Magazine of Natural History, London. 19—Horae Societatis Entomologiae Rossicae. 21—The Entomologist's Record, London. 22—Zoologischer Anzeiger, Leipzig. 24—Berliner Entomologische Zeitschrift. 25—Bolletino, Musei di Zoologia ed Anatomia Comparata d. R. Università di Torino. 35—Annales, Societe Entomologique de Belgique. 45—Deutsche Entomologische Zeitschrift. 47—The Zoologist, London. 51—Novitates Zoologicae, Tring, England. 56—Mittheilungen, Schweizerischen entomologischen Gesellschaft, Schaffhausen. 84—Entomologische Rundschau. 89—Zoologische Jahrbucher, Jena. 94—"Das Thierreich" herausgegeben von d. Deutschen zoologischen Gesellschaft, Berlin. 97—Zeitschrift fur wissenschaftliche Zoologie, Leipzig. 123—Bulletin, Wisconsin Natural History Society, Milwaukee. 128—Proceedings, Linnean Society of New South Wales, Sidney. 129—Annali, R. S. Superiore di agricoltura di Portici. 148—New York Agricultural Experiment Station, Geneva. 166—Internationale Entomologische Zeitschrift, Guben. 177—Quarterly Journal of Microscopical Science, London. 180—Annals, Entomological Society of America. 182—Revue Russe d'Entomologie, St. Petersburg. 190—Deutsche Entomologische Zeitschrift "Iris," Dresden. 191—Natur, Munchen. 193—Entomologische Blatter, Cassel. 214—Naturwissenschaftliche Zeitschrift fur Forst- und Landwirtschaft, Stuttgart. 218—Mikrokosmos, Zeitschrift fur die praktische Betatigung aller Naturfreunde, Stuttgart. 236—Boletin, Sociedad Aragonesa de Ciencias Naturales, Zaragoza. 243—Year-

book, Department of Agriculture, Washington, D. C. **254**—Archives de Parasitologie, Paris. **263**—Proceedings, Hawaiian Entomological Society, Honolulu. **277**—Victorian Naturalist, Melbourne. **285**—Nature-Study Review, Urbana, Illinois **315**—Memoires, Academie Royale de Belgique, Classe des Sciences, 2d ser., Brussels. **335**—Smithsonian Miscellaneous Collections. **344**—U. S. Department of Agriculture, Washington, D. C. **350**—Bulletin from the Laboratory of Natural History of the State University of Iowa, Iowa City. **368**—The Monthly Bulletin of the State Commission of Horticulture, Sacramento, Cal. **369**—Entomologische Mitteilungen, Berlin-Dahlen. **379**—Proceedings of the International Zoological Congress. **380**—Annual Report of the State Board of Horticulture, Denver. **381**—Experiment Station Record, Washington, D. C. **382**—Revue Zoologique Africaine, Bruxelles. **383**—Proceedings and Transactions of the Nova Scotian Institute of Science, Halifax. **384**—Archivio Zoologico Italiano, Napoli.

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# ENTOMOLOGICAL NEWS

Vol. XXIII.

No. 8



*S. S. Haldeman 1866.*

PHILIP P. CALVERT, Ph.D., Editor.  
E. T. CRESSON, Jr., Associate Editor.

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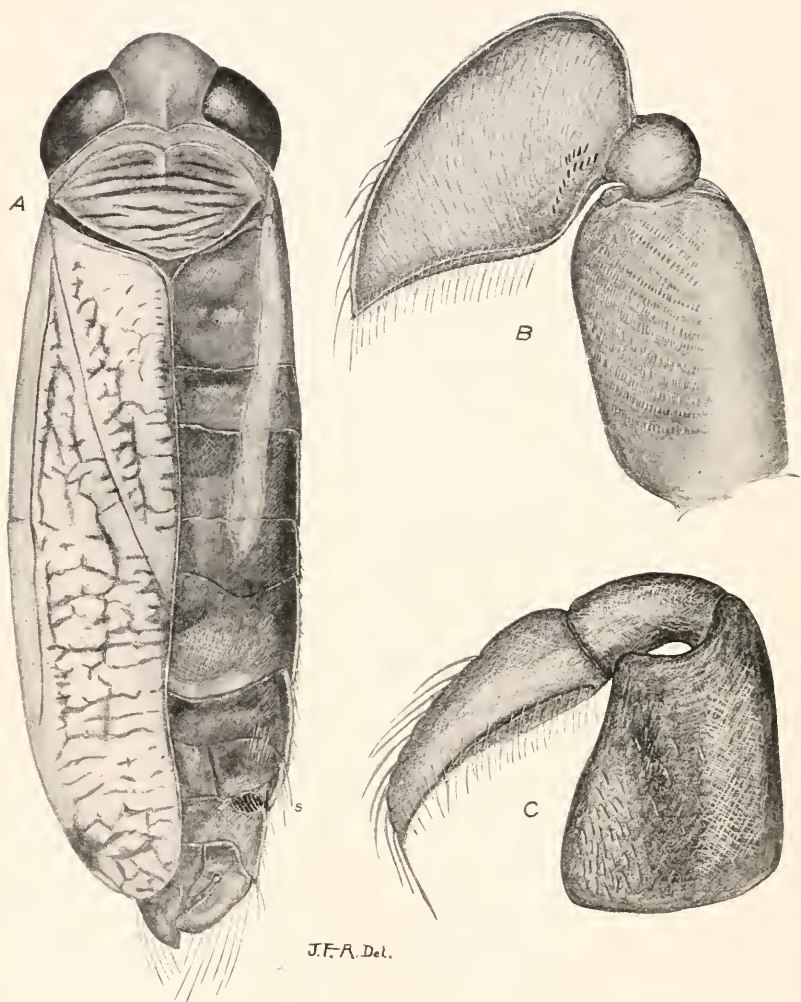
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PALMACORIXA GILLETTII—ABBOTT.

# ENTOMOLOGICAL NEWS

AND

## PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XXIII.

OCTOBER, 1912.

No. 8.

### CONTENTS:

Abbott—A new genus of <i>Corixidae</i> (Hemip.) .....	237	Malloch—Certain generic names in Phoridae (Dipt.) .....	356
Girault—Notes on <i>Pediculus vestimenti</i> Nietzsche, the Body Louse of Man .....	239	Scholarship in Entomology .....	358
Haskins— <i>Thecla clytie</i> , <i>leda</i> and <i>ines</i> (Lepid.) .....	344	Paine—The Mallophagan genus <i>Heterodoxus</i> Le Seuef and Bullen. ....	359
Girault—A few experiments with the effects of the protective vapors of Heteroptera on other insects .....	346	Editorial .....	363
Felt—Observations on <i>Uleela Rubs.</i> (Dipt.) .....	352	Champion—Notes on Mexican Barids (Curculioninae) Coleop. ....	364
Girault—Standards of the Number of Eggs laid by insects—X .....	355	Tristan—A Costa Rican Indian Superstition Concerning a Mecistogaster Dragonfly (Odonata) .....	364
		Entomological Literature .....	365
		Doings of Societies .....	373
		Obituary—Robert W. C. Shelford .....	388

## A new genus of *Corixidae* (Hemip.).

By JAMES FRANCIS ABBOTT, Washington University,  
St. Louis, Missouri.

(Plate XVIII)

### *PALMACORIXA* new genus.

Elongate, with vermiculate semi-obsolete markings. Male palae thin, platelike, obliquely inserted, the height about one-half the greatest length, the upper margin parabolic, the stridulating "pegs" in two rows and reduced to the lower proximal corner of the inner surface. Large stridular area on femur. Female palae short cultrate, femur also apparently with a stridular area. No terminal palar spine in either sex. Male vertex tumid, face flat, hardly foveate, female face convex. Metathoracic wings aborted in both sexes. Male asymmetry and strigil dextral; fifth tergite entire, sixth divided. Perhaps related to *Arctocorisa* Walleng. but differs markedly in several particulars from any other genus hitherto described.

### *Palmacorixa gillettii* new species.

Head pale yellow, vertex usually carinate, posterior angles rather acute and produced backward. Posterior margin emarginate. In-

terorbital space (posterior margin) about twice in the median length of the head in the male; one and a half times in the female. Inner margins of eyes parallel in facial aspect.

Pronotum lenticular, with a more or less definite median keel, rather strongly margined, the margin being marked by a narrow line of brown, the anterior line incised to correspond with the emargination of the head. Color, yellowish, paler at the sides, with eight to ten delicate broken and confluent lineations, some of the most posterior of which join the marginal line. Surface of pronotum polished, minutely rastrate; it requires a compound microscope to resolve the rastrations.

Tegmina polished, non-rastrate, light yellowish with brown markings. The latter are quite variable, usually not displaying the familiar cross-banded effect of the majority of the species in the family. Clavus more or less immaculate toward the inner angle as in *mercenaria* Say, the markings reduced to a more or less definite diagonal stripe following the direction of the corial suture. The inner edge of the clavus is margined with brown, and between this and the diagonal stripe mentioned are numerous lineations ranging from isolated flecks in some individuals to interlocking and connecting cross bars in others. Embolium immaculate, its inner edge strongly margined. Corium and membrane with vermiculate and inosculate brown markings, usually arranged in two rather indefinite longitudinal stripes. A dark fleck on the outer edge of the membrane.

Metathoracic wings aborted in both sexes to a rudiment which extends from thorax to about the level of the third abdominal segment. Strigil ovate, about 0.3 mm. long by 0.2 mm. wide, transversely placed, with 6-7 striae. Legs and entire under surface yellowish white.

Male palae very strongly compressed, plate like, the lower edge straight, the upper edge parabolic in outline; the surface covered with fine depressed spines. Toward the lower edge, next the tibial joint are found the "pegs" in two rows, 5-6 in the upper row, 9-10 in the lower. These two rows seem rather sharply differentiated from the rest of the spines covering the face of the pala, yet it would seem to be not impossible that the whole surface may function in stridulation. The lower edge of the pala is fringed with cilia but there is no terminal spine. Tibia globular, about one-fourth the length of the pala. Femur oblong, as long as the pala, its width about one-half its length. Stridular area large, consisting of numerous rows of minute spines. Female palae short cultrate, triangular in section, the length a little less than three times the greatest height. Tibia rounded oblong, about as wide as the pala, its length a little more than twice its width. Femur trapezoidal in shape with a distinct area of strong spines analogous to the stridular area in males.

Second leg: Spines about equal to tibia in length, the latter one-half the femur. Tarsus slightly shorter than tibia. Third legs: Femur and tibia subequal and about four-fifths the tarsus. Metaxyphus short, acute.

Length 6 mm., width across pronotum  $1\frac{1}{2}$  mm.

Described from three males and three females from Fort Collins, Colorado, collected in May and June by Prof. C. P. Gillette to whom the author is indebted for the specimens. Superficially the species resembles *calva* Say, with which it possibly has been confused. It is considerably larger than Say's species and structurally very different from any other Corixid with which the writer is familiar.

#### Explanation of Plate XVIII.

A. *Palmacorixa gillettii* n. gen. et sp. Male with one hemielytron removed to show the nature of the abdominal asymmetry, the strigil (s), and the rudimentary metathoracic wing. Other specimens show a rather more definite tegminal lineation. x12.

B. Male first leg (pala, tibia, and femur) showing the inner surface of the pala with the stridulating pegs and the stridular area on the femur. x55.

C. Female first leg (pala, tibia, and femur). x55.

---

## Notes on *Pediculus vestimenti* Nietzsche, the Body Louse of Man.

By A. A. GIRAULT, Brisbane, Queensland, Australia.

The following fragmentary notes were derived from a visit to the Cook County Hospital for the Indigent Insane at Dunning, near Chicago, Illinois, and are published for their general interest.

Dr. F. B. Clarke, formerly medical superintendent of the hospital, and Mr. J. J. Davis, my colleague in economic entomology, were experimenting tentatively on fumigants with the object of finding one which was efficient both as an insecticide and germicide or disinfectant in order to obviate separate fumigations of entering patients' clothes. The common body louse was one of the insects used in the experiments and some eggs of this insect forming the contral lot of one of the experiments

was turned over to me for observation. It was from some of the nymphs from these eggs that the following observations were made on the feeding habits of the very young. The eggs were obtained from a patient's black coat which was covered with them inside, so much so as to be nearly white in color. I give the observations in detail, just as they are rather hastily jotted down by me.

*Nymph I.*

Hatched 30th March, p. m. Body wholly silvery white, the eyes and claws blackish. Taken at 8.21 p. m. and placed on arm. Took feeding position at once and after 1½ minutes from start the first blood entered, staining the thorax crimson. Remained feeding for 11 minutes, the blood gradually staining the thorax and meson of abdomen a deep crimson, the rest of the abdomen salmon colored. Gradually the abdomen swelled, finally forcing two minute red strings of dry excrement from the anus; fed until nearly standing on head (really anterior legs), the intermediate and posterior legs free, waving slowly in air. Blood plainly visible as it pulsed through the head. Legs, head, prothorax and antennæ remained white. Placed at once on piece of cheese cloth and confined in a homeopathic vial, plugged with cotton. After feeding, abdomen fully extended, cylindrical.

By noon, March 31st and sooner, the body had assumed its white color again, saving the dark blotch at the dorsal aspect of the abdomen, centrally; minute pellets of crimson excrement adhering to the anus. Thus the food obtained last night had been entirely digested. At 12.16 p. m., 31st, the portion of the cloth containing the young louse was placed against the skin and without hesitation the nymph crawled over on to the arm and at once began to feed (12.16 p. m. to 12.31 p. m.); the entering blood could not be seen very distinctly but gradually the abdomen became stained; a small dry pellet of excrement was voided as the abdomen filled.

At 8.02 p. m., March 31st, it was again fed, blood entering after 4 minutes and feeding continued for 3 minutes. At first, under 16-candle power light as at first meal, nymph always crawled away from food (naked arm) as in Nymph II.

Placed on arm again at 1.07 p. m., April 1st, the nymph then pallid saving a dark blotch along the alimentary canal; first blood entered after 2 minutes and feeding continued til 1.20 p. m.; went to food at once; broad daylight. No signs of an ecdysis. By 10 p. m., April 1st, the nymph was again pallid; it eagerly went to food at 9.59 p. m., the first blood not entering however, until after 3½ minutes of probing;

feeding continued till 10.11 p. m. (stopped by force). Placed on food again at 8.36 p. m., April 2nd, the nymph pale; first blood entered after 1 minute and feeding continued till 9.15 p. m.; excrement voided as usual but in larger amounts. Nymph was dead by 5 p. m., April 5th, without change, having been left without food.

*Nymph II.*

Hatched 30th March, 1910. Placed at 8.48 p. m. on skin of arm; did not crawl at all but at once took feeding position and attempted to feed. Unsuccessful until after 4 minutes when first blood entered the body; fully colored after 1½ minutes of feeding; the entire abdomen and thorax a deep crimson; excrement gradually forced from anus. Fed for 14 minutes. Then removed to vial onto piece of cheese cloth.

By noon March 31st, the young nymph was again shrunken about the abdomen, merely the alimentary canal and sides of thorax being still crimson. Placed on hairless portion of arm, at 1.48 p. m., 31st; blood began to pulsate after 1½ minutes, the pulsations at the rate of about 3 per second. As the abdomen became inflated, a long, dry string of minute blood-red pellets were forced from the anus; this was moniliform nearly and brilliant ruby red. At 1.59 p. m. stopped feeding and commenced to crawl slowly off. Alimentary canal stained ruby red, the remainder of abdomen pinkish. Nymph would not voluntarily go to food at 8 p. m., 31st March but crawled away from it (under bright light 16 c. p.).

In bright daylight, the nymph pallid excepting dark alimentary canal, it went to food at once at 1.24 p. m., April 1st; first blood entered at 1.26 p. m. and feeding continued till 1.32 p. m. Placed on the arm again at 10.15 p. m., April 1st, but wandered until 10.17, when it settled to feed; first blood entered after three-quarters of a minute; fed until satisfied, till 10.27 p. m., excrement being voided at 10.24 p. m.

Placed on arm again at 8.11 p. m., April 2nd, the nymph pale; first blood entered after 2 minutes and feeding continued till 8.18 p. m., until satisfied; no signs of an ecdysis. Placed on arm again at 10.12 p. m., April 5th, 1910, after three days of starvation. Nymph very pale, shrunken, the alimentary canal filled with a thin, dark streak of excrement. Too weak to pump blood, though effort was continuous up to 10.29 p. m. Slightest jar would cause relaxation and the louse would drop off or turn over on its back. Discontinued attempts to feed at 10.31 p. m. and lay inert on its back. Replaced in vial. Died April 6th, 1910.

*Nymph III.*

Hatched at 10 a. m., 31st March, 1910. Perfectly white. Placed on arm at 2.37 p. m., March 31st. It immediately began to crawl up to

and through the hairs along side of fore arm for 1 minute ( $1\frac{1}{2}$  inches) then settled down to feed (2.38 p. m.-2.45); blood began to enter the head after 2 minutes (2.40 p. m.); abdomen swollen at 2.42 p. m. At 2.44½ a red pellet of excrement was exuded from the abdomen, continuing in a string of a dozen or more, the nymph ceasing to feed. To the naked eye, the nymph now appears as a small red conical moving object (thorax and abdomen, alone visible thus): Removed to vial on piece of cheese cloth. Nymph avoided food when presented to it at 8.23 p. m., 31st March and though at first attempting to feed when placed on arm, after a minute and a half crawled off. Body still deeply colored.

At 4.02 p. m., April 1st, the nymph went at once to food when the cloth holding it was approached to bared arm; its body pallid, excepting darkness of the alimentary canal. Blood entered at 4.04 p. m. and feeding continued until satisfied at 4.15 p. m. The abdomen then had the appearance of a partially inflated balloon. Toward the last, a minute string of ruby pellets, dry, was slowly exuded from the anus and as slowly dropped; this was capped or headed by a rounded shining dark clot. And again from 10.30 p. m. to 10.43 p. m., April 1st, the nymph was fed. Could see no blood enter but abdomen became swollen, peristalsis strong, but no excrement voided; taken from food. Placed on food again at 8.44½ p. m., April 2nd, the nymph then pallid, excepting dark canal; first blood entered after 1 minute; feeding continued until 9.07 p. m. (satisfied); anus at first, as usual after first two or three meals, with a round excrementitious cap.

Placed on again not until 10.21 p. m., April 5th, nymph then very pale, the abdomen shrunken. Commenced to feed at once, causing slight itching. Successful in obtaining blood after  $4\frac{1}{2}$  minutes of continuous effort and fed until 10.55 p. m.; the usual red excrement voided. Feeding stopped by observer, blood not pulsating then, but peristalsis strong and nymph was probably being imbibed. Placed on food again at 9.15 p. m., April 6th, 1910, the nymph pale; blood began to enter after 4 minutes and feeding continued till 9.30 p. m. (by permission). Pulsation of blood stopped at 9.27 p. m. Placed on food again April 7th, 10.48 a. m., the nymph then colored somewhat; began to probe at once, first blood entering not at all; none was seen to enter though the nymph was plainly obtaining nourishment, the abdomen swelling and excrement being voided gradually, as usual during the process of feeding. The voided excrement had the appearance of minute blackheart cherries strung together. Feeding continued until 11.39 a. m., the nymph being removed. It was then much swollen, the abdomen red. At 6.45 p. m., April 7th, it was placed on food but crawled around for five minutes and would not feed. Replaced in vial.

Eagerly went to food at 10.26 p. m., April 7th, 1910; at first peristalsis strong; first blood entered at 10.31 p. m., the pulsations strong. Pulsations practically stopped at 10.37 p. m. but were resumed at intervals as excrement was voided to make way for further supplies; feeding stopped by force at 10.46 p. m. Placed on host again at 11.13 a. m., April 8th, 1910; blood began to pulsate after three minutes; left food voluntarily at 11.26 a. m. and crawled several inches, settling again at 11.30 a. m. but did not feed; removed to vial at 11.36 a. m. Placed again at 9.38 p. m., 8th April; began to suck at once till 9.43 without effect; then crawled slightly and settled again at 9.43; was successful up to 9.47, when it again began to crawl; removed. Died after several days.

*Nymph IV.*

Hatched at 6 p. m., 31st March, 1910. Perfectly white. Placed on naked arm at 8.34 p. m., March 31st, its reaction to food being strong, the nymph eagerly clambering off original piece of infested cloth onto arm in bright glare (direct) 16 c. p. electric light; first blood entered after three minutes; the nymph fastened to the first spot its body fell upon; abdomen and thorax red from blood, the former distended after two minutes of continued pumping; red excrement voided after five minutes; finished feeding at 8.46 p. m. No pain; as with other nymphs. Placed on cloth in vial.

Placed on food a second time at 5.06 p. m., April 1st, 1910; blood began to pulsate at 5.08½ and feeding continued till 5.17 p. m. Placed on food at 9.10 p. m., April 2nd, then pallid; first blood entered after one minute and feeding continued until 9.19 p. m. Not fed again until 10.33½ p. m., April 5th, the nymph then weak, pallid, shrunken, began to "feed" at once. Very weak; unable to keep its position long enough to feed, after turning over on its back and then unable to regain its feet. Replaced in vial at 10.45 p. m. Died several days later.

From these tentative observations, one is rather surprised at the rapidity of digestion in the young nymph, of its seemingly voracious appetite, apparently requiring a constant or else frequently renewed supply of nourishment and, at the length of the first postembryonic stadium (under the conditions of the observations,—food not being constant or renewed at very frequent intervals). Obviously, the nymphs require much more nourishment during stadium than do those of the bedbug, for instance. From my experience in feeding them, I formed the conception of them as being continually hungry, often imbibing and excreting at the same time, occasionally ceasing to feed and wandering slowly about over the host but not for long intervals (of a day or more as in *Cimex lectularius* Linnaeus), returning again for their supply of blood after several hours have elapsed. Under the conditions of the observations, when food was

allowed not more than once in twelve hours, in some instances I could not spare the time to allow satisfaction. Sometimes the nymph would settle down as if permanently, the peristalsis movements of the alimentary tract ceasing after the first ten (more or less) minutes. If deprived of food after three or four days for a period of about three days, the nymphs died through sheer weakness, being unable to obtain food try as they may. They did not always feed on normal blood as witness the absence of redness at times when the abdomen was perceptibly enlarging.

I also made the following preliminary experiment to show the length of life of the new-born nymph without food. Four nymphs hatching at 6 p. m., March 31st, 1910, were confined separately in glass vials, containing a small piece of cloth for them to rest upon. The vials were stopped with cotton and were kept in a warm laboratory. Three of them died at about 3 p. m., April 2nd; at this time, the fourth was still alive but obviously weak; it reacted to food but was unable to take it. It died on the following morning. Thus, life continued without food not longer than about thirty-six hours, showing the great dependence of the young louse upon its host.

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### **Thecla clytie, leda and ines (Lepid.).**

By J. R. HASKINS, Los Angeles, Calif., and F. GRINNELL, JR., Pasadena, Calif.

Messrs. Barnes and McDunnough, in their article in the February, 1912, number of the NEWS, exhibit too bad form in their personalities concerning the Pacific Coast Lepidopterists to permit of an adequate reply, except by indulging in the same vein. We do feel, however, that we may with propriety discuss several of the points covered by their strictures.

Concerning Mr. W. H. Edwards, no Lepidopterist needs to be told that his work is far ahead of anything else that has been done in America. But Mr. Edwards, as we all know, made many mistakes, like everyone else. Many of these have been corrected by himself and others, and many more will be discovered as the little known species are more closely studied. One has only to turn to a Catalogue of Lepidoptera and note the numerous synonyms by Edwards to appreciate our point.

As for descriptions, we believe that they should be so

worded that when taken in connection with illustrations and type localities no mistakes can be made as to what the author had in mind. Although many descriptions certainly are inadequate, still the majority of them are fairly satisfactory, and our first move in studying a species is always to read the verbatim account of the author and consider his words in connection with the type locality.

We are very glad to find that our article has resulted in the publishing of the fine illustrations in Messrs. Barnes and McDunnough's article in the NEWS. As for their remarks concerning them, our own study, and the illustrations themselves, lead us to entirely different conclusions.

Referring to the illustrations of *leda* and *ines*, so called, we note that these variations came from identical localities, are not even seasonal, and are the widest variations obtainable from a set of one hundred specimens. We may corroborate this by saying that we have several sets of from five to twenty specimens each, taken in widely separated localities, in which the same variation can be noticed. For example, Mr. Haskin, during two days' careful search, took seven specimens from one small clump of willow, covering not more than twenty square feet of space, in a sandy wash near Cananea, Mexico. Another set of six came from a patch of mesquite, east of Needles, California, on the Arizona side of the Colorado River and about eighty miles from Prescott, the type locality of *leda*. And, by the way, the type locality of *ines* is not Prescott, as stated by Messrs. Barnes and McDunnough, but Southern Arizona. (See Edwards' original description.)

Again, Mr. Grinnell has a set of twenty specimens from one limited locality in Southern California. The extremes of this latter set in particular are even more marked than in the illustrations, yet it would be stretching one's imagination to attempt to separate them into species or even forms. These facts, together with the well known fact that there are many other small species, especially among the Theclas, which vary as much as and even more than the one under discussion, confirm us in the belief that we are right in claiming that *leda* and *ines* are but synonyms.

With reference to *clytie*; At the time we made our study, the only references available were Edwards' description, Holland's illustration and Aaron's reference. The new illustration of the under side is fine and causes us to modify our first conclusion. We now believe that *clytie* should be called the species with Southeastern Texas as its habitat. *Ines* and *leda* are synonymous and represent the southwestern form as influenced by a desert environment. The general resemblance in markings, as shown by the illustrations, is very close and such differences as exist between *clytie* and the southwestern form can be easily accounted for by the difference in environment. As it stands this way there is no danger of confusing it with any other species; but with an attempted differentiation into three species unlimited confusion is possible. We therefore arrange these names as follows:

*T. clytie* Edwards.  
Var. *leda* Edwards.  
Syn. *ines* Edwards.

Many other examples might be mentioned as showing the influence of the dry southwest on the coloring of butterflies. In our opinion a close study of these differences, and a simplification of our synonymy, is much more to be desired at the present time than a constant attempt to introduce new names, based on the description of one or of a very limited number of specimens.

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## A Few Experiments with the Effects of the Protective Vapors of Heteroptera on Other Insects.

By A. A. GIRAULT, Brisbane, Queensland, Australia. . . .

The following notes may add one or two facts of importance bearing indirectly on the protective value of the odoriferous secretions of a few insects. Facts of this nature do not add actual evidence of protection which must be observed in nature and supplemented by dissections of the natural enemies of the protected insects.

THE POISONOUS NATURE OF THE ODOR OF *EUSCHISTUS*:

One June 1, 1909, four adults of a species of *Euschistus*, captured in a clump of weeds, were confined together in a homeopathic vial, closely stoppered, from 11 A. M. to 2.08 P. M., or for slightly over three hours. They were then carefully removed. An adult *Megilla maculata* De Geer was added to the vial, controlled by an adult kept in a clean vial. No apparent effect.

The four bugs having been placed together in a stender dish, on the following day their odor was very perceptible and at 7 A. M. an adult of *Tyloderma foveolatum* Say was placed in with them. A similar stender dish contained a control adult. No effect resulted. It is probable here that the protective vapor of these insects had already been dissipated before the experiments.

THE POISONOUS NATURE OF THE ODOR OF *BROCHYMENA*:

An adult *Brochymena* was captured from apple at 8 A. M., May 14, 1909, and was at once confined in a homeopathic vial for twenty-four hours, occasionally being roughly shaken up. The vial was closely stoppered. At 8 A. M., May 15, the still living bug was hastily removed; the vial contained then a very faint sweetish odor. A control vial was prepared.

(1). At 8.10 A. M., May 15, a worker of *Lasius niger americanus* was introduced into each vial. Both ants at once began to crawl about, acting normally. No change up to 11 A. M., when both were apparently normal. When the bug was removed from the first vial it was hastily transferred to another, smaller one in which it died at nine o'clock; this vial contained filter paper to absorb moisture. The experiment ant was removed to this vial at 11.05 A. M., the control removed to a similar, but clean vial. The second experiment vial now contained the dead *Brochymena* and had a pronounced odor given off by the bug when it was confined at 7 A. M., or else when it died. Three minutes afterwards, the experiment ant showed convulsive movements but continued to crawl feebly; a minute

later it was in continuous convulsions, which did not end in (apparent) death until after fifteen minutes. The control ant died several hours afterward, but without convulsions.

(2). At 1.10 P. M., May 17, 1909, another worker of the same ant was introduced into the vial still containing the dead body of the *Brochymena* and which still had a strong odor. A similar control. After one minute, the experiment ant fell over in convulsions and was apparently dead five minutes later; control ant remained normal. Both ants were captured at the same time and were not selected.

(3). This experiment was repeated at 3.15 P. M., May 18, with two random workers captured at the same time. Within three minutes the ant of the experiment was in violent convulsions, the control remaining normal. After 15 minutes the former was apparently dead. It was removed to the control vial containing the normal control ant. It fully recovered by 7 P. M., both ants then normal.

(4). Another worker of the same species was introduced into the vial containing the dead bug at 3.30 P. M. Before a minute had elapsed, it was obviously struggling against the effects of the secretion and was apparently dead after a quarter of an hour. At 7 P. M., or after three and a half hours' exposure, it was removed to the control vial, but did not recover. The control vial itself had an odor not unlike that of weak chloroform when this ant was placed into it, the odor presumably from the experiment ant of (3), introduced into the vial at 3.30 P. M. and which together, with its control, was normal at seven o'clock.

(5). At 10.28 A. M., May 19, a healthy ichneumonid was introduced into the vial containing the dead bug; it was in convulsions after two minutes, the convulsions ceasing in apparent death after seven minutes. Removed at 5 P. M. and did not recover. No control.

(6). At 10.35 A. M., May 21, 1909, an adult of *Conotrachelus nenuphar* Herbst, in the protective position was introduced into the vial containing the dead *Brochymena* and its odor. The weevil showed no change for twelve minutes, after

which it began to relax gradually, turning upon its back at eleven o'clock. It was then slowly moving its legs. This movement continued for some time until at 1.10 P. M. the true attitude of death was assumed. The weevil was in a stupor and to all appearances dead. At 6 P. M., or after about seven and a half hours exposure, it was removed to a clean vial. Complete return to normal health had occurred by 7 A. M., May 22. At that hour it was reintroduced into the experiment vial, upon which it did not fully assume the well known protective attitude, one of the legs being extended to grasp the strip of filter paper upon which it was lying. This position continued until visible relaxation commenced at eight o'clock and which was distinct at 8.10 A. M. and complete forty minutes later when the beetle was upon its back in slow convulsions. At 4 P. M. slight symptoms of life were present. The curculio was removed at 10 A. M., May 23, to a clean vial. It had fully recovered within twenty-four hours. Controls unchanged.

(7). At 2.40 P. M., May 24, 1909, a recently emerged female of *Habrocytus thyridopterygis* Ashmead was introduced into the vial, a similar adult retained as a control. The parasite commenced to show symptoms of approaching stupor at 2.46 P. M., but up to 3 P. M. it was still able to walk slowly, showing its uneasiness, however, by remaining inert most of the time and by strained movements of the abdomen, indicating difficulty in breathing. It was upon its back, apparently very weak, by 4.30 P. M.; at that time it was unable to locomote, though making efforts to do so; its fore wings were spread. Death had not occurred up to 6 P. M., but by the following morning the parasite was dead. The control remained normal. The odor of the bottle at the termination of this experiment was perceptibly weaker.

#### THE POISONOUS NATURE OF THE ODOR OF A PHYMATID.

(1). An adult phymatid captured on Evening Primrose in an orchard and at once confined in a vial, on July 15, was violently shaken up at 9.45 A. M., July 20 (it had not been fed in the meanwhile), and at 9.50 A. M. an adult of the beetle

*Chlamys plicata* Fabricius was introduced; a similar control. Both beetles were in their protective attitude when added to their respective vials and remained unchanged after introduction. The adult of the experiment first showed movement, regaining its feet at 9.55 A. M.; the control beetle making a similar movement at 10 A. M. Both remained normal up to 10 A. M., July 26, at which time the bug was dead. No effect.

(2). An adult phymatid captured at 9 A. M., May 12, 1909, on an apple leaf, was confined in a vial with an adult chryso-melid, captured a few minutes later. Both were dead after one and a half hours. These deaths may have been caused by the odoriferous secretions of each insect acting on the other.

(3). The vial containing the odor of the insects in (2) was hastily emptied and then tightly corked. At 12.40 P. M., May 12, a worker of *Lasius niger americanus* was placed into it; controlled. After three-quarters of an hour the ant of the experiment was apparently dead and was removed to a clean vial. It was replaced by another at 12.35 P. M.; this worker was in convulsions by 12.55 P. M., on its back at 1.06 P. M., and apparently dead by 1.50 P. M. By 1 P. M. the first ant was recovering, but not yet able to walk. Both of the ants were then placed in the open air and both had recovered and crawled away by 3.30 P. M. Controls remained normal.

(4). A wingless viviparous female of *Aphis persicae-niger* E. F. Smith was introduced into the same vial at 1.57½ P. M., May 12. Controlled. The aphid of the experiment remained motionless, but that of the control was in normal motion from the start. The former was to all appearances dead by 3.30 P. M., dying in the same spot and position as when introduced; control healthy and active. The louse of the experiment was plainly dead, its body shriveled, by 8 A. M. the day following. The control then alive and active.

(5). At 8.30 A. M., May 13, an adult of the coccinellid *Megilla maculata* DeGeer was introduced into the vial; controlled. Both adults captured the same morning in an orchard. Upon introduction, the experiment beetle showed obvious

symptoms of annoyance and disturbance and within thirty seconds fell from the glass sides of the vial, spreading its wings and falling on its back beneath the strip of filter paper, which it feebly grasped by its contracted legs. After five minutes it had assumed the death attitude, lying on its back, feebly moving the legs. On the other hand, the control behaved normally, actively running over the sides of the vial. By 8.48 A. M. the adult of the experiment was apparently dead. At nine o'clock, after half an hour's exposure, it was removed to the control vial, upon which it commenced to give symptoms of recovery after twenty minutes. By the following morning it had fully recovered. At eleven o'clock on May 14 both adults were liberated, upon which they crawled away.

(6). At two minutes past nine o'clock on the morning of May 13, an adult male of *Bibio albipennis* Say was introduced into the vial, controlled by the *Megilla* in (5). Within two minutes it had fallen over upon its side in convulsions, and the death attitude was assumed at 9.05 A. M., with slight leg contractions still visible. Two minutes later to all appearances it was dead, no movements following thereafter. At 11 A. M. the next day, it was removed to the control vial. It did not recover.

The odor of this phymatid was easily recognized by the nostrils. It reminded one very much of ethyl ether mixed with butyric acid—a rancid sweetness, very sickening to the human being and not unlike that given off by some species of *Calosoma*.

#### INTERPRETATION.

There can be little doubt from what has been recorded that the vapors emitted by certain Heteroptera are highly noxious to various forms of insect life, in many cases quickly stupefying some insects when the latter are exposed to them in an air-tight receptacle. In other cases death ensues. Under similar conditions Conradi (*Science*, New York, N. S., XIV, 1901, pp. 816-817; *id. ib.*, N. S., XIX, 1904, pp. 393-394) has recorded that toads are stupefied and sometimes killed—also salamanders—by the vapors emitted by the common *Anasa*

*tristis* DeGeer; that the protective odor of *Euschistus fissilis* sometimes killed the hardy weevils *Anthonomus grandis* Boh. in the adult stage (at other times failing to do so), and that the vapors emitted by *Brochymena annulata* killed adult muscids and stupefied a centipede but were variable in their effects. That variation of the efficiency of these secretions occurs fulfills the expectations, but has not of course been fully measured by these experiments, if measured at all. The end result, namely actual protection, after all, is the only measure of efficiency in this respect, since the fact that the protective vapor is seriously injurious to one species of insect and not to another, under the unnatural conditions of these experiments is no criterion upon which to state that it affords protection against the one and not against the other. Because a toad is killed once and not another time, under the same stated conditions, is no reason whatever for stating that variation in the protective efficiency of the vapor in question occurs. The actual protection must consist in being distasteful or obnoxious, not in causing serious injury, stupor or death to the attacking animals, since the latter must involve, under natural conditions, actual handling or even swallowing of the protected insect in order that the protective vapor would have time to be effective, even if then effective. In the case of these evil-smelling Heteroptera, however, birds and amphibians must be the enemies to be feared and it is in giving the individuals of attacking species of these animals the memory impression of distastefulness that the protection consists. It works through the memory of the young attacking animals, not stupefying or killing them but giving them such an experience of unpalatableness that they soon learn to avoid attacking. Therefore, it is obvious that the experiments recorded by Conradi and myself show no more than what is stated in the first three sentences of this paragraph and have little or no bearing on the relative efficiency of the protective odors in question.

The foregoing experiments were performed in a field laboratory at Centralia, Illinois, U. S. A.

## Observations on *Uleella* Rubs. (Dipt.).

By E. P. FELT, Albany, N. Y.

This genus was erected in 1908\* for a remarkable, tailed, midge larva, which latter was described as *Uleella dalbergiae* and is therefore the generic type. The adult was then unknown. Through the courtesy of W. H. Patterson, formerly of the Agricultural School, St. Vincent, B. W. I., specimens of practically identical larvae and adults were received. We deem it advisable to place on record the generic characters of the imago at this time as well as to correct two earlier provisional generic references.

Adults of the genus *Uleella* have fourteen cylindrical subsessile antennal segments, the distal segment of the female reduced while the circumfili in the male are large and very irregular. The palpi are triarticulate. The third vein unites with the margin at the apex of the wing. The terminal clasp segment of the male is subapical and serrate distally, while the ovipositor is short with feebly chitinized plates and a moderately stout variably chitinized terminal portion.

The slight reduction of the female antennae and of the palps is along the same line, though not carried so far, as obtains in *Asphondylia*; the terminal clasp segment indicates an affinity with *Cincticornia*, while the circumfili are nearly identical with those of *Schizomyia*. This genus is an exceedingly interesting synthetic type.

### *Uleella pisonifolia* n. sp.

This species was reared by W. H. Patterson, then of the Agricultural School, St. Vincent, presumably in June, 1911, from leaf galls on *Pisonia nigricans*.

*Gall*.—An irregularly oval leaf swelling 2-3 mm. long, the insects escaping through a circular orifice at one extremity.

*Larva*.—Length, 1.5 mm. The young larva is cylindrical, white, with a small, moderately broad head, the antennae short and stout. The breast bone is feebly chitinized, broad, tapering anteriorly and broadly emarginate. The fourteenth segment has a diameter half that of the

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\* Rubsaaenen, E. H. Marcellia, 6; 120-21.

preceding and bears a long, stout, irregularly annulate conical process distally. Moderately well developed pseudopods occur on the venter of the sixth to the thirteenth segments inclusive. Older and apparently nearly mature larvae are stouter and yellowish brown.

*Pupa*.—Length, 2 mm., moderately stout, yellowish orange, cephalic and thoracic horns distinct, the latter slender. The sixth, seventh and eighth abdominal segments dorsally with a sparse basal row of stout papillae each with a chitinous apex, terminal segment with one small median and two submedian pairs of chitinous processes; abdominal sclerites thickly set with chitinous points.

*Male*.—Length, 1.75 mm. Antennae as long as the body, sparsely short haired, fuscous yellowish, fourteen segments, the fifth with a stem one-fourth the length of the cylindrical basal enlargement, which latter has a length thrice its diameter, slight constriction near the basal third, basal, sub-basal and apical whorls of short stout, setae and high, irregular circumfili, resembling those of *Schizomyia*; terminal segment somewhat produced, with a length thrice its diameter. Palpi: First segment small and irregular, the second broadly oval and the third shorter than the second, oval. Mesonotum dark reddish brown. Scutellum and postscutellum fuscous yellowish. Wings hyaline, costa fuscous straw, the third vein uniting with the margin at the apex of the wing. Halteres probably fuscous yellowish. Coxae and legs yellowish, the tarsi somewhat fuscous, claws simple, slender, evenly curved, the pulvilli about half the length of the claws. Genitalia, basal clasp segment stout, narrowly conical, the apex subacute, terminal clasp segment subapical, its apex pectinate; dorsal plate short, divided, the lobes broadly oval, ventral plate short, broadly and roundly emarginate, the lobes broad, broadly rounded.

