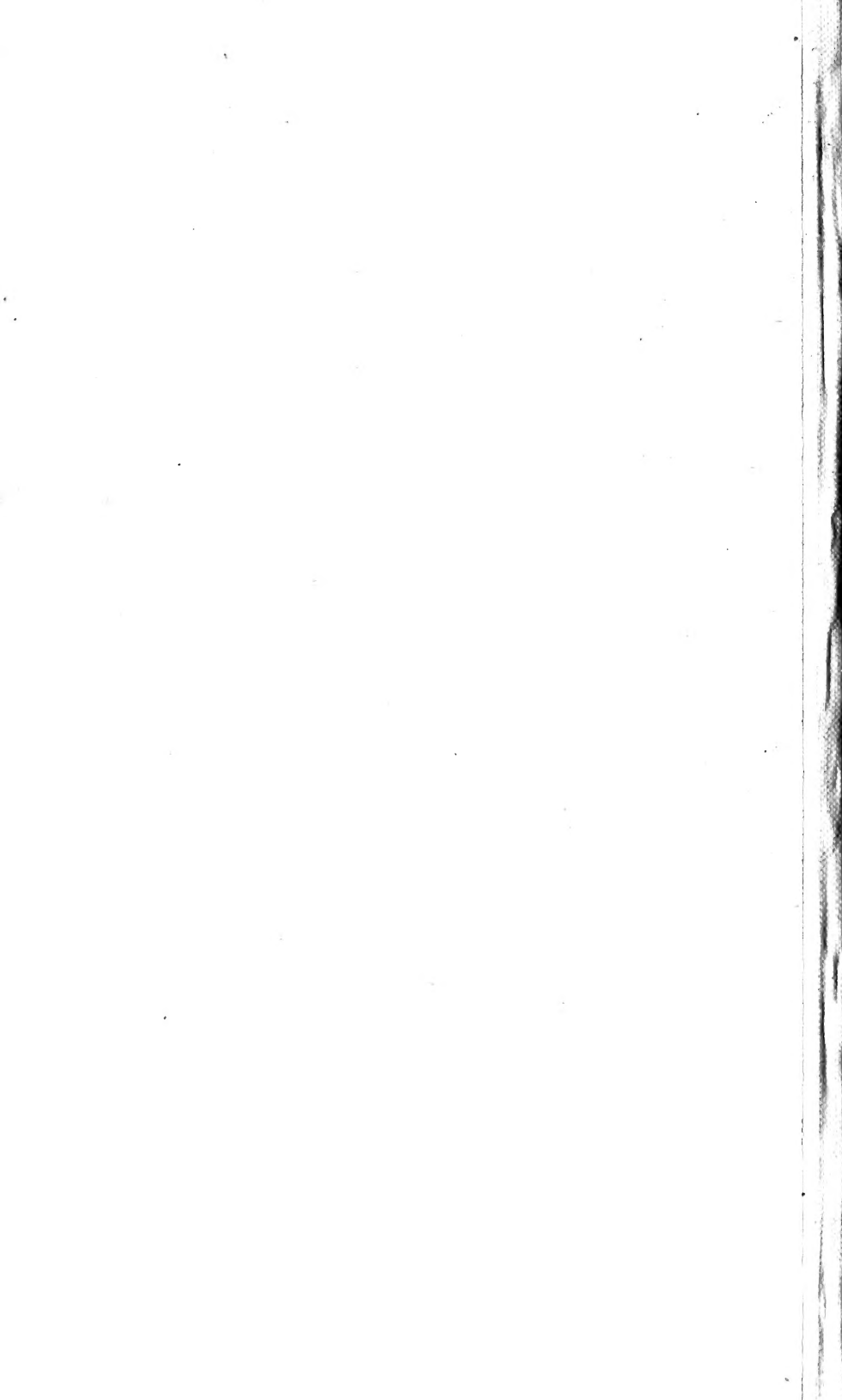
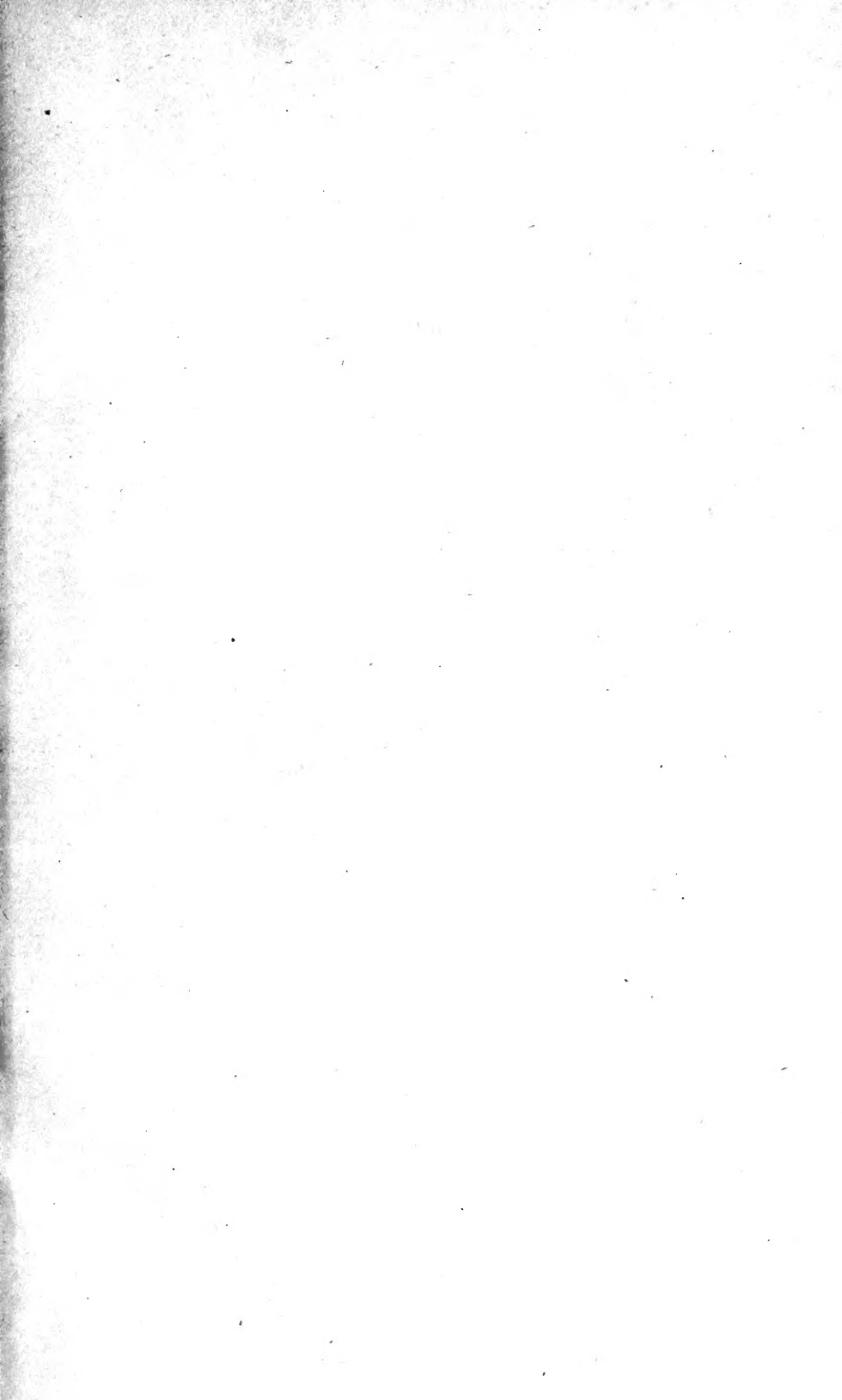