*Female*.—Length, 1.75 mm. Antennae about half the length of the body, rather thickly haired, fuscous yellowish; fourteen segments, the fifth with a stem one-fourth the length of the cylindrical basal enlargement, which latter has a length twice its diameter; terminal segment with a length one-fourth greater than its diameter. The tip of abdomen not expanded; ovipositor short, the apical portion broad and weakly chitinized; ventrally there is a pair of narrowly triangular, feebly chitinized plates.

Type, Cecid, a2230.

The most marked difference between this form and the closely allied *U. (Bruggmanniella) pisoniae*, Felt, is to be found in the relative development of the ovipositor. The allied *Bruggmanniella mexicana*,\* Felt, is also referable to the genus *Ulella*.

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\* 1911, Journ. Econ. Ent., 4: 547.

## Standards of the Number of Eggs laid by Insects—X.\*

Being Averages Obtained by Actual Count of the Combined Eggs from Twenty (20) Depositions or Masses.

By A. A. GIRAULT, Brisbane, Queensland, Australia.

## 14. LOCUSTA DANICA Linnaeus.

No.	Date 1912	No. counted per mass	Successive Totals	Av. per Egg Mass	Max.	Min.	Range		
1	Feb. 13	81	81	81.	81				
2		68	149	74.					
3		39	188	63.					
4		31	219	55.					
5		46	265	53.					
6		30	295	49.				30	
7		45	340	49.					
8		72	412	51.					
9		51	463	51.					
10		64	527	53.					
11		38	565	51.					
12		62	627	52.					
13		46	673	51.					
14		37	710	51.					
15		53	763	51.					
16		61	824	51.					
17		76	900	53.					
18		37	937	52.					
19		52	989	52.					81
20		64	1053	53.					
20			1053	222.	81	30	51		Finals

The egg masses upon which these counts are based were obtained within a square yard of made soil along the Mulgrave Tramway (connecting Cairns with Babinda) just across the Mulgrave River from Nelson (Cairns District), North Queensland, Australia. It is tolerably certain in this case, that each mass represents the total depositions of a single female, since the deposition of one mass, apparently, always results in her death, seemingly, she being unable to withdraw her greatly stretched abdomen, which after death breaks off at the fourth abdominal segment, or else is twisted off by the struggles of the female. In two cases, 96 and 115 eggs were counted, but

\*For the first nine of this series, see ENT. NEWS, 1901, p. 305; 1904, pp. 2-3; 1905, p. 167; 1906, p. 6; 1907, p. 89; 1908, pp. 4, 383; 1909, pp. 355-357; 1911, pp. 14-15.

I am not sure that these masses did not become mixed with a portion of another, so that they are not recorded above. An abundance of food was present.

On the other hand, each female may deposit two masses. I do not believe the females usually die as above described; in this case, so many thus dying may have been due to frantic efforts to escape upon the approach of a train. At any rate, I have seen egg masses, supposedly of this species, which did not contain in the upper part of the excavation, the mutilated abdomen; moreover, numerous dead females on the ground nearby showed no mutilation whatsoever.

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### Certain Generic Names in Phoridae (Dipt.).

By J. R. MALLOCH, Bureau of Entomology, Washington, D. C.

There has been, and is, considerable confusion in the *Phoridae* with regard to the generic names, and having, during the last seven years, done considerable work in this group, I have, like others, been impressed with the necessity for something like a definite arrangement of the genera and a decision as to the validity of the various generic names used.

If we leave out of consideration the *Bibio florea* of Fabricius (Ent. Syst. IV, 255, 8, 1794), which may, or may not, be synonymous with *Trineura abdominalis*, Fallen, the first species to be described was *atterima*, Fab. (l.c. 334, 93) under the generic title *Musca*. In 1802 Latreille erected the genus *Phora* with *Musca aterrima* Fabr. as the type (Hist. Nat. d. Crust. et d. Ins. III, 464, 1802). In 1803 Meigen created *Trineura* with the same species as type (Illiger's Mag. f. Ins. II, 276, 88, 1803). Thus *Trineura*, Mg., is a synonym of *Phora* Latr., which is the name that must be given to the genus having *atterrima* as type, *i. e.* *Trineura* in the present acceptance of the catalogs and authors. Lioy (Atti, Istit. Veneto, ser. III, X, 1864) attempted to subdivide the group, and owing to his imperfect knowledge of the species added very considerably to the confusion (when taken seriously). I have had occasion to examine his paper while engaged upon my work in connection with

the *Phoridae* in the U. S. National Museum and it may prove of interest to state just what this paper contains.

*Phora* Latr. is described as having the frons armed with reclinate bristles, the legs with setulæ and the wings with costa ciliate. The "marginal vein" is bifurcate, and the "submarginal vein" is prolonged towards the extremity of the wing. The median vein is straight.

He gives as his first species *Phora flavicornis*, Mcq., which is a synonym of *maculata*, Mg. The accepted type I believe would be this species but the name *Phora* being that used for another genus of course is inapplicable here. The other species in his genus are *P. flavipalpis* Mcq., *scapularis* Mcq., *vicinia* Mcq., *fuscipes* Mcq., and *rufa* Fab., which are all unrecognizable species: *fuliginosa* Mg. = (*Gymnophora arcuata* Mg.?), *pulicaria* Mg., *flava* Mg., *rufipes* Mg., *lutea* Mg., *nigra* Mg. and *pusilla*, Mg. The last five species have the postantennal bristles proclinate and belongs to *Aphiochaeta*. He also gives *bicolor*, Mg., which is a synonym of *lutea*, and *pallipes* Latr., *vulgaris* Fln. and *annulata* Mg., which are synonyms of *rufipes*. It is evident that he did not know the species and that which applies to this genus is equally applicable in the others.

*Trisometopia*, which has *Trineura thoracica* Mg. as type, is given as having the frons with "transverse row of bristles directed forward." The other characters are as in *Phora*. *Thoracica* has no proclinate frontal bristles.

*Obelosia* is said to have the hind tibiæ furnished with minute setulæ. The type *Phora rufipennis*, Mcq., is an unidentified species, but evidently an ordinary *Aphiochaeta*.

*Anevrina* is given as having the face with an impressed line, the legs armed with setæ, posterior tibiæ ordinarily very spinose, and the costa slightly ciliate. The anal vein is also given as absent. The type is *Phora urbana*, Mg., which has the anal vein complete and distinct, and the other species *opaca*, Mg., has the anal vein incomplete but has the hind tibiæ entirely bare.

It is not necessary to deal with the other genus *Diploneura* in this paper as the three species are all in the unrecognizable category. I had thought that it might be possible to use some

of the names proposed by Lioy in place of *Phora* for the spined-leg species left nameless through the substitution of *Phora* for *Trineura*, Meigen, but I find on a perusal of his paper that such a course is impossible.

It will be necessary to resort to later attempts at sub-division for generic names for the group.

In 1898 Dahl created a genus—*Dorniphora*— for the reception of one species—*dohrni* Dahl—(Sitzb. Ges. Natf. Fre., Berl., 188) and since then other species have been added to it until there are about ten species that may be classed as congeneric with the original type, most of which had been known, but not considered as generically distinct from those in *Phora*.

In 1908 (Jour. Nat. Hist. Soc. Glas.) I subdivided *Phora* into five genera. The names of some of these genera I afterwards discovered were preoccupied and in my paper on the *Phoridae*, now ready for the press, I have altered the names of those. It will thus be necessary to use those names which I originally proposed as subgenera in place of *Phora*. They are, I believe, as near an approach to a natural arrangement as it is possible to obtain with our present limited knowledge of the group, and will facilitate the study of the species, if they serve no other useful purpose. In the end this is really what genera are generally considered as being constructed for rather than to indicate their position in nature, though I do not subscribe to that.

N. B. It may be as well to state that the "marginal vein" of Lioy is the third longitudinal vein, and that the "submarginal vein" is the fourth vein, *i. e.* first thin vein.

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SCHOLARSHIP IN ENTOMOLOGY.—Mrs. H. M. Bernard, of London, has arranged with Professor Kellogg to establish a small scholarship in the department of entomology at Stanford, to aid an advanced student for two years in an investigation of some problem in insect evolution. The scholarship will yield one hundred dollars a year besides an additional sum to pay all laboratory fees. Mrs. Bernard is the widow of the English biologist, Henry M. Bernard, a student of Ernst Haeckel, at Jena, an authority on the corals and an independent investigator of evolution problems.—*Science*.

## The Mallophagan Genus *Heterodoxus* Le Souëf and Bullen.

By JOHN HOWARD PAINE, Stanford University, California.

The genus *Heterodoxus* was founded in 1902 by S. A. Le Souëf and H. Bullen (†) for a Mallophagous parasite from the kangaroo. The authors say:

"This insect . . . is interesting on account of its being only the second two-clawed parasite of the family Liotheidae which has been found on a mammal.

" . . . The insect under consideration . . . closely resembles the sub-genus *Menopon*, but as that sub-genus has been regarded by former writers as being exclusively confined to birds, in order that there may be no confusion we have determined to found a new genus, *Heterodoxus*, for it."

The authors fail to point out characters which would separate, structurally, *Heterodoxus* from certain species of *Menopon*, several of the latter genus having been described from mammals (‡) showing that the belief that two-clawed *Mallophaga* are strictly confined to birds is not founded on fact.

Specimens of *Mallophaga* taken from a dog in Berkeley, Cal., were sent to this laboratory by Professor W. B. Herms, of the University of California. They resemble closely Le Souëf & Bullen's *Heterodoxus macropus*, specimens of which, sent to this laboratory by Mr. Le Souëf, are at hand. Upon examination of the two lots, characters were at once noted that seem to separate them from all other genera of *Mallophaga*.

I offer the following, therefore, as an account of the structural characters distinguishing this genus, which so far contains but the two species here mentioned.

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(†) Le Souëf & Bullen: Description of a Mallophagous Parasite from the Kangaroo.—VICTORIAN NATURALIST, Vol. XVIII, No. 10, p. 159, Feb. 6, 1902.

(‡) Kellogg & Paine: Mallophaga from Birds and Mammals.—ENT. NEWS, Vol. XXI, pp. 459-463, 1910.

Genus *Heterodoxus* Le Souef & Bullen.

Resembles certain species of *Menopon* in having the many spines characteristic of mammal-infesting Liotheidae, but dif-

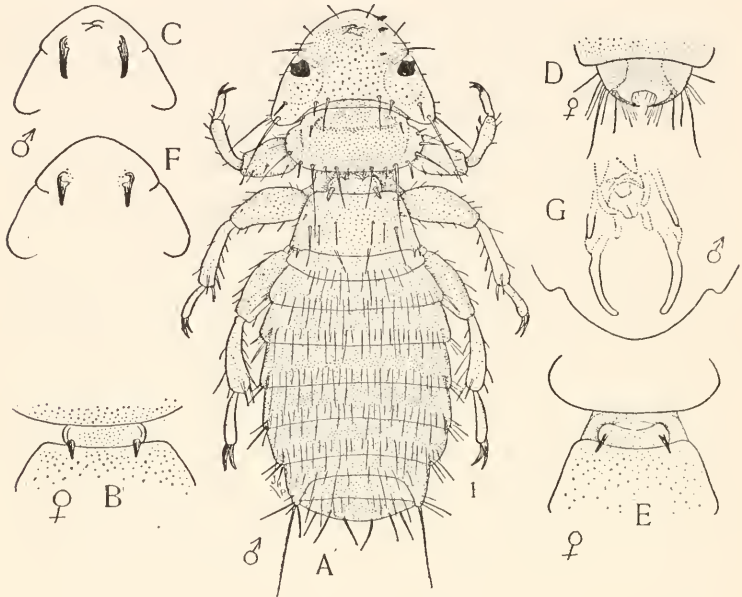


Fig. A. *Heterodoxus armiferus* Paine, ♂.

Fig. B. *Heterodoxus armiferus* Paine, mesothorax of ♀.

Fig. C. *Heterodoxus armiferus* Paine, head of ♂ showing ventral hooks.

Fig. D. *Heterodoxus armiferus* Paine, last segment of ♀.

Fig. E. *Heterodoxus macropus* Le Souef & Bullen, mesothorax of ♀.

Fig. F. *Heterodoxus macropus* Le Souef & Bullen, head of ♂ showing ventral hooks.

Fig. G. *Heterodoxus macropus* Le Souef & Bullen, last segment of ♂ showing genitalia.

fers from this genus and all others in having a distinct mesothorax. Head conical, broader than long, not longer than broad as characterized, on the basis of Le Souef's description,

(‡) V. L. Kellogg: Mallophaga, Genera Insectorum, 66 Fascicule, 1908.

in Kellogg's key to the *Mallophaga*; (‡) front rounded, sides straight, the ocular emarginations being completely filled; ocular fleck prominent; a pair of heavy hook-like spines on the under side. Thorax well developed. Mesothorax a distinct segment, much smaller than the pro- or metathorax. Legs and abdomen well developed. Mammal infesting, probably characteristic of dogs.

**Heterodoxus macropus** Le Souef & Bullen (Figs. E, F, G).

Four specimens of this species, two males and two females, from a black Wallaby (Victoria) were kindly sent by Mr Le Souef. The species is well described in the authors' paper before mentioned except for the omission of reference to the mesothorax. This segment is small, consisting of a narrow, short plate on the dorsum with a short heavy spine on each side; sides rounded. (Fig. E.)

DIMENSIONS.

	Length		Width	
	Male	Female	Male	Female
Head .....	.42	.45	.62	.66
Prothorax .....	.29	.30	.56	.60
Mesothorax .....	.13	.14	.20	.22
Prothorax .....	.29	.30	.56	.60
Abdomen .....	1.44	1.86	.96	1.06
Total .....	2.68	3.00		

Dr. G. Enderlein has described a parasite from a South African dog† under the name *Menopon spiniger*. His description and figure, however, both agree so closely with our specimens of *H. macropus* that it is impossible to separate the two species. Owing to priority therefore, *M. spiniger* becomes a synonym. Thus we have both species of the genus *Heterodoxus* occurring on the dog, which animal is probably its characteristic host.

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†Enderlein, G., Anopleuren & Mallophagen; Schultze, Forschungsreise in Sudafrika, II; Jenais-Denkschr. XIV, 1909.

*Heterodoxus armiferus* n. sp. (Figs. A, B, C, D).

Four specimens, one male and three females sent by Professor W. B. Herms, collected from a dog (Berkeley, Cal.). One can scarcely see how two such closely related forms can come from hosts so widely separated, both geographically and systematically unless by some process of "straggling." This species generally resembles *macropus*, but is much smaller and the abdomen of the male is truncate.

Description of male: Head conical, broader than long; clypeus slightly angled on the meson and rounding on the sides; temples straight laterally, rounded narrowly at the posterior angles; occiput concave; ocular emarginations lacking, being completely filled by the large eyes; ocular fleck large, prominent, jet black. Two hook-like spines on under side of head (Fig. C), more developed than in the preceding species (Fig. F); clypeal hairs fine, inconspicuous, except for one long spine just before the eye; eye with one short spine on the surface; temples with two long spines on the angle and several short ones; occiput with short heavy spines and two longer, lighter ones. Thorax well developed; prothorax laterally and posteriorly rounded, with a row of strong spines on those margins; mesothorax small but distinct (Figs. A & B), with sides rounded and a short heavy spine on each side; metathorax trapeziform with posterior margin slightly convex; a number of spines on the margin and surface. Abdomen almost quadrilateral; last segment broad, truncate, slightly rounded; a row of closely set spines across each segment, long and short spines alternating. Last segment of female with forceps-like appendages (Fig. D).

DIMENSIONS.

	Length		Width	
	Male	Female	Male	Female
Head .....	.38	.40	.56	.58
Prothorax .....	.22	.22	.49	.51
Mesothorax .....	.10	.10	.20	.20
Metathorax .....	.24	.26	.48	.50
Abdomen .....	.90	1.12	.72	.81
Total .....	1.76	1.98		

As some of the segments overlap there is a discrepancy between the total length and the sum of the various lengths.

This paper was prepared in the entomological laboratory of Stanford University.

# ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

TO CONTRIBUTORS.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, four weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form and without covers, will be given free, when they are wanted; if more than twenty-five copies are desired, this should be stated on the MS. The receipt of all papers will be acknowledged. Proof will be sent to authors for correction only when specially requested.—Ed.

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PHILADELPHIA, PA., OCTOBER, 1912.

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The Second International Congress of Entomology is a thing of the past. As may be seen from the account published under "Doings of Societies" on another page, the actual attendance at Oxford was larger than that at Brussels, although the numbers of members (and therefore of subscriptions) was not as great. The Third Congress is to meet in Vienna, which will be a disappointment to many entomologists in America, but the American invitations made a great impression and we entertain high hopes of bringing the Congress to the United States and Canada in 1918. The Congress, wisely, did not act on the question of nomenclature itself, but provided machinery which ought to accomplish that world-wide consideration and agreement on this difficult question which is so desirable. Personal acquaintance among entomologists of different countries was largely fostered by this Congress and this alone fully justified the existence of these international gatherings.

## Notes and News.

### ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

NOTES OF MEXICAN BARIDS (CURCULIONINAE.) COLEOP.—Dr. A. Fenyes has recently sent to the British Museum a small collection of 42 species of Barids from Mexico, mostly collected by himself in Vera Cruz. These insects have been handed over to me for determination, and though there is nothing new amongst them, there are several interesting forms, including three additions to the Mexican list. The additions are: *Cyrionyx exiguus*, Ch., from Orizaba\* and Matamoros Izucar\*; *Geraeus undatus*, Ch., from Cordoba\*; and *Eurhinopsis viridicolor*, Ch., from Cordoba\*; the types of all of which came from more southern localities in Central America. The other species of interest are *Pseudorhianus imprettus*, Ch.; one male with the characteristic prosternal tuft of hairs, from Cuernavaca\*; *Geraeus arcuatirostris*, Ch., from Orizaba\*; *G. dispositus*, Ch., one pair from Cuernavaca\* (described from a single ♂; the ♀ has the rostrum abruptly narrowed beyond the middle, (as in various other species of the genus); *G. bipustulatus*, Ch.,\* Cordoba; *Cylindrocercinus tubifer*, Ch., two specimens, Cuernavaca; *Anisorrhampus squamiventris*, Ch., Cordoba\*; *Pseudobaris gibbicollis*, Ch., Jalapa\*; *P. dentipes*, Ch., Cuernavaca and Matamoros Izucar\*; *P. cylindricollis*, Ch., Matamoros Izucar\* and Puebla\*; *P. leucostigma*, Ch., Cordoba; *P. cribrella*, Sol., Cordoba\* and Orizaba\*; *Dolichobaris schwarzi*, Ch., Cordoba\*; *Baris corrusca*, Boh., Puebla\* and Atlixco\*; *B. implana*, Ch., Cordoba\*. The localities marked with an asterisk are additional to those given in the Biol. of Centr.-Am. Coleopt. Vol. IV. part 5.—G. C. CHAMPION, Woking, England.

A COSTA RICAN INDIAN SUPERSTITION CONCERNING A MECISTOGASTER DRAGONFLY (ODONATA).—[In February, 1912, in the peninsula of Nicoya, Costa Rica], only once we saw a single *Mecistogaster*—in Rio Bueno Vista. In this place the forest is so dense that it was impossible to catch it. I returned several times to the same place, but no other specimen was seen. People here say that this *pipilacha* (*Mecistogaster*) is common in some years. An old man told me that this was not a *pipilacha* at all, but a *human spirit*, because they have not head or body, only wings! When a person dies, the spirit (soul) begins to fly for some days in the woods and nobody can disturb it. It seems to me that this is an Indian belief that is worth noting.—J. FID. TRISTAN, San José, Costa Rica.

## Entomological Literature.

COMPILED BY E. T. CRESSON, JR., AND J. A. G. REHN.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), excluding Arachnida and Myriapoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species, will be recorded. The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published, and are all dated the current year unless otherwise noted. This (\*) following a record, denotes that the paper in question contains description of a new North American form.

For record of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington.

- 1—Proceedings, Academy of Natural Sciences of Philadelphia.  
 4—The Canadian Entomologist. 5—Psyche, Cambridge, Mass.  
 7—U. S. Department of Agriculture, Bureau of Entomology. 8—  
 The Entomologist's Monthly Magazine, London. 9—The Entomologist, London. 10—Nature, London. 11—Annals and Magazine of Natural History, London. 15—Biologia Centrali-Americana, London. 22—Zoologischer Anzeiger, Leipzig. 35—Annalen, Societe Entomologique de Belgique. 36—Transactions, Entomological Society of London. 37—Le Naturaliste Canadien, Quebec. 38—Wiener Entomologische Zeitung. 40—Societas Entomologica, Zurich. 59—Sitzungsberichte, Gesellschaft der naturforschenden Freunde, Berlin. 74—Naturwissenschaftliche Wochenschrift, Berlin. 79—La Nature, Paris. 84—Entomologische Rundschau. 86—Annales, Societe Entomologique de France, Paris. 89—Zoologische Jahrbucher, Jena. 97—Zeitschrift fur wissenschaftliche Zoologie, Leipzig. 102—Proceedings, Entomological Society of Washington. 105—Videnskabelige Meddelelser, Naturhistoriske Forening i Kjobenhaven. 119—Archiv fur Naturgeschichte, Berlin. 135—Verhandlungen. Gesellschaft deutscher Naturforscher und Artz. Leipzig. 143—Ohio Naturalist. 157—Meddelanden, Societas pro Fauna et Flora Fennica, Helsingfors. 160—Internationale Reyue der Gesamten Hydrobiologie und Hydrographie, Leipzig. 166—Internationale Entomologische Zeitschrift, Guben. 180—Annals, Entomological Society of America. 184—Journal of Experimental Zoology, Philadelphia. 189—Pomona Journal of Entomology, Claremont, Cal. 191—Natur, Munchen. 200—Bulletin Scientifique de la France et de la Belgique, Paris. 204—New York State Museum Bulletin. 211—Popular Science Monthly, Lancaster, Pa. 236—Boletin. Sociedad Aragonesa de Ciencias Naturales, Zaragoza. 237—University of Colorado Studies. Boulder. 248—Hawaii Agricultural Experiment Station, Honolulu. 264—Boletin del Min-

isterio de Agricultura, Buenos Aires. **269**—Memoirs, Department of Agriculture in India, Entomological Series, Calcutta. **279**—Jenaische Zeitschrift für Naturwissenschaft, Jena. **291**—Proceedings of the Staten Island Association of Arts and Sciences, Lancaster, Pa. **322**—Journal of Morphology, Philadelphia. **340**—Transactions of the Linnean Society of London, 2nd Ser., Zoology. **342**—Pennsylvania Health Bulletin, Harrisburg. **368**—The Monthly Bulletin of the State Commission of Horticulture, Sacramento, Cal. **369**—Entomologische Mitteilungen, Berlin-Dahlen. **379**—Proceedings of the International Zoological Congress. **381**—Experiment Station Record, Washington, D. C. **336**—Bulletin, University of New Mexico, Biological Series, Albuquerque. **387**—Bulletin, Division of Entomology, Dept. of Agriculture, Experimental Farms, Dominion of Canada, Ottawa. **388**—Verhandlungen der Schweizerischen Naturforschenden Gesellschaft. **389**—Archivos do Museu do Rio de Janeiro. **390**—Zoologischer Beobachter, Frankfurt a. Main. **391**—Annual Report of the Laguna Marine Laboratory at Laguna Beach, Cal.

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**DIPTERA.** **Babak, E.**—Zur physiologie der atmung bei "*Culex*," **160**, v, 81-90. **Britton, W. E.**—The role of the house fly and certain other insects in the spread of human diseases, **211**, lxxxi, 36-49. **Carnes & Newcomer.**—An insect enemy of pasture land and growing alfalfa (*Tipula simplex*), **368**, i, 275-280. **Cole, F. R.**—Some *D.* of Laguna Beach, **391**, i, 150-162 (\*). **Crawford, D. L.**—The petroleum fly in Cala, "*Psilopa petrolei*," **189**, iv, 687-697. **Dyar, H. G.**—Distribution of mosquitoes in No. Am. (abstract), **379**, vii, 956-957. **Enderlein, G.**—Die Richardiinen des Stettiner Museums, **59**, 1912, 99-113. **Felt, E. P.**—"Diarthronomyia californica" n. sp. (Itonidae), **189**, iv, 752 (\*). **Henrivaux, J.**—La destruction des mouches et des moustiques dangereux par de nouveaux moyens, **79**, xl, 101-103. **Hermes, W. B.**—The reactions of sarcophagid fly-larvae to light (abstract), **379**, vii, 152-153. **Hine, J. S.**—Five n. sp. of No. American Tabanidae, **143**, xii, 513-516 (\*). **Hyslop, J. A.**—The legume pod maggot (*Pegomyia planipalpis*), **7**, Bul. No. 95, 105-108. **Joan, T.**—Nota sobre un diptero pronzonos (*Melusina dinellii*), **264**, xiv, 363-385. **Johnson, C. W.**—Dipterological notes, **5**, xix, 102-104. The velutinous species of the genus "*Chrysophilus*," **5**, xix, 108-109 (\*). **Keilin, M.**—Recherches sur les dipteres du genre "*Trichocera*:" Biologie, Development, Affinities, **200**, xlvi, 172-190. **Knab, F.**—"Drosophila repleta" Woll., **5**, xix, 106-108. Blood-sucking and supposedly blood-sucking lepidid, **102**, xiv, 108-110. **Lecaillon, A.**—Nouvelles observations sur la ponte des oeufs et la vie larvaire de "*Tabanus quatuornotatus*," **86**, lxxx, 487-491. **Loucheux, G.**—La psychologie es betes. La mouche verte de la viande—l'aslicot, **37**, xxxviii, 165-172. **Lutz, F. E.**—Inheritance of abnormal wing-venation in *Drosophila*, **379**, vii, 411-419. **Metcalf, C. L.**—Life-histories of Syrphidae, IV (*Allograpta obliqua* and *Sphaerophoria cylindrica*), **143**, xii, 533-542. **Morgan, T. H.**—Heredity of body color in *Drosophila*, **184**, xiii, 27-46. **Morgan & Cattell.**—Data for the study of sex-linked inheritance in *Drosophila*, **184**, xiii, 79-101. **Nielsen, J. C.**—Undersogelser over entoparasitiske muscidelarver hos Arthropoder, **105**, lxiii, 1-26. *Mydaea anomala*, a parasite of So. American birds, **105**, lxiii, 195-208. **Ribeiro, A. M.**—Alguns dipteros

interessantes, **389**, xiv, 231-239, 1907. **Smith, J. B.**—Ridding a state of mosquitoes, **379**, vii, 662-663. **Stevens, N. M.**—The chromosomes in "*Drosophila ampelophila*," **379**, vii, 380-381. **Thompson, W. R.**—A correction (to key of "*Metopia*"), **4**, 1912, 170.

**COLEOPTERA.** **Arrow, G. J.**—Coleopterorum catalogus, Pars 43: Scarabaeidae: Pachypodinae, Pleocominae... Troginae, 66 pp. **Baker, C. F.**—Some C. of the beach at Laguna with descriptions of n. sp. by Dr. M. Bernhauer, **391**, i, 170-173 (\*). **Bickhardt, H.**—"*Melanaerius infernalis*" Fall. 1907—"Terapus mnizechi" Mars. 1862, **5**, xix, 97. **Boileau, H.**—Description de quelques especes nouvelles de Lucanides appartenant aux collections du Br. Mus., **36**, 1911, 426-451. **Breed & Ball.**—The interlocking mechanisms which are found in connection with the elytra of Coleoptera (abstract), **379**, vii, 660-661. **Champion, G. C.**—Rhynchophora. Supplement to the Thecesterninae and Otiorynchinae, **15**, Col. IV, pt. 3, 313-354. **Chittenden, F. H.**—Description of an injurious Otiorynchid, **102**, xiv, 106-107. **Fuchs, G.**—Ueber den penis der borkenkafer, **135**, ii, 424-425, 1912. Morphologische studien ueber borkenkaefer: II. Die europaischen Hylesinen, 53 pp., Munchen, 1912. **Heikertinger, F.**—Notizen zur Halticinengattung "*Minota*," **40**, xxvii, 55-56 (cont.). **Hipp, O.**—Der einfluss des letzten sommers auf die koleoptoren und ihre entwicklung, **191**, 1912, 427-430. **Johnson, R. H.**—Heredity of color pattern in coccinellid beetles (abstract), **379**, vii, 409-410. **Krizenecky, J.**—Ueber die homoeosis bei C. Einige bemerkungen zu Przibrams Studie, **22**, xxxix, 579-582. **Leng, C. W.**—Salt meadow beetles, **291**, iii, 153-155. **Nusslin, O.**—Ueber ein neues system der heimischen borkenkafer auf phylogenetischer basis, **135**, ii, 425-436, 1912. **Raffray, A.**—Especes nouvelles de Pselaphides exotiques, **86**, lxxx, 425-450. **Schaeffer, C.**—New species of the C. genus "*Collops*," **4**, 1912, 184-187 (\*). "*Coccinella undecimpunctata*" in Massachusetts, **5**, xix, 104-105. **Schmidt, A.**—Coleopterorum catalogus, Pars 42: Scarabaeides: Aegialiinae, Chironinae, 11 pp. **Simpig, G.**—Das leben und die vermehrung von "*Dytiscus marginalis*," **166**, vi, 55. **Stevens, N. M.**—Various types of heterochromosomes in the Coleoptera, **379**, vii, 377-379. **Vogel, R.**—Beitrage zur anatomie und biologie der larve von "*Lampyris noctiluca*," **22**, xxxix, 515-519. **Wasmann, E.**—Neue beitrage zur kenntnis der Termitophilen und Myrmecophilen (No. 192), **97**, c, 70-115. **Watson, J. R.**—A foe of the melon aphid: "*Hypodamia convergens*" in New Mexico, **386**, iii, 109-119. **Walcott, A. B.**—The Cleridae of the Stanford expedition to Brazil, **5**, xix, 71-77.

**HYMENOPTERA.** **Buhk, F.**—Aus dem leben einer im naturhistorischen museum zu Hamburg gehaltenen waldameisenkolonie (*Formica rufa*), **191**, 1912, 423-426. **Cockerell, T. D. A.**—Some

parasitic bees. (*Coelioxys*), **4**, 1912, 166-170 (\*). Some bees from Guatemala, **5**, xix, 105-106. New and little known bees, **9**, 1912, 175-178. Descriptions and records of bees—XLV, **11**, x, 21-31. **Crawley, W. C.**—Parthenogenesis in worker ants, with special reference to two colonies of "*Lasius niger*," **36**, 1911, 657-663. **Donisthorpe, H. K.**—Further observations on temporary social parasitism and slavery in ants, **36**, 1911, 175-183. **Donisthorpe & Crawley.**—Experiments on the formation of colonies by "*Lasius fuliginosus*" females, **36**, 1911, 664-672. **Elliott & Morley.**—On the hymenopterous parasites of Coleoptera, 1st supplement, **36**, 1911, 452-496. **Enderlein, G.**—Beitrage zur kenntnis aussereuropaischer Ichneumoniden. II: Ophioninae. Die gattung "*Thyreodon*" und ihre verwandten, **22**, xxxix, 624-632. Neue gattungen und arten aussereuropaischer Braconiden, **119**, 1912, Abt. A, Heft 2, 38-41. **Foerster, E.**—Vergleichend-anatomische untersuchungen ueber den stechapparat der ameisen, **89**, xxxiv, 347-380. **Forsius, R.**—Zur kenntnis einiger blattwespen und blattwespenlarven, **157**, 1910-11, 77-78. **Hedicke, H.**—Beitrage zur kenntnis der Cynipiden, **84**, xxix, 81-82. **Linder, C.**—Les fourmilieres-boussoles, **379**, vii, 668-671. **Lovell, J. H.**—Bees which visit only one species of flower, **211**, lxxxi, 197-203. **Mann, W. M.**—Note on a guest of "*Eciton hamatum*," **5**, xix, 98-100. **Mitchell & Pierce.**—The ants of Victoria County, Texas, **102**, xiv, 67-76. **Morice, F. D.**—The terebrae of the *Chalastogastra*, or the saws of saw-flies, **36**, 1911, cxxvii-clv. **Rohwer, S. A.**—The sawflies (*Chalastogastra*) of Boulder Co., Colorado, **237**, ix, 91-104. **Strickland, E. H.**—The *Pezomachini* of No. Am., **180**, v, 113-140 (\*). **Timberlake, P. H.**—A study of the biology of "*Limnerium validum*," **7**, Tech. Ser. No. 19, 71-92. **Turner, C. H.**—*Sphex* overcoming obstacles, **5**, xix, 100-102. **Wagner, H.**—Beitrag zur kenntnis der *Apion*-fauna Central- und Sud-Amerikas. Beschreibungen neuer arten, **119**, 1912, Abt. A, H. 2, 99-136. **Wheeler, W. M.**—New names for some ants of the genus "*Formica*," **5**, xix, 90. **Zavattari, E.**—Bemerkungen ueber die neotropischen *Masariden*, **119**, 1912, Abt. A, H. 2, 58-65.

ETUDES DE LEPIDOPTEROLOGIE COMPAREE, par Charles Oberthür. Rennes, Imprimerie Oberthür. Fascicules. I, Mars 1904; II, Octobre 1906; III, Juin 1909; IV, Avril 1910; IV bis, Décembre 1910; V (1re Partie), 1911; V (2e Partie), 1911.

This large, important and expensive work is of great interest to naturalists everywhere, especially philosophical naturalists. It is full of material for future bionomic work, and is teeming with useful and stirring suggestions. It is illustrated with 85 mostly colored lithographic plates of a high grade of execution, by J. Culot.

In the first *fascicule* Oberthur says that with the 21st livraison of *Etudes d'Entomologie* he had planned to close his publications on the Lepidoptera, and devote his time to the arrangement of his collection. But despite his resolutions he could not resist the temptation of again entering entomological activity; and the attraction of certain problems was too irresistible, so we have this magnificent series of *fascicules*. In *fascicule* III we have an important paper by Dr. Max Standfuss, the well-known experimenter of Zurich, first in German and then translated into French, on some results of experiments on the reproduction by mutations of Lepidoptera on the basis of Mendel's law and de Vries' mutation theory. It is on *Agria tau* and aberrations, the Bombycid.

A great portion of the *fascicules* is taken up with an extended catalogue and comparison of the fauna of France and Algeria; of great interest to the zoogeographer; and is replete with facts which will be used by some coming generalizer; the amassing of facts is the first requisite in the large and important generalizations.

A considerable part of the preface of *fascicules* III and IV are taken up with digressions on the infinite power and wisdom of God in the works of Creation; "L'évidence de l'intervention du Créateur, seul maître de la puissance infinie, apparait, dans les plus petites choses, comme le résultat nécessaire de l'observation de la Creation elle-même, et la raison s'oppose à ce que la moindre restriction soit admise en ce qui concerne l'action créatrice du Très-Haut. Seulement, comme le rappelle Linne; *Pauca Laec vidimus operam Dei, multa obscurdita sunt maiora his.*" He also has a good deal to say, in a strong way, against the habit of publishing descriptions without figures; "Il important, me semble-t-il, d'oser signaler a l'attention des Naturalistes le coté mercantile de l'opération," les descriptions sans figures sont un perpétuel sujet de trouble et de doute." He concludes his long preface to *fascicule* V with the rule: "Sans bonne figure à l'appui d'une description, pas de nom valable; dès lors la priorité du nom appartient au premier Iconographe plutôt qu'au premier Description"

In the *fascicule* V, 1911, are several important contributions. The first is on the Relations of the Lycaenidae and Ants, by Harold Powell; then the continuation of the comparison of the lepidopterous fauna of France and Algeria. In his lengthy discussion of *Lygacna transalpina*, we have some interesting and pleasing poetical digressions. Two final short essays, by the author and Alphéraky are on the always interesting theme of subspecies and morpha, which we are informed will be further discussed at the Entomological Congress at Oxford in 1912, as well as concerning the publication of descriptions without figures. He is not in much sympathy with these hypothetical discussions. His ideas can be seen from the following extract: "Dans ma collection de Lépidoptères, plus d'un million de specimens ont ete classes et ranges

par mes soins. M'est-il permis après cela trop de temerite, de me considérer comme relativement assez bien renseigné sur la matiere entomologique? Cependent je déclare n'avoir jamais vu de subspecies, selon le sens attribué à se mot. J'ai vu des Variétés géographique, des Races et Formes locales, des Aberrations." But the reviewer is certain Oberthür is not very clear on this subject. Alpheraky's paper is a review of an extended one by Sémenov Tian-Shansky, published in Russian in 1910, and by R. Friedländer in German.

Alpheraky En concluent ces notes, nous croyons de notre devoir de recommander le mémoire de M. Sémenov Tian-Shansky à l'attention de tous ceux qui s'intéressent à la Classification du règne animal, car ils y trouveront ample matière à réflexion et à méditation."

Finally the second part of fascicule V has a very valuable contribution: Revision iconographique des Espèces de Phalénites (Geometræ) énumérées et décrites par Achille Guenée in the Species general des Lépidoptères, 1857; with colored illustrations; this is of great interest to systematic lepidopterists generally, and of course to the numerous students of geometridæ in this country. Our ideas of certain species may change with colored illustrations of the types before us. There is a sympathetic sketch of Guenée's life, and a reprint of "Ecrits humoristiques de Guenée;" showing the latter's fine literary style and broad-mindedness; it is further entitled, "Les Entomologistes peints par eux-mêmes." The superb photographic reproductions of scenes in Algeria and the Pyrenees are of interest to the zoogeographer; the photos from life of the larvæ of various species and the beautiful lithographs of J. Culot make a very valuable volume.—  
FORDYCE GRINNELL, JR.

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## Doings of Societies.

### THE SECOND INTERNATIONAL CONGRESS OF ENTOMOLOGY.

The sessions of the Second International Congress of Entomology were held in the University Museum, Oxford, England, from August 5th to August 9th, 1912, inclusive. The first extensive meeting of the members with each other, however, was at an informal reception given by Oxford entomologists in the Dining Hall of New College, at 8.30 p. m., August 4th. In spite of its name, this Hall dates from the latter part of the fourteenth century; its height, its great, stained-glass windows, the portraits of eminent past members of the college on its walls and, above all, its historic associations combined to make it a most charming and appropriate gathering place

for a scientific congress. On entering, each person was welcomed by Prof. Edward B. Poulton, President of the Congress, and soon found himself or herself in the midst of old and new friends. Each one received a guide-book to Oxford to which was prefaced a specially written "Sketch of the Entomology of the Oxford District" by Commander Walker, Secretary of the Entomological Society of London, and "An Account of the Hope Department" by Professor Poulton.

The Congress was formally opened in the lecture room of the museum by President Poulton, at 10.30 a. m., August 5, Dr. G. Horvath, of Budapest, being Vice President. Dr. Malcolm Burr, of Dover, the General Secretary, was, unfortunately, detained at home by the illness of Mrs. Burr, but in his absence Mr. H. Eltringham ably discharged the functions of that difficult office, assisted by Mr. G. H. Grosvenor. Happily, Dr. Burr was able to join the Congress on the 8th and to remain with it until the 10th.

In his opening address, Professor Poulton warmly welcomed the members to Oxford, told of its many entomological associations with the past, especially as they concerned the late Professor J. O. Westwood, and mentioned some of the collections of insects which are housed in this museum. He then exhibited and commented on a wonderful series of *Papilio dardanus* with reference to mimicry.

The Hon. N. C. Rothschild made a brief but earnest plea for "Nature Reserves" in Great Britain and Ireland, for the preservation of all forms of plant and animal life. Sympathetic remarks by speakers in various languages followed, telling of what had been accomplished in their relative countries toward this end.

The remainder of the program was:

August 5, 2. p.m.

SECTION I. *Economic and Pathological*.—President, L. O. Howard, Washington; Vice-President, R. Newstead, Liverpool; Secretary, H. Scott, Cambridge, England.

Sir Daniel Morris Boscombe, on behalf of W. A. Ballou. "Some Entomological Problems in the West Indies." Occurrence *Phytalus smithi* Arrow, in Barbados, attacks of Root Borer on Sugar Cane,

Red Maggot, Flower Bud Maggot, and Leaf Blister Mite on Cotton, and control of certain insects by natural enemies.

Read on behalf of J. Dewitz. "Die Physiologie in der Schädlingsforschung."

R. Stewart MacDougall, Edinburgh. "*Heteroptera* and *Thripidae* as apple enemies."

SECTION 2. *Systematics and Distribution*.—President, C. N. Rothschild, Oundle; Secretary, Rev. G. Wheeler, London.

H. J. Kolbe, Berlin. "Die Differenzierung der zoogeographischen Elemente der Kontinente." In jedem Kontinent und in jeder Zone giebt es zoogeographische Elemente von ungleichem Werte. Diese sind das Resultat der Entwicklung während verschiedener geologischer Perioden.

W. Horn, Berlin. "Die Fortschritte des neuen Coleopterorum Catalogus von Junk-Schenkling."

August 6th, 10 a.m.

GENERAL MEETING. President, A. Lameere, Brussels; Vice-President, J. Van Bemmelen, Groningen.

J. H. Comstock, Ithaca. "The Silk of Spiders and its Uses." A description of the different kinds of silk spun by spiders and of the use of each kind. Illustrated by lantern slides made from photomicrographs of silk and from photographs of webs.

Rev. G. Wheeler, London, and G. T. Bethune-Baker, Birmingham. "Nomenclature, with a communication from the Entomological Society of London." (1) Proposal from Entomological Society of London for formation of International and National Committees. (2) Unofficial suggestions as to desirable restrictions. (This was referred to the Executive Committee.)

SECTION 1. *Evolution, Bionomics, and Mimicry*.—President, Y Sjöstedt, Stockholm; Vice-President, H. Skinner, Philadelphia; Secretary, L. Doncaster, Cambridge, England.

E. B. Poulton. "Messrs. C. A. Wiggins and Dr. G. H. Carpenter's researches in mimicry in the forest butterflies of Uganda."

R. C. L. Perkins, Honolulu. "The color groups of Hawaiian Wasps."

The Rev. K. St. A. Rogers, British East Africa. "Mimicry in the two sexes of the E. African Lycaenid *Alaena picata*, E. M. Sharpe."

August 6th, 2 p.m.

SECTION 1. *Nomenclature*.—President, E. B. Poulton; Vice-President, K. Kertész, Budapest; Secretary, K. Jordan, Tring.

M. Ch. Oberthür, Rennes. "Pas de bonne figure à l'appui d'une description, pas de nom valable."

To be read on behalf of Mr. L. B. Prout. "On the place of figures in descriptive Entomology."

SECTION 2. *Morphology and Anatomy*.—President, P. P. Calvert, Philadelphia; Vice-President, J. C. H. de Meijere, Hilversum; Secretary, R. S. Bagnall, Peshaw.

F. A. Dixey, Oxford. "Scent Organs in the Lepidoptera." The specialized scales which serve to distribute scent in many species may be either generally scattered over the wing-surface, or collected into patches. In the latter case there is a special supply of air tubes to the sockets of the scales.

G. H. Carpenter, Dublin. "The Presence of Maxillulae in Beetle Larvae." Demonstrates the presence of paired appendages (maxillulae) connected with the hypopharynx in certain larvae of the Coleoptera.

G. Horváth, Budapest. "Sur la construction de l'élytre des Cicadides."

I. P. Longinos, Navas Zaragoza. "Algunos organos de las alas de los insectos" (but given in French).

August 6, 8 p.m.

Illustrated lecture. S. A. Neave, Ingatestone. "Travels of an Entomologist in Eastern Africa."

August 7th, 10 a.m.

GENERAL MEETING. President, J. H. Comstock, Ithaca; Vice-President, the Hon. W. Rothschild, Tring.

J. Van Bemmelen, Groningen. "The Phylogenetic Significance of the Development of the Butterfly Wing."

J. W. Taylor, Horsforth. "The Distribution of life and its relations with Evolution and Phylogeny." The principles governing the laws of Geographical Distribution. Influence of Environment, Phylogeny, etc., and the need of Entomological investigation on these lines.

Leonard Doncaster, Cambridge, England. "Sex limited Inheritance in Insects." An account of the inheritance of characters which show sex-limited transmission in the Moth *Abraxas grossulariata* and the Fly *Drosophila ampelophila*. (with exhibition of *Abraxas* specimens).

SECTION 1. *Economic and Pathological*.—President, J. Jablonowski, Budapest; Vice-President, R. C. L. Perkins, Honolulu; Secretary, J. C. Moulton, Borneo. (Part of this sectional meeting was adjourned to the following morning.)

J. Jablonowski. "The destruction of *Stauronotus maroccanus* in Hungary," and "On the destruction of *Cochylis* and *Eudemis* in the vineyards."

A. G. L. Rogers. "The necessary investigation with relation to Insect and Fungus Enemies of Plants, preliminary to Legislation."

F. V. Theobald, Wye. "Aphides attacking Cultivated Peas, and the allied species of the genus *Macrosiphum*."

SECTION 2. *Systematics and Distribution*.—President, Capt. Ch. Kerremans, Brussels; Vice-President, J. L. Navas, Zaragoza; Secretary, G. T. Bethune-Baker, Birmingham.

Rev. J. Waterston, Ollaberry. "On a new Scottish Parasite on *Procellaria*."

A. Dampf. (absent). "Systematik, geographische Verbreitung und Phylogenie der Arten aus der *Hydroecia nictitans* Gruppe" (read by title only).

K. Jordan, Tring. "On *Arixenia*, an aberrant genus of Earwigs, its habits morphology and anatomy," and "On the viviparity of "*Polyctenidae*." (These two read at an adjourned meeting at 9 p.m.)

#### August 7th, Afternoon Excursions.

NUNEHAM, by kind invitation of the Rt. Hon. L. V. Harcourt, M. P., Secretary of State for the Colonies. By Steamer, leaving Folly Bridge at 2.30. Available for about 70 members.

BAGLEY WOOD, by kind invitation of the President and Fellows of St. John's College. By steamer leaving Folly Bridge at 2.30. Available for about 50 members.

#### August 8th, 10.00 a.m.

GENERAL MEETING.—President, E. J. G. Everts, The Hague; Vice-President, A. Handlirsch, Vienna.

A. Handlirsch. "Die geographische Verbreitung der Insekten in ihrer Beziehung zu Phylogenie und Palaeontologie."

SECTION 1. *Bionomics, Evolution, and Mimicry*.—President, the Rev. F. D. Morice; Vice-President, W. M. Wheeler, Cambridge, U. S. A.; Secretary, K. G. Blair, London.

H. St. J. K. Donisthorpe, London, and W. C. Crawley, London. "On the founding of Colonies by Ants."

W. M. Wheeler. "Observations on the Central American *Acacia* Ants."

H. Osborn, Columbus. "Insect Fauna of a Lake Shore."

SECTION 2. *Morphology*.—President, P. Speiser, Labes; Secretary, G. Meade-Waldo, London.

Frederick Lowe. "The Devolution of Wing Structures as shown in *Blattidae*." 1. Giving the results of practical work, and describing a new method. 2. Giving measurements of the wings of a large series of *Blattidae*.

Dr. T. A. Chapman, Reigate. "Regeneration of the Legs in *Limantria dispar*." Effects of the parts being lost at different stages and tendency to reduplication of parts.

#### August 8th, 2.00 p.m.

SECTION 1. *Nomenclature*.—President, E. Olivier, Moulins; Secretary, K. Jordan, Tring.

W. Horn, Berlin. "Protest gegen die Zulassung von Ausnahmen vom Prioritätsgesetze."

Ch. Kerremans, Brussels. "Nomenclature et Synonymie." Sur la nécessité de restreindre les noms donnés aux variétés et de les remplacer par une lettre ou un No. d'ordre.

Ernest Olivier. "The necessity for the Latin tongue for Entomological descriptions" (but given in French.)

SECTION 2. *Economic and Pathologic*.—President, G. Hewitt, Ottawa; Vice-President, V. Ferrant, Luxembourg; Secretary, H. Rowland-Brown, Harrow Weald.

Stephen A. Forbes, Champaign. "*Simulium* and Pelagra in Illinois, U. S. A." Results of studies of species, distribution and life histories of *Simulium* as related to new cases of pelagra in asylums.

Frederick A. Lowe. "How to kill that Fly."

F. W. Ulrich (absent). "The Biology of some Trinidad Mosquitoes, and notes on their control" (read by title.)

August 9th, 10.00 a.m.

SECTION 1. *Evolution, Bionomics and Mimicry*.—President, V. Kellogg, Stanford University; Secretary, H. H. Druce, London.

R. C. Punnett, Cambridge, England, on behalf of Mr. J. C. F. Fryer. "The Polymorphism of *Papilio polytes*."

C. F. M. Swynnerton. (Communicated by Prof. Poulton.) "Pellets ejected by insect-eating birds after a meal of butterflies."

M. Pic (absent). "Le mélanisme chez divers *Cryptocephalus* paléarctiques" (read by title.)

A. H. Hamm, Cambridge, England. Exhibition of photographs of insects in resting attitudes in their natural surroundings.

SECTION 2. *Systematics*.—President, N. Banks, East Falls Church, Va.; Vice-President, A. v. Schulthess, Zurich; Secretary, J. E. Collins, Newmarket.

K. von Rosen, Munich. "Über fossile Termiten."

P. Speiser, Labes. "Bemerkungen und Notizen zur geographischen Verbreitung einiger blutsaugenden Insekten" and "Ueber die Variabilität geographische afrikanischer Bombyliden."

Philip P. Calvert, Philadelphia. "Progress in knowledge of the Odonata from 1895 to 1912." A statement of the advance of knowledge of the structure, life, development, geographical and geological distribution, habits, classification, and phylogeny of the *Odonata* in the period indicated.

August 9th, 2.00 p.m.

GENERAL MEETING.—President, E. B. Poulton; Vice-President, H. J. Kolbe, Berlin.

Adalbert Seitz, Darmstadt. "How does the insect see the world?" Results of biological experiments on the eye, and physiological remarks. Ultraviolet rays, colors, outlines, etc.

V. L. Kellogg, Stanford University. "Distribution and Species forming among Ectoparasites." Discusses the distribution, both geographical and host, of all the known species of *Mallophaga*.

The report of the Executive Committee was then read by sections and each section immediately acted on.

Invitations to hold the Third Congress in Frankfort-on-the-Main and in Vienna were acknowledged, and letters from the American Association of Economic Entomologists and the Entomological Society of America, urges that the next session be held in the United States, were read. After discussion, the question was put to the whole Congress as to whether the next meeting should be in Europe or in America. A large majority, having voted in favor of the former, the Executive Committee then recommended Vienna as the place, and Dr. Anton Handlirsch as President of the Third Congress in 1915, and this was approved by the Congress without objection.

All of the following recommendations of the Executive Committee were unanimously adopted by the Congress.

As the result of action taken by the Economic and Pathologic Section, the formation of an International Commission on the prevention of importation of injurious insects from one country to another was recommended to the International Institute of Agriculture at Rome.

Messrs. Nathan Banks and Stephen A. Forbes, of the United States, J. F. Tristan, of Costa Rica, and E. M. Walker, of Canada, were added to the New World members of the Permanent Committee on International Entomological Congresses.

Messrs. E. T. Cresson, of Philadelphia, P. R. Uhler, of Baltimore, and Frey-Gessner, of Geneva, were named to fill the vacancies created by the decease of honorary members since the First Congress of 1910.

An International Committee on Entomological Nomenclature was named, consisting of Messrs. N. Banks (U. S. A.), C. J. Gahan (England), K. Kertész (Hungary), F. Ris (Switzerland), S. Schenkling (Germany), H. Schouteden (Belgium), Y. Sjöstedt (Sweden), and K. Jordan (England), with power to add to their number. This International Committee is to enter into negotiations with the entomological so-

cieties of different countries to the end that National Committees on Nomenclature may be formed. The International Committee, in co-operation with the National Committees, is to consider the opinions and views of entomologists on all questions of the nomenclature of insects and what modifications of the rules of the International Commission on Zoological Nomenclature are necessary to meet the needs of Entomology; it is to communicate its conclusions to the Secretary of the same Commission and to take such steps as will insure representation of Entomology on that Commission.

The secretary of the Executive Committee (Dr. Burr) reported that the total number of members of this Second Congress was 201 (40 of this total being life members), of which 172, representing 23 nationalities, were present. The corresponding figures for the First Congress, at Brussels, 1910, were 201, 147 and 24.

President Poulton then delivered a farewell address, thanking all those who in one way or another had aided to make this Congress the success which all felt it to be, those present signifying their approval by continued applause. The President then received the thanks of the Congress and the General Meeting adjourned. A photograph of the Congress in Wadham College quadrangle was taken at 5 p. m.

In the evening, at 7.30, a largely attended banquet was held in the Dining Hall of Wadham College, dating from the early 17th century, and portraits of four members of this college who were founders of the Royal Society of London, with those of other famous alumni, looked down upon us from the walls. Appropriate toasts and brief speeches in four languages brought this enjoyable festival to a close.

Mention should be made of the exhibit of insects which were displayed in different rooms of the museum from time to time during the Congress. These were Pierinae, by Dr. F. A. Dixey; The African species of the genus *Acraca* (Lepid.), by Mr. H. Eltringham; Insects and their prey with special reference to the courtship of the Empidæ, by Prof. Poulton and Mr. A. H. Hamn; Mimetic Groups, by Prof. Poulton; New British Thysanura; Collembola, Thysanoptera,

Mallophaga and Myriapoda, and Hawaiian Thysanoptera, by Mr. R. S. Bagnall.

On Saturday morning the great majority of the members left Oxford on a special train for Tring, at the invitation of the Hon. Walter Rothschild, where a procession of a dozen coaches conveyed the party from the railway station to his zoological museum. Private and public rooms were alike thrown widely open to our inspection. While the public exhibition rooms, containing an admirable collection of typical animals of all groups were appreciated, the members were naturally chiefly interested in the study collections of insects, now limited almost entirely to the Lepidoptera, estimated at one million specimens. A wonderful series of the genus *Ornithoptera* was specially set out for examination. In passing, it should be mentioned that the other study collection consists of a vast series of bird-skins.

A luncheon in Victoria Hall, Tring, a group photograph, a walk through the gardens and park of the estate, in which last rheas, deer and kangaroos roam at large, followed. Then the Congress, after hearty thanks to Mr. Rothschild for his hospitality, dispersed with best hopes and wishes for reunion in Vienna in 1915.

Those who were present at the Congress, in addition to those mentioned in the preceding program, were:

*Great Britain and Ireland.*—Ammandale, R., Edinburgh; Arrow, G., British Museum, London; Bacot, A., Loughton; Beeson, Cyril; Bowater, W., Birmingham; Staff Surgeon and Mrs. Cameron, Mrs. Lee; Champion, G. C., Woking; Coney, Batcombe; Crampton, T. C., Glasgow; Dixey, Mrs. F. A., Oxford; Durrant, J. K., British Museum, London; Gardner, J., Hart; Gillanders, A. T., Alwick; Gahan, C. J., British Museum, London; Griffiths, G. C., Bristol; Grosvenor, G. H.; Halbert, J. N., Dublin; Hartert, Dr. E., Tring; Hoar, T. F. P., Leighton Buzzard; Hoey, Dr. W., and Hoey, J. T. S., Oxford; Image, Prof. S. J., London; Janson, O. E., London; Jardine, N. K., Ashford; Jones, A. H., Eltham; Jordan, Miss, Tring; Joseph, E. G., Oxford; Kaye, W. J., Ditton Hill; Lace, O. H., Sheffield; Loesch, C., Dover; Longstaffe, Dr. G. B., London; Lyle, G., Brockenhurst; Marshall, G. A. K.; Meade-Waldo, G., British Museum, London; Morris, Lady, Boscombe; Pollok, J. C., Bothwell; R. I. and Mrs. Pocock, London; Poulton, Mrs. E. B. and Miss; Radok, F., Upper Norwood; Robertson, Major R. B.,

Chandlers Ford; Rowland-Brown, Miss, Harrow Weald; Schaus, W., London; Sennett, N. S., London; Sharp, Dr. D., Brockenhurst; Shipley, Prof. Dr. A., Cambridge; Sich, A., Chiswick; Swaine, Miss, London; Trechmann, C. O., Hudsworth Tower; Wainwright, C. J., Handsworth; Warburton, C., Cambridge; Watson, J. H., Manchester; Wheeler, Mrs. G., London; Williams, C. B., Merton; Woodland, Dr. W. N. F. London; Walker, Comm. J. J.

*Belgium.*—Ball, F. J., Brussels; Clavereau, H., Brussels; Kerremans, Mlle., Brussels; Orchymont, A. d', Meenen; Dr. H. and Mme. Schouteden, Brussels; Severin, G., Brussels.

*Canada.*—Lyman, H. A., Montreal.

*Egypt.*—Andres, Ad., Cairo.

*France.*—P. L. and Mme. Boppe, St. Die, Vosges; Oberthür, Mme. C., Rennes; Olivier, Fils, Moulins.

*Germany.*—Dadd, E. M., Berlin; Horn, Frau W., Berlin; W. and Frau Jung, Berlin; Kolbe, Frau H. J., Berlin; Lehmann, Dr. Th., Heppenheim; Nassauer, Dr. M., Frankfurt; Wichgraf, F., Berlin.

*Holland.*—Hoop, Dr. van der, Rotterdam.

*Hungary.*—Horvath, Miss, Budapest.

*Hawaiian Islands.*—Perkins, Mrs. R. C. L., Honolulu.

*Spain.*—Cabrera, Anatael, Teneriffe; Cabrera, Augustin, Teneriffe; Garcia, y Mercet, R., Madrid.

*Sweden.*—Tragardh, Prof. Ivar, Stockholm.

*Switzerland.*—Schulthess, Mrs. A., Zurich.

*Turkey.*—Graves, P. P., Constantinople; Sureya, Prof. Mehmed, Constantinople.

*United States of America.*—Calvert, Mrs. P. P., Philadelphia; Comstock, Mrs. J. H., Ithaca; Forbes, Mrs. S. A., Illinois; Jones, Miss Noble; Mrs. H., Miss and Master Skinner, Philadelphia; Rane, F. W., Boston; Wheeler, Mrs. W. M., Harvard.

P. P. C.

### AMERICAN ENTOMOLOGICAL SOCIETY.

Meeting of April 25th, 1912. Dr. Philip P. Calvert, President in the chair. Twelve members and one visitor were present.

An invitation was received from the International Congress of Hygiene and Demography, to appoint a delegate to the Congress, and the President was authorized to appoint such.

The President and Recording Secretary were appointed to represent the Society at the Second International Entomological Congress to be held in Oxford in August.

Mr. Laurent exhibited males and females of *Callosamia*

*angulifera* and *promethea* and also their cocoons and the larva of *promethea*. He said he believed the two were abundantly distinct specifically and that virgin females of either only attract their respective males. He also said that the cocoon of *angulifera* is never suspended.

Mr. Herman Hornig said he had found the cocoons of *angulifera* suspended.

Mr. Rehn made some remarks on the crickets of the group Mogoplisti, referring particularly to the general confusion in the use of certain generic names in the group. Extensive collections made by Mr. Hebard and the speaker had enabled them to go into the relationship of the North American forms more exhaustively than had ever been done before, the results of which show that all of the species from the United States and Lower California belong to genera distinct from the old world generic groups with which most of them were associated at the time of their description.

Mr. H. W. Wenzel exhibited a number of species of the genus *Eleodes* collected by Mr. H. A. Wenzel, dwelling upon the distribution of some of the geographical races. He exhibited the male and female of *E. tenuipes* Casey, described from a unique male collected in Nov., 1890, at El Paso, Texas. Three months later, Dr. Horn described *E. wickhami*, also from a unique male, from Tuscon, Arizona, which Dr. Blaisdell thinks is a race of *E. tenuipes* Casey, this name having priority over Dr. Horn's.

The type is mentioned as being 30 mm. in the male. The male specimen exhibited was collected in the desert about forty or fifty miles south of Alpine, Texas, and measures 38 mm. The female of the species were previously unknown. He also exhibited specimens of *Asida obliterata* Champ. from the same region. A broken specimen of this species in the Horn collection is from Mexico. Among the species and races exhibited were the following: *E. debilis*, *extricata* forma *cognata*, var. *arizonensis*, *obsoleta* forma *punctata*, var. *porcata*, *veterator*, *quadricollis* var. *anthracina*, *obscura* var. *dispersa*, *sponsa hispilabris* unknown form, *tenuipes?* *Asida obliterata* and *marginata*.

Dr. Calvert exhibited a pair of *Erpetogomphus* from Costa Rica representing a new species, which he proposed to call *E. tristani*, in honor of their collector, Prof. J. F. Tristan. They were of interest, not only because they confirmed the existence of this genus so far south (only one specimen being hitherto known from Costa Rica), but also because of the remarkable modification of the head of the female, probably as an adaptation in mating. The vertex has a deep longitudinal groove into which the inferior appendage of the male can fit, as must be the case if the male holds the female in copulation as do other Gomphinae. The presence of this groove alters the position of the median ocellus of the female in a way unlike that of any other Odonate known to the speaker.

HENRY SKINNER, *Recording Secretary.*

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#### ENTOMOLOGICAL SECTION, ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

Meeting of March 28th, 1912, Mr. Philip Laurent, Director, presiding. Twelve persons were present.

Mr. Rehn said the collection of Orthoptera had been increased during the last month by over five hundred specimens, from various sources.

Dr. Skinner said a large number of specimens of *Trogo-derma sternale* Jayne, had been collected from the mounted mammal heads in the hall of the Academy, and he exhibited both sexes.

Dr. Calvert commented on the editorial in the March ENTOMOLOGICAL NEWS, on the subject of priority in nomenclature and read letters relating to the same question, and gave the text of an editorial for the April NEWS in relation to the discussion.

Mr. Rehn said he was in favor of priority in nomenclature. He spoke of his work on the Catalogue of North American Mammals, wherein the law of priority was upheld. He thought that the practicability of *nomina conservanda* was hopeless and considered that stability would only come from upholding the law of priority.

Dr. Skinner remarked that much depended on the method and the possibility of agreement on a way of carrying out *nomina conservanda*.

Dr. Calvert said that specialists in various groups could send in lists of *nomina conservanda* to be accepted or decided on by some central or authoritative committee.

Mr. E. T. Cresson, Jr., spoke of the changes made in certain families of Diptera in a paper by Meigen.

Mr. Hornig exhibited a scale insect on "Asparagus Fern" and said his plants were all infested with it. He asked about the methods of distribution of the species. Discussed by the members.

Mr. Laurent exhibited a peculiar color form of a female *Callosamia promethea* raised from a cocoon.

HENRY SKINNER, *Recorder*.

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Meeting of May 23rd, 1912. Mr. Laurent, Director, presiding. Six persons were present.

Dr. Calvert spoke in relation to his work on the Odonata and the results attained by Dr. Walker in his lately published monograph of the North American dragonflies of the genus *Aeshna*. Dr. Walker had found that it required about three years for the larvae of this genus to become full grown, and that this growth was accomplished in about twelve moults. He further complimented Dr. Walker on his work and mentioned its general scope and thoroughness in biological detail. Discussed by the members.

Mr. E. T. Cresson, Jr., made some remarks on damage done to a floor of hard wood by *Lycetus striatus* (Coleop.)

Mr. Laurent exhibited a specimen of *Cicindela modesta* taken at Iona, New Jersey, May 17th, and remarked upon its abnormal marking.

Mr. Liebeck said he had received from E. E. Calder specimens of the green and brown forms of *Cicindela rugifrons* and *modesta*, which were said to have been caught in copulation.

It was announced that Mr. C. T. Greene, an Associate of

the Section, had accepted a position in the "Forest Insect Investigation" Division of the United States Department of Agriculture at Washington, D. C.

E. T. CRESSON, JR., *Recorder pro tem.*

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#### FELDMAN COLLECTING SOCIAL.

The social was invited by Mr. Haimbach to 150 Sumac Street, Wissahickon, Philadelphia, on February 21st, 1912, but owing to the inclemency of the weather only Messrs. Huntington, C. T. and George M. Greene put in an appearance, so no meeting was held.

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Meeting of March 20th, 1912, at 1523 South Thirteenth Street, Philadelphia. Eleven members were present. Vice-President Wenzel in the chair.

The death of our honorary member, Prof. John B. Smith, was announced. The Secretary stated that the social was represented at the funeral by five members.

Mr. Daecke said he had had, in the past, much trouble cleaning greasy insects. He stated that it was comparatively easy to clean Coleoptera but in Diptera it was very difficult, as the wings would not stay in position after being wetted but would always collapse. Dipping in gasoline was unsatisfactory, and he finally devised the following method: Made a setting block of plaster of paris to which the fly is fastened, the wings being held in position by strips of white blotting paper. Then ammonia water was dropped on the specimen from a tumbler, a drop at a time, and finally when the insect was allowed to dry it was perfectly clean and the grease had been absorbed by the block, which could be easily seen on the one exhibited. Same speaker said he had dug larvae at Manumuskinn, N. J., May 21, and when bred they proved to be *Rhyacionia (Evetria) rigidana* Fern. (Lep.), which is not in the New Jersey list. Exhibited a specimen of an Empid, *Blepharoprocta binunmus* Loew (Dipt.) from Inglenook, Pa., May 28, 1911, which he said had been very puzzling at first to identify. When viewed under the microscope it appears as if holding two coins in its "hand," hence its name.

Mr. Laurent exhibited *Cicindela sexguttata* Fabr. with one, two, four, five, six and eight spots; said if great series were taken it would be found without spots. Mr. Wenzel, Sr., read extracts from Leng's monograph to show that the immaculate form of this species is not var. *violacea* Fabr.

Mr. C. T. Greene reported the capture of a rather rare Dipteron: *Rhyphus alternatus* Say, of which several specimens were taken on windows in the city by George M. Greene, March 18th.

Mr. Wenzel, Sr., exhibited several boxes of Coleoptera comprising his collection of Hispidids of over a thousand specimens all cleaned and remounted.

Mr. George M. Greene exhibited two pairs of *Plectrodera scalator* Fabr. (Col.) from Sedgwick County, Kan., July 3, 1911, collected by J. C. Warren, and also a tick found on the under side of a beetle *Tinotus carolinus* Linn, collected by A. Schmidt, Frankford, Pa., August 15.

Adjourned to the annex.

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Meeting of April 17th, 1912, at 1523 South Thirteenth Street, Philadelphia. Twelve members were present; President Haimbach in the chair.

Prof. Calvert exhibited a pair (male and homoeochromatic female) of *Erythrodiplax berenice berenice* Drury (Odon.) from Fernandina, Fla., September 11, 1909, by Prof. J. Chester Bradley. They formed part of a collection of eleven specimens of this species from this locality, Apalachicola, Fla., and St. Simon's Islands, Ga., all by Dr. Bradley, which the speaker had recently examined, thanks to Prof. Needham. The venational features of all eleven had been tabulated and the resulting numbers of cells are intermediate between the more densely veined *berenice berenice* of the more northern States and the *berenice naxva* of southern Florida, the West Indies and Central America, as given in *Biologia Centrali-Americana*, Neuroptera, p. 268. No examples from northern Florida or southern Georgia had been recorded or tabulated previously.

He also exhibited a male each of *Enallagma durum* Hagen and of *E. aspersum* Hagen (Odon.) from a brickyard pond

near Holmes, Delaware County, Pa., August 29, 1911, taken by himself; very few records of these species from this neighborhood exist. A male of *E. civile* Hagen from the same pond and date is of interest because of its additional black asymmetrical spots on abdominal segments 3 and 4.

This led to a general discussion on the different forms from warm and cold climates and Mr. Wenzel, Sr., exhibited his collection of Cicindelas—*dorsalis* group to bear out his statements.

Dr. Skinner said they have had considerable trouble at the Academy, caused by Dermestids infesting the mounted heads hanging about the museum. He found upon examination that they were a Californian and New Mexican species. *Trogoderma sternale* Jayne. Mr. McCadden claims they do not injure the hair but feed on the cartilage left on the bones and at the base of the horns.

Mr. Daecke said someone at Harrisburg had complained to him of numerous mosquitoes breeding in a certain place. He had gone to this water hole and spread three gallons of oil on the surface and immediately the water beetles came up for air and were easily captured with a net—many specimens were taken. Dr. Skinner said it might be possible to obtain the same result with fish poison as used by the Indians in New Guinea.

Mr. C. T. Greene exhibited the *Rhyphus alternatus* Say (Dip.) reported at the last meeting.

Mr. Geo. M. Greene exhibited *Metathorasa monctifera* Gn. (Lep.) collected by C. T. Greene, Lehigh Gap, Pa., vii-7-07.

Mr. Haimbach recorded a pair of *Packardia albipuncta* Pack. (Lep.) collected by C. T. Greene, Roxboro, Pa., and *Alcathoe caudatum* Harr. collected by Mr. Harbeck, Pocono Lake, Pa., July 13. Adjourned to the annex.

GEO. M. GREENE, *Secretary*.

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## OBITUARY.

ROBERT W. C. SHELFORD.—It is with deep regret that we learn of the death on June 22, 1912, in his 39th year, of this well-known British Orthopterist.

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PHILIP P. CALVERT, Ph.D., Editor.  
E. T. CRESSON, JR., Associate Editor.

HENRY SKINNER, M.D., Sc.D., Editor Emeritus.

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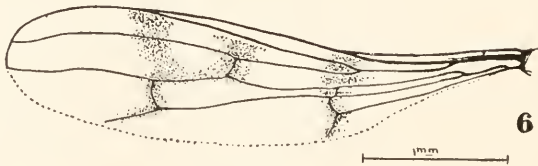
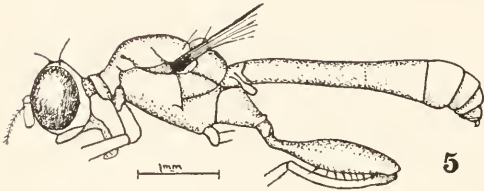
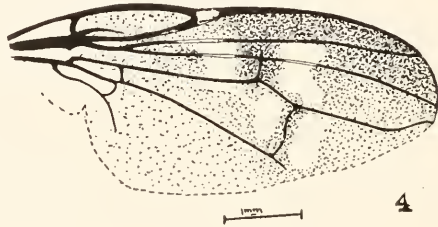
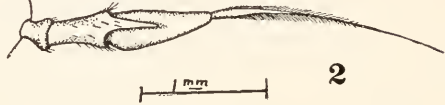
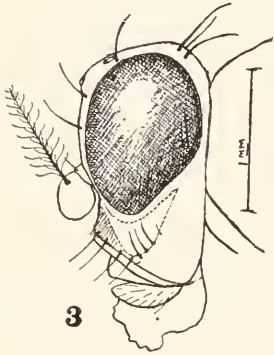
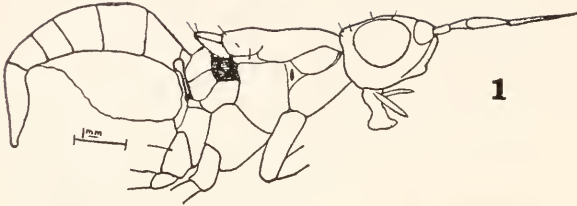
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8	1897		25	20	20	25	20		10	10	10			
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12	1901	2.00	20	20	10	25		15	10	25		20		
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16	1905	1.00		10	10	10	10	15	10	5	15	15		
17	1906	2.00	25		20	20	20	20		25	15	25		
18	1907	2.00		10	15	15	10	10	20	15	15	15		
19	1908	2.00	20		25			25	25	25	25			
20	1909				20	20	20	20	*20	25	15	15		
21	1910	2.00		15	15	15	15	15	15	15	15	15		
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Del. E. F. C. Jr.

NEW NEOTROPICAL ACALYPTRATE DIPTERA—CRESSON.

# ENTOMOLOGICAL NEWS

AND

## PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

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### CONTENTS:

Cresson—Descriptions of several new Neotropical Acalyprate Diptera ..	389	Westcott—Note on <i>Anatis 15-punctata</i> and <i>A. casevi</i> n. sp. (Coleop.).....	422
Sasscer— <i>Erium lichtensioides</i> Ckll. vs. <i>Eriococcus artemisiae</i> Kuw. (Hem.)	396	Thomas—The Splitting of Insect Tracheae .....	422
Girault—Fragments on North American Insects—I (Lep., Col., Hym.)	399	Additional votes on Priority in Nomenclature .....	423
Rehn and Hebard—On the Genus <i>Anaxipha</i> (Orthoptera, Gryllidae)....	411	Townsend—Strict Priority Throughout Taxonomic Nomenclature.....	423
Knab and Malloch—A Borborid from an Epiphytic Bromeliad (Diptera; fam. Borboridae) .....	413	Skinner—A Senator on Medical Entomology .....	425
Alexander—A Bromeliad-Inhabiting Crane-fly (Tipulidae, Dipt.) .....	415	Entomological Literature .....	425
A School of Entomology in N. Y. City	417	Review of Sanderson & Jackson: Elementary Entomology.....	432
Alexander—A new Tropical Gonomyia (Tipulidae, Dipt.) .....	418	Doings of Societies .....	433
Editorial .....	421	Obituary—Ludwig Ganglbauer.....	435
		Rev. Thomas Blackburn.....	436
		George Masters .....	436
		G. H. Grosvenor .....	436

## Descriptions of Several New Neotropical Acalyprate Diptera.

By E. T. CRESSON, JR., Academy of Natural Sciences, Philadelphia, Pa.

(Plate XIX)

The following are descriptions of a few species belonging to little known and interesting genera of the families Micropezidae, Psilidae and Agromyzidae. A few suggestions and notes are also included, relating to the classification of the genera of Micropezidae based upon observations made in the study of this family and of the literature.

### MICROPEZIDAE.

From a casual study of the few genera of the Micropezidae, the following is suggested for the sub-family divisions:

Propleura strongly developed beneath, in front of fore coxae; sternopleura beneath, at most, scarcely longer than fore coxae.

#### Neriinae

Propleura scarcely developed, sternopleura much longer than fore coxae; fore legs widely separated from the closely situated middle and hind pair .....

#### Micropezinae

The known genera belonging to the Neriinae may be separated as follows:

- 1 Arista dorsal; fore coxae situated nearer middle pair than to the head ..... **Nothybus** Rond.  
 Arista terminal; fore coxae situated about equidistant from head and middle pair ..... 2
- 2 First antennal joint many times longer than second and third together ..... **Macrotoma** Laporte  
 First joint not longer.  
 Third antennal joint truncate apically; arista bare ..... **Nerius** Fabr.  
 Third antennal joint conical; arista apparently much thickened basally... .. **Telostylus** Bigot

*Longina* Wied. from Brazil may be synonymous with *Macrotoma*, as suggested by Osten Sacken (1) but comparison of specimens should be made to substantiate this.

**Telostylus vittatus** n. sp. (Plate XIX, Figures 1-2).

Opake brown: Front yellow with narrow orbits and vertical angles black, somewhat shining; ocellar region reddish; frontal orbits a little projecting and polished black anteriorly; calli at base of antennae polished black, separated from orbit below by a velvety black spot. Face and cheeks pale yellow, orbits narrowly silvery. Occiput yellow, with upper angle and a horizontal stripe at lower orbit, velvety black. Palpi and proboscis pale yellow. First joint of antennae pale yellow; second and third brown; style snow white.

Thorax brownish; mesonotum darker with a broad median pale vitta; a notopleural stripe and pectus pale yellow; scutellum pale yellow, with lateral margins broadly brown or black. Halteres pale yellow. Abdomen brownish, with bases and apices medianly of 2-4 segments more or less pale; venter pale. Legs yellow, with tarsi brown (posterior pair wanting). Wings brownish, more intense towards costa. Auxiliary vein complete ending near apex of first, the latter short ending much before middle of wing; second vein very long, so that second costal section (between ends of first and second veins) about four times length of third section; veins 2 and 3 parallel; fourth gently curving towards third; first posterior cell open; basal cells complete; anterior cross-vein near middle of discal cell; anal cell obtuse. Length (less antennae and ovipositor), 9 mm.

*Type Locality*.—Bartica, British Guiana, S. A.

*Type*.—♀ In the collection at the Academy of Natural Sciences of Philadelphia, No. 5251.

(1) Berl. Ent. Zeit., xxvi, 200, 1882.

This is the first species of the genus to be recorded from the Western Hemisphere, but seems to be a true *Telostylus* and the genus may be further characterized as follows:

Elongate, slender; head produced anteriorly, being much longer than high; eyes roundish; front and oral margin nearly parallel; occiput and face produced beyond orbits; inner and outer vertical, reclinate or erect, decussating ocellar, two frontals and one buccal bristles present, all small; a polished callous-like swelling at base of each antennae; palpi lanceolate, not constricted basally. Antennae elongate, porrect; first joint not longer than third; second with inner margin produced thorn-like along side of third joint; *latter long, conical, with a long thickly pubescent arista at its apex*, the thick pubescence giving it a solid appearance basally. (fig. 2).

Thorax elongate, conically developed anteriorly; propleurae strongly developed in front of fore coxae, causing the latter to be forced nearer the middle pair; the latter and posterior pair close together, the metapleura with a rounded callous-like swelling. Scutellum obtusely triangular, 1 pair prescutellar, 1 supra-alar, 2 notopleurals, 2 scutellar bristles, present, all short, no bristles or hairs on pteropleura. Abdominal segments sub-equal, slightly diminishing apically; ovipositor normal. Legs slender; femora much stouter, with stout but short spines beneath; posterior coxae with a lateral subapical bristle. Wings normal.

The three known species may be separated as follows:

South American species; mesonotum brown with a median pale stripe and a yellow stripe between humeri and wing. *vittatus* n. sp.

East Indian species; mesonotum pale with black spot behind humeri.

Scutellum pale with brown side spots; a black spot above each wing ..... *maccus* O. S.

Scutellum entirely pale; no spot above wings... *binotatus* Big.

*Telostylus binotatus* Bigot is the genotype with the following bibliography and synonymy.

*Telostylus binotatus* Bigot. Rev. et Mag. Zool., 1859, 307.

*Coenurgia remipes* Walker. Proc. Lin. Soc., IV, 164, 1860.

*Telostylus binotatus* O. S. Berl. Ent. Zeit., XXVI, 208, 1882.

*T. maccus* O. S. was described from a single female in Berl. Ent. Zeit., XXVI., 207, 1882.

## PSILIDAE.

## SYRINGOGASTER n. gen.

Head nearly spherical, broader than high; male dichoptic; occiput convex. Front moderately broad in both sexes; inner vertical and greater ocellar bristles alone present. Face flattened or slightly convex, receding below; foveae weak; bristles wanting; cheeks narrow; clypeus, palpi and proboscis well developed. Third antennal joint much longer than second; arista sparingly short plumose. Prothorax elongate, collar-like; mesothorax elongate, attenuated anteriorly; fore and middle coxae widely separated, at least equalling length of middle femur apart; hypopleurae greatly developed posteriorly, cone-like, bearing the hind legs at their extremities; mesonotum quadrate; scutellum very short and broad; metanotum well developed. Only a post-alar and a prescutellar pair of bristles present; pleurae bare excepting sparse, fine pile. Abdomen very elongate, clavate, very narrow basally; first and second segments fused together in a length as long as head and thorax together, the incision scarcely discernible; (fig. 5); lateral margins turned down but not strongly revolute. Hypopygium of male distinct but little developed externally. Legs slender except hind femora which are very much swollen medianly, bearing two series of flexor spines, otherwise legs unarmed; tibiae without preapical bristles; hind tibiae arcuated conforming to the curvature of the swollen femora, and nearly as long; claws small, curved; pulvilli present. Wings not attaining apex of abdomen, attenuating basally, axillary lobe wanting; costal cell very narrow; axillary vein incomplete, more or less fused with first. (see figure).

Type species *Syringogaster rufa* n. sp.

This genus evidently belongs to the *Psilidae* and may be diagnosed as follows:

Elongate, slender; head nearly spherical; front bare except bristles of vertex; face convex, without vibrissae; antennae moderately elongate, decumbent; thorax slender, long, bare, except a few bristles near posterior mesonotal margin; middle and posterior legs removed far caudad with posterior pair situated at apex of conical hypopleurae; scutellum short and broad; abdomen very slender, clavate, first and

second segments very long, fused together; legs slender but posterior femora straight and much thickened, spinose beneath; wings slender; auxiliary veins rudimentary, more or less fused with first; latter short, entering costa before middle of wing; third and fourth veins parallel; discal cell complete; basal cells well developed; anal cell rounded apically.

According to the figure of *Gobrya simulans* de Meij. (Tidj. V. Ent. liv. 363, 1911) this genus seems similar but is very distinct. The generic characters of *Gobrya* given by de Meijere are not as definite as they should be, but if one may be guided by the figure given, the position of the fore coxae will at once eliminate the possibility of synonymy.