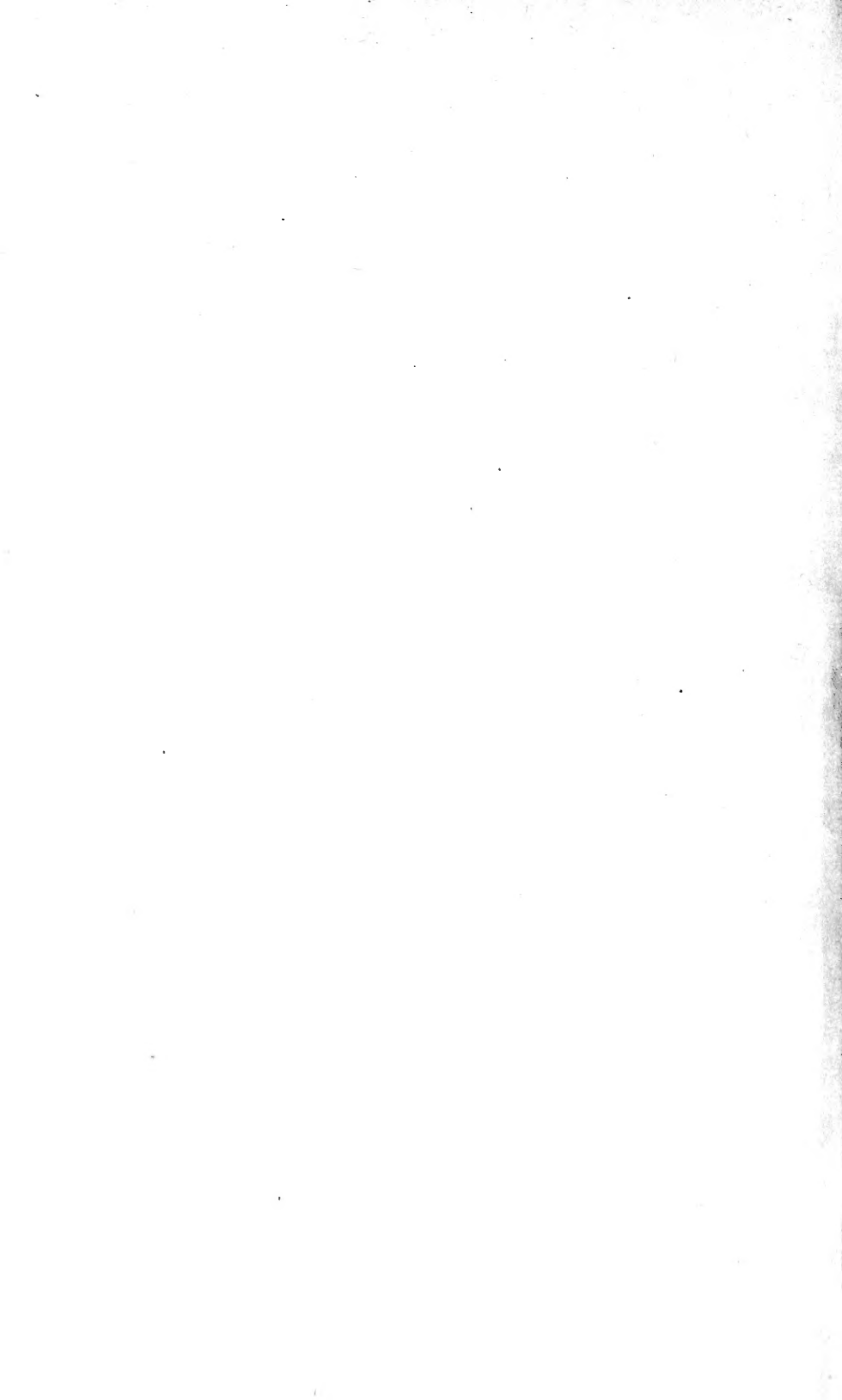