**Syringogaster rufa** n. sp. (Plate XIX, Figures 5-6).

Entirely rufous or yellowish; all bristles black and hairs yellow. Front semiopaque with two longitudinal dark stripes above, not well defined; ocellar tubercle violaceous. Face laterally, and cheeks in certain aspects, silvery. Mesonotum subopaque, faintly dusted with brown, posterior part, especially laterally, blackish; a black dot in depressions above humeri; scutellum subopaque, yellow; pleurae polished; hypopleural suture and apex of hypopleurae above, black. Halteres yellowish white. Abdomen highly polished, but brownish pruinose apically. Anterior coxae, trochanter, bases of middle and hind femora, pale, translucent yellow, nearly white; fore tibiae and all tarsi yellow; hind femora with more or less diffused black basal ring. Wings brownish hyaline, with yellow veins; a transverse fuscous band over apices of second basal and anal cells, a fuscous cloud over anterior cross vein, and a fuscous band over posterior cross-vein extending to costa (fig. 6.).

Front less than a third the width of head. Antennae less than half as long as face. First and second abdominal segments gradually widening apically; third segment about one-sixth to one-eighth as long as first and second together, fourth to fifth or sixth diminishing in length and width. Lateral series of flexor spines on posterior femur confined to the apical two-thirds. Fifth and sixth veins attaining margin of wing. Length 6.25 mm.

*Male*.—Abdomen with five segments; hypopygium small, yellow. *Female*.—With six segments.

*Type Locality*.—Rio Surubres, Bonnefil farm, 800 feet altitude. Costa Rica.

*Holotype*.—♀ Collected Oct. 16, 1909, by P. P. Calvert in sweeping. In collection at the Acad. Nat. Sci., Phila. No. 5252.

*Allotype*.—♂ topotypic.

*Paratype*.—♂ topotypic.

Distinguished from the next species by the wings being hyaline with brown bands, the abdomen gradually expanding in width; the third segment much shorter; also in its much larger size.

***Syringogaster brunnea* n. sp.**

Dark rufous or brown. Front and face subopaque, latter more yellow, with orbits and cheeks silvery, latter narrow. Antennæ yellow, more or less rufous. Mesonotum subopaque or reddish, becoming black in the sutures; scutellum concolorous; pleuræ concolorous, polished, becoming black at bases of middle and posterior coxæ. Halteres whitish. Base of first abdominal segment subopaque, becoming polished apically; fourth to sixth segments subopaque, nearly black; apices of second and third black. Fore coxæ whitish; femora, tibiæ and tarsi and middle legs entirely, yellow; posterior coxæ and tarsi, yellow; posterior femora translucent rufous, yellow basally and a black spot above at basal third; tibiæ dark; lateral series of spines extending nearly to base of femora. Wings brown, with base, and 3 transverse bands hyaline, first an incomplete band crossing apex of first basal and base of discal cells; second, at basal-fourth of first posterior and apical fourth of discal; third, beyond posterior cross-vein, extending into first posterior cell; these bands all incomplete, not attaining costa, clear hyaline or whitish, becoming indistinct towards the lighter posterior margin of wing.

Front more than one-third width of head. Antennæ extending beyond middle of face. First and second segments narrow, suddenly dilating at posterior third; third segment about one-third as long as first and second together; fourth, half as long as third; fifth and sixth, small. Fifth and sixth veins not attaining margin of wing, former extending but little beyond cross-vein. Length 4.5 mm.

*Type Locality*.—Peralta Station, Costa Rica.

*Holotype*.—♀ Collected Aug. 10, 1909, (P. P. Calvert). In the collection at the Acad. Nat. Sci., Phila. No. 5253.

*Paratype*.—♀ Juan Vinas, Costa Rica, near brook on edge of forest, 2500 feet altitude. May. (P. P. Calvert).

Differs from *rufa* in its smaller size, darker color, narrowness of first abdominal segment, and the abrupt dilatation of the second; third segment longer in proportion; the wings are evenly infuscated with hyaline maculations.

## AGROMYZIDAE.

**Traginops pilicornis** n. sp. (Plate XIX, Figures 3-4).

Opake, yellow and brown pruinose. Front black above, rufous towards antennae, with broad orbits and a pair of elongate spots caudo-laterad posterior ocelli, yellow pruinose; occiput yellow pruinose becoming cinereous below; lunule cinereous with an isolated, velvety black spot. Middle portion of face cinereous; orbits faintly whitish; vibrissal angle dark; oral margin cinereous. Cheeks yellow pruinose with the flat triangular area below orbits brown. Clypeus brownish; palpi and antennae yellow. Mesonotum yellow pruinose with a complete broad median stripe, a narrow intermediate interrupted stripe, and interrupted lateral margins dark brown. Scutellum concolorous, with two longitudinal brown stripes, apex with a point of light yellow. Pleura yellow pruinose, irregularly marked with brown; metanotum cinereous. Halteres yellow. Abdomen subopake, black; apical margins of segments 2-4 narrowly white, becoming broader and cinereous laterally. Coxae and femora black; apices of latter yellow; tibiae and tarsi yellow; former with subapical and subbasal rings, and latter with apical joints, brown. Wings (fig. 4) infuscated, darker towards costa; with whitish, hyaline spots on disk as figured; veins black except at base, first at jointing with costa, and second and third where crossing white spots of disk, hyaline.

Compact, robust species, head closely applied to thorax. Eyes bare, large. Ocellar plate situated far forwards but little produced conically as with the other species (fig. 3). Three frontals, inner and outer verticals, a post-ocellar pair and an anterior ocellar pair, bristles, well developed, (the latter are broken off in type); frontal orbits slightly converging below. Face short concaved; foveae shallow; vibrissal angles and peristomalia prominent, strongly differentiated from the middle portion of face and area bordering the oral margin, peristomalia bearing a few short hairs and three to four moderately long bristles. Cheeks nearly quarter the height of eye, with a bare triangularly shaped depressed area above peristomalia; a series of about three bristles on anterior edge of lower occipital area which otherwise is thickly hairy. Clypeus distinct but retracted; palpi clavate. Antennae short, situated far below middle of eye level; second joint short with an apical bristle-like hair above; third joint rounded; arista long, *doubly plumose*, having the two usual series of long hairs and two other series of shorter hairs situated at 90 degrees with the longer series. Mesonotum bare, but with a post dorso-central bristle and an intra-alar, close to margin; 2 post-alars; 2 supra-alars; 1 presutural; 1 humeral. Pleura with 2 notopleural and 3 sternopleural bristles. Scutellum triangular, convex, sharply pointed or semi tuberculate apically; with 4 bristles. Abdomen short, (ap-

parently shrunken), ovate; segments subequal in length? Legs normal. Wings extending beyond abdomen?, generally strongly bent at apices of second basal and anal cells; without spines or bristles. Length 6.0-6.5 mm.

*Male*.—Abdomen with five segments; hypopygium more or less extended. *Female*.—Abdomen with six segments.

*Type Locality*.—Bartica, British Guiana.

*Holotype*.—♂, May 21, 1901. In the collection at the Academy of Natural Sciences of Philadelphia. No. 5254.

*Allotype*.—♀, topotypic.

*Paratypes*.—1 ♂, 1 ♀, topotypic.

This species differs from all the others in that the front is not produced conically, is larger, and the maculation of the wing is limited to a few whitish areas on the disc, the remainder being brownish, becoming lighter towards the posterior margin. In general, the species is a true *Traginops*, but the arista is curiously doubly plumose. This is the fourth species described in this genus.

#### EXPLANATION OF PLATE XIX.

Fig. 1. *Telostylus vittatus*.

Fig. 2. *Telostylus vittatus*, mesal surface of an antenna.

Fig. 3. *Traginops pilicornis*, head.

Fig. 4. *Traginops pilicornis*, wing.

Fig. 5. *Syringogaster rufa*.

Fig. 6. *Syringogaster rufa*, wing.

### *Erium lichtensioides* Ckll. vs. *Eriococcus artemisiae*\* Kuw. (Hemip.).

By E. R. SASSER, Bureau of Entomology, Washington, D. C.

In the fall of 1911 the writer received from Mr. P. H. Timberlake a coccid on *Artemisia californica* collected at Santa Barbara, California, and owing to its great similarity to *Eriococcus artemisiae* Kuwana† it was provisionally identified as such. A subsequent examination of this scale revealed the fact that it also agreed in practically every particular with *Erium lichtensioides* Cockerell,‡ which was described from Fort Collins, Colorado, on *Artemisia frigida*. The fact that

\* Published by permission of Dr. L. O. Howard, Chief, Bureau of Entomology.

† Pr. Cal. Ac. Sci., (3), II, p. 399 (1901).

‡ Science-Gossip, n. s., III, p. 199 (1897).

the Santa Barbara material agreed so well with the coccids described by Messrs. Cockerell and Kuwana, even though placed in separate genera, raised the question as to the validity of *artemisiae*. It was therefore deemed wise to make a careful study of the latter species and at the same time compare it with *lichtensioides*. Through the courtesy of Prof. Cockerell, additional material of his species was submitted from Tolland, Colorado, on *Artemisia tridentata*.

In comparing and studying coccids, especially *Diaspinae*, the writer has found it decidedly advantageous to resort to the use of photomicrographs, and this method was followed in going over this material. Two exposures were made, one showing the anterior half of the insect, including the antennae and first pair of legs, and the second exposure exhibiting the posterior half, magnification approximately one hundred and thirty diameters.

In comparing these photomicrographs the resemblance was found to be remarkably close since the capitate dermal spines and the size and number of hairs around the anal ring agree almost precisely, although there was a slight difference in that the antennae and legs of *lichtensioides* did not appear quite so robust as in *artemisiae*. However, the fact that the appendages of *lichtensioides* are a trifle smaller than in *artemisiae* is certainly not a character of sufficient importance to separate them as distinct species, let alone placing them in separate genera.

Possessing six long hairs around the anal opening, as does *artemisiae*, surely excludes it from *Eriococcus*, which is recognized as possessing long caudal lobes, this character being absent in Mr. Kuwana's species, and eight long hairs located around the anal ring. Some specimens of *lichtensioides* present a few scars on the surface of the body and, although they can be seen on Mr. Kuwana's material, they are not so apparent. Small cylindrical pores are to be seen on the surface of both lots of material.

Superficially, the sacs enclosing *artemisiae* and *lichtensioides* are alike in color, although there is a slight difference in size, which is undoubtedly due to the fact that Mr. Kuwana's ma-

terial was taken from the large branches where the insect can reach its maximum growth, whereas Mr. Cockerell's material comes from the small terminal shoots.

As might be expected, a study of the antennae of the two failed to present any salient characters, and as an evidence of the inconstancy of such measurements the following formulae are submitted:

*Eriococcus artemisiae* Kuwana. Co-type material on *Artemisia* sp. at foot-hills of Sierra Morena, Stanford University, Cal. S. I. Kuwana, Collector, March 24, 1900. [7, 1, 6, 4 (3, 2), 5]; [7, 1 (5, 2) (6, 4, 3)]; [7, 1, 2, 4 (6, 2) 5].

*Erium lichtensioides* Ckll. Type material on *Artemisia frigida*, Fort Collins, Col. C. P. Gillette, Collector, September 25, 1896. [7, 1 (2, 6), 4 (5, 3)]; [7, 1, 4 (2, 6), 3, 5].

*Erium lichtensioides* Ckll. on *Artemisia tridentata* from Tolland, Col. T. D. A. Cockerell, letter, February 13, 1912. [7, 1, 2, 3 (4, 6) 5]; [7, 1, 2 (3, 6) 5, 4]; [7, 1 (2, 5) (3, 4) 6].

A careful study of the above formulae and many not included in this paper is conclusive evidence, to the writer, that measurements of antennal joints afford a very weak and variable character since in not a single instance do the lengths agree throughout even when the measurements are made of antennae of the same individual. There is also another feature worthy of notice, viz., the presence of seven- and eight-jointed antennae. This occurs in the material collected by Mr. Timberlake, although the division between four and five is not so prominent. A study of the legs failed to present any substantial characters to warrant a separation.

In conclusion, it is the belief of the writer that *artemisiae* is founded on unstable grounds, since the co-type material does not exhibit any character which would warrant its retention as a valid species. It surely does not belong to the genus *Eriococcus* as it is now defined owing to the presence of only six hairs around the anal ring, a character belonging to the genus *Erium*. Occurring as they both do on *Artemisia* and possessing no features worthy of separation, it is therefore proposed that *Eriococcus artemisiae* Kuwana be reduced to a synonym of *Erium lichtensioides* Cockerell.

## Fragments on North American Insects—I.

By A. A. GIRAULT, Nelson (Cairns), North Queensland.

### 1. Protective Attitudes of the Caterpillars of *Datana ministra* Drury (Lepid.).

The peculiar attitude of the individuals in colonies of young larvæ of this species when at rest was noticed at Blacksburg, Virginia, August 25, 1902; the head plus the thorax are held curved rigidly over the back, while the three distal segments of the abdomen are held in the same manner, but in the opposite direction. Even when in motion, the distal abdominal segments are still upcurved. When individuals in a colony are disturbed, with great suddenness, they wriggle from the leaf and hang suspended by a thread of silk. Disturb the whole colony and they all fall together. Older larvæ form nearly a complete hoop when slightly disturbed.

The significance of the resting attitude above noted becomes evident when we read the following: On September 2, 1902, a badly infested linden tree was shaken violently, dislodging the caterpillars which fell into the grass below; soon a number of tachina flies were noticed buzzing about without apparent aim or resting sharp-eyed upon near-by blades of grass. These had already discovered the caterpillars which were crawling and wriggling about in the grass (if they had not known of them for some time and were waiting about for a chance to attack them). Every now and then, one of the parasites darted suddenly at one of the larvæ and attempted to deposit an egg on its body, not at any point on its surface but on the thorax just behind the head. If unsuccessful, the fly would alight and follow the larva on foot, keeping as nearly behind the head as possible and running along in a peculiar sidelong manner, reminding one of the totally different, yet extremely similar behavior of a courting rooster. It thus followed the crawling caterpillar, over and under, twisting in and out, the blade of grass, flying short leaps when necessary, until at a favorable opportunity the fly would dart at the thoracic region, leave an egg and dart away. These attempts were not always successful; for the pursued caterpillars acted in a manner altogether incomprehensible without attributing it to a sense of fear.

Their movements were a combination of squirms and wriggles amounting almost to convulsion; the fore body was frequently thrown violently from side to side and the caterpillar would often make attempts to remove any eggs placed upon either side by biting or by rubbing or shaking them off. They emit fluid from the mouth. No matter how they would contort themselves, however, they could not reach the region of the cervical shield where the flies were obviously attempting to deposit their eggs. By observation, it was demonstrated that this region was the safest place to lay them. Generally several flies would attack the same larva. Their eggs were often misplaced, occurring on any portion of the dorsal aspect of the body. In one of these cases a caterpillar, upon which there had been two eggs misplaced, removed one by rubbing the head against it. However, misplaced eggs were not always removed within the time limits of the observation. They are easily removed from a caterpillar's body with the hand and are rather easily crushed.

Thus, we have here an undoubted explanation of the resting attitude noted above; the cervical shield is protected by bending back the fore body, while the upcurved hind body aids the protection by preventing access from behind. That the protection is not perfect is to be expected, but it is acted upon by natural selection and only those larvae practicing it obtain the greatest freedom from death following parasitism from those eggs which will be the most successful, namely those placed behind the head. In regard to the origin of the habit in the flies themselves, natural selection has again acted, since only those eggs safely placed would survive. Through the accumulated inheritance of acquired characters, the placing of the eggs in safety would become a habit which by the further action of heredity would become instinctive. As regards the obvious fear expressed in the movements of the caterpillars when being pursued by parasites, it must be considered as being of the same nature as fear in other animals, including man. Here it certainly seems to be conscious, though expected to be unconscious; a horse indicates consciousness by turning

the head to inspect an object or by shying at unaccustomed objects, and is not the caterpillar's behavior the same in degree? Of course it is not; it must be unconscious from the known structure of its nervous system.

(For the possible identity of the parasites, see *Insect Life*, II, p. 256; III, pp. 26-27.)

### 2. Oviposition of the Weevil *Lixus concavus* Say. (Coleop.).

At Blacksburg, Virginia, June 8, 1903, a female was observed ovipositing into the stem of a species of dock. The whole operation was completed in about thirty minutes; twenty-seven minutes for excavation of the nidus, one minute in laying the egg therein, and two minutes for smoothing off the cavity. The first thing done by the female was to pull off short parallel strips of the plant's skin, peeling them back about an eighth of an inch and bending them. This was continued until the cavity reached some depth, upon which, the operation being no longer possible (or else the pith being reached), the female inserted the snout into the cavity and enlarged the latter sufficiently to receive the egg. While doing this she was often nearly "standing on her head." The egg was deposited simply by turning in her tracks and applying the end of the abdomen to the excavation. This performed, she again turned slowly and commenced to smooth over the lacerated portions of the nidus; the latter was then filled by pushing adjacent tissue into it and completed by turning back into their places the short strips of skin upon which she began operations. The female then crawled to a leaf and commenced feeding, eating out crescentic areas from its margin. The male was absent, probably due to the late date.

Although this weevil will lay eggs into the stems of rhubarb, the consequent larvae do not seem to be able to mature within that plant, being killed by it.

### 3. Notes on *Malacosoma americana* Fabricius, (Lepid.).

In Floyd County, Virginia, April 10, 1903, the larvae of this species were observed eating into the buds of apple. In the same place, in two instances, as many as ten old nests were on

single trees, while a half dozen to a tree were common. The 1903 generation in Virginia (Montgomery County) hatched about March 26, upon which date some colonies of the young larvae were observed to have formed a web over the egg-masses. On May 8, it was noted that larvae in woodlands were more advanced than those occurring in orchards. An adult of this generation was captured on June 24 at Blacksburg and the first fresh egg-mass was seen on June 24, 1903, at Cambria. In damp, warm weather, the covering over the egg-mass becomes soft and gummy, due more to the moisture than to the warmth, for when masses in this condition are placed in a warm room they become hardened again; warm water produces the same effect as the warm, damp weather.

Of a number of egg-masses collected March 16, 1903, at Blacksburg, Virginia, from apple, in one case four of them were together, end to end, and in another three; in six cases two masses were together, and in another case two masses were pressed together so as to be indistinguishable (nearly). The manner of deposition of the mass varies considerably; usually, however, they are deposited singly on small twigs and to some extent generally embracing a small offshoot. Thus, in seventy-seven random masses collected, forty-nine were embracing a bud-shoot while the other twenty-eight were entirely away from shoots. In some cases the mass is laid down in a crotch, that is, where many small twigs have their origin, and in others they entirely surround the base of a shoot. Once three eggs laid side by side were found isolated on a twig. During 1903, egg masses exposed to the warmth of a room about the end of the second week in March would commence to hatch after several hours' exposure.

In this species the winter is passed as a perfect embryo within the egg; it is quite probable that some of these hatch before winter sets in, as is indicated by finding holes involving the whole top of the egg in some of the masses. Out of seven thousand five hundred and six eggs obtained early in March, 1903, from twenty random egg masses sixty-four had thus apparently hatched, or 0.85 per cent. The perfect embryos

are grayish in color, the head black, the body with a pallid, soiled line across each segment, and it is clothed with long silky, whitish hair. In Montgomery County, Virginia, perfect embryos were found as early as September 2, 1902.

4. *Thyridopteryx ephemeriformis* Haworth (Lepid.).

This species has been observed at Salem, Virginia; Annapolis, Maryland, and Paris, Texas. At Annapolis, a male issued September 21, 1902, a female three days later; in the same year the emergence at Salem, Virginia, occurred at the same time or somewhat later, the larvae being half grown or more by the end of July. The species also occurs at Butler, Illinois, and comes to maturity there in the late summer.

5. *Lophyrus abbottii* (Hym.).

This species in late July, 1902, was defoliating portions of several white pine trees at Blacksburg, Virginia. The larvae vary somewhat in detailed coloration; in some of the specimens the black dots at the base of the prolegs are absent, and sometimes the first thoracic segment is dotted with black. Observing a cluster of nearly full-grown larvae at rest, occasionally one is seen to throw back its fore body (head plus thorax) stiffly, holding itself thus for quite a while. Their natural position of rest is to be stretched along a leaf; when disturbed their bodies are jerked backward quickly and a glue-like fluid is emitted from the mouth. When feeding, they begin at the apex of the pine needle or leaf and eat it down to its base; a colony thus denudes the terminal portions of a branch. Pupation commenced on August 2, a number of larvae having been confined in a rearing cage. Subsequently a few adults emerged late in August and some others not until the following July. Pupation occurred in cocoons made within the earth in the cage. A dipterous parasite was noted.

6. Notes on *Automeris io* Fabricius (Lepid.).

A gravid female of this species, captured at Blacksburg, Virginia, July 7, 1902, and roughly confined, deposited a number of eggs the same day; on July 9 the yellow end-spot on the eggs had changed to black; on July 21 the color of the eggs

had changed to lilac, the side spots darker; on July 22, in the morning, the eggs hatched, after a stage of about fourteen and a half days.

The young larvae are gregarious and have a curious habit of traveling in lines, one behind the other, all following the first. Soon after hatching four larvae were noticed thus moving along, all in touch with each other, and all obeying the movements of the first. A portion of an apple leaf was placed in the path of the latter; it was climbed upon without hesitation, tasted, refused and the leader moved on; the others, after a slight hesitation followed without tasting the leaf, thus accepting the decision of the first. The short column moved on and acted in the same manner when a clover leaf was placed in their path. Then a piece of the leaf of corn was placed in the path. The leading caterpillar stopped and, after tasting it several times, began to feed, the others soon advancing and following his example; the line was then broken. If a leading larva of a larger string of the young caterpillars is made to travel in a circle, so that the line gradually becomes circular and finally a complete circle, all of the larvae in touch with each other, they will continue in this condition for hours. I have observed this on several occasions. The gregarious instinct is strong and, as in all social communities of animals, there appears to be some altruism and division of labor, rude though this may be. Later this instinct is lost; it probably has arisen from the fact that the colony of young after hatching once had to search for its food.

The caterpillars were confined and fed; when not feeding they rested in irregular masses or stretched in rows, one behind the other. The first molt began on July 30 and was general on the following day; the larva is very short, its body contracted just after the first ecdysis; when in the second stage the young larvae rested either in masses composed of regular transverse rows or else in a single line as noted above. When disturbed in this stage the anterior end of the body is swept rapidly from side to side, or else the head is simply turned to one side. The second molt occurred about August 15,

and while in the third stage a peculiar gland-like structure was noticed on the first and seventh abdominal segments, just caudo-ventrad of the spiracle; it presents the appearance of a puckered, fleshy wart, undifferentiated in color from the brown of the spiracular stripe; when the larva is disturbed the organ is slightly but quickly inverted or projected. It is probably odoriferous. The third ecdysis occurred on August 22; after this molt it was noticed that the spines of the tubercular setae of the larvae at first cling together parallel to the axis of each seta and overlapping; they are then short and stout, with a very short tip, giving the larva, viewed as a whole, a very peculiar appearance. They then have a dull opaque green color, becoming gradually transparent as the fluid enters them; this also straightens the bent tips; this process can be watched and occurs rapidly. The fourth molt occurred on August 30. The cocoons had been formed by September 29.

These caterpillars are often reputed to be dangerously poisonous. On September 2, 1902, I passed the back of my hand roughly over the back of one of the large larvae, whereupon a number of the spines penetrated and broke off, causing a sharp pain; subsequently much irritation and redness appeared, followed after several minutes by raised white blotches not unlike those caused by stinging jellyfish. These disappeared after about twenty minutes, leaving a blotched redness of the skin which persisted for twenty-four hours; toward the end the raised blotches accompanied by irritation reappeared, gradually disappearing in the following twenty-four hours.

When at rest, in the second stage, the young larvae attach small, tough strands of silk to the leaf. The eggs have been noticed on garden beans.

#### 7. Notes on *Laphygma frugiperda* Smith and Abbot (Lepid.).

A larva of this species which had been fed in the laboratory and which was taken on corn at Paris, Texas, April 26, 1904, having been fed on cross-sections of the stalks of young corn plants, attained full growth about April 30 and at ten o'clock of the morning of that day commenced to enter some earth prepared for it. By the afternoon it was several centimeters

beneath the surface, leaving a small mass of loose earth behind, not unlike that usually found around the entrance of an ant's nest. The larva went to the bottom of the ordinary glass tumbler containing the earth and there pupated; the burrow narrowed gradually toward the bottom; it measured eight millimeters across the entrance and was slightly slanted; the pupa was formed in a vertical position, the head end up and about ten millimeters beneath the top of the soil. The moth emerged during the night of May 19-20.

Another larva similarly captured, confined and fed, entered the earth during the night of May 19-20, 1904, and emerged as an adult in the early morning of June 4, having been beneath the earth about fourteen and a half days; its larval burrow was straight and measured seventeen millimeters long, seven wide at the entrance and only one and a half at extreme bottom. The above moths lived in confinement without food about four and a half days. The soil at the entrance of the larval burrows (pupal cells) is slightly convexed.

#### 8. On *Estigmene acreae* (Lepid.).

About sixteen miles northwest of Paris, Texas, on April 3, 1904, a female of this species was found clinging to the stem of a dead weed, the legs wrapped tightly about it. She was depositing eggs. These latter had been placed in more or less longitudinal rows, the female probably laying transverse rows of them as she crawled slowly upward; there were twenty-two transverse rows, containing from three to eleven eggs each and a total number of a hundred and twenty-one eggs. The mass was covered with a very light network of hair from the abdomen of the female; it hatched on the morning of April 15; no external signs of embryonic development could be noticed; the young hatching larva eats a large hole through one side. The vacated eggs were eaten in some instances.

Out of a mass of two hundred and ten eggs which commenced to hatch at 6 A. M., October 1, 1904, after two and a half days, seventy remained as yet unhatched. These eggs were taken at Paris. The second larval stage differs from the first, principally in lacking the two spots on the head and bear-

ing complex tubercles; while the third differs from the second mainly in bearing more compound tubercles which are darker, the presence of median and dorso-lateral stripes, in being deeper green in general coloration and the generally darker appearance to the unaided eye.

At Paris, Texas, in 1904, this species became increasingly numerous toward late fall (early November) in scattered situations.

9. *Anosia Plexippus* Linn.: Length of Pupal Stage (Lepid.).

On June 2, 1902, at Blacksburg, Virginia, two chrysalids of this species were formed in the laboratory; the resulting butterflies emerged late in the afternoon of June 11, or after a stage of about nine and a quarter days. The butterflies lived in confinement without food until June 20, when they were liberated.

10. *Ceratonia catalpae* Boisduval (Lepid.).

An egg mass of this species was found upon the under surface of a leaf of a catalpa tree at Blacksburg, Virginia, May 26, 1902; the eggs commenced hatching on June 4 following. There were at least five hundred eggs in the mass but they were not counted.

11. The Pupation of *Eu Vanessa antiopa* (Linn.) (Lepid.).

A closely clinging mass of caterpillars of this species in about the third larval stadium was obtained at Blacksburg, Virginia, July 30, 1902, from a willow tree. They molted on August 4 and again on August 8, and by August 14 were full grown; on the following day one chrysalid was formed while eight of the caterpillars had suspended themselves for pupation. Of these latter, only three successfully transformed—three fell to their death while trying to attach the cremaster (the other two were accidentally killed). On August 16, other larvæ had suspended themselves. The following notes were made:

(1) One suspended larva, August 15, 1902:

Integument parts along dorsum .....	10:31½ p. m.
Chrysalid excluded excepting anal segment .....	10:34½ p. m.
Anal segment excluded .....	10.35 p. m.

(Struggle to attach cremaster began at once.)

Cremaster attached .....	10:38 p. m.
Chrysalid still soft .....	12:49 a. m.
Adult emerged—August 25, 1902 .....	5:30 p. m.
Duration of pupal stage .....	9 days, 19 hours.

During the early afternoon of August 15, 1902, as noted above, eight of the larvæ were found suspended from small pads of silk spun against one side of a twig of willow. They were fixed and held by the claws or minute hooks of the anal prolegs and during the whole afternoon they remained quietly hanging, the dorsum arched, the head neatly tucked in and the legs passively closed. Between 6 and 8.30 P. M., two chrysalids were formed; at about the same time one of the suspended larvæ was removed from its position and laid upon a table (3) in following; the other two were closely observed. Three fell to their death as noted already.

(2) Everything was quiet until 10.30 P. M., August 15, when one of the two suspended caterpillars taken for observation began to move (wiggle) violently as if in agony. A half minute later, the integument parted along the back and the chrysalis commenced to appear, being pushed forward by alternating constriction and expansion of the body. At 10.34½ P. M., after three plus minutes of struggling, all of the body excepting the anal segment had been exposed. The critical stage was now approaching; it occupied more than half of the time of the whole ecdysis. The operation of attaching the cremaster of the chrysalis seems simple enough, but is evidently a critical one; it must be remembered that it is done by instinct, the chrysalis having no previous experience concerning it. The chrysalis has to hold itself by a powerful muscular effort, bending the abdomen in such a manner as to grasp the cast larval skin, then detaching the latter from the anal segment, and then attempt to entangle its cremaster in the silken pad from which the caterpillar had previously suspended itself. After freeing the anal segment, apparently not done without some struggle and seemingly an operation, which, ordinarily would require some practice, the chrysalis has the problem of climbing over the still adhering empty larval integument with nothing to hold on by excepting a very pliable abdomen.

Taking its hold between two of the abdominal segments, by grasping a portion of the larval integument at the incision between the segments, with great strain, the cremaster was slowly moved toward the silken pad; during this operation, the chrysalis also climbed over the larval cast. When the cremaster had approached the silken net, it was attached to it by a striking movement or else simply by dragging it across the surface of the silk. In this caterpillar, this operation took much effort and it very nearly missed the pad altogether. As soon as it had succeeded, however, with a violent movement the larval exuvia was thrown off; the chrysalis then whirled or spun its body a few times, to further entangle the cremaster and make sure of its position. It then remained quiet and after from four to six hours had hardened and become fully colored.

At the beginning, the larval integument parted along the meson of the third thoracic segment, the opening rapidly advancing to the head, the plates of the latter parting obliquely from the meson, along the epicranial sutures. The dorsum of the prothorax is the first portion of the chrysalis to become visible. (In a case observed later, the integument parted at the caudal margin of the second thoracic segment, advancing to the epistoma, after reaching the head, following along the paraclypeal pieces. The ecdysis did not proceed farther, the insect dying).

(3) This caterpillar was removed, after being suspended for some hours, and placed upon its side on a table. It was quiet until 11.06 P. M., August 15, when violent convulsions commenced—forward internal movements from the caudal end as if trying to push through its confining skin. The movements became very violent before successful; the following:

Integument parts at meson of third thoracic segment and reaches the head whose plates part mesially .....	11.09½ p. m.
Thorax excluded .....	11:12½ p. m.
Body excluded, except anal segment .....	11:18¾ p. m.
Cremaster excluded .....	11:32 p. m.
Made useless attempts to attach cremaster; consider its position.	

(4) This caterpillar was quiet until 11.11 P. M., 15 August, when convulsions began. At first it straightened and lengthened the body gently; then violent, spasmodic movements of the thoracic region occurred, followed by the motionless position, which continued until 11.43. At that time the thoracic segments commenced to twitch gently for several seconds, the movement quickly ceasing. At 12.23 A. M., a slight thoracic spasm occurred but no further movements up to 12.50 A. M., when the observation was discontinued. The chrysalis was excluded between 1 A. M. and 6 A. M., August 16, but not successfully, having fallen during the operation of attaching the cremaster.

The struggle to free itself of the larval integument consists of straining movements located chiefly in the caudal portions of the body. The abdominal segments are bent violently, forming a convexity at the prolegs, which flatten again when the movement ceases.

Before suspending themselves, the caterpillars appear to wander considerably and spin much silk at this time.

At 2.20 P. M., August 16, a chrysalis was noticed with all of the thorax excluded. It rapidly wriggled the remaining portions of its body out of the larval skin, to the anal segment and then taking a firm hold of the larval skin with the abdomen (is there a disc-like organ for this purpose near the cremaster?—I failed to look for it at the time, though its presence is indicated in the rough notes), it gradually worked its way from beneath and then over the larval skin, pushing the latter down as its position advanced, thus not raising the body to any considerable angle with the twig. However, after nearly reaching the silken pad, a very small one in this case, this chrysalis was forced to drop, apparently from exhaustion. This observation occupied five minutes.

From the larvæ noted above, the first adult appeared on August 25, 1902, at 5.30 P. M. (from chrysalis No. 2, found at 10.38 P. M., August 15), having been about nine days and nineteen hours in the chrysalis stage. About twenty-four hours preceding emergence of the adult, the chrysalids change to a bluish-black color.

A chrysalis formed at 3 P. M., August 16, 1902, excluded the adult at 10 A. M., August 26, or after nine days, nineteen hours. The butterflies continued to emerge until August 30, in the laboratory, and on that date one was captured out-of-doors.

In 1903, in the same locality, a colony of full-grown caterpillars of this species was found on cottonwood on May 23. They were taken to the laboratory and fed on willow.

June 6, 1903—Pupation commenced.

June 9—Chrysalids.

June 19-21—Butterflies.

This would indicate at least two broods; there is time for three.

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## On the Genus *Anaxipha* (Orthoptera ; Gryllidae).

By JAMES A. G. REHN and MORGAN HEBARD, Philadelphia, Pa.

An examination of material of the genus *Anaxipha* from the United States shows that two species occur in North America, north of the Rio Grande. It is also true that Scudder's *Cyrtoxipha delicatula* is a synonym of the less well known of the two, *Anaxipha pulicaria* (Burmeister), being based on the long-winged form of this species. We have before us Scudder's type of *delicatula* and other long-winged individuals referable to both species of the genus. The perforation of both faces of the cephalic tibiae has been considered of great importance in the separation of *Anaxipha* and *Cyrtoxipha*, while the macropterous condition found in forms of *Cyrtoxipha* had not been reported in the other genus. The type of *delicatula* has the tibiae doubly perforate and the wings are decidedly caudate, but a peculiar facies to the head and pronotum seen in forms of the genus *Cyrtoxipha* is not apparent in the specimen.

We have been able to bring together for examination a considerable number of specimens of both forms of the genus, including a number of long-winged individuals, and we find that while the majority of the brachypterous individuals have the cephalic tibiae uniperforate, two short-winged specimens of *exigua* have the same portion strongly perforate on both faces,

being, in this respect, exactly like the macropterous ones. All of those in the latter condition have the tibiae with the perforations on both faces. In consequence it is apparent that the presence or absence of the perforation of the cephalic face of the cephalic tibiae is variable in individuals which are clearly referable to the same species, hence of neither generic or specific importance in this connection.\*

The two species of *Anaxipha* found within our limits are closely related and from the material in hand we find the following characters by which the two can be separated:

A. Ovipositor of female longer, one-half as long as the caudal femora; pronotum less decidedly transverse; caudal femora more elongate, of male longer than tegmina; tympanum of male tegmina with the length little greater than the width.....*exigua*†

AA. Ovipositor of female shorter, not one-half as long as the caudal femora; pronotum very decidedly transverse; caudal femora shorter, of male shorter than the tegmina; tympanum of male with the length at least one and one-half times the width...*pulicaria*‡

In addition to these features, *pulicaria* is always uniformly paler and less maculate, the external face of the caudal femora always lacking the medio-longitudinal line which is almost invariably found in *exigua*, while the generally pronounced facial markings of *exigua* are almost never indicated in *pulicaria*.

Females of *pulicaria* are at first glance liable to be confused with that sex of *Falcicula hebardei* Rehn, but the much more inflated and flea-like caudal femora and slenderer ovipositor of the latter are excellent characters to separate the two. The males, however, are very easily separated by the absence of a tympanum on the tegmina in *Falcicula*.

\* The presence or absence of a tympanum on the cephalic face of the cephalic tibiae has been shown by Sausurre (Melang. Orthopt. II, pp. 313, 366) to be variable in two genera of *Gryllinae*—*Gryllus* and *Gryllodes*.

† *Acheta exigua* Say, Jour. Acad. Nat. Sci., Phila., IV, p. 309, 1825. ["Missouri, near Konza Indian Village," which from the original charts of the expedition is found to be about eighty miles west of Kansas City, on the Kansas River, in Kansas.]

‡ *Gryllus pulicarius* Burmeister, Handb. der Entom., II, abth. II, pt. I, p. 732, 1838. [Jamaica.] For the facts in regard to the use of this name see the author's remarks, Proc. Acad. Nat. Sci., Phila., 1912, p. 274.

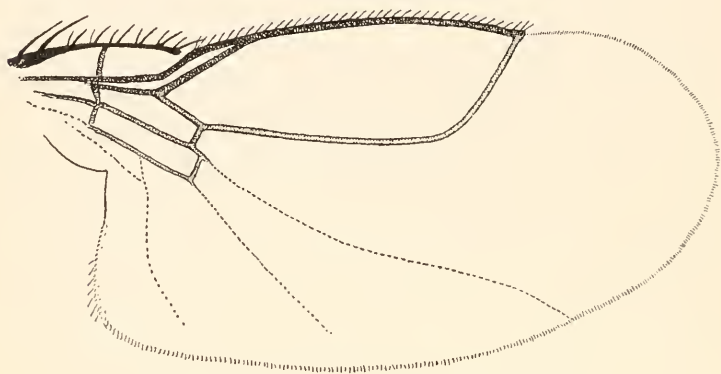
## A Borborid from an Epiphytic Bromeliad (Diptera ; fam. Borboridae).

By FREDERICK KNAB and J. R. MALLOCH,  
Bureau of Entomology, Washington, D. C.

For some time it has been known that certain Bromeliaceae, growing upon the branches of forest trees in tropical America, hold water at the bases of their leaves and that this water forms the habitat of a considerable number of insects, mostly in the larval stage. During his investigations of mosquitoes in tropical America the senior author naturally gave all possible attention to these plants, for they harbor the larvae of a considerable number of species of Culicidae which are restricted to this habitat. It was soon found that, besides the culicid larvae, larvae of a number of other families of Diptera were present, as well as the aquatic larvae of certain Coleoptera and the larvae of a species of Odonata. All these are confined to this habitat. Aside from these many other arthropods, including Myriapoda and many Arachnida, were found to frequent these epiphytic bromeliads, some of them feeding upon the tissues of the plant itself, others upon the vegetable and other debris which collects among the leaves of the bromeliad, and still others in a predaceous capacity or merely to obtain shelter.

On his last visit to Córdoba, Mexico, 1907-1908, the senior author found a group of bromeliads growing well up on a mango tree, perhaps fifty feet from the ground. These were removed and carefully lowered (no small task, on account of the uncertain footing, the weight of the plants and their spiny leaves) and afterwards examined for animals, of which a great variety were obtained. Among other insects breeding in the vegetable debris (kept moist by the water at the bases of the leaves) was the species of *Limosina* here described. While many of the Borboridae are scavengers, and therefore likely to turn up under a variety of circumstances, others have specialized habits. We believe that the present species will prove to be peculiar to the habitat from which it was obtained. As compared with the ordinary scavenger forms

it shows much specialization structurally, particularly in the wing venation with its short costa and the concentration of the veins towards the base of the wing. In this respect it even exceeds *Limosina perparva*, described by Williston from the island of St. Vincent, and which may prove to have similar habits.



Wing of *Limosina bromeliarum* K. and M., n. sp.

***Limosina bromeliarum* n. sp.**

Male and female: Black, subshining; frons opaque except on stripes on which frontal bristles are situated, the central rows nearly parallel and not strongly incurved; face very distinctly produced, shining, concave in centre, one large and 3-4 smaller bristles on cheeks close to mouth edge, jowls bare; second antennal joint with numerous bristles and nearly as long as the somewhat triangular third joint, arista twice as long as breadth of frons, very thin, with long pubescence; dorsum of thorax with regular rows (10) of short bristles, one pair of prescutellar dorsal and one much weaker and widely separated pair of dorso-central bristles; scutellum with four marginal bristles; abdomen short and broad, especially in ♂, the second segment elongated in both sexes, numerous strong lateral hairs in both sexes, ♂ hypopygium large, slightly asymmetrical, with a large central depression and numerous short hairs; legs piceous, fore femora with a series of bristles on ventral surface, the apical three of which are strongest, fore tibiae slightly dilated towards apex covered with short hairs, basal joint of fore tarsi nearly as long as next three, mid tibiae with a regular series of three bristles nearly on the dorsal surface and one on postero-dorsal surface at same length from apex as lowest of the other three, hind femora with two

preapical ventral bristles, hind tibiæ dilated towards apices, with numerous short hairs but no distinct bristles, basal joint of hind tarsus distinctly thicker and shorter than second joint; wings yellowish, costa very much short of apex of wing, first section longer than second, second nearly twice as long as sections 1 to 3, third longitudinal vein very obtusely bent at turn and joining costa at nearly a right angle, costa not extending beyond end of third vein, both cross veins very close together, fourth vein obsolete beyond cross vein, fifth barely traceable; halteres brown. Length  $\frac{1}{2}$ - $\frac{3}{4}$  mm.