UNIV. OF
TORONTO
LIBRARY







1310
E

Entomological News

AND

PROCEEDINGS

OF THE

ENTOMOLOGICAL SECTION

OF THE

Academy of Natural Sciences
of Philadelphia.

VOLUME XI, 1900.

EDITOR :

HENRY SKINNER, M. D.

PHILIP P. CALVERT, Ph.D., Associate Editor.

ADVISORY COMMITTEE :

EZRA T. CRESSON.
PHILIP LAURENT.

CHARLES A. BLAKE.
WILLIAM J. FOX.

CHARLES LIEBECK.
CHARLES W. JOHNSON.

PHILADELPHIA :
ENTOMOLOGICAL ROOMS OF
THE ACADEMY OF NATURAL SCIENCES,
LOGAN SQUARE.

1900.

153407
28/11/19

P. C. STOCKHAUSEN
PRINTER
53-55 N. 7TH ST., PHILADELPHIA.

QL
461
E574
v.11

INDEX TO VOLUME XI.

* Denotes new variety, species or genus.

THE GENERAL SUBJECT.

- Academy of Natural Sciences,
Ent. Section 346, 380, 482, 608
Alaskan Insects . . . 381, 416, 459
Alpine insects 319
American Entom. Society, 380, 483,
514, 610.
Bolivia, Collecting in 346
Bolter Collection 503
Buffalo Ent. Club 435
Chicago Entom. Society . . . 447
Color photography 434
Doings of Societies 346, 380, 411,
446, 482, 512, 548, 578, 608, 642.
Economic Entomologists, As-
sociation of 370
Economic Entomology 336, 370,
390, 404, 436, 471, 546, 638.
Editorials 335, 369, 402, 434, 473,
504, 536, 571, 602, 633
Entomological Literature 342, 376,
407, 440, 475, 505, 537, 572, 603,
634.
Entomologists' Directory . . . 427
Feldman Collecting Social . 347,
380, 411, 448, 483, 515, 548, 578,
611, 642.
Genera 602
Harris Club 341, 401, 446, 513, 579,
609, 643, 644.
Kissing bug 547
Malaria and mosquitos . . . 516
Massachusetts Agric. College,
Entomology at 359
Mt. Washington, Alpine insects
of 319
Newark Entom Society 348, 411,
447, 512, 608, 644.
Notes and News 340, 481, 509, 547,
577, 641.

Obituary :

- Bolter, A. 450 (503)
Chatfield, A. F. 451
Dakin, J. A. 451
Gilbert, Mrs. L. F. R. . . . 484
Harvey, F. L. 451
Hulst, G. D. 613
Meade, R. H. 412
Ruscheweyh, G. 580
Soltau, H. 450
Peach mite 471
Pin labels 341
Recollections of old collecting
grounds 597
Rose-bug, Fish oil soap for . 546
Russian Economic Entom. . . 404
Silver Lake, Utah 363
Strange habits, Some 600
Students' Entom. Association. 447
Sugar-beet pest 390
Trap lantern 579
Watkins, W. 577

ARACHNIDA.

- Amblyomma hebraeum 336
Bont tick, Life history of . . 336

COLEOPTERA.