Resembles in some particulars *perparva* Will., but very different in venation of wings. Seven specimens, males and females, reared from arboreal bromeliads, March 17-21, 1908.

Córdoba, Mexico. (F. Knab).

Type.—Cat. No. 14,913, U. S. Nat. Mus.

## A Bromeliad-Inhabiting Crane-fly (Tipulidae, Dipt.)

By CHAS. P. ALEXANDER, Ithaca, N. Y.\*

To the rather long list of inhabitants of the Neotropical epiphytic, water-bearing Bromeliaceous plants, (as given by Dr. Calvert in ENTOMOLOGICAL NEWS, Nov., 1911, pp. 402-411), there should be added the family *Tipulidae*. I have recently received specimens of a Costa Rican *Mongoma* that were bred from Bromeliads by Sr. C. Picado. I am indebted to Mr. Frederick Knab, of the U. S. National Museum, for the privilege of examining these specimens.

### *Mongoma bromeliadicola* sp. n.

Brown; thorax indistinctly striped; femora with a subapical black ring; apices of femora and tibiæ and bases of the tibiæ, white.

Length, ♂, 7.4 mm.; ♀, 8.4-9.2 mm.

Wing, ♂, 7.6 mm.; ♀, 8.5-9.2 mm.

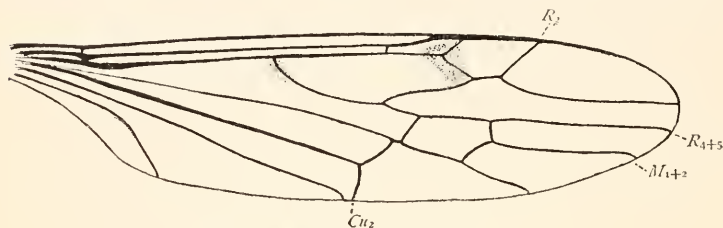
Legs all detached and almost impossible to separate; femora, 8.4-9.8 mm.; tibia, 7.6-10.1 mm.; tarsus, 7.2-8.9 mm. What is probably the fore-leg measures, femora, 8.4 mm.; tibia, 10.1 mm.; tarsus, 8.9 mm. Middle leg: supp. 9-9 mm., tibia 7.6-8.1 mm., tarsus 7.2-7.3 mm. Hind leg, supp., femora 9.6-9.8 mm., tibia 9.8-9.4 mm.

Head: rostrum and palpi yellowish-brown; antennæ dark brown the basal segments rather paler; front vertex and occiput light brown-

\*Contribution from the Entomological Laboratory of Cornell University.

ish yellow; a brown stripe along the inner margin of the eye, running from the narrowest portion of the front back to the genæ.

Thorax: mesothoracic præscutum light yellowish-brown with brown longitudinal stripes on either side of the narrow middle line; these stripes begin as two dark dots at a considerable distance caudad of the anterior margin of the sclerite, running backward to the suture and becoming more distinct behind; outer caudal margins of the sclerite rather dark brown, which color is continued backward onto



Wing of *Mongoma bromeliadicola* n. sp.

the sides of the scutum; middle line of the scutum yellowish-white; scutellum purplish-brown with a broad pallid caudal edge; post-notum deep purplish-brown; pleuræ dull pale whitish-brown; sclerite just anterior to the wing-basis darker, brownish. Halteres pale, whitish, throughout. Legs: coxæ and trochanters light brown; femora light yellowish-brown, darkening abruptly to form a sub-apical blackish ring; extreme tip abruptly cream-white in color; tibia: extreme base and tips, whitish, the tip being the broader; remainder of the tibiæ and the tarsi, dark brown. Wings faintly tinged with yellow; veins C, Sc and R brownish-yellow; remaining veins, brown; stigma somewhat triangular, dark brown; a distinct brown cloud at the origin of Rs; tip of wing indistinctly darker. Venation (See Figure).  $R^2$  longer than that portion of  $R^{2+3}$  between cross-vein  $r$  and the fork of  $R^{2+3}$ ; cross-vein  $r$  longer than that portion of  $R^{2+3}$  beyond it; basal deflection of  $Cu^1$  before the fork of M;  $Cu^2$  close to 1st A at their tips, the distance separating the two veins at the wing margin being only about as great as  $Sc^2$ .

Abdomen: tergum brown, the lateral and caudal margins of the two basal and the apical segments paler, yellow; in the  $\delta$ , the 8th and 9th segments are darker, blackish; the hypopygium brown. In the  $\varphi$ , the last two segments of the abdomen are narrow, tubular with the valves of the ovipositor very long, slender, acicular. Sternum brown; the margins of the sclerites light colored.

The data for the specimens is a trifle confusing; the following localities were given by Sr. Picado:

Cartago, Costa Rica—1500 meters—Nov.-Feb.; Estrella,

Costa Rica—2000 meters—Sept. ; Orosi, Costa Rica—1200 meters—Nov.-Feb.

It is difficult to say just where the specimens were taken. Holotype, ♂ — Costa Rica (Sr. Picado, coll.) Allotype, ♀ — with the type. Paratypes, 4 ♀'s—with the type.

All of the types in U. S. Nat. Mus. Coll. (Type No. 14,957). The species is conspicuously different from the six Neotropical species of *Mongoma* that are known to me in its striking leg-pattern. Whether or not the long ovipositor has a significance in the manner of egg-deposition is a question for the collector to verify; a similar condition exists in the females of other species and it is possible that these may, likewise, have this peculiar larval habitat. But one *Mongoma* has ever been reared hitherto. De Meijere has recently<sup>1</sup> described the larva and pupa of the East Indian *M. pennipes* O. S. (l.c.; p. 50, 51; fig. 41, pupa). He states that Mr. Jacobson found the larvæ at Semarang (Java), Jan., 1906, in decaying plant-stems.

In conclusion, I would mention the rearing from *Bromeliads* of one of the "false crane-flies" by Sr. Picado, and its recent characterization as *Anisopus picturatus*<sup>2</sup> by Mr. Knab.

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#### A School of Entomology in New York City.

PARK COMMISSIONER STOVER, of New York City, has decided to establish a school of entomology in Central Park, so that old and young nature lovers may take a practical course in the study of butterflies, bumble bees, dragon flies, beetles and other insects.

The place of study is to be in the Swedish schoolhouse. This building was prepared in Sweden for the Centennial Exhibition at Philadelphia in 1876, as a model of the national schools of that country. After the exhibition the park board bought this building and transferred it to Central Park.

The building will immediately be fitted up. Dr. Edmund B. Southwick, the entomologist of the park department, will be in charge.—*The North American*.

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<sup>1</sup> Studien über sudostasiatische Dipteren. Pt. 5. Ostindische Tipulidæ, von Dr. J. C. H. De Meijere. Tijd. von Ent. Apr., 1911; p. 21-79; pl. 4; f. 1-49.

<sup>2</sup> New Species of Anisopidæ (Rhyphidæ) from Tropical America (Diptera; Nemocera), by Frederick Knab. Proc. Biol. Soc. Wash.; Vol. 25, p. 111-114; reprint dated June 29, 1912.

## A new Tropical *Gonomyia* (Tipulidae, Dipt.).

By CHARLES P. ALEXANDER, Ithaca, N. Y.\*

The species described herein is referable to the *manca* group of *Gonomyia* Meigen, which, in a more extensive discussion of the genus published elsewhere, I have recognized as belonging to the subgenus *Leiponeura* Skuse. This subgenus is represented in America by the following species: *manca* O. S.; *pleuralis* Will. (*Atarba*); *puella* Will. (*Atarba*); *alexanderi* Johns. (*Elliptera*), and the present species.

This form is closest to *pleuralis*,† from which it differs in coloration and, fundamentally, in hypopygial characters.

### *Gonomyia* (*Leiponeura*) *amazona* sp. n.

Wings with cord margined with brown; legs black.

♀—Length, 5.4-5.5 mm.; wing, 3.8-3.9 mm. Fore leg, femur, 2.4-2.65 mm.; tibia, 4.2 mm. Hind leg, femur, 3-3.2 mm.; tibia, 4-4.05 mm.

♂ ♀—*Head*.—Rostrum and palpi dark brownish-black; antennæ, basal segments greatly swollen, orange; flagellum with the three or four basal segments almost white, apical flagellar segments dark brownish-black. Front, vertex and occiput, pale yellowish white.

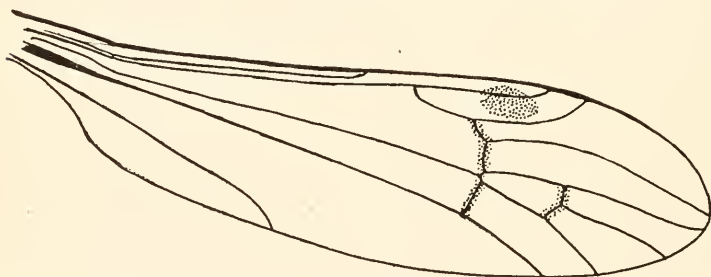


Fig. 1

Wing of *Gonomyia* (*Leiponeura*) *amazona*, n. sp.

*Thorax*.—Mesonotum, præscutum very light yellowish orange; the lateral margins of the sclerite broadly whitish, separated from the bright color of the dorsum by an indistinct brownish line; scutum brownish-orange, almost concolorous with the præscutum, scutellum and postnotum very pale, almost white. Pleuræ almost white; a broad band extending across the pleural sclerites, beginning on the genæ of the head, continuing back to the abdomen; the dorsal and ventral margins of this band are darker, deep brown; the ventral mark runs through the halteres, the rest of the band suffusing the mesonotal præscutum with light brown; a narrow, more or less dark colored,

\* Entomological Laboratory, Cornell University.

† Williston, Trans. Ent. Soc., Lond. (1896); p. 289; pl. 10; fig. 61.

brown band running across the pleuræ just over the bases of the coxæ; it is only about one-third as wide as the broad pale band separating the two dark pleural stripes. Halteres, basal half of the stem brown; remainder, including the knob, light yellow. Legs: coxæ white; trochanters and femora dark brownish-black, the extreme apices of the latter white; tibiae and tarsi dark brownish-black; the tarsi rather lighter.

Wings clear bluish-hyaline; veins light brown, C. and Sc. more yellowish; stigma large, rounded oval, dark brown; components of the cord and the outer end of cell 1st M<sup>2</sup> black, the membrane adjoining suffused with darker. All of the longitudinal veins are faintly margined with very pale brown. Venation as in *pleuralis*. (See fig. 1.)

*Abdomen*.—Tergum, light yellowish, especially bright on the lateral margins of the sclerites; apices of the sclerites dark brownish-black; sternum dull yellow, apices and lateral margins of the sclerites brown Hypopygium (see fig. 2), described below, in key.

*Holotype*, male, Igarape-assu, Para, Brazil; February 1, 1912 (H. S. Parish).

*Allotype*, female, Igarape-assu, Para, Brazil; February 7, 1912 (H. S. Parish).

*Paratype*, 18 females, 2 males, Igarape-assu, Para, Brazil; January 25 to February 7, 1912 (H. S. Parish).

Types in Cornell University, except 5 female paratypes in author's collection and two in Coll. U. S. National Museum. Two females, in poor condition, are referred to this new species. They are from Paramaribo, Dutch Guiana (H. Polah, Coll.), and are in the U. S. Nat. Museum.

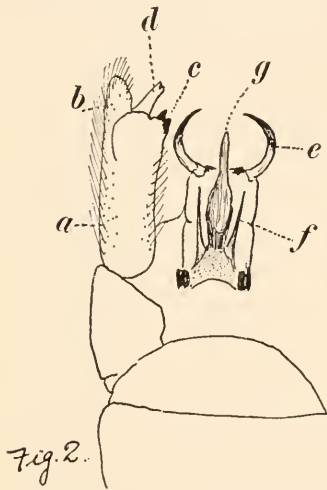


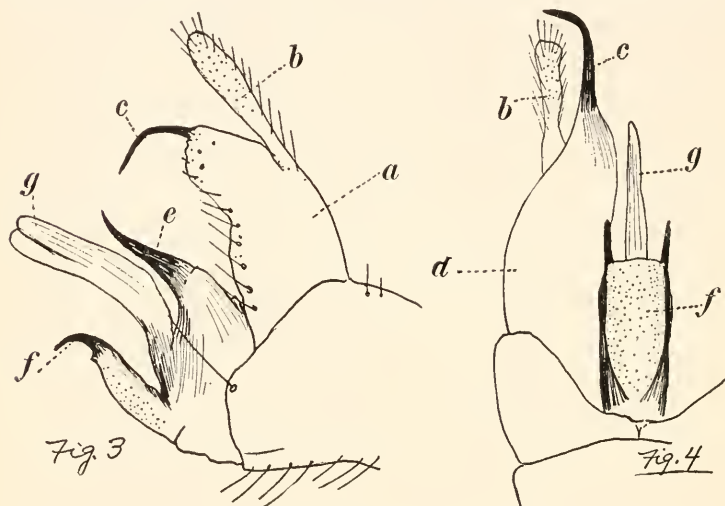
Fig. 2.  
Hypopygium of *Gonomyia (Leiponeura) amazona* n. sp. Ventral aspect. a, pleural pieces; b, dorsal apical appendage; c, ventral apical appendage; d, intermediate apical appendage; e, dorsal gonapophyse; f, ventral gonapophyse; g, guard of the penis.

The following comparison will point out the differences between the species:

***pleuralis* Will. (Antilles).**

Trochanter and femur light yellow, femur light yellowish, subapically brown, tip light yellow. Lower pleural stripe broad, more than one-half as wide as the pale one above it. Pleural stripe very dark brown, clear cut. Wings with uniform veins; cord not seamed with darker. Base of flagellum dark. Hypopygium: (See figs. 3, 4.) the eighth sternite convex; ninth sternite with each of the lateral

pieces triangular, almost or entirely united on the ventral aspect; pleural pieces elongate-cylindrical, bearing two appendages, the lower one (c), a long, chitinized hook bent strongly ventrad near its middle; the dorsal appendage (b), long, slender, fleshy, projecting caudad. Viewed from beneath, a short rectangular organ (f), ending in two short sharp-pointed, chitinized teeth which are curved ventrad; the organ rather chitinized basally and on the sides; behind the above described apophyse, an elongate subchitinized organ (g), undoubtedly the penis guard; it is elongate-cylindrical and directed caudad; above this, a pair of sharp pointed chitinized teeth (e), directed caudad and slightly upward, their base thickened and with a dorsal notch. ♂, Baracoa, Cuba; Sept., 1901; Aug. Busch. (In Coll. U. S. Nat. Mus.)



Hypopygium of *Gonomyia (Leiponeura) pleuralis* Will. Fig. 3. Lateral aspect; Fig. 4. Ventral aspect. Lettering as in Fig. 2.

*amazona* sp. n. (Surinam, E. Brazil).

Trochanter and femur dark brownish-black, extreme tip of latter white. Lower pleural stripe narrow, only about one-third as wide as the pale one above it. Pleural stripes usually light brown, not clear cut. Wings clothed with cord and outer end of cell 1st  $M^2$  dark brown, narrowly seamed with darker. Base of flagellum pale. Hypopygium (see fig. 2): the eighth sternite convex, basal piece of ninth sternite triangular; pleural pieces (a), cylindrical, with a short, fleshy dorsal lobe (b), clothed with long hairs at the tip; ventral lobe reduced to two blunt chitinized teeth (c); behind this a broad, less chitinized organ (d). Viewed from beneath, a short, broad, rectangular organ bearing at its apex at either angle, long curved horns (e), shaped like steer's horns, chitinized at the tip; ventrad of this organ, close to its lower face, two sharp needle-like appendages (f), and a sharp-pointed median organ which is presumably the guard of the penis (g). ♂, Igarape-assu, Brazil, Jan. 26, 1912; H. S. Parish. (In Cornell University.)

# ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

TO CONTRIBUTORS.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, four weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form and without covers, will be given free, when they are wanted; if more than twenty-five copies are desired, this should be stated on the MS. The receipt of all papers will be acknowledged. Proof will be sent to authors for correction only when specially requested.—Ed.

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PHILADELPHIA, PA., NOVEMBER, 1912.

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At this season of the year when the collections of the past summer are being labeled, when material is being received from and sent to others, when papers based in part or in whole on insects gathered not by the author are being prepared, forget not the collector or the credit due him or her! See that his or her name appears on the pin-label and in the "copy" for the printer. As a well-known entomologist writes: "This is not wholly a matter of personal credit or sentiment. A specimen is worth more for scientific purposes if we know who obtained it and can raise questions concerning it in the right quarter when necessary. I am always indignant when I see a man cite new material and give no credit to the collector; but collectors are largely to blame if they do not put their names on the labels."

An interesting illustration of the value of citing the collector's name is afforded by Dr. Skinner's article on the rediscovery of the longtime rare beetle, *Plusiotis woodii* Horn, in the NEWS for October, 1911, page 356. Horn's citation of Dr. H. C. Wood as collector enabled Dr. Skinner to write to that veteran and ascertain the probable localities at which the types of the species had been taken.

## Notes and News.

### ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

#### Note on *Anatis 15-punctata* and *A. caseyi* n. sp. (Coleop.).

The varied marking of *A. 15-punctata* is no new thing. Say's *mali* with ocellated spots is as frequent in this vicinity as the typical form. All shades of red and yellow are found and many which are so dark that the spots are, as commonly stated, very "indistinct." However, I have recently taken one which is entirely outside of any description I remember to have seen. It is jet black, with absolutely no discernible spots, indistinct or otherwise. The thoracic markings are pure white, while on all my other varieties the thoracic markings are invariably some shade of yellow. To speak of this insect as *15-punctata* is so flagrant a misnomer that I venture to suggest that this variety be called *Anatis caseyi*, in memory of the fact that at least one coccinellid appears to have succeeded in escaping the notice of so indefatigable an investigator.—O. S. WESTCOTT, Oak Park, Ill., June 29, 1912.

#### The Splitting of Insect Tracheae.

In studying the tracheae of mosquito larvae, I found the following method to be very useful. This method consists in flattening the tracheal tubes between a glass slide and a cover glass and then splitting the tubes in half longitudinally.

The technic is carried out as follows: First, the tracheal tubes are dissected from the insect and are then transferred to a clean glass slide. The tracheae should remain free from any torn tissue and if possible a small quantity of blood should remain on the tracheae. If there is not sufficient blood, a drop of water will answer fairly well. A clean cover glass should then be put on, pressed down lightly, and the excess of water wiped off to allow the cover glass to fit closely. In working with very small tubes, the success of the operation depends upon the care exercised in causing as close a contact as possible between the cover glass and the glass slide.

After thorough drying, which usually takes a day, the cover glass can either be lifted off or shifted a little to the side so as to uncover the lower half of the tube. If the cover glass is not removed, it should be securely attached to the glass slide in order to prevent further shifting, which may injure the specimen. Prepared in this way the tracheae are ready for microscopic examination.

The advantages of this technic are: First, the whole field can be brought into focus at the same time avoiding the rounding along the edges which is so noticeable in the examination of a whole tube; second, the shape and size of the taenidis, their method of branching, and other minute details can be made out very distinctly, particularly the complicated structures at the juncture of one tube with another; third, all the optical effects due to superimposed striations are wholly avoided. The optical effects just referred to result in the production of a remarkably complicated pattern in the large longitudinal tracheae of mosquito larvae and which has not been noticed in the tracheae of other insects.

By this technic tubes of nearly any diameter from about twenty micromillimeters and upwards can be split in half.—W. W. THOMAS, University of California, Berkeley, Calif.

#### **Additional Votes on Priority in Nomenclature.**

The following additional votes have been received (see the NEWS for July, 1912, pages 300-304):

Messrs. E. A. Back, R. A. Vickery and C. H. T. Townsend vote (A) that the law of priority should be strictly applied in all cases.

Messrs. H. A. Ballou, H. M. Bower, C. B. Davenport, A. G. Ruggles, H. H. Severin and J. F. Tristán vote (B) against the strict application of the law of priority in all cases and express the desire that the most important and generally used names should be protected against any change on nomenclatural grounds.

The vote taken by the News now stands 98 for A and 197 for B.

#### **Strict Priority Throughout Taxonomic Nomenclature.**

I wish to record my vote for strict priority in taxonomic nomenclature, and this includes not only specific names, but generic, tribal, subfamily, family, superfamily and all other group names used in taxonomy, with the self-evident and obligatory qualification that the synonymy of those names above generic up to superfamily shall follow the synonymy of the generic names from which they are formed. I vote thus because I am fully convinced that no other course can secure as great a degree of final nomenclatural fixity. Fixity in this matter here and hereafter is what we all desire. The question is how to secure it now in the highest degree. Fixity depends upon absolute and undivided co-operation, else it is only comparative. In order to secure it now as well as ultimately we must not only have fixed rules for our guidance, which will be generally accepted and acted upon

both now and in the future, but we must all adhere strictly to these fixed rules. If exceptions are admitted today by a majority vote, they establish a precedent. Who can foretell the end of the influence of such a precedent? Where will the line be drawn? Future generations of biologists still unborn have no present voice in this matter, but their voice will be heard in time. Can we speak for them now and say that these exceptions will appeal to the majority of them? They may easily create a commission in the future to overthrow our entire system of nomenclature if we ever begin making exceptions, for exceptions have no end and will undermine any system ever created.

It is evident that the salvation of nomenclatural fixity is the pursuance of a course which will by its very simplicity appeal to human nature at once and forever. The fewer the exceptions the stronger the rule is always true. The stronger the rule the more surely will it stand the test of time is equally true. If the highest possible degree of fixity for the present which will last into the future is what we want, it seems clear how to get it. If strict priority will not get it, nothing will. If we grant exceptions we are weakening the foundation upon which we stand. The International Zoological Congress most wisely framed its rules so as to make the granting of exceptions next to impossible, and I trust that not one exception will ever be granted by it.

As to Meigen's 1800 generic names and all others of like nature, I agree with Hendel, Bezzi and Coquillett that they are valid. The test of a generic name is our ability to place the type species whence it originated. This is the sense of the International Code. According to this, those of Meigen's 1800 genera of which we know the type species must be accepted. His later genera with the same types are certainly synonyms of the earlier ones. The hardship in accepting such changes falls more heavily on the systematist than on any other person. Meigen's 1800 names were highly distasteful to me personally in the beginning and I doubt if I shall ever be able to accept them with complete satisfaction, but their acceptance means to me simply a step in securing final nomenclatural fixity. If they are not generally accepted now, they will be so at some future time. If changes of this nature are inevitable, the sooner they are effected the better it will be for all concerned. Postponement is the enemy of progress.

The large majority votes against strict priority, among zoologists in both Europe and North America, seem to me an exhibition of a desire for past and present fixity at the sacrifice of future and final fixity. Such postponement of change can not result in good.—CHARLES H. T. TOWNSEND, Lima, Peru, July 11, 1912.

### A Senator on Medical Entomology.

THE Hon. John D. Works uses 78 pages of fine print to try to convince the people of the United States that the bill to establish an independent Health Service would be a pernicious thing. He is the spokesman for all kinds of practitioners of medicine who fear the nation may become too healthy, if the bill becomes a law. He says, "it is claimed to have been discovered that the sting of the mosquito causes yellow fever, the bite of the fly typhoid fever, and that the ground squirrel is the carrier of bubonic plague." We are not aware of the fact that mosquitoes sting, being under the impression from actual experience that they bite. We did not know that the bite of the mosquito is the cause of yellow fever, being under the impression that the cause of yellow fever is unknown. Some flies bite, but we suppose he refers to *Musca domestica* which only tickles. We were ignorant of the fact that the bite of any fly causes typhoid fever as we were taught that the cause of the diseases is the *Bacillus typhosus*. His argument is based on the supposition that such a department would control "methods of healing" or therapeutics, whereas it would have nothing to do with the practice of medicine and should not.

(Speech of the Hon. John D. Works, of California, in the Senate of the United States, April 29th & 30th, 1912).—HENRY SKINNER.

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## Entomological Literature.

COMPILED BY E. T. CRESSON, JR., AND J. A. G. REHN.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), excluding Arachnida and Myriapoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species, will be recorded. The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published, and are all dated the current year unless otherwise noted. This (\*) following a record, denotes that the paper in question contains description of a new North American form.

For record of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington.

4—The Canadian Entomologist. 5—Psyche, Cambridge, Mass. 6—Journal, New York Entomological Society. 7—U. S. Department of Agriculture, Bureau of Entomology. 8—The Entomologist's Monthly Magazine, London. 9—The Entomologist, London.

10—Nature, London. 11—Annals and Magazine of Natural History, London. 14—Proceedings, Zoological Society of London. 21—The Entomologist's Record, London. 22—Zoologischer Anzeiger, Leipzig. 35—Annales, Societe Entomologique de Belgique. 38—Wiener Entomologische Zeitung. 40—Societas Entomologica, Zurich. 43—La Cellule. 44—Verhandlungen, k. k. zoologisch-botanischen Gesellschaft in Wien. 46—Tijdschrift voor Entomologie. 50—Proceedings, U. S. National Museum. 77—The National Geographical Magazine, Washington, D. C. 84—Entomologische Rundschau. 85—Bulletin, Societe des Sciences Naturelles de l'Ouest de la France, Nantes. 119—Archiv für Naturgeschichte, Berlin. 123—Bulletin, Wisconsin Natural History Society, Milwaukee. 153—Bulletin, American Museum of Natural History, New York. 155—Nova Acta Academiae Caesareae Leopoldinae Carolinae Germanicae Naturae Curiosorum, Halle. 161—Proceedings, Biological Society of Washington. 166—Internationale Entomologische Zeitschrift, Guben. 169—"Redia," R. Stazione di entomologia Agraria Firenze. 179—Journal of Economic Entomology. 182—Revue Russe d'Entomologie, St. Petersburg. 190—Deutsche Entomologische Zeitschrift "Iris," Dresden. 193—Entomologische Blätter, Cassel. 194—Genera Insectorum, Diriges par P. Wytzman, Bruxelles. 198—Biological Bulletin, Marine Biological Laboratory, Woods Hole, Mass. 199—Bulletin, Societe Scientifique et Medicale de l'Ouest, Rennes. 201—Memoires, Societe Entomologique de Belgique. 204—New York State Museum Bulletin. 209—Transactions, Zoological Society of London. 239—Annales, Biologie Lacustre, Brussels. 240—Maine Agricultural Experiment Station, Orono. 277—Victorian Naturalist, Melbourne. 284—Bulletin, Museum National d'Histoire Naturelle, Reunion Mensuelle des Naturalistes du Museum, Paris. 285—Nature-Study Review, Urbana, Illinois. 320—Der Tropenpflanzer, Berlin. 324—Journal of Animal Behavior, Cambridge, Mass. 335—Smithsonian Miscellaneous Collections. 359—Connecticut Agricultural Experiment Station, New Haven. 365—Collections Zoologiques du Baron Edm. de Selys Longchamps, Bruxelles. 367—International Entomological Congress. 368—The Monthly Bulletin of the State Commission of Horticulture, Sacramento, Cal. 369—Entomologische Mitteilungen, Berlin-Dahlen. 392—The Irish Naturalist, Dublin. 393—"Scientia," Bologna. 394—"Timehri," The Journal of the Royal Agricultural and Commercial Society of British Guiana, Demarara. 395—Revue Mensuelle de la Societe Entomologique Namuroise, Namur.

**GENERAL SUBJECT.** Anon.—The second international congress of entomology, 8, 1912, 204-207. Anon.—Der II. internatio-

nale Entomologenkongress zu Oxford, **84**, xxix, 113-114 (cont.). **Ballou, H. A.**—Insect pests of the Lesser Antilles. Issued by the Commissioner of Agriculture of the West Indies, Pamphlet Series No. 71, 210 pp. **Brues & Sheppard.**—The possible etiological relation of certain biting insects to the spread of infantile paralysis, **179**, vi, 305-324. **Chapman, F.**—What are type specimens? How should they be named? **277**, xxix, 59-64. **Criddle, N.**—Injurious insects of 1911 at Treesbank, Manitoba, **179**, v, 248-252. **Davis and Leng.**—Insects on a recently felled tree, **6**, xx, 119-121. **Doane, R. W.**—An annotated list of the literature on insects and disease for the year 1911, **179**, v, 268-285. Some insect pests of the California live oaks, **179**, vi, 346-348. **Fernald, H. T.**—Insects of the year 1911 in Massachusetts, **179**, v, 245-248. **Grossbeck, J. A.**—List of insects collected in Lower California by the "Albatross" expedition in 1911, **153**, xxxi, 323-326 (\*). **Hendel, F.**—Ein wort ueber die antrage der Deutschen Zoologischen Gesellschaft, die das Prioritatsgesetz einschränken sollen, **369**, i, 225-226. **Herms, W. B.**—Economic entomology from the viewpoint of the sanitarian, **179**, vi, 355-357. **Netolitzky, F.**—Ueber fundortsangeben, **369**, i, 273-275. **Pentland, G. H.**—Note on the increase and decrease of some . . . insects in the County of Louth during the last 50 years (Sirex and Rhyssa), **392**, 1912, 147-148. **Rosenfeld, A. H.**—Insects and spiders in Spanish moss (some additional data), **179**, vi, 338-339. **Rowland-Brown, H.**—The second international congress of entomology, Oxford, August, 1912, **9**, 1912, 268-275. **Sanderson & Jackson.**—Elementary entomology, Ginn & Co., 1912, 372 pp. **Severin, G. (et al.).**—Historique et proces-verbaux, **367**, Vol. I, 276 pp. **Snellen, P. C. T.**—In memoriam . . . door M. C. Piepers, **46**, lv, 1-8. **Turner, H. J.**—Nomenclature, **21**, 1912, 178-181. **Welch, P. S.**—The insect life of pond and stream, Part III, **285**, viii, 221-225. **Zacher, F.**—Notizen ueber schadlinge tropischer kulturen, **320**, xvi, 484-493.

**APTERA AND NEUROPTERA.** **Bagnall, R. S.**—Some considerations in regard to the classification of the order Thysanoptera, **11**, x, 220-222. **Cholodkovsky, N. A.**—Contribution a l'anatomie du testicule ches des Trichopteres (Russian), **182**, xi, 422-424. **Emerton, J. H.**—Note on "Myrmeleon immaculatus," **5**, xix, 134. **Hewitt, C. G.**—Walker's "North American dragon flies of the genus Aeshna," **4**, 1912, 242-244. **Hood, J. D.**—A n. gen. and 3 n. sp. of No. American Thysanoptera, **5**, xix, 113-118 (\*). **Jacobson, E.**—Biological notes on some Planipennia from Java, **46**, lv, 97-193. **Klapalek, F.**—Perlodidae, Monographische revision, **365**, Fasc. IV, No. 71, 66 pp. **Korsakow, R.**—Zur geographischen verbreitung und biologie der "Proturen." **182**, xi, 411-418. **Petersen, E.**—A few new Neuroptera Planipennia, **369**, i, 267-273.

**Ris, F.**—Ueber einige Gomphinen von Sudbrasilien und Argentina, **201**, xix, 101-120. **Root, F. M.**—Dragonflies collected at Point Pelee and Pelee Island, Ontario, in the summer of 1910-11, **4**, xlv, 208-209. **Wilson, C. B.**—Dragonflies of the Cumberland Valley in Kentucky and Tennessee, **50**, xliii, 189-200.

**ORTHOPTERA.** **Burr, M.**—Dermaptera, **194**, fasc. 122, 112 pp. **Davis, W. T.**—Three n. sp. of *Belocephalus* from Florida, **6**, xx, 122-125 (\*). **Meissner, O.**—Ueber allmahliche farbungsonderung bei "Dixippus morosus" (Stabheuschrecke), **40**, xxvii, 79-80. Die Zucht der nordamerikanischen stabheuschrecke (*Diapheromera femoratus*), **166**, vi, 154-155. **Shelford, R.**—Mimicry amongst the Blattidae; with a revision of the genus "Prosoplecta," and the description of a n. gen., **14**, 1912, 358-376. On a collection of Blattidae made in Central Peru...., **182**, xii, 27-34.

**HEMIPTERA.** **Barber, H. G.**—Distribution of (some) Hemiptera, **6**, xx, 134-135. **Cockerell, T. D. A.**—"Eriococcus borealis" in Colorado, **179**, v, 295. **Ewing & Webster.**—Mites associated with the oyster shell scale (*Lepidosaphes ulmi*), **5**, xix, 121-134. **Matausch, I.**—Observations on some N. Am. Membracidae in their last nymphal stages, **153**, xxxi, 331-336. **Peneau, J.**—Le genre "Eurygaster." Etude monographique, **85**, i, 157-194. **Samsonoff, C.**—The activity of "Prospaltella berlesei" against "Diaspis pentagona" in Italy (translated by L. O. Howard), **179**, vi, 325-328. **Spooner, C. S.**—Some n. sp. of Delphacidae, **4**, 1912, 233-242 (\*). **Teodoro, G.**—Le glandule laccipare o ceripare del "Lecanium oleae," **169**, viii, 312-320. **de la Tarre Bueno, J. R.**—Three days in the pines of Yaphank. Records of captures of Hemiptera Heteroptera, **4**, xlv, 209-213. **Townsend, C. H. T.**—The work in Peru against the white scale of cotton, **179**, v, 256-263. **Wilson, H. F.**—Notes on the aphid genus "Eriosoma," **4**, xlv, 219-220.

**LEPIDOPTERA.** **Barnes & McDunnough.**—New Noctuid species, **4**, xlv, 216-216 (\*). **Britton, W. E.**—Spread of the leopard moth in Connecticut and its injury to shade trees, **179**, v, 241-243. **Bruhn, S.**—Farbenanderungen bei raupen infolge verschiedenfarbigen futters, **166**, vi, 98-99. **Byrd, H.**—Bats vs. mosquitoes, **4**, 1912, 231-232. **Le Cerf, F.**—Descriptions d'Aegeriidae nouvelles, **284**, 1911, 297-307. **Dognin, P.**—Heteroceres nouveaux de l'Amerique du Sud, **201**, xix, 121-178. **Ehrmann, G. A.**—A new *Papilio* from Central America, **4**, 1912, 224. **Fassl, A. H.**—"Anaea ludmilla" eine neue form aus der Panaristegruppe, **84**, xxix, 85-86. Neue papilioniden aus sudamerika, **84**, xxix, 103-104. **Felt, E. P.**—The white-marked tussock moth (*Hemerocampa leucostigma*), **204**, No. 156, 14-17. **Fleutiaux, E.**—Descriptions de Metasidae nouveaux, **35**, lvi, 296-304.

**Frohawk & Rothschild.**—Some notes on the life-history of "*Melanargia japygia* subsp. *survarovius*," 9, 1912, 238-241. On the egg-laying and early stages of "*Hesperia linea*," 9, 1912, 253-256 (cont.).  
**Fruhstorfer, H.**—Die grossschmetterlinge der erde. Fauna americana. Lief. 137-139. **Hammar, A. G.**—Life-history studies on the codling moth in Michigan, 7, Bul. No. 115, 1-86. **Lambillion, L. J. L.**—Quelques remarques biologiques sur la Sesie du groseillier (*Sesia tipuliformis*), 395, 1912, 62-63. **Lehr, W.**—Zur schmetterlingsfauna der pampas, 166, vi, 146-147. **v. Linstow, Prof.**—Duftorgane der schmetterlinge und ein neuer duftapparat bei einem mannlichen spanner, 166, vi, 139-141. **Manders, N.**—The value of protective resemblance in moths, 21, 1912, 174-176. **Maskew, F.**—A serious walnut pest (*Epehestia elutella*), 368, i, 366-371. **Meyrick, E.**—Family Gracilariadae, 194, fasc. 128, 36 pp. **Moore, H. W. B.**—Ways and habits of caterpillars, 394, ii, 197-206. **Moss, A.**—On the Sphingidae of Peru, with a preface by K. Jordan, 209, xx, 73-134. **Peairs, L. M.**—A third brood of codling moth in Kansas in 1911, 179, v, 243-245. **Petry, A.**—Zur biologie der "*Lita vicinella*" Frey, non Dougl, 190, xxvi, 115-118. **Poulton, E. B.**—Polymorphism in a group of mimetic butterflies of the Ethiopian nymphaline genus "*Pseudacraea*," 10, xc, 36. **Prout, L. B.**—Family Geometridae, subfam. Hemitheinae, 194, fasc. 129, 274 pp. **Ribbe, C.**—Anleitung zum sammeln von schmetterlingen in tropischen landern, 84, xxix, 107-108 (cont.). **Schrader, W.**—Inzuch bei "*Junonia coenia*" unter hoher temperatur durch zweiundzwanzig generationen in ununterbrochener folge, 84, xxix, 109-112. **Swett, L. W.**—Revision of the genus "*Hydriomena*," group with moderate palpi, 4, xlv, 225-231. **Vuillet, A.**—Les parasites de "*Liparis dispar*" et "*L. chrysorrhoea*" en Amerique, 199, xx, 226-227. **Webster, R. L.**—Some further notes on the wheat-head army-worm (*Meliana albilinea*), 179, vi, 335-336. **Winn, A. F.**—L. from Yukon territory, 4, xlv, 213-216. Notes on the life history of "*Estigmene prima*," 4, xlv, 221-223. **Zerny, H.**—Neue Heteroceren aus der sammlung des k. k. Naturhist. Hofmus. in Wien, 190, xxvi, 119-124.

**DIPTERA.** **Aldrich, J. M.**—The biology of some western species of the dipterous genus *Ephydra*. Two western species of *Ephydra*, 6, xx, 77-102 (\*). **Britton, W. E.**—The mosquito plague of the Connecticut coast region and how to control it, 359, Bul. No. 173, 14 pp. **Brues, C. T.**—Synonymical notes on Phoridae, 5, xix, 135-136. **Dexter, J. S.**—On coupling of certain sex-linked characters in *Drosophila*, 198, xxii, 183-194. **Edwards, F. W.**—"*Lygistorrhina urichi*," a new Mycetophilid from Trinidad, 11, x, 203-204. **Enderlein, G.**—*Rothschildella*, eine neue Aphanipterengattung vom

Aguti, 22, xl, 72-76. **Felt, E. P.**—New Itonididae, 6, xx, 102-107 (\*). Observations on the identity of the wheat midge, 179, v, 286-289 (\*). "Itonida inopis" O. S., 179, vi, 368-369. **Johannsen, O. A.**—The fungus gnats of N. A. Part IV (conclus.), Mycetophilinae, 240, Bul. No. 200, 57-146 (\*). **Knab, F.**—N. sp. of Anisopidae (Rhyphidae) from tropical America, 161, xxv, 111-114. **Malloch, J. R.**—New D. from Panama, 335, lix, No. 17, Pub. No. 2133, 8 pp. **Morgan & Lynch.**—The linkage of two factors in *Drosophila* that are not sex-linked, 198, xxii, 174-182. **Schmiedeknecht, O.**—Opuscula ichneumonologica, Fasc. xxxi, Tryphoninae (cont.), p. 2403-2482. **Schnabl & Dzedzicki.**—Die Anthomyiden, 155, xcv, 56-358. **Townsend, C. H. T.**—Foundation of some new genera and species of muscoid flies mainly on reproductive and early-stage characters, 6, xx, 107-119 (\*).