- Abnormalities 619
Alaska, C. of 459
Allorhina nitida 437, 609
Amphionycha flammata . . . 621
Anthicidæ 511
Apion puritana 411
Arizona, C. of Phoenix . . . 561
Bryaxus abdominalis 548
Callida viridipennis 621
Calosoma willcoxi 548
Cedius zieglerei 579
Colapsis brunnea 437

Colorado, C. of	597
Copturodes cockerelli	503
Crioceris asparagi	639
C. 12-punctata	436
Cryptorhynchus fuscatus	380
Cychnus viduus	611
Cyclocephala immaculata	620
Dichelonycha fuscata (548)	608
Dorytomus brevisetosus	601
Elater militaris	348
Eumicrus motschulskii	348
Geopinus incrassatus	610
Halticus uhleri	436
Hoplosia nubila	620
Ichalia costata	380
Illinois, C. of	468
Length of life of C.	633
Megalonycha fuscata 548 (608)	
Metrius sericeus*	389
Microchara explanata	610
Monstrosities	619
Mycetina perpulchra	380
Neladius tenuis	643
New Jersey, C. of 380, 411, 484, 515, 548, 611, 642.	
Northfield, Mass., Collecting at	392
Oberea bimaculata	437
Panagæus crucigerus	515
Pennsylvania, C. of 348, 380, 449, 499, 548, 579, 610, 612, 619, 643.	
Phyllobrotica decurrata	642
Platynus spp.	499
Saperda vestita	621
Sitodrepa panicea	375
Soronia ulkei	411
Stenomimus pallidus	509
Tiger hunt in far west	581
Utah, C. of	482, 581

COLLEMBOLA.

Achorutes tigrina*	552
C., New Maine	549
Entomobrya agilis*	549
Smynturus brunneus*	550

DIPTERA.

Anopheles	516
Bee fly four years a larva	510

Blepharocera capitata	305
Cecidomyia destructor	438
C. oxycoccana	324
Chætopsis apicalis*	326
Chrysomyza demandata	609
Daulopogon terricola*	326
Diplosis pini-radiatæ*	491
Eutanypus borealis	439
Goniops	531
Hesperodes*	429
H. johnsoni*	429
Hypocharassus	423
Mosquitos and malaria	516
Neaspilota achilleæ*	328
Pangonia chrysocoma 392,	531
Pseudatrichia griseola*	501
P. unicolor*	500
Rivellia brevifasciata*	326
Sargus cæruleifrons*	325
Sepsisoma*	327
S. flavescens*	327
Synonyms	531
Teucholabis complexa	324
Therioplectes astutus	516
T. politus*	325
Traginops*	429
T. irrorata*	430

HEMIPTERA.

Aphis mali	448
Aspidiotus diffinis	425
Cicada septendecim	638
Clastoptera	463
C. bimaculata*	464
Diaspis piricola	590
Eriococcus spp.	594
E. quercus toumeyii*	594
European pear scale	590
Eutettix magnus*	395
Pemphigus betæ*	391
Platymetopius hyalinus*	501

HYMENOPTERA.

Anthophora montana, its para- sites	510
Asobara antipoda*	625
Bathymetis antipoda*	624

- Brachista pallida** 616
*Centrobia odonatae** 616
Coelioxys 8-dentata and host 553
*Crabro angelicus** 358
*C. foxii** 356
C. of Washington 353
*Doryctomorpha** 629
*D. antipoda** 630
*Eulophus albitarsis** 623
Formica exsectoides 579
*Hyperteles polynemæ** 615
Macrotera 510
Megacilissa 510
Mellinus bimaculatus 346
Monedula carolina 347
Mutilla, Extra-American 400
Parasitic H. 615, 623
*Polynema needhami** 617
*Schauinslandia** 627
*S. alfenii** 628
*S. femorata** 627
*S. pallidipes** 628
*Tetrastichus polynemæ** 616
Washington, H. of 353
- LEPIDOPTERA.**
- Achalarus cellus* 439
Acontia delecta 513
Actias luna 609
Ægiale streckeri 495
Alaskan L. 382, 416
Anartia melanopa 380
Anthocaris genutia 465
Arachnis dilecta 600
Archonias lyceas 533
*Argynnis nitocris coerulescens**
 332, 449, 483.
*A. n. nigrocœrulea** 622
Azelina peplaria 583
*Brenthis pales alaskensis** 383
*B. youngi** 383
Brephos infans 514
Bungalotis midas 600
Callidryas agarithe 618
Catocala badia 368
C. innubens scintillans 445
*C. titania** 472
Catocalæ of Missouri 433, 472
Cecropia 579, 631
Ceratonia catalpæ 608, 611
Citheronia regalis 642
C. sepulcralis 446
Cocytius cluentius 334
Cænonympha kodiak yukonen-
*sis** 386
Colias philodice 347, 449, 642
C. eurytheme 347, 449
Diurnals, Notes on N. A. 328
Double cocoons 401, 446
Eacles imperialis 641
Enodia portlandia 609
*Erebia sofia alaskensis** 387
*E. youngi** 388
Erebus odora 608, 610
*Eucordylea** 349
*E. atripictella** 350
Feralia jocosa 368
Gastropacha americana 514
Geometrina, N. Am. 527, 554
Hemaris brucei 380
H. spp. 498, 547, 584
Hepialus argenteomaculatus 610
Hesperidæ, N. Am. 413, 578, 579
House-moth injuring specimens 445
Hymenitis spp. 600
Inflated cocoons 446, 513, 515, 580,
 631.
Lycæna sonorensis 481
*L. yukona** 416
Melipodes jucunda 641
Melitæa phæton superba 401
Metzneria lappella 644
Mimicry in L. 644
Mississippi, L. of 512
Missouri, L. of 433, 472
*Nealyda** 350
*N. bifidella** 351
Neophasia-terlootii 535
New Jersey, L. of 348, 513, 548,
 608-9, 642, 643.
Noctuidæ, North Am. species
wrongly listed as 509