**COLEOPTERA.** **Benick, L.**—Zur biologie des "Necrophorus vestigator" nebst beschreibung der larve und nympe, 193, viii, 197-203. **Brocher, K.**—Observations biologiques sur quelques Curculionides aquatiques, 239, v, 180-186. **Chittenden, F. H.**—The broad-bean weevil (*Larix rufimana*), 7, Bul. No. 96, 59-82. **Dalla Torre, K. W.**—Family Cebrionidae, 194, fasc. 127, 17 pp. **Dupuis, P.**—Family Carabidae, subfam. Psydrinae, Opisthiinae, 194, fasc. 123, 2 pp., fasc. 126, 2 pp. **Felt, E. P.**—The elm leaf beetle (*Galerucella luteola*), 204, No. 156, 6-14. **Frost, C. A.**—New sp. of C. of the genus "Agrilus," 4, 1912, 245-252 (\*). **Gee, W. P.**—Notes on "Saperda calcarata" in So. Carolina, 179, vi, 336-337. **Gillette, C. P.**—"Diabrotica virgifera" as a corn root-worm. "Cleonus canescens" as a fruit tree pest, 179, vi, 364-367. **Heikertinger, F.**—Zur praxis des kaeferfanges mit dem kaetscher. III. Die standpflanze, 38, xxxi, 195-223. **Hunter & Pierce.**—Mexican cotton-boll weevil, 7, Bul. No. 114, 188 pp. **Kleine, R.**—Die geographische verbreitung der Ipiden, 193, viii, 160-163. **Kuntzen, H.**—Einige bemerkungen im anschluss an den Lampyriden-teil des Junk-Schenklingschen Coleopterorum catalogus, 84, xix, 86-87. **Lameere, A.**—Revision des Prionides. Prionines VII. Gen. Prionus, 35, lvi, 195-260. **Lewis, G.**—On n. sps. of Histeridae and notices of others, 11, x, 250-260. **Mann, W. M.**—List of Histeridae and Buprestidae collected by the Stanford expedition to Brazil, 1911, 5, xix, 11-121. **Marshall, G. A. K.**—Three n. sp. of neotropical Coccinellidae, 11, x, 320-322. **Mast, S. O.**—Behavior of fire-flies (*Photinus pyralis*) ? with special reference to the problem of orientation, 324, ii, 256-272. **d'Orchymont, A.**—Contribution a l'etude des genres "Sternolophus." "Hydrophilus," "Hydrous" (Fam. Hydrophilidae), 201, xix, 53-72. **Pic, M.**—Trois nouveaux "Discodon" de l'Amerique Meridionale, 35, lvi,

305-306. **Prell, H.**—Beitrage zur kenntnis der Dynastinen. Neue formen aus Amerika. . . ., **193**, viii, 179-187. **Quaintance & Jenne.**—The plum curculio (*Conotrachelus nenuphar*), **7**, Bul. No. 103, 250 pp. **Sampson, W.**—Some n. sp. of Ipidae and Platypodidae in the Br. Museum, **11**, x, 245-250. **Sharp, D.**—The larva of "Cardiophorus asellus," **9**, 1912, 189-191. **Strohmeyer, H.**—Coleopterorum catalogus, Pars 44: Platypodidae, 26 pp. **Townsend, C. H. T.**—The cotton square-weevil of Peru and its parasites, **179**, v, 252-256. **Tucker, E. S.**—The rice water-weevil (*Lissorhoptrus simplex*) and methods for its control, **7**, Circ. No. 152, 20 pp. **Wagner, H.**—Family Curculionidae, subfam. Apioninae, **194**, fasc. 130, 109 pp. Beitrag zur kenntnis der Apion-fauna Central- und Sud-Amerikas, **201**, xix, 1-32. **Webb, J. L.**—A preliminary synopsis of Cerambycoid larvae, **7**, Tech. S. No. 20, 149-155. **Weise, J.**—Family Chrysomelidae subfam. Hispinae, **194**, fasc. 125, 123 pp.

**HYMENOPTERA.** **Banks, N.**—New Scolioidae, **4**, xlv, 197-203 (\*). **Cameron, P.**—The H. of the Georgetown Museum, Part III, **394**, ii, 207-231 (cont.). **Cockerell, T. D. A.**—Descriptions and records of bees, **11**, x, 311-320. **Crawford, J. C.**—Descriptions of new H. No. 5, **50**, xliii, 163-188 (\*). **Emery, C.**—Les especes-type des genres et sous-genres de la famille des formicides, **35**, lvi, 271-273. Le plante formicaire, **393**, 1912, 48-62. **Forel, A.**—Formicides neotropiques, Part II-III, **201**, xix, 179-237. **Girault, A. A.**—Reconstruction of the chalcid genus "Hypopteromalus" of the family Pteromalidae, **123**, x, 24-46. The chalcidoid family Trichogrammatidae (Tables and Catalogue), **123**, x, 81-100. **Grossbeck, S. A.**—Habits of "Cerceris fumipennis," **6**, xx, 135. **Ihering, H.**—Biologie und verbreitung der brasilianischen arten von "Eciton," **369**, i, 226-235. **Kieffer, J. J.**—Family Diapriidae, **194**, fasc. 124, 75 pp. **Maidl, F.**—Ueber einen fall von lateraler gynandromorphie bei einer holzbiene (*Xylocopa micans*), **44**, lxii, 19-26. **Rixford, G. P.**—Fructification of the fig by Blastophaga, **179**, vi, 349-355. **Turner, C. H.**—The copulation of "Ammophila abbreviata," **5**, xix, 137. **Viehmeyer, H.**—Ueber die verbreitung und die geflugelten weibchen von "Harpagoxenus sublevis," **369**, i, 193-197. **Viereck, H. L.**—Contributions to our knowledge of bees and ichneumon-flies, including the descriptions of 21 n. gen. and 57 n. sp. of ichneumon-flies, **50**, xlii, 613-648 (\*). **Webster, R. L.**—The number of moults of the pear-slug "Caliroa cerasi," **6**, xx, 125-130. **Wheeler, W. M.**—Notes on a mistletoe ant, **6**, xx, 130-134 (\*). Notes about ants and their resemblance to man, **77**, xxiii, 731-766. **Zavattari, E.**—Materialien fur eine monographie der neotropischen Eumeniden, **119**, 1912, Ab. A, Heft 4, 1-272.

ELEMENTARY ENTOMOLOGY, By E. DWIGHT SANDERSON, Dean of the College of Agriculture, West Virginia University, Director West Virginia Agricultural Experiment Station, and C. F. JACKSON, Professor of Zoology and Entomology, New Hampshire College. Ginn & Co., Boston. New York, Chicago, London. 8vo, cloth, pp. vii, 372, 496 figs., price \$2. Not dated on the title-page. Copyrighted 1912 by the authors.

This is intended by the authors as a text for beginners and "is confessedly very largely a compilation from the works of others." The right and proper ground is taken that general entomology is the foundation upon which economic entomology is to "be erected, and without a knowledge of the elements of entomology a course in economic entomology will have but little meaning to the average student, whereas if the more general knowledge of the subject has been mastered, the study of the various insect pests may be profitably pursued by the individual, even if he has not been able to take a systematic course in that phase of the subject."

After an Introduction of four pages, in which the pathologic and economic importance of insects to man is briefly stated, the book is divided into three parts. Parts I., The Structure and Growth of Insects, (pp. 5-66) and II., The Classes of Insects, (pp. 67-274) are by the senior author; Part III., Laboratory Exercises, (pp. 275-358) by the junior.

In comparison with some other text-books of about the same size, Part I. is much less detailed than the corresponding parts of the well-known texts of Folsom and of Carpenter, but of nearly the same length as that of Smith. Part II. is much longer than Folsom's treatment of the same topic, but not more extended than those of Smith and of Carpenter. There is but little, and that incidental, in this new book corresponding to Carpenter's chapters on Insects and Their Surroundings, and The Pedigree of Insects, or to Chapters IV to XIII of Folsom. A strictly economic section, which might perhaps have included some of the material of Smith's Part III. (Insecticides, Preventives and Machinery), has been intentionally omitted by Messrs. Sanderson and Jackson, as tending to make the book "too cumbersome; indeed, it is usually not possible to cover both elementary and economic entomology in a single course."

From the three older texts this work differs in giving Laboratory Exercises (Part III.), which are a less usual feature in entomological manuals. These exercises deal with the External anatomy of the locust (*i. e.* grasshopper), A comparison of the different types of Arthropoda, A comparison of different types of insects: bee, fly and beetle, The internal anatomy of the locust, The mouth-parts of insects, The life-history of insects, and The classification of insects. Sixty-seven

exercises on these subjects are arranged for, following which are two chapters on Methods of collecting insects, and Methods of preserving and studying insects. For exercises 59-67 on classification, a compact series of keys to the orders and many families of insects is provided (pp. 303-329).

A list of books for the reference library, pp. 360-361, is decidedly one-sided, as no other order than the Lepidoptera is represented. As indicated above, there are many figures; they are both old and new; figure 53 would seem to be that of a *male*, rather than of a female, mosquito.—P. P. C.

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## Doings of Societies.

### ENTOMOLOGICAL CLUB, LOS ANGELES, CAL.

At an informal meeting and banquet held on Thursday evening, May 2, 1912, at Christopher's Broadway Café, the following thirteen men were present: A. Davidson, J. R. Haskin, H. H. Newcomb, R. L. Beardsley, H. B. Dixon, C. O. Esterly, V. W. Owen, John Comstock, C. A. Whiting, F. C. Clark, E. Nichols, G. C. Davis and F. Grinnell, Jr.

Prof. C. O. Esterly, of Occidental College, gave a talk, illustrated with living specimens, and drawings, of the Oil Fly, *Psilopa petrolei* Coq., the larvae of which live in great numbers in the pools of crude petroleum near Los Angeles. Dr. Davidson told of the first discovery of this insect about 1805: Coquillett described it in 1890, but its full biology had not been studied till this year. The larvæ have a special interest for the student of animal behavior, reactions to external stimuli, etc., which were especially touched on by Prof. Esterly.

Mr. H. H. Newcomb gave a short account of the problems presented in the genus *Limenitis*, of which he has made a special study: he exhibited enlarged photographs of the species.

Mr. Grinnell exhibited a box of specimens of the interesting Noctuid genus *Tarache*, which is extensively represented in the Southwest. Also specimens of *Ephydra tarsata* from Owen's Lake, adults, larvæ and pupæ; and *Ephydra* sp. from a salt pool near Santa Monica, and specimens of species of

Hippoboscidae and Nycteribiidae from a bat, a deer and specimens of an unknown species caught flying in the bright sunshine.

Enthusiastic discussion followed the communications and exhibitions; the meeting finally adjourning at 11 P. M.

THE CLUB met in the office of Dr. A. Davidson, in the Wilcox Building, Los Angeles, Cal., on Thursday evening, June 6, 1912, at 8 o'clock, with the following persons in attendance: H. H. Newcomb, A. Davidson, A. G. Smith, K. R. Coolidge, W. Bollerman, H. Hehre, R. M. Caldwell, Mrs. E. P. Van Duzee, E. H. Van Duzee, V. W. Owen, H. B. Dixon, R. L. Beardsley and F. Grinnell, Jr.

Mr. F. Grinnell, Jr., read an account of the pioneer entomologists of California, illustrating with photos, maps, blackboard outline, letters and books. He divided the history of entomological study in California into five periods, as follows: 1791-1848 coinciding with the Spanish Colonial period in California, and marked especially by the activities of Russian Naturalists, and various scientific expeditions; 1849-1859, period of the Mexican Boundary Survey and Pacific Railroad Survey, founding of the California Academy of Sciences and the activities of Behr and Lorquin; 1860-1870, the period of the State Geological Survey and J. D. Whitney; 1870-1890, after the opening of the Pacific Railroads many new collectors came in, Stretch, Rivers, Henry Edwards, etc., 1890- to the present time, the period of the two universities.

Mr. H. H. Newcomb gave an account of his methods of collecting and preserving insects; exhibited a copy of Week's Illustrations of Diurnal Lepidoptera, a nicely printed and illustrated work; a specimen of a Belostomid with the usual mass of eggs on the wing covers.

Mr. Grinnell exhibited a box of Noctuids, including some rare species, and a specimen of *Lycaena exites* mounted as a novelty by the Denton Bros., for a necklace.

Mr. Owen showed specimens of a *Neophasia*, probably *Menapia* from the South central Sierras; and species of *Gloveria* from Arizona.

Mr. Coolidge presented descriptions of the early stages of some butterflies; *Lycaena sonorncsis*, *Thecla dumetorum*, and *Lycaena acmon*.

Meeting adjourned at 10.30.

The Entomological Club met on Thursday evening, August 1, in Dr. Davidson's office in the Wilcox Building, Los Angeles. The following were present: H. H. Newcomb, J. R. Haskin, A. Davidson, F. Grinnell, Jr., H. Hehre, Ralph Benton, P. H. Timberlake, J. C. Bridwell, C. L. Edwards, F. C. Benedict, H. W. Allin, Mrs. S. P. Wheeler and some visitors.

Mr. J. C. Bridwell gave a very interesting and lengthy account of the bees and wasps of California, referring to their possible past origin and distribution, and the lifezones as studied on the San Jacinto Mountains where he spent a month. He exhibited a large collection of these insects, including a new genus of *Scoliidae*, five specimens of which have been so far taken in this vicinity, with nearest relatives in South America, Australia and Madagascar. He referred to the mimetic relations of these insects, showing some mimics in various orders.

Dr. Davidson described the habits of the parasite of the trapdoor spider, with blackboard sketches.

Dr. F. C. Clark, not able to be present, sent some boxes of Hymenoptera and Diptera for exhibition.

General discussion. Adjourned at 10.30.—F. GRINNELL, JR., *Acting Secretary*.

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## OBITUARY.

LUDWIG GANGLBAUER, the eminent Coleopterist, died on June 5, 1912. He was born in Vienna, October 1, 1856, studied in the University of his native city and, in October, 1880, was appointed to succeed Dr. H. Krauss as custodian of Coleoptera in the Imperial "Hofcabinet," with the rank of Assistant. He became Custos in 1893 and Director of the Zoo-

logical Department of the Imperial & Royal Museum, in succession to F. M. Brauer, in 1906. His chief work is the *Käfer Mitteleuropas*, 1892-1904, in four volumes. He suggested many improvements in the classification of the beetles, and a critical synopsis of his views was recently given by Mr. C. J. Gahan in the *Entomologist* (London), April-December, 1911. He was one of the founders of the *Wiener Entomologische Zeitung*, and was elected an Honorary Member of the Entomological Society of London in 1896. (Abridged in part from the notice, accompanied by a portrait, in the *Entom. Month. Mag.*, Sept., 1912.)

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THE REV. THOMAS BLACKBURN, who died at Adelaide, South Australia, May 19, 1912, at the age of more than 70 years, was of English birth. His residence in the Hawaiian Islands in 1876-1882 gave him opportunities for collecting insects there and he published on the Coleoptera of that fauna. A few years later he removed to Australia, where he likewise devoted himself to the beetles, publishing a number of memoirs on them in Australian journals. His types have been acquired for the British Museum of Natural History. (*Ent. Mo. Mag.*, Sept., 1912.)

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GEORGE MASTERS, a native of Kent, England, who went to Australia about 1860, collected and catalogued Australian Coleoptera, and became, in 1874, curator of insects in the Macleay Museum, University of Sydney, died in Sydney, June 26, 1912, aged 75. (*Ent. Mo. Mag.*, Sept. 1912.)

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We regret also to have to record the death of G. H. GROSVENOR, of Jesus College, Oxford, whose kindly services at the recent International Congress of Entomology in that city will be remembered by all who were present. He spent some time in the United States in entomological study about a year ago. He was drowned off the Cornish coast, on September 4, when trying to save the life of another.

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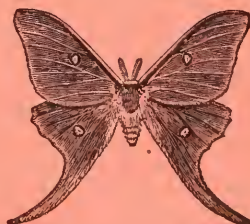
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# ENTOMOLOGICAL NEWS

Vol. XXIII.

No. 10.



*S. S. Haldeman 1862*

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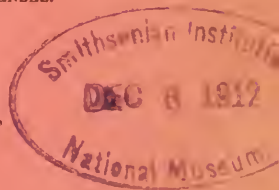
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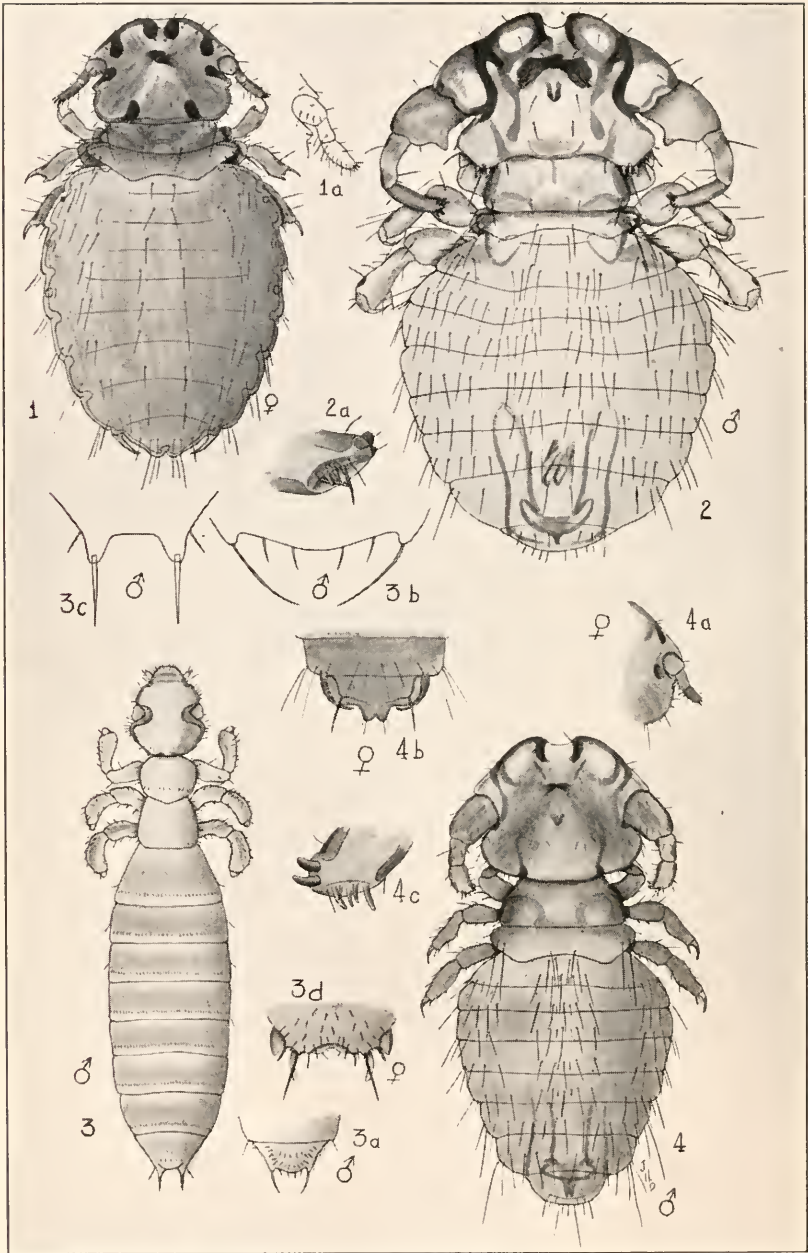
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MALLOPHAGA FROM MAMMALS—PAINE.

# ENTOMOLOGICAL NEWS

AND

## PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XXIII.

DECEMBER, 1912.

NO. 10.

### CONTENTS:

Paine—Notes on a miscellaneous collection of Mallophaga from Mammals.....	437	Grinnell—An Example of Protective Resemblance in a Satyrid Chrysalis (Lepid.).....	471
Pearsall—Eupithecias that appear to be undescribed (Lepid.).....	442	Rohwer—The Synonymy of an Economic Species of Sawfly (Hym.).....	472
Cockerell—New Records of Bees (Hymen.).....	444	Cockerell—A Phycitid Moth Swarming at Light (Lepid.).....	472
Nunenmacher—Studies amongst the Coccinellidae, No. 4 (Col.).....	448	Hooker—The Occurrence of <i>Cecidomyia foliora</i> (Dipt.).....	472
Infantile Paralysis Transmitted by the Stable Fly (Dipt.).....	451	Soule—A Tropical Butterfly in New Hampshire.....	473
Cresson—Studies of some Pipunculidae from the Eastern United States (Diptera).....	452	Grinnell—On Labeling Specimens—A Suggestion.....	473
Robertson—Oligotropic Bees (Hym.).....	457	Webster—Oviposition of <i>Lixus concavus</i> Say (Coleop.).....	474
Allard—Variation in the Stridulations of Orthoptera.....	460	Entomological Literature.....	475
Walton—New North American Diptera.....	463	Review of Hewitt: House-Flies and how they Spread Disease.....	479
Girault—Fragments on North American Insects—II (Lep., Col., Hym., Dipt., Thys.).....	464	Review of Poulton: Polymorphism in a Group of Mimetid Butterflies of the Ethiopian Nymphaline Genus <i>Pseudacraea</i> .....	480
Editorial.....	468	Review of Barnes and McDunnough: Contributions to the Natural History of the Lepidopt. of N. Amer.....	480
Paine—Synonymical Note on <i>Haematopinus phacochoeri</i> Enderlein (Malloph.).....	468	Review of Seitz: The Macrolepidoptera of the World.....	481
The Entomological Society of America.....	469	Doings of Societies.....	482
The American Association of Economic Entomologists.....	470		

## Notes on a Miscellaneous Collection of Mallophaga from Mammals.

By JOHN HOWARD PAINE, Stanford University, California.

(With Plate XX.)

### *Trichodectes mephitidis* Osborn.

Numerous specimens from *Mephitis mephitis* (Stanford University), *Mephitis machura* (Fairbanks, Arizona), and a skunk (Choro, Bolivia). This species is very closely allied to *T. castoris* Osborn, of which it may be merely a variety, a difference in host being a rather slight specific character.

### *Trichodectes geomydis* Osborn.

Specimens from *Thomomys bottae*, *T. bulvivarus* (Monterey, Cal.) and a ground squirrel (Santa Rosa, Cal.).

### *Trichodectes setosus* Giebel.

Several individuals of this large species from the western porcupine, *Erethizon epixanthus* (Tuolumne, Cal.).

**Trichodectes parallelus** Osborn.

Four specimens from the red deer (Michigan Agricultural College).

**Trichodectes subrostratus** Nitzsch.

Numerous specimens from a domestic cat (Stanford University), also collected in large numbers from a lynx, *Lynx rufus* (San Gregorio, Cal.). It is not known whether the species generally infests the lynx or not, but probably this is a case of "stragglings."

**Trichodectes forficula** Piaget.

Four specimens from a wild dog, *Cyon dukkhensis* (Dhikala, Ghurwal District, at the base of the West Himalayas, India). This species is described by Piaget from a deer, *Cervus porcinus*, from the Zoological Gardens of Rotterdam. This case is not so easily explained by "stragglings."

**Trichodectes climax** Nitzsch.

Collected in large numbers from an Angora goat (Palo Alto, Cal.).

**Trichodectes scalaris** Nitzsch.

Found in large numbers on calves.

**Trichodectes parumpilosus** Piaget.

Abundant on the horse.

**Trichodectes octomaculatus** n. sp. (Pl. XX, Fig. 1.).

A large number of specimens, apparently all female, from the western raccoon, *Procyon psora* (Stanford University). This form is easily recognizable by the eight distinct chestnut blotches on the head, these being the only dark markings on the insect.

*Description of female:* Head broader than long with front broadly rounded though slightly flattened on the sides, with a clear space in the middle not excised; the antennal bands turn inward just as they reach the central clear portion and end in a chestnut colored blotch; there is a similar blotch on the margin well in front of the small trabecular projections. There are several minute hairs on the frontal margin, two on each side of the central clear portion, one between the two blotches and another near the posterior frontal blotch; also a still smaller one on the trabecular-like projection and four on the dorsal surface, two of which occur close together just behind the central clear portion while the others arise, one on each side, near the margin close behind the posterior blotch. Temples

rounded, eye prominent with an ocular blotch similar to those in front, only smaller; a minute hair on the eye with another close behind it and five more occurring on the temples, being placed quite regularly around to the prominent occipital blotches; one rather long heavy hair on the temple arising at the point where it meets the prothorax; occiput slightly sinuous, without marginal hairs. Antennae quite long, the terminal segment longest. (Fig. 1a). General color of head and thorax pale yellowish brown.

Prothorax short, slightly darker than head with divergent sides and posterior margin convex; a minute hair on each lateral margin and two longer ones on the posterior margin, one on each side of the meson. Metathorax also short but considerably wider than prothorax; a rather prominent hair on the acute anterior angle and two similar ones behind, on the surface; sides strongly convergent, with obtuse posterior angles; posterior margin concave, without hairs. Legs short, rather heavy with prominent claw and numerous hairs.

Abdomen elliptical, slightly narrowed posteriorly; color pale to transparent. Two hairs near the meson on each segment and two others on each side midway between the meson and lateral margin; several hairs in each posterior lateral angle. Margin thickened with a continuous transparent band, enlarged at the sutures. Last segment notched, with three hairs on each angle. Prominent spiracles on the lateral margins of segments 2, 3 and 4.

	Length	Width
<i>Measurements:</i> Female .....	1.32	
Head .....	.30	.42
Thorax .....	.16	.44
Abdomen .....	.86	.72

***Trichodectes minutus*** n. sp. (Pl. XX, Fig. 4).

Three specimens, one male and two females, from a weasel (*Putoris noveboracensis*) were collected by H. E. Ewing (Marshall, Ill.). This species resembles Nitzsch's *T. retusus* from *Mustela vulgaris* and *M. erminea*, but, unlike that species, there is a striking difference in the antennae of the two sexes. Osborn has recorded *T. retusus* from a weasel (Ames, Iowa).

*Description of Male:* Color pale yellow. Head sub-pentagonal, front angular, rather deeply incised with a clear space behind the incision; prominent, trabeculae-like processes in front of the antennae; antennal bands prominent, extending to the frontal incision where they turn back, forming an acute angle. Antennae large, reaching posteriorly beyond the head; first segment large and nearly as long as the following two, of which the last is a little longer; several short thick spines on the tip of the distal segment (Fig. 4c). Temples prominent, broadly, not angularly rounded as in *T. retusus*, with

several short hairs and one rather long one; occiput convex, slightly emarginate on each side where the occipital bands meet the margin. Head widest across the trabeculae-like processes.

Thorax long; prothorax trapezoidal, with diverging sides and straight posterior margin; a hair in each posterior angle and two on the posterior margin. Metathorax shorter and broader than prothorax with anterior angles broadly rounded, sides converging and posterior margin concave; a short hair on the lateral margin and two longer ones on each side on the dorsal surface; also two near the meson. Legs poorly developed.

Abdomen subovate, widest at the second and third segments and regularly diminishing to the seventh; last segment protruding with two rather long hairs and several shorter ones; also a row of prominent hairs across each of the other segments, those in the mesal region being more closely set. Color pale yellow.

*Female.* Antennae short (Fig. 4a), ordinary, with segments of nearly equal length. Trabeculae-like processes longer and more acute than in the male. Abdomen more developed, subquadrilateral; widest at second segment and diminishing slightly to the sixth, with seventh segment narrowed and the last narrow, bilobed; two chitinized hook-like processes apparently arising from the sixth segment (Fig. 4b).

*Measurements:* ♀ .96; ♂ .80.

	Length		Width	
	Male	Female	Male	Female
Head .....	.24	.26	.28	.32
Thorax .....	.14	.16	.24	.28
Abdomen .....	.42	.54	.36	.40

**Trichodectes californicus** Chapman. (Pl. XX, Fig. 2).

With some hesitation I refer several specimens, male and female, from *Dipodomys merriami*, a pocket rat (Arizona), to this species. The females of the specimens in hand are very similar to *T. californicus*, but have fewer hairs on the thorax and abdomen, less than half as many in the case of the metathorax. The male, which has heretofore been unknown, differs greatly from the female in the shape of the head and in the antennae. The temples are nearly square, with two short broad spines on the posterior angle. The antennae are very striking, being long enough to reach well back on to the abdomen; first joint large, deep set, a little longer than either of the succeeding joints, with a prominent tooth-like appendage midway on the inner side; second and third joints long and narrow and about equal in length; two short heavy teeth and several longer spines on the tip of the last segment (Fig. 2a).

**Gyropus ovalis** Nitzsch.

Specimens of this species and of the following from the guinea pig, *Cavia cobaya*, sent in by H. E. Ewing (Urbana, Ill.). (Also from Cambridge, Mass., by S. S. Berry.)

**Gyropus gracilis** Nitzsch.

Many specimens (Urbana, Ill.; Cambridge, Mass.).

**Gyropus bicaudatus** n. sp. (Pl. XX, Fig. 3).

A large series of specimens taken by W. M. Mann from a wild guinea pig (*Cavia cutleri*), collected by Dr. W. E. Castle in Peru. This species closely resembles in general habit Nitzsch's *G. gracilis*, but is strikingly different in the form of the last abdominal segment in the male. In the present species this segment narrows and gives rise to two prominent appendages, each bearing a strong spine, giving the insect a very characteristic appearance. This difference is shown in Figs. 3b and 3c, the former being drawn from specimens of *G. gracilis* Nitzsch.

*Description of male:* Entire insect pale, often white or transparent. Head closely resembling that of *G. gracilis*, Nitzsch. Antennal, ocular and temporal bands faint, continuous, marginal, enlarged slightly around the lateral emarginations; numerous minute hairs on the margin of the rounded clypeus and a row across on the surface near the margin; also several hairs on the divergent sides before the lateral emarginations and on the convergent temples. Thorax narrower than head, prothorax almost circular, with posterior margin slightly angled on the meson; metathorax quadrilateral, sides slightly rounded. Abdomen long and narrow with sides, between the second and sixth segments, almost straight; last two or three segments tapering, the last being produced into two appendages (Figs. 3 and 3c), each appendage bearing a stout spine; a short fine hair on the lateral margin of this segment just above the appendage. In old specimens a faint transverse band is visible across each segment; a row of extremely minute spines or prickles across each segment.

*Measurements:* ♂ 1.16; ♀ 1.22.

	Length		Width	
	Male	Female	Male	Female
Head .....	.18	.18	.16	.18
Prothorax .....	.10	.10	.12	.14
Metathorax .....	.12	.12	.12	.14
Abdomen .....	.76	.82	.28	.36

**Menopon jenningsi** Kellogg & Paine.

A female specimen collected by W. M. Mann from a wild guinea pig (*Cavia cutleri*), brought from Peru by Dr. W. E. Castle. This is the second record of this peculiar species and is of special interest, coming as it does from a wild form of *Cavia*, thus more certainly establishing the guinea pig as its typical host. The type is from the tame *C. cobaya*.

## EXPLANATION OF PLATE XX.

- Fig. 1. *Trichodectes octomaculatus* Paine, n. sp. ♀.  
 Fig. 1a. *Trichodectes octomaculatus* Paine, antenna of ♀. (Enlarged).  
 Fig. 2. *Trichodectes californicus* Chapman ♂.  
 Fig. 2a. *Trichodectes californicus* Chapman, tip of last segment of antenna of ♂.  
 Fig. 3. *Gyropus bicaudatus* Paine, n. sp. ♂.  
 Fig. 3a. *Gyropus gracilis* Nitzsch, last segment of ♂.  
 Fig. 3b. *Gyropus gracilis* Nitzsch, last segment of ♂ (enlarged).  
 Fig. 3c. *Gyropus bicaudatus* Paine, last segment of ♂ (enlarged).  
 Fig. 3d. *Gyropus bicaudatus* Paine, last segment of ♀.  
 Fig. 4. *Trichodectes minutus* Paine, n. sp. ♂.  
 Fig. 4a. *Trichodectes minutus* Paine, antenna of ♀.  
 Fig. 4b. *Trichodectes minutus* Paine, last segment of ♀.  
 Fig. 4c. *Trichodectes minutus* Paine, tip of last segment of antenna of ♂.

**Eupithecias that appear to be undescribed (Lepid.).**

By RICHARD F. PEARSALL, Brooklyn, New York.

(Continued)

The following species I fear I have distributed to some of my friends, under the name of *multiscripta*, Hulst. I had at that time, a single specimen of the latter from Colorado, verified by comparison with the type, but I thought these were possibly but a variation of it. Later, when more material came to me from both localities, I found that we had in the Southwest another large species, very like unto *multiscripta*, in size, shape and color, which I have called

**Eupithecia perillata**, n. sp.

Expanse 28-30 mm. Palpi long, stout, gray, tipped with white. Front gray, bordered narrowly along orbits, and over clypeus with white. Antennae rather stout and ciliate in both sexes, gray, barred finely with black.

All wings above, gray, faintly tinged with brownish, and frosted with white scales, quite evenly distributed over the central portions between extra basal and extra discal lines, and in broken patches along costa of primaries, most conspicuous just beyond the inception of the extra and intradiscal lines. A number of black hair lines, wavy and much broken cross the wings. On costa of primaries these enlarge into spots and mark the beginning of four of the most conspicuous lines. The basal only one sixth out crosses costa, then turns rapidly inward to base of wing. Two or three similar parallel lines form the extra basal, starting one-third out from costa, after crossing which, they turn sharply inward much waved and partly obliterated centrally, but clear at inner margin. The intradiscal, a single clear black line, crosses costa above discal mark, makes a sharp outward angle enclosing it, and turning inward parallel to extra basal lines, touches inner margin at centre. The extra discal with its accompanying geminate pale line, after crossing costa, angles sharply outward and parallels the intra discal to inner margin, waved or scalloped between the veins. The subterminal line, not clear white, but broad and much waved to anal angle, outwardly borders a greasy brownish shade line. On all wings are fine, marginal black lines, broken at veins, with the fringes of ground color, long and spotted with dusky opposite veins. Discal spots on primaries oval, or linear, partly encircled with white scales, on secondaries small almost invisible dusky dots.

Secondaries with fine black cross lines evident at inner margin, but not reaching across wing; the intra and extra discal with its geminate pale line, being clearly defined.

Body of ground color, the second segment white, its posterior border narrowly edged with black, third segment brownish anteriorly, marked laterally with a large black spot; smaller lateral spots appear on two or three succeeding segments.

Beneath, the primaries are dusky, with cross lines broad and not so definite, and the costa from base to extra discal, and lower terminal space are powdered with white scales. Discal dots jet black, crescentic. Secondaries evenly powdered with white scales, thus throwing into relief the black cross lines, especially in the ♂ type, where they are continuous and enlarged at vein crossings. Discal dots evident, black. Marginal lines and fringes as above.

*Types:* A male and female from San Diego, Calif., the former taken April 3, 1910, the latter March 31, 1910 (Ricksecker), and twelve co-types of both sexes from the same locality, are in the author's collection.

(To be continued)

## New Records of Bees (Hymen.).

By T. D. A. COCKERELL, Boulder, Colorado.

### *Xylocopa orpifex* Smith.

Knight's Valley, California. British Museum (506—84, 73.)

### *Xylocopa arizonensis* Cresson.

Lake County, California; both sexes (O. T. Baron). Brit. Museum.

### *Alcidamea simplex* (Cresson).

Trenton Falls, New York (E. Doubleday); from F. Smith's collection; two males, Brit. Museum.

### *Hypanthidium aureocinctum* sp. n.

♀ Length a little over 7 mm., moderately robust; head and thorax densely punctured, black, marked with yellow; clypeus, mandibles (except apical margin), malar space, cheeks, a broad band across hind part of vertex (continuous with yellow of cheeks), broad bands at sides of face (extending to top of eyes), and a large U-shaped mark between antennæ, all chrome yellow; region between antennæ somewhat elevated; black of front extending downward to top of clypeus as a narrow band on each side; scape and base of flagellum light orange-ferruginous; rest of flagellum also ferruginous, but more dusky; occiput black; prothorax black, but tubercles tipped with yellow; pleura mainly yellow; mesothorax with a narrow yellow (reddish-tinted) margin on each side and in front, except about the middle fifth in front, where the bands are connected with narrow stripes extending backward over the mesothorax; scutellum projecting, emarginate in middle, the apical margin, with the axillæ, broadly chrome yellow; metathorax black, dull, the base with a series of pits; hair of head and thorax pale yellowish, scanty; tegulæ dull orange, ferruginous in middle; wings dusky, strongly so in costal region; second r. n. going well beyond second s. m.; legs yellow, the femora and tibiæ marked with ferruginous; no pulvilli; abdomen strongly punctured, the punctures large on the basal half of the segments, small and dense on the apical part; the segments black at base, broadly ferruginous at apex, each with a very broad entire chrome yellow band, which is not notched sub-laterally or in the middle; on the first segment the band bends sharply at its ends, sending a short process along the sides; the fifth and sixth segments appear all yellow, except that the fifth is obscurely ferruginous apically, and the sixth has a subapical dark interrupted band; ventral scopa yellowish-white.

*Hab.*—Mexico (F. Smith's collection, 79-22). Brit. Museum. This is the first *Hypanthidium* north of Panama. I was at first inclined to think that it might be the undescribed male of *Anthidium bivittatum* Cresson, but I believe *bivittatum* is a *Dianthidium*, and the differences indicated on comparison with Cresson's description can hardly be all due to sex. *H. aureocinctum* is not very closely related to its South American relatives, but it is seen on comparison to be of the same general type as *H. flavomarginatum* (Smith). In Friese's table (Das Tierreich) is runs nearest to *Dianthidium apicale*, from which it differs in many details.

***Panurginus cressoniellus calochorti* Cockerell.**

Cripple Creek, Colorado, July 27 and 31, 2 ♀, 5 ♂ (*S. A. Rohwer*). Both sexes at flowers of *Potentilla*: males also at *Pentstemon* and *Geranium*. The male does not differ from that of typical *cressoniellus*. The altitude of the locality is 9590 ft. A study of a series of New Mexico females of *cressoniellus* indicates that *calochorti* is not more than a variety, certainly not a subspecies. Specimens from Beulah, August 18 (*W. Porter*), hill above Beulah, August 19 (*W. Porter*), Harvey's Ranch, August 22 (*Porter* and *Ckll.*), and Viveash Ranch, 9000 ft., July 21 (*Ckll.*), all have dark antennæ and belong with *calochorti*. Specimens from west of Beulah, August 23 (*W. Porter*) and top of Las Vegas Range, June 29 (*Ckll.*) have the flagellum red beneath. Thus there is no evident relation between altitude and the color of the antennæ. Sometimes the first r. n. enters the basal corner of the second s. m.

***Panurginus verus* Cockerell.**

Upon comparison of the female types, it is seen that this is very close to *P. cressoniellus calochorti*. Aside from the difference in the recurrent nervure, *P. verus* has the deeper marginal cell rounded instead of angled at its upper apical corner, and the second abdominal segment (exclusive of the apical depression) more closely and evidently punctured. The last character is a variable one in *cressoniellus*. I incline to the opinion

that *verus* is after all a variety of *cressoniellus*. This idea receives support from the fact that additional specimens of *P. verus* show much variation, while the males do not appear to differ from those of *P. cressoniellus* except in venation. A male *verus* from Beulah, N. M. (July 27, Cockerell) has the wings unusually reddish. Both sexes (one pair united) were taken by Mr. S. A. Rohwer at Topaz Butte, Colorado, at flowers of *Drymocallis fissa*, June 23 and 30, 1907. All things considered, I believe we ought to write *P. cressoniellus verus*.

**Panurginus bakeri** (Cockerell).

Rio Ruidoso, White Mountains, New Mexico, prox. 6500 ft., August 4 (Townsend).

**Panurginus neomexicanus** Cockerell.

Beulah, New Mexico, August 18, ♂ (*W. Porter*); Rio Ruidoso, N. M., prox. 7600 ft., at flowers of *Solidago trinervata*, August, ♂ (*Townsend*).

**Panurginus boylei** (Cockerell).

Las Vegas, New Mexico, males at flowers of *Melilotus alba* and *Sphaeralcea lobata*, August 9 (*W. Porter*).

**Panurginus pauper flavotinctus** Cockerell.

Las Vegas, N. M., females, one at *Grindelia nuda*, August 14 (*W. Porter*). The female is easily known from *P. nigrinus* Viereck by the very fine sculpture of the metathorax, with the margins of the basal enclosure shining.

**Panurginus innuptus** Cockerell var. **absonus** v. n.

♂. With a rather large supraclypeal spot; stigma and nervures dark reddish brown. Easily known from *P. rudbeckiae* (Rob.) by the broadly truncate lateral face marks and the thicker flagellum. Pecos, New Mexico, August (*W. P. Cockerell*). I believe that comparison of types will show that *P. innuptus* is identical with *P. picipes* (*Panurgus picipes* Cresson).

**Panurginus illinoiensis** (Cresson).

Males from Fedor, Texas, April 2 and 21 (*Birkmann*), which I had doubtfully labelled as a variety of *P. renimaculatus*, prove to be entirely distinct from that species, and to agree with *P. illinoiensis*, although the wings are paler and the tibiae show more yellow than in a specimen from Vir-

ginia. The flagellar joints are broader than long, and the process of the labrum is characteristic, being extremely broad, with a practically straight edge (not emarginate as in *rudbeckiae*), its color pale yellow, with the edge dark.

**Panurginus picitarsis** n. n.

*Panurginus picipes* Morawitz, Hor. Soc. Ent. Ross., xxiv (1890) p. 358.—China. Not *P. picipes* (Cresson 1872).