<i>Ecdomasia badia</i>	348, 368
<i>Eneis jutta alaskensis</i> *	389
<i>Pamphila attalus</i>	642
<i>Papilio ajax</i>	643
<i>P. asterias</i> on <i>Cosmos</i>	577
<i>P. electryon</i>	428
<i>P. philenor</i>	580, 642
<i>P. turnus aber. fletcheri</i> *	482
<i>Pericopis salvini</i>	600
Phægoptera ochraceator	600
<i>Protoparce rustica</i>	485
<i>Pseudochelaria walsinghami</i> *	352
Pyralidina, N. Am.	527, 554
<i>Pyrameis caryæ</i>	412
Rearing larvæ, Hints for	461
<i>Sibine fusca</i>	517
Skinner's catalogue, Additions and corrections to	328
Slug-caterpillar, Life history of a S. Am.	517
Smith's list of L.	396
<i>Sphinx drupiferarum</i>	581
<i>S. luscitiosa</i>	580
<i>Synchlœ lacinia</i>	503
Synonymy, Headlong plunge into	533
<i>Thecla mellinus</i>	578
<i>Tinea fuscipunctella</i>	503
Tineid larva feeding on dead <i>Cecropia</i>	502, 516
<i>Tineina</i> , New N. Am.	349
<i>Tortricidea fiskeana</i> *	333
<i>Tropæa truncatipennis</i>	403
Utah, L. of	363
<i>Vanessa antiopa</i>	514

NEUROPTERA.

Alaskan Odonata	382
Arkansas Odonata	621
Atropidæ	431
<i>Calopteryx angustipennis</i>	464
Dragonflies caught by tendrils of vines	439
D, Kingbirds eating	340
Dragonfly-eggs, Parasites from	615
<i>Enallagma anna</i> *	455

<i>Gomphus crassus</i>	545
<i>G. externus</i>	545
Indiana Odonata	640
<i>Mecistogaster</i>	601
<i>Megaloprepus</i>	601
<i>Myrmeleon texanum</i> *	596
Psocids at light	601
<i>Psocinella</i> *	431
<i>P. slossonæ</i> *	432
<i>Tachopteryx thoreyi</i>	398
<i>Troctes bicolor</i> *	559
<i>T. niger</i> *	560
Wyoming dragonflies	453

ORTHOPTERA.

Alaskan O	382
Earwigs on gallinule	516
<i>Gryllotalpa borealis</i>	642
<i>Podisma variegata</i>	630

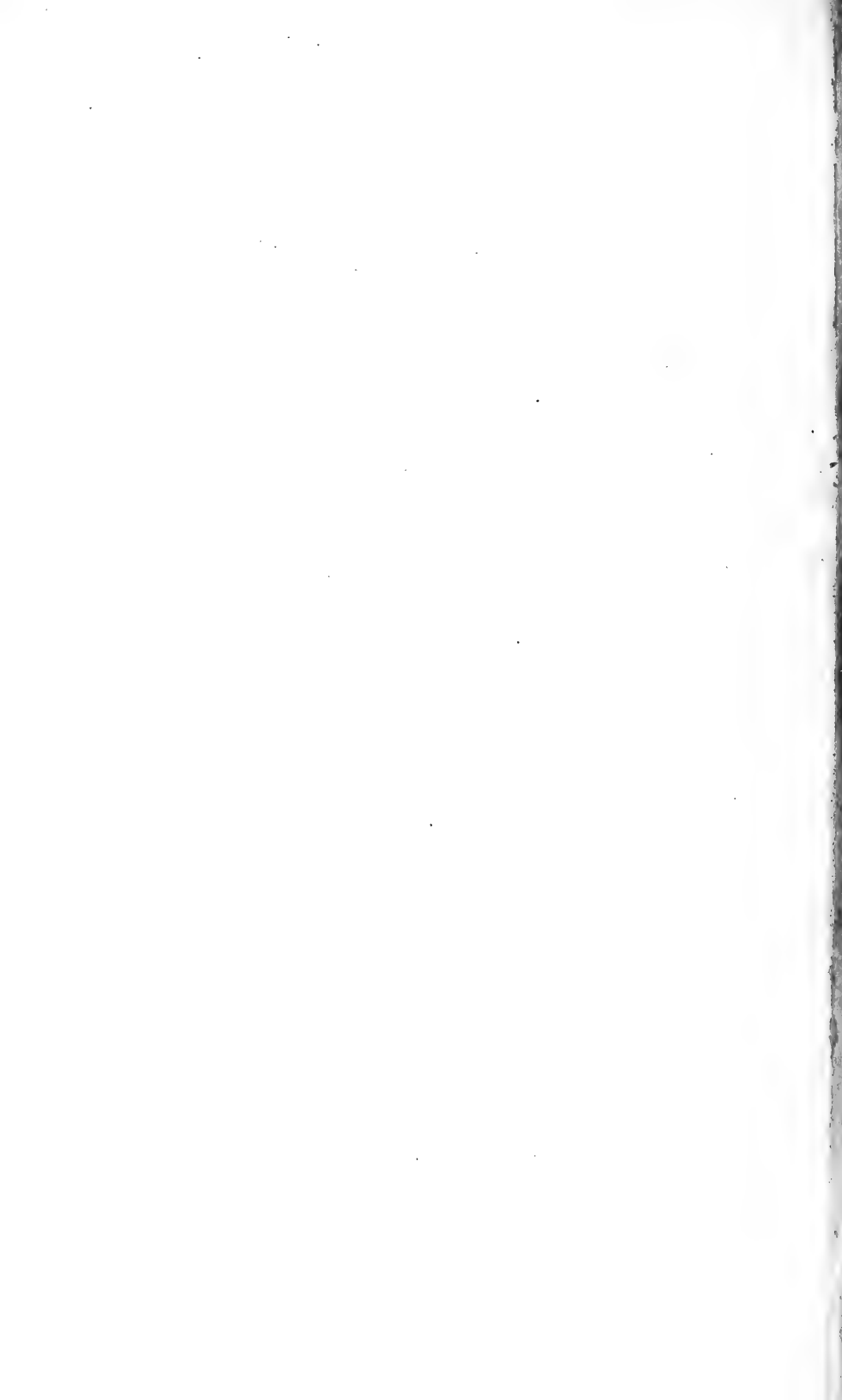
AUTHORS.

Adams, C. C.	621
Aldrich, J. M.	531
Ashmead, W. H.	615, 623
Baker, C. F.	463
Banks, N.	431, 559, 596, 601
Barnes, W.	328
Barrett, O. W.	403, 428, 600
Bowditch, F. C.	393, 512
Bradley, J. C.	448
Broadwell, W. H.	411, 447, 513, 608, 644.
Brown, C. E.	439
Browning, G. W.	581
Calvert, P. P.	340, 342, 376, 407, 440, 452, 475, 505, 537, 546, 572, 603, 634, 641.
Caudell, A. N.	583
Cockerell, T. D. A.	439, 503, 510, 578, 594, 601, 622.
Cockerell, W. P.	622
Coquillett, D. W.	429, 500
Davidson, A.	511
Dietz, W. G.	349
Doane, R. W.	390
Dodge, G. M.	433, 472

INDEX.

v

Dury, C.	510	Moore, J. P.	340
Dyar, H. G.	333, 517, 580, 618	Newcomb, H. H.	396
Ehrmann, G. A.	499, 619	Osborn, H.	395, 501
Fall, H. C.	459	Oslar, E. J.	495
Fernald, C. H.	359	Read, H. Y.	412
Field, W. L. W. 401, 446, 447, 513, 514, 580, 610, 643, 644.		Rehn, J. A. G.	630
Forket, C.	512	Rivers, J. J.	389
Foster, F. H.	461	Satterthwaite, A. F.	502
Fox, W. J. 348, 380, 400, 412, 449, 484, 548, 553, 579, 612, 643.		Skinner, H. 334, 335, 347, 369, 380, 402, 413, 434, 445, 473, 482, 483, 502, 504, 515, 533, 536, 545, 571, 602, 608, 609, 611, 632.	
Girault, A. A.	439	Slosson, A. T.	319
Goodhue, C. F.	368	Smith, J. B.	375, 509, 615
Griffith, H. G.	561	Snyth, E. A., Jr.	465, 485, 498 (547), 584.
Harvey, F. L.	549	Snow, W. A.	489
Herr, C. W.	481	Snyder, A. J.	363
Hine, J. S.	392	Soule, C. G.	631
Holland, W. J.	332, 381, 416	Troschel, A.	334
Hulst, G. D.	527, 554	Webster, B. F.	436
Johnson, C. W.	323	Webster, F. M.	375, 577, 640
Johnson, W. G.	471	Weidt, A. J.	348
Kellogg, V. L.	305, 490	Weith, R. J.	641
Kemp, S. T.	368, 482	Wheeler, W. M.	423
Kincaid, T.	353	Wickham, H. F.	450, 597
Kwiat, A.	447	Willcox, E. V.	404
Lounsbury, C. P.	340	Williamson, E. B.	398, 453, 464
Mally, C. W.	546	Wolcott, A. B.	468
Marlatt, C. L.	425, 590		
Mills, H.	489		



ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XI.