**Panurginus labrosiformis distractus** subsp. n.

♂ Length about 5 mm.; like *P. rudbeckiae* (Rob.), differing thus: smaller; b. n. barely falling short of t. m. (falling considerably short in *rudbeckiae*); the long and slender flagellum pale yellowish-red beneath, except at base and apex; the broad-triangular process of labrum with a narrow truncate (not emarginate) apex, wholly different from the broad, emarginate process of *rudbeckiae*. As in *P. rudbeckiae*, the clypeus has a median groove. This agrees with *P. labrosiformis* Rob. in the narrowed process of labrum, and the impressed lines on the mesothorax; but the antennæ are long and slender and the wings are quite strongly dusky. The supraclypeal spot is a mere point. The second and third abdominal segments have the depressed basal part dull, while the apical part is shining, with distinct minute punctures; in this the insect resembles *P. asteris*. Another similar species is *P. bidentis* (Ckll.); this has the process of labrum strongly emarginate.

*Hab.*—Lincoln, Nebraska, August (*L. Bruner*, 9). Very likely a distinct species, but I describe it as a sub-species of *labrosiformis* (which I know only from description), as it seems to nearly agree in structure. In the table of Nebraska *Panurginus* in ENT. NEWS, May, 1907, p. 184, it runs to *P. renimaculatus*, which has the process of labrum deeply emarginate.

**Exomalopsis zexmeniae** sp. n.

*Exomalopsis pulchella* Cockerell, Ann. Mag. Nat. Hist., July, 1912, p. 29 (not of Cresson).

Very like *E. pulchella* Cresson, but the receipt of a series of genuine *pulchella* (from Liguanea Plain, Jamaica; *C. T. Brues*) shows that the Guatemalan species (type from Quirigua, at flowers of *Zexmenia*; *W. P. Cockerell*) is distinct by its rather larger size, black (instead of fulvous) hair of scutellum; more strongly punctured clypeus, but especially by the very large knee-plate of hind legs, that of *pulchella* being very small.

## Studies Amongst the Coccinellidae, No. 4 (Col.).

By F. W. NUNENMACHER, Piedmont, California.

### *Agrabia sicardi* n. sp.

*Color*, shining black except head of ♂, sides and front margin with median spur from latter extending backwards one-third the width of pronotum, the legs and epipleurae, the sides of the first, second and third ventral segments, and the entire last segment, which are rufotestaceous; and one small irregular spot placed on each elytron two-thirds the distance posteriorly and close to the suture, which is blood red. *Form*, oval, feebly convexed. *Head*, closely and very coarsely punctured. *Pronotum*, a little less closely and coarsely punctured than the head. *Elytra*, punctured like the pronotum. *Ventral surface*, coarsely and irregularly punctured, the punctures becoming coarser at sides.

*Length*: ♂ 5 mm.; ♀ 5.50 mm. *Width*: ♂ 4 mm.; ♀ 4.50 mm.

*Type*.—♂ ♀ and one cotype in my collection.

*Type locality*.—Hamburg, Siskiyou Co., Calif., June 1, 1911 (Nunenmacher).

*Geo. Dist.*.—Siskiyou Co. and Shasta Co. (Castella Cottle), Calif.

I dedicate this pretty species to my friend, Dr. A. Sicard, for his many kind favors.

### *Agrabia sicardi* var *complexa* n. var.

Color and structure as in *sicardi* except for the elytra which have two small spots and a fascia situated as follows: one small spot at middle of base, one small discal one-third of distance from base and nearer the margin than the suture, and a transverse comma-shaped fascia at two-thirds the distance from base, with the larger and rounded end very close to the suture; and the tip of the elytra, yellow.

*Type*.—♂ in my collection.

*Type locality*.—Hamburg, Siskiyou Co., Calif., June 2, 1911 (Nunenmacher).

### *Coccinella humboldtiensis* n. sp.

*Color*.—Black except for two small irregular spots on the vertex of the head close to the eyes and the anterior angles of the pronotum which are yellow, and the elytra which are a yellowish red with the exception of a large roundish black scutellar spot. *Form*, elongately oval and slightly convex. *Head*, sparsely and coarsely punctured.

*Pronotum*, closely and finely punctured. *Elytra*, closely and coarsely punctured. *Ventral Surface*, more sparsely punctured than elytra, but as coarsely.

*Length*: ♂ 4 mm.; ♀ 4.50 mm. *Width*: ♂ 3 mm.; ♀ 3.50 mm.

*Type*.—♂ ♀ and cotype in my collection.

*Type locality*.—Crescent City, Del Norte Co., Calif., May 27, 1910 (Nunenmacher).

*Varieties*: *A*. With a small marginal black spot at one-third from base, another discal at one-third from base, and a larger at two-thirds.

*B*. With two small spots arranged transversely at two-thirds the distance from base, the marginal one not touching and smaller.

*C*. With the two spots of *B* joined forming a fascia.

*D*. With two fasciae, one just before the middle and one at two-thirds the distance from base.

I have a form of *Adalia frigida* Muls. from Br. Columbia that has almost the same markings as *D*., but in that species the spots slant backwards, whereas in Var. *D*., they slant forwards. By the shape of the head and eyes, the more slender form, and the peculiarities of puncture, this species approaches *C. tricuspis* Kirby, but in regard to the form of the metacoxal line, it approaches *C. trifasciata* Linn. It can, however, readily be separated from the latter by its more slender and less convex form, by the coarse punctuation, and by the weaker claws. It seems to be a local species found in the swampy land of Del Norte Co., Calif.

***Brachyacantha lengi* n. sp.**

*Color*: ♂ Black except head, front, anterior angles, and sides of pronotum, the side maculation not quite reaching the base; front and middle legs, knees and tibiae of hind legs, and five spots on each elytron, yellow. The five elytral spots are arranged as follows: a small humeral; a large, narrow, scutellar, not quite reaching the humeral; one more or less triangular marginal, facing the discal, just behind the middle; one discal at same distance but close to the suture; and a subapical a little larger than the others closer to the margin than to the suture or tips. *Form*, regularly oval, convex. *Head*, closely, shallowly, and finely punctured. *Pronotum*, closely and finely punctured. *Elytra*, punctured like pronotum. *Ventral Surface*, closely and much more coarsely punctured than elytra.

*Length*: ♂ 4 mm. *Width*: 3 mm.

*Type*.—♂ in my collection.

*Type locality*.—Weitchpec, Humboldt Co., Calif. (on oak), May 20, 1911 (Nunenmacher).

The metacoxal line in this species curves to meet the first ventral suture, runs with it a short distance, then curves forward and stops just as it clears the suture. In Mr. Leng's table, it will fall in his fourth group and near *fenyesi*, having the fifth ventral segment strongly excavated. The spine on the anterior tibia is small, about as wide as long, appearing as an acute triangle. I dedicate this to my friend, Mr. C. W. Leng, in recognition of his able work on this group.

***Hyperaspis idae* n. sp.**

♀ *Color*, shining black throughout except the elytra, which have three red spots arranged as follows: a semi-circular marginal about its own width from base and with its straight side touching the margin; a small rounded discal placed just before the middle and closer to the suture than to the margin; and a subapical one the same size as the discal, nearer the margin than the suture or tip. *Form*, broadly oval, feebly convex. *Head*, finely punctured. *Pronotum*, slightly more coarsely and closely punctured than the head. *Elytra*, punctured like pronotum. *Ventral Surface*, closely and coarsely punctured.

*Length*: ♀ 2.25 mm. *Width*: 2.50 mm.

*Type*.—♀ and one cotype ♀ in my collection.

*Type locality*.—Humboldt Co., Calif., April 25, 1911 (Nunenmacher).

*Geo. Dist.*—Humboldt Co., Calif., one specimen; Guerneville, Sonoma Co., Calif., May 30, 1908, one specimen (Dr. F. E. Blaisdell).

This species is closely related to *lateralis* Muls. The form of the metacoxal line in this species leaves a space between it and the first ventral suture whereas in *lateralis* it touches the first ventral suture. The two specimens before me were taken in different places but are identical in every regard.

***Hyperaspis falli* n. sp.**

♂ *Color*, deep shining black except the head and anterior angles of pronotum, which are yellow, and the front pair of legs, tibiae and tarsi of the others, which are dark testaceous. *Form*, broadly oval, feebly convex. *Head*, very finely and closely punctured. *Pronotum*,

a little more coarsely punctured than the head. *Elytra*, punctuation like pronotum but not so close. *Ventral Surface*, mesosternum and metasternum with large, coarse, rounded, deep punctures; the ventral punctures the same but about half the size.

*Length*: ♂ 2 mm. *Width*: 1.50 mm.

*Type*.—♂ and one cotype ♂ in my collection.

*Type locality*.—Goldfield, Esmeralda Co., Nev., June 10, 1908 (Nunenmacher).

This species is an intermediate form between *H. simulans* Casey and *H. ploribunda* Nun. It was taken on the Montezuma Mountains (6000 to 7000 ft. alt.), on sage brush.

#### ***Scymnillus cochisiensis* n. sp.**

*Color*, shining black throughout. *Form*, broadly oval, convex. *Head*, coarsely and thickly punctured and pubescent, the latter very short. *Pronotum*, not as coarsely punctured as the head, the punctures a little coarser and closer at sides, the pubescence confined to the sides and a narrow margin in front. *Elytra*, finely but not closely punctured. *Ventral Surface*, finely and closely punctured, becoming coarser at sides.

*Length*: ♂ 1.05 mm.; ♀ 1.25 mm. *Width*: ♂ 0.75 mm.; ♀ 1. mm.

*Type*.—♂ ♀ and eighteen cotypes in my collection.

*Type locality*.—Benson, Cochise Co., Ariz., October 4, 1906 (Nunenmacher).

In this species, the metacoxal line curves to meet the first ventral suture, but does not quite reach it; it passes obliquely and joins the posterior angle of the first ventral suture.

I wish to express my thanks to my friend, Dr. E. C. Van Dyke, of San Francisco, for advice and criticism during the preparation of this paper.

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#### **Infantile Paralysis Transmitted by the Stable Fly. (Dipt.).**

The successful transmission of infantile paralysis in monkeys through the bite of the blood-sucking stable fly (*Stomoxys calcitrans*) has been announced by Prof. M. J. Rosenau of the Harvard Medical School and C. T. Brues of the Bussey Institution, Harvard University, and their results have been confirmed by Dr. J. F. Anderson of the Public Health and Marine-Hospital Service.

The hypothesis advanced last year by Brues and Sheppard that the stable fly is the carrier of this disease has thus been given experimental proof, although it is still possible that other channels of infection may exist. With the exception of the investigations of Dr. Anderson, the work was done under the auspices of the Massachusetts State Board of Health.

## Studies of Some Pipunculidae from the Eastern United States (Diptera).

By E. T. CRESSON, JR., Academy of Natural Sciences, Philadelphia, Pa.

This paper is the results of a study of a small collection sent to me by Mr. C. W. Johnson, of the Boston Society of Natural History, for determination. It is rarely the case when a collection of this family is studied, that there are not some new forms brought to light. So we find, even in this small amount of material, a new species and several of the opposite sex of those heretofore described. This paper should be used in conjunction with my monograph of this family (1) to which I often refer. I wish here to acknowledge my indebtedness to Mr. C. W. Johnson for the loan of his type of *P. fallipes* and other specimens, and especially to Dr. P. P. Calvert for his kindness in examining the type of *lateralis* Walker in the British Museum of Natural History, and to Mr. E. E. Austen for granting Dr. Calvert the privilege to examine this type for me.

Mr. Nathan Banks, while in London during his attendance at the Second International Entomological Congress, made a few notes on Walker's types of *lateralis*, *reipublicae* and *translatus*, but not having made an especial study of this group and having no specimens along for comparison, he unfortunately did not consider many of the most important characters in his notes and sketches. However, they give some new light upon these species, especially *lateralis*, and as he kindly turned over these notes to me, I am indebted to him mainly for the results here obtained relative to these species.

### *Pipunculus affinis* Cresson.

One male, Buena Vista, N. J., July 10th.

Agrees with the description but the stigma is less than one-half as long as the following section.

In my typical description of this species (2) the “;” after

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(1) Trans. Amer. Ent. Soc. XXXVI, 267-329. pls. v-ix, 1911.

(2) Trans. Amer. Ent. Soc. XXXVI, 283.

"more or less developed" in the 14th line from the top of the page should be omitted.

**P. globosus** n. sp.

Allied to *P. aequus* Cress., but the antennae are black; legs black except knees and extremities of tibiae; ovipositor short, yellow, with black, globose base. Front subopake, shining only at vertex, becoming silvery towards antennae, with an evident, narrow, median shining stripe; antennae abruptly long acuminate (Fig. 12) (1). Mesonotum subopake, brown, lateral margins cinereous, anterior angles more silvery; scutellum cinereous; humeri yellowish; pleurae and metanotum cinereous; halteres brown. Abdomen elongate, subparallel laterally, subopake, brownish with lateral angles of segments cinereous; first segment with small lateral comb of black bristles; fifth and sixth subequal, longer than fourth. Ovipositor short, reaching only to apex of fourth, yellow, abruptly attenuating from a rather small shining black, globose base (similar to Fig. 81). Nearly all tarsi yellow. Wings hyaline, stigma equalling 4th section, fifth, one and a half times fourth; fourth vein simple. Length 3 mm., wing 4 mm.

*Type Locality*.—Buttonwoods, R. I.

*Type*.—Female, collected July 25, 1911. In the collection of the Boston Society of Natural History.

**P. fuscus** Loew.

In the 14th line from the top of the page (3) of my description, the "humeri" should be black instead of "yellow," thus reading, humeri black and halteres yellow.

**P. biscaynei** n. sp.

Antennae with third joint yellow, long white acuminate; humeri black; abdomen subopake to opake, densely cinereous laterally; ovipositor extending to base of abdomen, yellow, gradually tapering from an elongate globose base; 6th segment of abdomen slightly longer than 5th; legs entirely yellow; stigma colored, equalling following section and shorter than 5th section; fourth vein forked.

Seemingly allied to *P. brevis* Cress., but differing from the description of that species (I have not the type before me) as follows: Front mostly shining black, only silvery a little above the antennae, constricted towards vertex; occiput normal; knob of halteres entirely yellow. Abdomen subopake to opake; first, lateral and ventral margins of 2-4, 5th except a median stripe, and entire 6th segments, densely cinereous, the dark portions subopake, brown pruinose; 5th segment

a little longer than 6th; ovipositor reaching base of abdomen. Legs, except coxæ, entirely yellow; femora spinose only beneath. Wings long, hyaline; colored stigma equalling 4th section; 5th section about  $1\frac{1}{2}$  times the stigma in length; 4th vein with fork. Length, 3 mm. Wings 4 mm.

*Type Locality*.—Biscayne Bay, Fla. Mrs. Slosson, Collector.

*Type*.—Female in the Collection at the Academy of Natural Sciences of Philadelphia. No. 5255.

**P. constrictus** Banks.

A male and a female from Florida possessing all the characters of this species, according to the description of the type, which is a male, with the exception of the constriction of the abdomen. It seems that this peculiarity may be an abnormality possessed by the type specimen. The male above referred to, is from St. Augustine and is the specimen noted under *P. houghi* Kert. in this paper, as Dr. Hough's determination of Walker's *lateralis*. It is no doubt Bank's species, or a very close ally (I have not the type of *constrictus* before me). The female is from Biscayne Bay, collected by Mrs. Slosson, and agrees with the male with few exceptions: The front is narrower at the vertex, shining black except just above the antennae where it is silvery; the antennae are acuminate.

**P. houghi** Kertz. (*lateralis* Walk. non. Macq.).

*femoratus* Cress. Tr. Am. Ent. Soc., XXXVI, 302, 1911.

As is generally the case, little or no satisfaction can be derived from the study of Walker's descriptions, and so we find, in this family, that his description of *lateralis* applies equally well to several species having yellow legs and shining abdomen. In my former paper (4) I considered Johnson's *pallipes* to be the same as Walker's species, but Mr. Johnson would not have it so, and therefore he loaned me the type of his species, also a specimen from St. Augustine, Florida, which he had, and which he said had been examined by Dr. Hough and Mr. Coquillett, and considered by them to be *lateralis*. Of course, having this specimen before him as *lateralis*, he was right in his denials. The most important difference be-

tween these two, is the forking of the fourth vein in the St. Augustine specimen. Therefore according to our present classification, this would throw these two into entirely separate groups, although I am rather doubtful that this character is of so much importance as that. The question then arose, is this Florida specimen a true *lateralis*? Dr. Calvert's sketch of the wing and Mr. Banks' notes, and sketch of the ovipositor, for the type is a female, at once settled this query and revealed the fact that we have an entirely different species, in *lateralis* Walker than we had surmised. The fourth vein is normal, not forked, the ovipositor is long, and tapering from an elongate base, and the post-femora are thickened and spinose. This at once suggests my *femoratus*; in fact, I do not hesitate to consider them synonymous.

Therefore my determinations as *houghi* Kertz., should be changed to *pallipes* Johns, and those as *femoratus* Cress. changed to *houghi* Kertz.

**P. pallipes** Johnson.

*houghi* (Kertz.) Cress. Tr. Am. Ent. Soc., XXXVI, 308, 1911.

Before me is another female of this species from Ithaca, N. Y., August 14, 1904 (C. W. Johnson), which varies a little from the description of this species given in my previous paper referred to (4). The upper half of the front is polished; second antennal joint black; abdomen rather obscurely shining, finely granular, with segments 2-4 distinctly yellow laterally; joints of the post tarsi not noticeably flattened or serrated.

**P. reipublicae** Walker.

Mr. J. R. Malloch, of the Bureau of Entomology at Washington (5), thinks that this species may be the same as *P. atramontensis* Banks (6) on account of the coloration of the femora. From the notes and sketch made by Mr. Banks, of Walker's type, the abdomen is broad, with the hypopygium large, which characters would seem to indicate *albofasciatus* Hough, rather than Bank's species; the latter having a moder-

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(4) Trans. Amer. Ent. Soc., XXXVI, 308.

(5) Proc. U. S. Nat. Mus., XLIII, Hod, 291, 1912.

(6) Trans. Am. Ent. Soc., XXXVI, 312, 1911.

ately slender abdomen and a less developed hypopygium. As to the coloration of the legs, those of Walker's type may have been bleached or faded, leaving only the base of the femora black. I am inclined to consider *albofasciatus* rather than *atramontensis* as the synonym.

**P. translatus** Walker.

Evidently belonging to the *subvirescens* group, in which case a very close examination is necessary to establish its true position, but it will probably prove to be *subvirescens* Lw. The type is a male with the head missing.

**P. subvirescens** Loew.

Upon examining a female from Opelousas, La., June, '97, determined by Dr. Hough as this species, the following are noted: Similar in most respects to *similis* Hough, as I have described (7), but the abdomen is more cylindrical, not apparently ovate or flattened on the dorsum, and the incisures are not constricted; bare, and the black hairs not noticeable apically; femora and trochanters without basal bristles; otherwise I can see no difference. There may be a possibility that in associating the sexes of these species in my previous paper I have transposed the males or females of this species and *similis*, if any importance can be placed upon the bristles at the base of the femora. *Subvirescens* male has these present, but they are weak or absent in the male of *similis*, according to my determinations, while with the females, as I have them distributed, it is just the reverse.

**P. appendipes** Cresson.

One female. Tifton, Ga., Sept. 30, '96.

This specimen agrees with the typical description of the female of this species, except that the abdomen here is not quite shining, seeming to be minutely granular. This is one of the difficult *subvirescens*-group, and it is almost impossible to satisfactorily determine some of the species, especially those without the peculiar characters which many possess, and it will take large series and much study to straighten out this group especially as to the females.

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(7) Trans. Amer. Ent. Soc., XXXVI, 315.

## Oligotropic Bees (Hym.).

By CHARLES ROBERTSON, Carlinville, Illinois.

In an article in the Popular Science Monthly, Aug. 1912, pp. 197-203, Mr. John H. Lovell says: "When a female bee in gathering pollen for brood-rearing visits but one kind of flower it is termed a monotropic bee, or if only a few allied species an oligotropic bee; but if it visits many flowers it is called a polytropic bee. These terms were first proposed by Dr. Loew, and signify adapted to one, few or many flowers." This statement is correct, if one understands that Loew never used these terms in the sense here indicated. Loew's terms were not originated to apply to bees with reference to their pollen-collecting habits. They were not applied particularly to bees which collect pollen, but were also used with reference to inquiline and male bees. And pollen-collecting habits were not considered by Loew in determining the application of the terms. Indeed in this article Lovell does not always use them in that sense, for he includes species of *Epeolus* among oligotropic bees. *Epeolus* is a genus of inquilines.

Referring to *Halictoides novae-angliae*, he says: "Apparently in this region it never visits any other flower—it is a monotropic bee." On page 202 he says: "Dr. Graenicher writes me that the pickerel-weed bee (*Halictoides novae-angliae*) is found in Wisconsin; but the pickerel-weed does not flourish in the same locality, and so this bee is compelled to visit the blossoms of other plants." And, therefore, if "visit" means "visit for pollen," *H. novae-angliae* is not a monotropic bee.

Regarding *Halictus nelumbonis* and *Nymphaea advena*, he says, "This bee in this locality is never found on any other flower, but elsewhere is met with on other species of the water-lily family, or Nymphaeaceae." If the readers of the Science Monthly understand "is met with" to mean "collects pollen of," this will do, but, otherwise, this is an error, for the bee has been recorded as a nectar visitor of *Eriocaulon gnaphalodes*, *Utricularia inflata*, *Berlandiera subcaulis*, and *Verbena urticifolia* (Am. Nat. 36:599, 1902).

But, what is more, *Evylaeus nelumbonis* does not get pollen exclusively from flowers of Nymphaeaceae, but it also collects pollen of *Sagittaria latifolia*. The Nymphaeaceae have been regarded as primitive forms of Monocotyledons and they may be related to the Alismaceae; but, until this is proved, *E. nelumbonis* must be regarded as polytropic in the sense here used.

On page 198 it is stated that in Washington County, Wisconsin, according to Dr. Graenicher, twenty-four of the forty-seven indigenous species of *Andrena*, sens lat., are oligotropic. That is 51 per cent. At Carlinville, Illinois, after observing 595 visits of 51 species, I regard 24 species as *oligotropic*. That is 47 per cent. and two of the species are doubtful. Of the species named in my list, Flowers & Insects XIX, Bot. Gazette 28:36, 1899, *A. nasonii* and *geranii* are not oligotropic. Graenicher and I have found the latter collecting pollen of *Hydrophyllum virginicum*. I have also found it collecting pollen of *Blephilia ciliata*.

On page 200 we read "This is certainly a very singular habit on the part of bees, and one which could hardly have been foreseen." On the contrary, it is a phenomenon which finds an analogy in almost every considerable group of living things.

On page 201 Lovell says: "The oligotropic habit is not beneficial to flowers, it concerns the bees alone." On page 202 he says: "All bees including the honey bee show a strong tendency in collecting both nectar and pollen to be constant to one species of flower. This is manifestly for the advantage of both insects and flowers."

"The four species of *Andrena*, which in this locality visit exclusively the willows, do not thus avoid competition nor do they thus benefit other bees" (200). But they avoid competition with related species which collect pollen from entirely different flowers.

In the Botanical Gazette, 28:30, is this statement: "Of thirty-three species whose habits are pretty well known, nineteen are polytropic and fourteen oligotropic, in the sense in which I use those terms. Four of the oligotropic species get

pollen from plants of the same genus, but each of the other ten has its own flower, so there are eleven sets which are absolutely without competition among themselves. I think it is clear that so many species could hardly flourish in the same locality and complete their flight in so short a time, if all were in competition for the pollen of the same flowers." This refers to vernal *Andrenas* and the four species are oligotropes of *Salix*. If the several species of *Salix* afford an unusually rich supply of pollen, it is not inconsistent with the theory of avoidance of competition, if several oligotropic *Andrenas* compete for their pollen.

Lovell also says: "The social bees, as a rule, visit a great variety of flowers, though in Europe it is stated that there is a bumble-bee (*Bombus gerstäckeri*) which visits a single species of monkshood (*Aconitum lycoctonum*)." In this form the case is a nature-fake, as pointed out in the Botanical Gazette 28:34, 1899. In his Handbuch der Blütenbiologie, 114, Knuth says that *Bombus gerstäckeri* visits exclusively the flowers of *Aconitum lycoctonum*. This is simply a misstatement of an observation of Dalla Torre. This author did not say and did not suppose the *B. gerstäckeri* limited itself to *A. lycoctonum*, but only the female did. The males and workers have different habits and the difference was designated by the term *Heterotrophy*. Not even does the female limit itself to *A. lycoctonum*, for it was observed by Frey-Gessner and Hoffer on *A. napellus* (Vol. 2:52, 54). This still limits the female to *Aconitum*. They are apt to spoil this, if they keep on observing the habits of *B. gerstäckeri*.

In a paper on *Colletes* (Univ. Neb. Cont. Dept. Ent. No. 1) on page 14, Mr. M. H. Swenk refers to my statement that *C. brevicornis* is an oligotropic visitor of *Spicularia perfoliata* and says: "In Nebraska, however, it visits also the closely allied *Campanula rotundifolia*, while I have a female taken on *Melilotus alba*. In Texas it occurs on *Callirhoe involucrata* and *Asclepias latifolia*, while the types of *opuntiae* were taken on *Opuntia* and *Campanula*." I have taken the male on *Pastinaca* and the female on *Psoralea*. Mr. Swenk evidently mis-

takes the sense in which I have used the term oligotropic. I think it will be found that *C. brevicornis* does not collect pollen of any of the plants he mentions, except *Campanula*, and that would not be unexpected in the case of a supposed oligotrope of *Specularia*.

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### Variation in the Stridulations of Orthoptera.

By H. A. ALLARD, U. S. Dept. of Agriculture,  
Washington, D. C.

Many musical Orthoptera may be readily identified by their characteristic stridulations. It must be remembered, however, that all individuals of a given species do not always stridulate in quite the same manner. The usual stridulations may be more or less modified by a variety of external conditions, or even voluntarily changed from time to time by the insect. These differences may be classed as individual, accidental, local or geographic and volitional.

Independent of optimum conditions of existence, individuals of the same species or variety always show considerable variation in the intensity and rapidity of delivery, but more especially in the pitch of their notes. These differences are inherent in the individual make-up of the insect.

Inherent individual peculiarities of stridulation are likewise considerably modified by accompanying atmospheric conditions, especially temperature and moisture relations. Variable modifications of this sort are accidental in the life of the insect. Among the crickets these accidental modifications are more especially noticeable in the notes of intermittent trillers, such as *Oecanthus niveus* DeG., *Oecanthus angustipennis* Fitch, *Cyrtoxipha columbiana* Caudell, *Orocharis saltator* Uhler and others, since the rate of delivery of the successive trills is quite dependent upon attending temperature conditions. In general, higher temperatures stimulate brisk, rapid trillings, while low, unfavorable temperatures diminish the intensity and rapidity of the notes. The pitch, however, is not materially changed.

In New England, with the appearance of frosty evenings in late autumn, the intermittent stridulations of the snowy tree cricket *Oecanthus niveus* DeG. become painfully slow and faint as compared with the usually brisk, emphatic stridulations of this species during hot midsummer nights. Notwithstanding this response in the notes of insects to changing weather conditions, the characteristic habit of stridulation of any species is not sufficiently changed to make its identification uncertain. However unfavorable the conditions may be, *Oecanthus niveus* does not forsake its intermittent trilling habit, nor does the prolonged trill of *Oecanthus latipennis* become interrupted or in any way intermittent.

Among the species of musical Orthoptera covering a wide range of distribution it would be rather anomalous not to find in some instances more or less marked local peculiarities of stridulation and habit. Differences in the manner of stridulation distinguishing groups of the same species have been rarely reported. Concerning *Gryllus pennsylvanicus* Burm., one of the commonest and most widely distributed field crickets in North America, the writer has reported two extremely unlike habits of stridulation, differentiating New England from the most southern forms.\* In New England the note is a distinct, intermittent chirp. In the Piedmont region of northern Georgia the note is a weak prolonged trill very much like the trill of *Oecanthus quadripunctatus* Beut. The writer has likewise noted rather distinct methods of stridulation for different colonies of *Nemobius fasciatus* var. *vittatus* DeG. at Oxford, Mass.† It is probable that more thorough investigation will reveal peculiarities in the stridulations of local groups of other species.

The usual method of stridulation of a species is sometimes noticeably changed, apparently at the will of the musician. The category of volitional modifications includes changes of

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\*"Musical Crickets and Locusts in North Georgia," Proceedings of the Entomological Society of Washington, Vol. XII, 1910.

†"Some New England Orthopters observed in late October," in Entomological News, Vol. XXI, 1910.

this nature. Several species of katydids have been observed to vary their characteristic notes from time to time. Scudder reports a few instances, including *Stenobothrus curtipennis* Harris and *Scudderia curvicauda* DeG. The writer's observations include *Scudderia texensis* S. & P., *Amblycorypha rotundifolia* Scudd. and *Amblycorypha uhleri* Brunner.

The usual note of *Scudderia texensis* is a soft, shuffling note, sh-sh-sh-sh-sh, at other times the call becomes a sharp, rasping, zeet-zeet-zeet-zeet, which usually calls forth a similar response from the others within hearing. The writer first studied these notes at Oxford, Mass., in September, 1910.\* These modifications apparently were quite independent of appreciable differences of sunshine, shadow, etc.

The stridulations of *Amblycorypha rotundifolia* may consist of brief, soft, shuffling phrases, sh-sh-sh-sh, repeated at intervals. At other times the notes become more lisping and continuous, tsip-i-tsip-i-tsip-i-tsip. The different call notes of this katydid are very similar to those of the smaller *Amblycorypha uhleri*. The notes of the latter at times consist of a rapid, silken, shuffling sound, sh-sh-sh-sh, occasionally repeated. At other times the notes become brief, staccato lisps, i-tsip-i-tsip-i-tsip, followed by the usual phrases sh-sh-sh-sh. Abrupt modifications of this sort nearly always get a similar response from other individuals.†

In a study of the stridulations of Orthoptera it is important that the careful observer should avoid the conclusion that a certain species has but a single note. It is evident that a number of species are capable of modifying their stridulations considerably at will. In some instances it appears that these particular calls bear some unknown relation to changes in environmental conditions. It is highly probable that they are often more or less vitally connected with certain obscure social relationships of the species.

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\*"The Musical Habits of Some New England Orthopters in September," in *Entomological News*, Vol. XXII.

†"The Stridulations of Some 'Katydid's,'" in *Proceedings of the Biological Society of Washington*, Vol. XXIII, 1910.

## New North American Diptera.

By W. R. WALTON, Bureau of Entomology,  
Washington, D. C.\*

### *Agromyza davisii* n. sp. (AGROMYZIDAE).

Length 2 mm. Front, cheeks and proboscis yellow. Antennae, palpi, occiput and ocellar triangle black. Thoracic dorsum, scutellum and pleurae opaque blackish, strongly bristled. A line over the mesopleura pale yellow. Abdomen black, somewhat shining, sutures pale greenish yellow. Genitalia shining black. Legs and feet entirely black. Squamae, halteres and bases of wings yellow.

This species belongs to Meigen's group "C" (c) in which the cross veins are approximated and confined to the basal fourth of the wing, front yellow.

Described from two specimens, male and female, reared from the leaves of *Ranunculus abortivus*, in which it mines, by J. J. Davis, Lafayette, Indiana, and in honor of whom it is named.

Type deposited in U. S. Nat. Museum, Washington, D. C.

### *Microdon craigheadii* sp. nov. (SYRPHIDAE)

*Microdon laetus* Walton (not Loew), Ent. News, XXII, p. 319, 1911.

In Vol. xxii, p. 319, of ENTOMOLOGICAL NEWS the author published a note on *Microdon laetus* Loew. Additional material has since been received and in going over this, in comparison with a specimen in the U. S. National Museum which is labelled "*M. laevis* Loew," the two forms are evidently abundantly distinct. Now as there is no such species as "*M. laevis* Loew," and as the specimen referred to above agrees closely with Loew's description of *laetus* and is furthermore from Cuba, the type locality of *laetus*, it becomes obvious that the Pennsylvania specimens constitute a new species to which the name *Microdon craigheadii* is herewith given. To the previous description (*l. c.*, p. 320), the following details may be added:

*Male*.—Head about as wide as thorax, face three-quarters as wide as eye; eyes nearly bare.

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*Female*.—Cross veins slightly infuscated. Length 11-12 mm.

*Type*.—One specimen, Carlisle Junction, Pa., F. Craighead.

*Paratypes*.—One specimen, Enola, Pa., H. F. Adams. Rockville, Pa.; one specimen by author, others by A. B. Champlain.

Type in U. S. Nat. Museum, Washington, D. C.

*M. laetus* Loew has distinctly hairy eyes, head wider than thorax, face not more than half as wide as either eye, abdomen more narrowed posteriorly, whole color more violaceous than *M. craightheadii* and wing veins, especially cross veins, heavily stained with brown.

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## Fragments on North American Insects—II.

By A. A. GIRAULT, Nelson, Cairns, North Queensland.

### 1. More Notes on *Estigmene acreae*. (Lepid).\*

A female of this species was captured from grass at Blacksburg, Virginia, May 16, 1902, and upon rough confinement began to deposit eggs. The rate of deposit was regular, an egg being laid about every twenty seconds, or three every minute. Oviposition commenced about 3 P. M., May 16, and continued until the early morning of May 17; the total number was one thousand one hundred and twenty-nine. The eggs commenced to hatch at about 8 A. M., May 23, 1902; two had hatched by 10 A. M., and by the afternoon of the same day a hundred or more. Hatching was then becoming general. The eggs were deposited upon a thin network of hairs and attached by means of a yellowish-brown secretion. The first molt occurred on May 26; another on June 10, and by July 2 a few of the caterpillars had spun cocoons. At that date, however, the majority were yet feeding. By July 6 all had spun cocoons. The larvae had been fed upon wild plaintain and grasses. The adults issued the first week in August.

### 2. *Megalopyge opercularis* Smith and Abbot. (Lepid.).

On October 5, 1902, larvae of this species were received from a correspondent at Lynnhaven, Princess Anne County,

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\*See No. 8, page 406, *antea*.

Virginia. They were already cocooned. On the twentieth of the same month they were opened, exposing the caterpillar, now nearly naked from the fact that its clothing of long hairs had been used to make the peculiar, lidded cocoon.

3. **A Courting Habit of *Epicauta*. (Coleop.).**

The male of *Epicauta cinerica*, when courting, strokes the body of the female from end to end with its long antennae, in the meanwhile making frequent advances by attempting to unite with her. The male is repulsed time after time, but continues the monotonous performance for long intervals. Sexual union continues for hours.

4. **Notes on *Solenozopheria vaccinii* Ashmead. (Cynipoidea, Hym.).**

The tuber-like galls of this species were obtained at Cumberland, Maryland, on huckleberry, August 16, 1903. The identification was made by Ashmead. They occur on the stems and branches and are fleshy but firm, pinkish-red in color or green flushed with pinkish; kidney-shaped to irregular and lobed; the larval cells are of medium size.

The galls on young plants appear to check growth; on older plants they cause stems to bend nearly upon themselves, the gall forming an elbow. The galls were occasional to common. The larvae at this date were immature, but parasites were issuing from the galls in numbers continuing up to September 9, 1903. On September 12, 1903, a gall of this species was found on huckleberry at West Annapolis, Maryland.

5. **On *Callirhytis seminator*. (Cynipoidea, Hym.).**

This beautiful gall is common in the vicinity of Blacksburg, Virginia, on white oak. A number of them were collected on June 24, 1903; at that date their age varied, but adults were emerging from the mature galls. The young galls consist of a radiating mass of larval cases on a common receptacle at the end of a twig at the base of a leaf petiole. Each larval case is surmounted by a glossy white substance resembling glass wool, and which by combination with that of adjoining cases forms a complete, globular and more or less compact woolly ball. As the galls increase in size and approach maturity, the

larval cases lengthen from their distal end and push the woolly substance out into point-like protuberances. The galls turn brown when maturing. They may also be found along the side of a twig, in one case the receptacle being formed on a developing bud. The eggs of this cynipid are probably deposited within a bud. The galls are large and conspicuous, flower-like at times and bitter to the taste. There are commonly two receptacles, side by side, in the place of the two apical buds of the twig.

The young larval cases are seedlike and measure about three millimetres; they taper at the distal end and each bears a tuft of woolly substance. In the mature galls each case has become elongated into fleshy spokes, green and herbaceous, which measure about thirteen mm. in length, about half of which is the elongated distal end.

The adults issue through large holes at one side of the distal extremity of the larval case (the basal, swollen, seedlike portion of it) and tunnel their way through the surrounding substance to the open air, leaving for the time being a small shotlike hole; these soon close up owing to the nature of the gall substance. The adults emerge for a period of at least two weeks. The gall also occurs at Cumberland, Maryland.

Parasites are numerous; a golden-haired Eurytomid was reared from the Virginia specimens.

6. **The Galls of *Rhodites bicolor*. (Harris) (Hym.).**

On July 5, 1903, a number of the characteristic galls of this species were taken from wild Carolina rose growing in a boggy meadow near Blacksburg, Virginia. The cynipid larvae were then present and parasites had been emerging for some time. During the same year, though its host plant was abundant, the galls were rarer at Cumberland, Maryland, than in Virginia.

7. ***Diastrophus nebulosus*. (Hym.).**

This common gall of blackberry has been observed at Annapolis, Sparrow's Point (Baltimore) and Cumberland, Maryland; Ridgeley, West Virginia; Blacksburg, Virginia, and Paris, Texas.

At Cumberland, Maryland, August 9, 1903, it was not abundant, but such specimens as were seen were still green, the larvae only half-grown.

Four galls taken at Sparrow's Point, Maryland, in December, 1903, and kept in confinement yielded parasites and adult cynipids at Paris, Texas, March 18 to April 1, 1904.

8. *Diastrophus cuscuteaeformis*. (Hym.).

This blackberry gall was found May 5, 1903, at Blacksburg, Virginia, along the side of a low mountain spur. From sixty larval cases only four contained a pupa of the cynipid, four a chalcidoid pupa, while the rest were empty.

9. *Sphecodina abbotii* Swainson. (Lepid.).

A male larva of this species was taken from cultivated grape at Blacksburg, Virginia, June 30, 1902. It pupated on July 3.

10. Number of Chalcidoid Parasites from a Noctuid Pupa. (Hym.).

Four hundred and twenty-one pteromalids were reared from an unknown noctuid pupa at Blacksburg, Virginia, May, 1903. This is not a large number.

11. *Trypeta solidaginis*. (Dipt.).

On February 11, 1905, a gall of this species was taken from golden-rod at Arlington, Virginia; the contained larva was full grown and pupated five days later, emerging on March 18 following. The galls also occur at Arundel, Maryland.

12. The Length of Life of *Thysanura* (Entomobryidae) in Confinement.

On November 9, 1902, I captured many specimens of a thysanuran from beneath the very moist bark of an oak. They were placed into a narrow vial, in the bottom of which was a little damp soil covered by moss. A stopper of damp cotton prevented escape. After the moisture in the earth had evaporated the insects clustered about the damp cotton plug. All remained alive up to December 9, but by the 16th of that month the plug was allowed to dry and death rapidly ensued, all dying by the 19th.

# ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

TO CONTRIBUTORS.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, four weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form and without covers, will be given free, when they are wanted; if more than twenty-five copies are desired, this should be stated on the MS. The receipt of all papers will be acknowledged. Proof will be sent to authors for correction only when specially requested.—Ed.

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PHILADELPHIA, PA., DECEMBER, 1912.

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In another column of the present number of the NEWS we print some announcements of the meetings of entomological societies to be held at Cleveland, Ohio, during the Christmas holidays, in affiliation with the American Association for the Advancement of Science. This year the American Society of Zoologists, both Eastern and Central branches, will also meet (December 30 to January 1) in the same city as the Association, instead of elsewhere, as was the case last year. This will bring entomologists and zoologists together, a conjunction always desirable. The Entomological Society of America, by its Executive Committee, has decided that it is necessary to limit each paper on its program to fifteen minutes and to place second titles at the end of the program, thus following the procedure already adopted by the zoologists and others. Although this may be regarded as a hardship by some, there can be no doubt but that these two rules will work for the benefit of the majority. We sincerely hope that the meetings will prove to be very successful and productive of good.