JANUARY, 1900.

No. 1

CONTENTS:

Kellogg—Notes on the Life-History and Structure of <i>Blepharocera capitata</i> Loew	305	Holland—A Description of a Variety of <i>Argynnis Nitocris</i> from Chihuahua, Mexico	332
Slosson—Additional List of Insects Taken in Alpine Region of Mt Washington	319	Dyar—A New Coelidid of the Palearctic Group	333
Johnson—Some Notes and Descriptions of Seven New Species and One New Genus of Diptera....	323	Editorial	335
Barnes—Notes on North American Diurnals, with Some Additions and Corrections to Dr. Skinner's Catalogue.....	328	Economic Entomology	336
		Notes and News	340
		Entomological Literature	342
		Doings of Societies	346
		Exchanges	i, ii

NOTES ON THE LIFE-HISTORY AND STRUCTURE OF *BLEPHAROCERA CAPITATA* LOEW.

BY VERNON L. KELLOGG,

Stanford University, California.

I.

In the swift, tumbling little stream of Coy Glen, which has cut its way from the summit of West Hill into the valley at the head of Cayuga Lake, near Ithaca, N. Y., an interesting fly makes itself abundantly at home. This fly is *Blepharocera capitata* Loew, one of the few North American species of its family. In Comstock's Manual there is a picture of the larva and of the pupa of this fly. The midge itself looks like a small crane-fly. Prof. Comstock gives in the Manual some account of the *Blepharocera's* interesting habits and transformations. The larva and pupa are strangely modified to adapt themselves to their aquatic life, for both larva and pupa live submerged, clinging to the rockbed of the stream. They gather in groups, forming black patches on the bed, in the swift shallow parts of the brook. The larvæ hold firmly to

the smooth rock by means of six "suckers" lying in a single segmented series in the median line on the ventral aspect of the body. So fast-holding are these suckers that in attempting to remove a larva one often tears it in halves. Yet the suckers can be readily voluntarily loosened by the insect.

These strange larvæ of *Blepharocera* have not gone unnoticed in other lands. Fritz Muller found them in Brazil (and this was the discovery of the young stages of the Blepharoceridæ); Dewitz, another German naturalist, found them in the Hartz Mountains, and Prof. Zschokke, of the University of Basel, has sent me some specimens from Switzerland. Here in California I have found the midges of a new species of the genus *Liponeura*, belonging to this family, and shall some day find the larvæ. Of course, these various Blepharocerid larvæ represent several species, but all of the members of the family so far known have very similar immature stages.

For a year or more I have devoted some time to the study of the post-embryonal development of *Blepharocera capitata*, hoping to find in the development of a Nematocerous fly some new light on those remarkable phenomena of histolysis and histogenesis which accompany the development of the Diptera, but which have been chiefly studied in the case of *Calliphora*, one of the highly specialized members of the order. The results of this study will be published elsewhere, but a brief account of some of the interesting structural peculiarities of *Blepharocera*, in its various stages, together with the little that is known of its life-history, may be of interest to the readers of THE NEWS.

Life History.

The eggs of *Blepharocera capitata* have not as yet been found. The larvæ and pupæ have long been known to Prof. Comstock and his students, being abundant in two streams near Ithaca and not uncommon in others. On May 9, 1898, I visited Coy Glen and found many young larvæ; no eggs, no pupæ, no adults. The smallest of these larvæ were 2.5 mm. long, and the larvæ were much scattered over the smooth rock bed of the stream, where the water was swift, but shallow. The larvæ can only live in swiftly flowing water; they die soon after being removed into vials of water or into still-water

aquaria. On May 14th I found larvæ of all sizes, from 3 mm. to 10 mm. long, and also a few just formed pupæ. The larger larvæ, 9 to 10 mm. long, which were full grown and ready to pupate, had gathered together, forming conspicuous "patches" on the rock bed. Each of these patches contained from one to several hundred individuals.

Most of these full-grown larvæ were curiously covered dorsally with a close growth of diatoms. The most abundant diatom in this growth was one of the stalked *Gomphonema*. The basis of this covering of the larva's back was the gelatinous mass at the base of the stalked diatoms. Scattered upon and through this mass were individuals of *Nitzschia* and several other diatomaceous genera. The covering had a soft, felt-like appearance, grayish or brownish, and did not seem to trouble the larva. In fact in the light of this condition it was very interesting to me to discover that the principal part of the contents of the alimentary canal of the larva was composed of diatoms. Is there any connection between the food habits of the larva and this convenient flourishing of diatoms on the insect's back?