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## Synonymical Note on *Haematopinus phacochoeri* Enderlein. (Malloph.).

*Haematopinus peristictus* Kellogg and Paine (Bul. Ento. Research, Vol. II, July, 1911) is the same as Enderlein's *H. phacochoeri*, which was well described and figured by him in the Contributions to Sjöstedts Kilimandjaro-Meru Expedition, 1908, Pt. II, Anopleura. Both lots of material were taken on *Phacochoerus*, a genus of wild hog, from East Africa.—J. H. PAINE, Forest Hills, Mass.

## Notes and News.

### ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

#### The Entomological Society of America.

The sixth annual meeting will be held in Cleveland, Ohio, Tuesday and Wednesday, December 31, 1912, and January 1, 1913, in affiliation with the meetings of the American Association for the Advancement of Science and other affiliated societies. Meetings will be held Tuesday forenoon and afternoon, beginning at 10:00 A. M., and on Wednesday forenoon. There will be a full week of entomological meetings; the preliminary program, as outlined, is as follows:

The meetings of the Entomological Society of America will be held on Tuesday morning and afternoon and Wednesday morning. The public address will be given on Wednesday evening at 8:00 P. M.

The American Association of Economic Entomologists will convene at 1:00 P. M. on Wednesday with the Presidential address at this session. Other sessions will be held Thursday morning and afternoon and Friday morning.

The first meeting of The American Association of Official Horticultural Inspectors will open on Thursday evening with the President's address. The other meetings will be held on Friday afternoon and evening.

Every member of the Entomological Society is urged to contribute to the program. To obviate the crowding out of papers, the Executive Committee has decided that *each paper will be limited to fifteen minutes. Second titles will be placed at the end of the program and read in the order listed.*

The by-laws provide that there shall be held at the annual meeting a technical exhibit of entomological materials and methods. Any photographs, drawings, specimens, novelties, apparatus, or other matter of interest to entomologists will be heartily welcomed. This will remain open during the entire period of the meeting, for the examination at their leisure, of those interested.

The annual public address will be given by Dr. Philip P. Calvert, of the University of Pennsylvania, Philadelphia, on Wednesday evening, January the first, at 8:00 P. M. His subject will be "An Entomologist in Costa Rica." The lecture will be illustrated by lantern slides.

The annual business meeting will be held Wednesday morning, January 1st, for the reports of the treasurer, editor of the *Annals*, Auditing Committee, Committee on Nomenclature, the election of new members, and the transaction of all other business.

The Secretary of the American Association for the Advancement of Science furnishes the following information: "Cleveland is in the ter-

ritory of the Central Passenger Association. Owing to legislative acts reducing fares in that territory to a two (2) cent a mile basis, the Central Association cannot make a further reduction by authorizing the certificate plan of a fare and three-fifths for the round trip. With the Central Association granting no special rate, the other Passenger Associations will not grant any special rates other than such excursion fares as may be in effect at the time of the meeting."

The hotel headquarters for the Entomological Society of America will be the same as that of the American Association of Economic Entomologists, which will be announced later. [See below.]

All persons interested in entomology in Canada and the United States should be members of the society. There are many persons in the two countries that would be glad of membership if it were only called to their attention. An increase in membership means more funds and a consequent enlargement in the size of the *Annals*. Nominations should be in the hands of the Secretary not later than December 31st. The Secretary should be addressed at Cleveland, Ohio, after December 20th, in care of the Secretary of the American Association for the Advancement of Science.—STEPHEN A. FORBES, *President*, ALEX. D. MACGILLIVRAY, *Secretary-Treasurer*, University of Illinois, Urbana, Illinois.

#### **The American Association of Economic Entomologists.**

The Twenty-fifth annual meeting will be held in Cleveland, Ohio, January 1-3, 1913, in the Normal School Building, which is located between Euclid Avenue and East 107th and 115th Streets, four miles east of the center of the city.

The opening session will be called to order at 1 P. M., Wednesday, January 1st, when the address of the President of the Association will be delivered. The meeting will be continued Thursday, in the morning and afternoon, and the final session will be held at 10 A. M., Friday, January 3rd.

The hotel headquarters for this Association have been secured at Hotel Euclid, which is located at Euclid Avenue, 14th and Huron Streets, in the central part of the city. Rates ranging from \$1.50 per day and up for single rooms have been secured on the European plan. Members are urged to make hotel reservations as soon as possible, as the number of rooms available at the lower rate is limited.

In view of the information concerning railroad rates given under the preceding announcement of the Entomological Society of America, it is suggested that advantage be taken of such excursion fares as may be in effect at the time of the meeting. Members should, therefore, consult their local ticket agents regarding routes and rates. Parlor and sleeping car accommodations should be reserved in advance.

From the States of California, Nevada, Oregon, Washington and west of, and including, Mission Junction, B. C.; also, from what are known as Kootenay common points, namely, Nelson, Roosland, Sandon, Kaslo and Grand Forks, B. C., the Transcontinental Passenger Association has on sale daily Nine-Months Tourist Fares, approximating two cents per mile in each direction, or about one fare and one-third for the round trip. The nine-months fares apply to the eastern gateways of the Transcontinental territory, which are: Atchison, Kansas; Chicago, Illinois; Colorado Springs, Colorado; Council Bluffs, Iowa; Denver, Colorado; Fort Worth, Texas; Houston, Texas; Kansas City, Missouri; Leavenworth, Kansas; Memphis, Tennessee; Minnola, Texas; Minneapolis, Minnesota; New Orleans, Louisiana; Omaha, Nebraska; Pueblo, Colorado; St. Joseph, Missouri; St. Louis, Missouri; St. Paul, Minnesota.

Station Agents will cheerfully advise delegates as to the eastern points to which it will be most advantageous for them to purchase nine-months' tickets in rebuying through to Cleveland.

Proportionately higher fares are made to principal Atlantic seaboard points, and to interior points such as New York, N. Y.; Baltimore, Md.; Philadelphia, Pa.; Washington, D. C.; Boston, Mass.; Montreal, Quebec; Albany, N. Y.; Pittsburgh, Pa.; Buffalo, N. Y.; Detroit, Mich.; Toronto, Ontario; Cincinnati, Ohio; Indianapolis, Indiana; Atlanta, Georgia, etc.

The nine-months fares do not apply to intermediate or interior points, but only to what are known as the eastern gateways of the Association, such as those named, including also Colorado Common Points. Should it happen that delegates apply at a station on the Pacific Coast, from which the nine-months fare is not in effect, which may be the case at very small, unimportant stations, the agent will cheerfully ascertain and advise them the nearest point to his station, from which such fare does apply.

The official button of the Association will be supplied to all members whose dues are paid, including dues for the year 1913. These will be furnished at the meeting on application to the Secretary.—A. F. BURGESS, *Secretary*, Melrose Highlands, Mass.

#### An Example of Protective Resemblance in a Satyrid Chrysalis. (Lepid.)

During June, 1904, I collected insects and plants near Mt. Pinos, Kern County, California. The little narrow valley in which the potrero is located is partly in the Upper Sonoran Zone, with the characteristic shrub of the Upper Sonoran and Transition regions of the Great Basin, the true, aromatic, Sage Brush, *Artemisia tridentata*, occurring mixed with the pines. A number of adult insects

were collected on this shrub, all showing a protective coloration, being a grayish green, just like the foliage of the *Artemisia*. I found a chrysalis which I did not at the time particularly notice, but put it in a box, where after a few days a *Satyrus*, sp. emerged, like those which were so common flying in the vicinity. The chrysalis was attached to a twig at least two feet from the ground, and was the same color as the vegetation, grayish green. This chrysalis case is preserved in my collection with the series of *Satyrus* from that region.—FORDYCE GRINNELL, JR., Pasadena, California.

#### The Synonymy of an Economic Species of Sawfly (Hym.)

HOPLOCAMPA COOKEI (Clarke).—*Dolerus cookei* (Clarke). Can. Ent. vol. 38, 1906, p. 351. *Hoplocampa* (*Hoplocampa*) *californica* Roh. Techn. Ser. No. 20, Part 4, Bur. Ent. U. S. Dept. Agr. 1911, p. 143. The accumulation of additional material and additional study on this species has proven that the two names apply to the same insect. The biology of Clarke's species also proves the identity. The type of *Dolerus cookei* is lost, having been destroyed in the San Francisco earthquake.—S. A. ROHWER, U. S. Nat. Mus., Washington, D. C.

#### A Phycitid Moth Swarming at Light (Lepid.).

In Boulder, Colorado, between 9 and 10 on the night of Sept. 5, 1912, I observed enormous numbers of a small Phycitid moth (*Homocerosoma electellum* Hulst) at the street lights, and even at the lights in the street cars. They were so abundant about the lights as to remind one of a heavy snow storm; during eight years at Boulder I have never seen anything like it. Mixed with them was a number of other species, which, however, hardly constituted 5 per cent. of the swarm. These other species, so far as I collected them, were *Euxoa contagionis* Smith, *Euxoa* sp., *Loxostege sticticalis* L., *Bandera cupidinella* Hulst, *Paltodora magnella* Busck, *Gelechia invariabilis* Kearfott. All these species were very kindly named by Dr. Dyar and (the last two) by Mr. Busck. Dr. Dyar states that *H. electellum* occurs from New Jersey to California, but its life-history is unknown.—T. D. A. COCKERELL.

#### The Occurrence of *Cecidomyia foliora* (Dipt.).

During the past two years the writer has found that *Cecidomyia foliora* R. & H., which was described, in Volume XIX, pp. 349-352 of the Entomological News, from specimens bred from a single tree, has quite a wide distribution. At Amherst, Mass., I have frequently found its galls on the leaves of *Quercus rubra* and *Q. coccinea* growing in the woods and during the summer of 1910 collected them at Black River Falls and City Point, Wisconsin on *Q. rubra*.—C. W. HOOKER, Mayaguez, Porto Rico.

### A Tropical Butterfly in New Hampshire.

MY DEAR DOCTOR SKINNER—Will you be kind enough to tell me the name of a butterfly which alighted on the knee of a young woman at Intervale, New Hampshire? "It was about  $4\frac{1}{2}$  inches in expanse, of the bright, metallic blue seen in some of Denton's exhibited butterflies, with no markings on the blue, but a bright golden yellow edge around the four wings. The yellow edge had some small marks on it." It had no tails.

The person who saw this said that she never saw one like it before and her sister corroborates all the statements of color, etc. It seems to me an escape from some one's cage of chrysalids, or a tropical butterfly far astray.

The person is a rather more accurate observer than most non-entomological women, and is really desirous of knowing what her "vision of beauty" was. We both shall be grateful if you can tell us from this description.—CAROLINE GRAY SOULE.

May have been *Caligo atreus* or *uranus* from Central America, brought in chrysalis stage on a fruit steamer.—H. S.

### On Labeling Specimens. A Suggestion.

ON labeling specimens. A suggestion.—When a specimen is correctly named and placed in its proper position in the cabinet, or a new species described and duly named, that act is only a preliminary and comparatively unimportant proceeding; the name is the handle by which we will further study and communicate the results of such study of the species, in all the various relations of its natural history, economy, internal and external anatomy, distribution, etc. To do this further work we need a good knowledge of the environment of a species on which to base our studies; so we have the locality label. Very often this label is vague, inaccurate or indefinite, taken from a local or railroad map, the collector having the idea that the specimen and its taxonomy is the chief end of his endeavors. Some standard should be used, understood by everyone, and the *only* standards which are *permanent* and *accurate* are the topographic maps, termed quadrangles, being prepared by the U. S. Geological Survey. These sheets, about  $17\frac{1}{2} \times 15$  inches, include an area of 20 or 25 square miles, 1 mile to an inch, and more than one-quarter of this country has been thus mapped. The relief is shown by contour lines, so one can obtain at a glance the topography of the region. The name of the sheet is designated by the name of the principal town or some prominent natural feature, as: Watkins Glen Quadrangle, N. Y., or Tejon Quadrangle, Calif. So with a printed locality label for the particular *quadrangle*, with the date, collector, and exact locality indicated by a town, canon, peak, river, boundary lines, etc. on the specimen, a student can turn to the particular atlas sheet (which sheets are very convenient and beautiful

to study) and see at a glance the kind of territory which the species has evolved in. If collections and published references were labeled thus, a student of geographical distribution, for instance, could use such already accumulated data in his studies, instead of having to make special collections for such a purpose. It is evident that we possess taxonomic collections which are hardly useful for anything else; there is no reason why they should not be made doubly useful. A very little thought on this subject ought to convince anyone of the desirability of such a course of labeling, as it will make specimens useful for many generations in the study of the "why and wherefore" of things, the specimen otherwise being useless, except for its taxonomy.

By addressing The Director, U. S. Geological Survey, Washington, D. C., information and lists of published maps for particular States may be obtained free. These maps are very cheap, 5 cents each, or 2 cents when ordered in lots of 100.—FORDYCE GRINNELL, JR.

#### Oviposition of *Lixus concavus* Say (Coleop.).

A brief note on this species published by Mr. A. A. Girault, p. 401, November number of NEWS, would almost lead one to infer that there had been no previous studies of the oviposition of this species.

In *Entomologica Americana*, Vol. V, pp. 11-16, January, 1889, the writer gave a somewhat extended account of the oviposition of both *Lixus concavus* and *Lixus macer*. A few months later, in September, 1889, Doctor C. M. Weed published in Bulletin VI, Vol. II, of the Ohio Agricultural Experiment Station, some studies of the habits of *Lixus mucidus* under the name of *L. concavus*. There had been an earlier paper published by the late Mr. D. W. Coquillett in *Canadian Entomologist*, Vol. XV, p. 113, 1883, on similar habits of *Lixus macer*. Mr. Coquillett's observations were made at Woodstock, McHenry County, Illinois, while mine were made in DeKalb County, Illinois, and at Lafayette, Indiana. A second article by the writer, under the title of "Food Plants of *Lixus*," was published in the Proceedings of the Entomological Society of Washington, Vol. II, 1892, pp. 339-341. Still later, a more exhaustive article was published by Doctor F. H. Chittenden, Bulletin XXIII, n. s., U. S. Department of Agriculture, Division of Entomology, in 1900. This last article related entirely to *Lixus concavus*. While no special studies were made by Doctor Chittenden of the oviposition, nevertheless the paper contains references to previous publications, giving the distribution and a description of the earlier stages together with biological notes.

It will, therefore, be seen that Mr. Girault's paper is antedated by quite exhaustive studies of the oviposition of *Lixus concavus* and of other species of the genus.—F. M. WEBSTER.

## Entomological Literature.

COMPILED BY E. T. CRESSON, JR., AND J. A. G. REHN.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), excluding Arachnida and Myriapoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species, will be recorded. The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published, and are all dated the current year unless otherwise noted. This (\*) following a record, denotes that the paper in question contains description of a new North American form.

For record of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington.

- 1—Proceedings, Academy of Natural Sciences of Philadelphia.  
 4—The Canadian Entomologist. 6—Journal, New York Entomological Society. 7—U. S. Department of Agriculture, Bureau of Entomology. 8—The Entomologist's Monthly Magazine, London. 10—Nature, London. 11—Annals and Magazine of Natural History, London. 22—Zoologischer Anzeiger, Leipzig. 43—La Cellule. 49—Annales Historico-Naturales Musei Nationalis Hungarici, Budapest. 50—Proceedings, U. S. National Museum. 59—Sitzungsberichte, Gesellschaft der naturforschenden Freunde, Berlin. 62—Handlingar, Konglige Svenska Vetenskaps-Akademiens, Stockholm. 79—La Nature, Paris. 84—Entomologische Rundschau. 89—Zoologische Jahrbucher, Jena. 97—Zeitschrift fur wissenschaftliche Zoologie, Leipzig. 102—Proceedings of the Entomological Society of Washington. 118—Memoirs and Proceedings, Manchester Literary and Philosophical Society, Manchester. 153—Bulletin, American Museum of Natural History, New York. 166—Internationale Entomologische Zeitschrift, Guben. 175—Aus der Natur, Berlin. 179—Journal of Economic Entomology. 180—Annals, Entomological Society of America. 184—Journal of Experimental Zoology, Philadelphia. 186—Journal of Economic Biology, London. 196—Arkiv for Zoologie, Stockholm. 200—Bulletin Scientifique de la France et de la Belgique, Paris. 222—Purdue University Agricultural Experiment Station, Lafayette, Ind. 233—Iowa State College of Agricultural and Mechanical Arts, Experiment Station, Ames. 240—Maine Agricultural Experiment Station, Orono. 244—Zeitschrift, Induktive Abstammungs- und Vererbungslehre, Berlin. 254—Archives de Parasitologie, Paris. 278—Annales, Societe Zoologiques Suisse et du Museum d'Histoire de Geneve, Revue Suisse de Zoologie. 279—Jenaische Zeitschrift fur Naturwissenschaft, 324—Journal of Animal Behavior, Cambridge, Mass. 358—Boletim

do Museu, Ceara, Brazil. **359**—Connecticut Agricultural Experiment Station, New Haven. **381**—Experiment Station Record, Washington, D. C. **390**—Zoologischer Beobachter, Frankfurt a. Main. **393**—"Scientia," Bologna. **394**—Parasitology, Cambridge, England. **396**—Memoires de la Societe de Physique et d'Histoire Naturelle de Geneve. **397**—Pfluger's Archiv fur die Gesamte Physiologie des Menschen und der Tiere, Bonn. **398**—Pennsylvania Medical Journal, Athens.

**GENERAL SUBJECT.** Brues, C. T.—Blood-sucking insects as carriers of human diseases, **102**, xiv, 180-181. Busck, A.—On some arbitrarily formed scientific names, **8**, 1912, 225-227. Fiebrig, K.—Schlafende insekten, **279**, xlviii, 315-364. Scott, H.—A contribution to the knowledge of the fauna of Bromeliaceae; including descriptions of new insects by W. L. Distant and R. Shelford, **11**, x, 424-438. Skinner, H.—Life history of some American insects that carry disease, **398**, xv, 952-956. Smith, J. B.—Insects injurious to shade trees. New Jersey Forest Commission publication: The Planting and Care of Shade Trees, 67-91 pp. Taylor, George W.—Obituary, **4**, 1912, 285-287.

**APTERA AND NEUROPTERA.** Banks, N.—Notes on nearctic Mantispidae, **102**, xiv, 178-179 (\*). Holmgren, N.—Termitenstudien, III: Die familie Metatermitidae, **62**, xlviii, No. 4. Hood, J. D.—Descriptions of New N. Am. Thysanoptera, **102**, xiv, 129-160 (\*). Morrill & Back.—Natural control of white flies in Florida, **7**, Bull. No. 102, 78 pp. Neumann, L. G.—Notes sur les mallophages, II, **254**, xv, 333-384. Patch, E. M.—Notes on Psyllidae, **240**, Bul. No. 202, 215-234 (\*). Riley, C. F. C.—Observations on the ecology of dragon-fly nymphs: reactions to light and contact, **180**, v, 273-292. Russell, H. M.—Notes on Thysanoptera, **102**, xiv, 128. Walker, E. M.—The Odonata of the prairie provinces of Canada, **4**, 1912, 253-266 (\*).

**ORTHOPTERA.** Burr, M.—Interesting Dermaptera in the Budapest Museum, **49**, x, 281-284. Ueber einige neue und interessante Dermapteren aus dem Konigl. Zoolog. Museum, Berlin, **59**, 1912, 311-330. Caudell & Hebard.—Fixation of the single type (lectotypic) specimens of species of American O., **1**, 1912, 157-168. Rehn & Hebard.—A revision of the genera and species of the group Mogoplistii (Gryllidae) found in No. America north of the Isthmus of Panama, **1**, 1912, 184-234 (\*). On the O. found on the Florida Keys and in extreme So. Florida. I, **1**, 1912, 235-276 (\*). Russell, H. M.—A note on the southern walking stick (Anisomorpha buprestoides) and a tachinid parasite, **102**, xiv, 117. Voss, F.—Ueber den thorax von "Gryllus domesticus" V, Die nachembryonale metamorphose im ersten stadium, **97**, ci, 579-682.

**HEMIPTERA.** Cockerell, T. D. A.—Some Coccidae from the Grand Canon, Arizona, **4**, 1912, 301 (\*). Davidson, W. M.—Aphid notes from California, **179**, v, 404-411 (\*). Green, E. E.—On the cultivated and wild forms of cochineal insects, **186**, vii, 79-93. Horvath, G.—Revision of the American Cimicidae, **49**, x, 257-262 (\*). Licent, P. E.—Recherches d'anatomie et de physiologie comparees sur le tube digestif des homopteres superieurs, **43**, xxviii, 7-161. Patch, E. M.—Woolly aphid migration from elm to mountain ash, **179**, v, 395-398. Aphid pests of Maine, **240**, Bull. No. 202, 159-178 (\*). Food plant catalogue of the Aphidae of the world. Part I, **240**, Bul. No. 202, 179-214. Theobald, F. V.—The aphides attacking "Ribes," with descriptions of two n. sp., **186**, vii, 94-116. Van Duzee, E. P.—Hemipterological gleanings, **224**, x, 477-512 (\*). Wilke, Dr.—Beitrag zur kenntnis der chromatinreduktion der Hemipteren, **22**, xl, 216-219. Wilson, E. B.—Studies on chromosomes. VIII: Observations on the maturation-phenomena in certain Hemiptera and other forms, with considerations on synapsis and reduction, **184**, xiii, 345-450. Wilson, H. F.—A new aphid from Oregon, **4**, 1912, 302-303 (\*). Zacher, F.—Die stufenweise anpassung der pflanzenlause an parasitische lebensweise, **175**, viii, 362-366.

**LEPIDOPTERA.** Barnes & McDunnough.—Notes on Taylor's types of Geometridae, **4**, 1912, 270-275. Busck, A.—Two new Californian Acrolophidae, **102**, xiv, 184 (\*). Crosby, C. R.—The egg of the blackberry leaf-miner (*Metellus rubi*), **179**, v, 403. Dyar, H. G.—Three new Noctuidae. More about the sloth moth (*Chyptoses choloepi*), **102**, xiv, 167-170 (\*). Fassl, A. H.—Neue Nymphaliden aus Sudamerika, **84**, xxix, 121-123. Forbes, W. T. M.—Male of "Heliocheilus lupatus," **6**, xx, 193-194. MacGillivray, A. D.—The pupal wings of "Hepialus," **180**, v, 239-245. Merrifield, F.—Experimental researches on variations in the colouring of Lepidoptera (review), **10**, xc, 135-136. Peterson, A.—Anatomy of the tomato-worm larva "*Protoparce carolina*," **180**, v, 246-272. Pictet, A.—Recherches experimentales sur les mecanismes du melanisme et de l'albinisme chez les lepidopteres, **396**, xxxvii, 111-278. Poulton, E. B.—Note on "The attacks of birds upon butterflies," **10**, xc, 71. Schaus, W.—New species of Noctuidae from French Guiana, **102**, xiv, 170-174. Toyama, K.—On the varying dominance of certain white breeds of the silk-worm, "*Bombyx mori*," **244**, vii, 252-288. Warnecke, G.—Zur frage der ueberwinterung von "*Pyrameis atalanta*," **166**, vi, 179-180. Wolley Dod, F. H.—*Smerinthus cerisyi* and *S. ophthalmicus*, **4**, 1912, 299-300. Woodworth, C. W.—Check list of California insects. II: Noctuidae, **368**, i, 782-790.

**DIPTERA.** Amundsen, E. O.—Wistaria gall fly (*Agromyza*

schineri), 368, i, 730-733. **Becker, T.**—Chloropidae. Eine monographische studie. IV. Teil. Nearktische; V. Teil. Neotropische-Region, 49, x, 21-256 (\*). **Compere, G.**—A few facts concerning the fruit flies of the world, 368, i, 709-730. **Felt, E. P.**—New gall midges or Itonididae, 6, xx, 146-156 (\*). "Arthrocnodax occidentalis," n. sp., 179, v, 402 (\*). **Guyenot, A. D. E.**—Genetique et milieu necessite de la determination des conditions. Sa possibilite chez les Drosophiles.—Technique, 200, xlv, 249-332. **Hewitt, C. G.**—"Fannia (Homalomyia) canicularis" and "F. scalaris." An account of the biometrics and the larvae of the flies and their relation to Myiasis. . . ., 394, v, 161-174. **Houser, J. S.**—"Sciara sciophila" larvae congregating in chains, 179, v, 399. **Knab, F.**—Diptera at home on spiders' webs, 6, xx, 143-146. **Knab & Cooley.**—Symphoromyia as a blood-sucker, 102, xiv, 161-162. **Mackinnon, D. L.**—Protists parasitic in the larva of the crane-fly "Tipula" sp. (Preliminary note), 394, v, 175-189. **Melander, A. L.**—The dipterous genus "Bibiodes," 153, xxxi, 337-341 (\*). **Muller, G. W.**—Beobachtungen an padogenetischen miastorlarven, 22, xl, 172-176. **Smith, H. E.**—A contribution to N. Am. Dipterology, 102, xiv, 118-127 (\*). **Townsend, C. H. T.**—On the D. of Baja California, including some species from adjacent regions. II, 4, 1912, 287-293 (\*). Six n. gen. of Nearctic Muscoidea, 102, xiv, 163-166. **Washburn, F. L.**—"The Minnesota Fly Trap," 179, v, 400-402.

**COLEOPTERA.** **Anon.**—Economic entomology, 381, xxvi, 854-865; xxvii, 51-61, 155-164, 254-266. **Aurivillius, C.**—Neue oder wenig bekannte *C. longicornia*, 196, vii, No. 19, 41 pp. **Babak, E.**—Ueber die physiologie der atemzentren von *Dytiscus*, mit bemerkungen ueber die ventilation des tracheensystems, 397, cxlvii, 349-374. **Barber, H. S.**—Note on the avocado weevil (*Heilipus lauri*), 102, xiv, 181-183. **Boucomont, A.**—Coleopterorum catalogus, Pars 46: Scarabaeidae: Taurocerastinae, Geotrupinae, 47 pp. **Chittenden, F. H.**—The broad-bean weevil (*Laria rufimana*), 7, Bull. No. 96, 59-82. **Crosby, C. R.**—The egg-laying habits of "*Adoxus vitis*" in France, 179, v, 384. **v. Dalla Torre, K. W.**—Coleopterorum catalogus, Pars 45: Scarabaeidae: Melolonthinae I-II, 134 pp. **Fabre, J. H.**—Brutpflege bei mistkaefern, 390, liii, 289-297. **Frost, C. A.**—Collecting C. in a Maine sawmill yard, 4, 1912, 304-308. **Germer, F.**—Untersuchungen ueber den bau und die lebensweise der *Lymexyloiden*, speziell des "*Hylecotus dermestoides*," 97, ci, 683-735. **Germer & Steche.**—Ueber bau und bedeutung der kopfgliedmassen bei den *Lymexyloiden*, 369, i, 295-300. **Leng, C. W.**—Larva of "*Brachlys*" in oak leaf, 6, xx, 193. **McDermott, F. A.**—Observations on the light-emission of American Lampyridae, IV, 4, 1912, 309-311.

A note on "Photinus castus," 4, 1912, 312. **Managan, J.**—The presence of maxillulae in larvae of Dytiscidae, 118, lvi, No. 11, 6 pp. **Marsh, H. O.**—The sugar-beet webworm (*Loxostege sticticalis* L.), 7, Bul. No. 109, 57-70. **Matheson, R.**—The Halipidae of No. America, north of Mexico, 6, xx, 156-193 (\*). **Merrill, G. E.**—The alfalfa weevil situation, 368, i, 765-778. **Schulze, P.**—Die flügelrudimente der gattung "Carabus," 22 xl, 188-194. Die lautapparate der Passaliden "Proculus" und "Pentolobus," 22, xl, 209-216. **Shoemaker, E.**—Baiting for beetles at Eagle Rock, N. J., 6, xx, 194-195.

**HYMENOPTERA.** **Adam, A.**—Bau und mechanismus des receptaculum seminis bei den bienen, wespen und ameisen, 89, xxxv, 1-74. **Adlerz, G.**—Lefnadsforhallanden och instinkten inom familjerna Pompilidae och Sphegidae: IV, 62, xlvii, No. 10, 61 pp. **Baker & Essig.**—Host index to Californian Coccidae, 368, i, 740-763. **Brues, C. T.**—Brazilian Ichneumonidae and Braconidae obtained by the Stanford Expedition, 180, v, 193-230. **Cockerell, W. P.**—Collecting bees at Gualan, Guatemala, 4, 1912, 277-282. Two bees new to Canada, 4, 1912, 293 (\*). **Enslin, E.**—Ueber das mannliche geschlecht von "Eriocampa ovata," 369, i, 304-306. **MacGillivray, A. D.**—New gen. and sp. of Xyelidae and Lydidae, 4, 1912, 294-299 (\*). The lacinia in the maxilla of the H., 180, v, 231-238. **Mocsary, A.**—Chrysididae in diversis insectis vitam agentes parasiticam, 49, x, 269-276. **Peneau, J.**—L'evolution des guêpes, 79, xl, 297-301. **Pieron, H.**—Le probleme de l'orientation envisage chez les fourmis, 393, xii, 217-243. **Rohwer, S. A.**—Some Canadian saw flies collected by F. Knab, 4, 1912, 276. Studies in the woodwasp superfamily Oryussoidea, with descriptions of n. sp., 50, xliii, 141-158 (\*). Notes on sawflies, with descriptions of n. sp., 50, xliii, 205-251 (\*). **Santschi, F.**—Quelques fourmis de l'Amerique australe, 278, xx, 519-534. **Strand, E.**—Beitrag zur kenntnis der Hymenopterenfauna von Paraguay, 89, xxxiii, 256-346. **Turner, C. H.**—Reactions of the mason wasp, "Trypoxylon albotarsus," to light, 324, ii, 353-362. **Viereck, H. L.**—Tryphoninae—a review, 102, xiv, 175-178. **Webster, R. L.**—The pear-slug (*Caliroa cerasi*), 233, Bull. No. 30, 167-193. **Whitney, B. B.**—Some undesirable immigrants from Japan, 368, i, 737-739.

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HOUSE-FLIES AND HOW THEY SPREAD DISEASE. By C. G. HEWITT, D.Sc., Dominion Entomologist, Ottawa, Canada. G. P. Putnam's Sons, New York, 1912. Price forty cents. 122 pages, 19 figures. This is an extremely well written little book by one who has contributed largely to our knowledge of the subject, and who is in a position to speak with authority.

The structure, life history and breeding habits, parasites and natural enemies are treated as well as chapters on their relation to the spread of disease. The book concludes with a chapter on preventive and control measures, bibliography and index. An inexpensive book of this kind should have a wide circulation and be a considerable factor in educating the people to take measures to do away with this dire pest and nuisance.—H. S.

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POLYMORPHISM IN A GROUP OF MIMETIC BUTTERFLIES OF THE ETHIOPIAN NYMPHALINE GENUS PSEUDACRAEA. *Nature*, XC, 36, 1912. In the above mentioned article Prof. E. B. Poulton gives a very interesting account of these butterflies and also their mimetic relationship to the Acraeinae genus *Planema*. Dr. Karl Jordan came to the conclusion that *Pseudacraea eurytus* and its allies *hobleyi*, *terra*, *obscura*, *rogersi* and *imitator* were one species, based on studies of the genital armature of the male. Prof. Poulton studied large series from various localities and came to the conclusion that Dr. Jordan was probably correct in his opinion, but that at that time the final proof, breeding, was lacking. Dr. G. H. Carpenter recently found the egg of *obscura* in the Bugalla forest and succeeded in rearing it to the imago stage and it turned out to be *terra*, thus adding another link to the proof. Prof. Poulton hoped to be able to present this evidence before the Second International Entomological Congress, but the word (by cable) did not come until August 19th, after the Congress adjourned. Prof. Poulton says it is really a very striking case, probably more so than any that we shall discover in the future, because quite twelve species sink as mimetic modifications of *eurytus*; the case also differs in a very interesting manner from that of *Papilio dardanus*, because this latter is only mimetic in the female, whereas the *Pseudacraea*s are so in both sexes.—HENRY SKINNER.

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CONTRIBUTIONS TO THE NATURAL HISTORY OF THE LEPIDOPTERA OF NORTH AMERICA. By WILLIAM BARNES and J. H. McDUNNOUGH, Decatur, Illinois.

Vol. 1, No. 4, "Illustrations of Rare and Typical Lepidoptera," July 1st, 1912. This consists of 27 plates containing over 500 figures of moths in black and white half-tone. Many of the moths figured are types and many from typical specimens compared with the types. There are notes in relation to many of the species. It is exceedingly laborious to identify moths from descriptions alone, and illustrations are of immense value, even if they are only a partial aid and it becomes necessary to verify from the descriptions. The authors give their experience in the use of photography in illustrating moths and

have arrived at the conclusion that a half-tone from a photograph gives the best result. The half-tones are not up to the standard of American work by this method and are much inferior to those made in Europe with similar copy. In spite of this, which may be remedied in the future, the work is a contribution of the greatest value to students and is a strong hint to others to do likewise in illustrating what they study.

Vol. 1, No. 5, July 10th, 1912. "Fifty New Species; Notes on the Genus *Alpheias*." Many new species of moths, mostly from the western and southwestern United States, are described in this paper. A study is made of the Pyralid genus *Alpheias* Ragonot. The characters of some of the genera are given with tables for their separation, and some new genera and species are described. Some notes and corrigenda are appended. Four plates with many figures follow the text.

Vol. 1, No. 6, "On the Generic Types of North American Diurnal Lepidoptera," July 25, 1912. The authors in this paper have used the "first species" principle and listed the genera accordingly "to see what the result would be." They give tables showing the result of the first species method, and alongside of each genus the result of Scudder's work by "elimination." Inasmuch as the Committee on Nomenclature of the International Zoological Congress has adopted a different plan of procedure, we are still in the dark as to which genus to use. It looks like a case of "go as you please." Genera are liable to give all but the strongest intellects brain-fever. However this may be, we are indebted to the authors for their views on an interesting though tiresome subject.—H. S.

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THE MACROLEPIDOPTERA OF THE WORLD, By DR. ADALBERT SEITZ, PH. D.—This colossal work is published by Dr. Seitz with the help of an able corps of assistants, experts or authorities in the various branches of this immense subject. The study of the Macrolepidoptera has grown apace and for a time the illustrated works were entirely inadequate to cover the subject. Hundreds of new species were not figured and even those persons who had access to large libraries found it difficult to keep up-to-date. Of course, descriptions were available, but there are few persons that like the drudgery of relying solely on descriptions.

When we consider the fact that this work when completed will contain 930 plates and 39,000 figures in color we can realize what an undertaking it has been and how much it will contribute to our knowledge of the butterflies and moths of the world. The illustrations as a whole are excellent and the explanatory text as full as it could be, and the work kept within reasonable bounds. Good figures are essential in this study, as while they do not accomplish everything, they save an immense amount of time and, if necessary, one can always refer to

original descriptions for confirmatory evidence. Certain parts of the work are sold separately so that those persons who limit their studies may be accommodated. Volumes V to VIII are devoted to the species of North and South America and at present there have been issued of this section 334 pages and 79 plates.

It is expected that the entire work will be completed in the early part of 1914. The reasonable price of the parts places the work within the reach of all; it has been the great expense of many illustrated works which has excluded them from all but the wealthy and the great institution libraries. The work is issued in both German and English. The American agent is G. E. Stechert & Co., 151 W. 25th St., N. Y.—H. S.

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## Doings of Societies.

### AMERICAN ENTOMOLOGICAL SOCIETY

Meeting of June 10, 1912, being the first meeting held in the new entomological quarters of the Academy of Natural Sciences of Philadelphia. Dr. Calvert, President, in the chair. Nine persons present.

Dr. Skinner made some remarks on the damage done by the plum curculio and exhibited specimens of fruit containing their larvae. His own trees on his place at Ardmore, Pa., plums, peaches and apples, showed 100 per cent. injury. Not a single fruit was left to tell the story of what had happened.

Mr. G. M. Greene reported the great abundance of *Macrodactylus* and Syrphidae on the flowers of *Viburnum* at Gustine Lake in Fairmount Park.

Mr. Harbeck mentioned finding an Ortalid fly, *Callopistria annulipes*, on a dead locust tree at Trenton, New Jersey. The fly was found in some numbers. He also reported and exhibited a specimen of the tick *Dermacentor variabilis* taken from a boy's head.

Mr. Rehn said he and Mr. Hebard expected to spend three months in Texas this summer collecting Orthoptera.

Mr. E. T. Cresson, Jr., spoke of an apiculturist in the vicinity who was trying to get rid of black-segmented honey bees by breeding, in favor of a pure yellow strain. It was hoped to breed yellow drones and a yellow queen and get all yellow workers. Specimens of very yellow bees were exhibited.

Dr. Calvert read a note by Prof. Dr. Rudow in *Societas Entomologica*, Vol. XIII, p. 83, for September 1, 1898, containing a statement of Frau Schreiner, of Weimar, who declared she had caught a living *Mecistogaster*, a tropical American Odonate, at Driesen on the river Netze, east of Berlin, Germany, in which he questions the possibility of such an occurrence. The speaker said that it had occurred to him that, since we now know that the larva of at least one species of *Mecistogaster* lives in the water enclosed between the bases of Bromeliad leaves (see ENT. NEWS, Vol. xxii, p. 402), it might be possible for such a larva to have been carried in an importation of such plants to Germany and to have transformed there.

Mr. Harbeck spoke of keeping dragonflies alive for a time with a view of preserving their colors.

Dr. Calvert said it was his usual practice to keep them alive in papers for a time, so that they may empty the alimentary canal and thus better preserve their colors.

The Librarian reported the purchase of a number of desiderata in books.

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Meeting of October 24, 1912. Dr. P. P. Calvert, President, occupied the chair. Nine persons present.

Mr. Laurent stated that, although *Pyrameis atalanta* was a common butterfly on Five Mile Beach, New Jersey, yet he had never seen them in such numbers as they were on the third of October of the present year. The butterflies gathered together in large numbers on certain bushes, while other bushes nearby were entirely ignored. Hundreds of specimens could have been captured if one was so inclined. As the species is one of our hibernating butterflies, the speaker thought it might be possible that the butterflies gathered together previous to hibernating, as *Danais plexippus* does previous to migrating to the south. Nearly all the specimens were in perfect condition, which indicates a fall brood. Mr. Laurent stated that it was the general opinion that the caterpillars of this butterfly left the food plant and found another place in which to pupate. However, his experience had been different

as he had found a hundred or more of the chrysalids in the bags formed by the caterpillars drawing together the leaves of their food plant.

Mr. G. M. Greene mentioned finding three males and a number of females of *Megarhyssa greenei* Vier. on dead oak trees at Overbrook Seminary, near Philadelphia. They varied much in size.

Dr. Skinner exhibited specimens of *Oncideres putator* and said the species was probably rare in collections. If there is a single brood, this might be accounted for by their late appearance. The specimens were taken by Rehn and Hebard in Sycamore Canon, Baboquivari Mountains, Pima Co., Arizona, October 6-9, 1910; Palo Alto Ranch, Altar Valley, Pima Co., Arizona, October 6-10, 1910; Tucson, Arizona, October 3-4, 1910, and Snyder's Hill, Pima Co., Arizona, October 11, 1910.

Mr. C. J. Cole reported having seen *Pelecinus polyturator* in considerable numbers at Chicago, Illinois. Mr. Greene said they were often plentiful at Castle Rock, Pa.

Dr. Calvert exhibited some Lampyrid larvae which were given to him by one of the investigators of the photometric laboratory of the United Gas Improvement Company, of Philadelphia. He also exhibited a female Odonate, *Libellula exusta deplanata* Rambur, collected by Mr. Philip Laurent at Woodbury, New Jersey, May 14, 1912, apparently the first record of this southern form in New Jersey. Also *Enallagma traviatum*, a female taken at Clementon, New Jersey, and *E. aspersum*, a female from Mt. Airy, Philadelphia, both by Mr. Laurent, both being rare in this part of their habitat.

He also made an address on the Second International Entomological Congress, held at Oxford, England, from August 5 to 10. The interest attached to the place, the old colleges, the University Museum and the excursions were mentioned. The changes in the entomological collection from the time of Westwood to the present day were described. The special character of the collections as illustrating mimicry, protective resemblance, and food and habits of insects rather than systematics, was alluded to.—HENRY SKINNER, *Secretary*.

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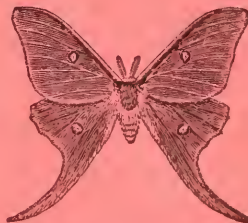
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