On May 17th there were many new pupæ, but also still many larva and these of all sizes, from the 2½ mm. fellows to the full-grown ones. The pupæ all lie with head down stream. On May 20th the pupæ far outnumbered the larvæ, and on May 26th the larvæ were scarce. There were no patches remaining; the larvæ were of various sizes. No adults had issued; this is certain from the fact that there were no empty pupal cases to be seen in the patches of pupæ. (The pupal skin always remains attached to the rock after the imago issues.) On June 1st I found the midges issuing. A few were seen flying, with slow, weak flight, over the stream, and I collected a number as they issued from the pupal skins. Prof. Comstock first observed, and described in the Manual, this interesting escape of the delicate fly from the submerged pupal skin. The swift water makes this matter a difficult one, and a majority of the flies whose issuance I watched were carried off before they could get above the water. By June 9th most of the imagines had issued, although there were still pupæ and even some larvæ there, mostly old. Farther up the stream

some larva of about middle size, i. e. about 5-6 mm., were found. I could find but few of the midges. These were clinging to the under sides of leaves of bushes bordering the stream, or were slowly flying about. I saw a female catch a small fly and eat it. Saw none *in copulo* or ovipositing.

Between June 9th and July 1st I visited the stream often, searching for the eggs, but in vain. The imagines were very scarce. I could find but one or two during an hour's searching. There were no larvæ nor pupæ left.

Some reference to the food habits of the imagines will be made in connection with the account of the mouth parts. But I have little else to tell about the life-history. The rest of the story is yet to be learned.

Anatomical Notes.

The larva. The curious shape of the larva is well shown by the illustration (fig. 508) in Comstock's Manual. But Prof. Comstock is in error in explaining the character of the segmentation of the body. The body (see Fig. 1, A) consists of six parts, separated by distinct constrictions. By making sagittal longitudinal sections through the body it can be seen that the anterior, apparently single, segment is composed of the fused head and three thoracic segments,

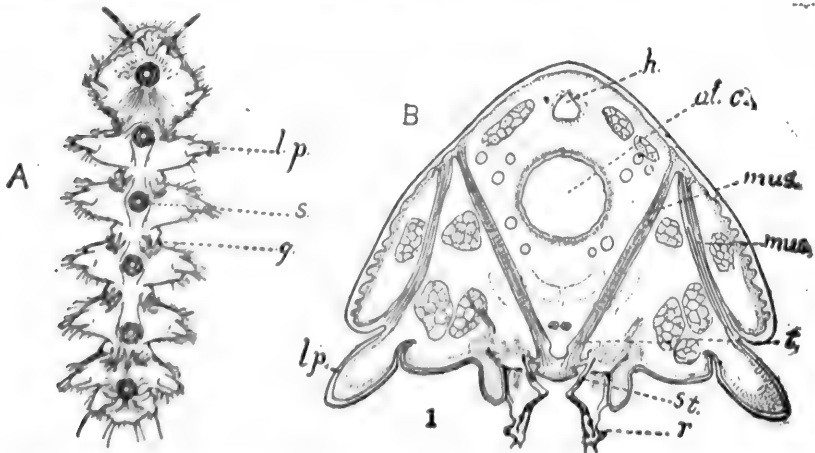


FIG. 1. *Hlephystoc-a capitata* Loew; A, larva, ventral aspect; B, dorso-ventral section of body of larva through a sucker; *l. p.*, lateral projection; *s.*, sucker; *g.*, tracheal gills; *h.*, heart; *al. c.*, alimentary canal; *mus.*, muscle; *t.*, tendon; *st.*, "stopper" or sucker; *r.*, rim of sucker.

while the most posterior part is composed of the last two abdominal segments, the intervening parts representing each a single abdominal segment. That the anterior body parts comprises the head and thoracic segments is also proved by the fact that all the imaginal discs of the legs and wings are to be found here. The larva is footless, but each body part (not body segment) bears a pair of small, unsegmented, pointed projections (Fig. 1, *l. p.*), situated on the ventral aspect of the lateral margins. This projection may be of slight use to the larva in locomotion, but, at best, only of slight use. The real organs of locomotion and of attachment to the rock bed of the stream are the six "suckers," one of which lies on the median ventral aspect of each body part (Fig. 1, *s.*). There is but one sucker for the combined head and thorax, and but one for the last two abdominal segments. By means of these suckers the larva clings to the rock bed of the stream, despite the impact of the swiftly flowing water. The larva can loosen its hold with the suckers voluntarily; and, by loosening those at one end of the body, swinging this end laterally and refastening it, and then loosening the other end of the body and swinging and refastening it, a slow but safe locomotion, chiefly lateral, is possible. The larvæ move about not a little, especially from the necessity of continually moving from the edge out farther into the stream as the water of the little stream gradually lessens in quantity.

The structure of these suckers and the manner of their working are of interest. The ventral (external) aspect of a sucker (Fig. 1, *s.*) shows a central opening, surrounded by a strong, flexible, concave rim, marked with alternating concentric bands of thicker and darker and thinner and lighter bands of chitin. The rim projects considerably ventrad, so that a considerable free or air space is enclosed by the rim when its outer edge is applied to any surface. In dorso-ventrad sections transversal to the body of the larva (see Fig. 1, *b.*) the whole structure of the sucker is apparent. The cup-shaped sucker is seen, after all, not to consist of a rim around a circular opening, but to be simply a part of the outer body wall (true skin and chitin cuticula) peculiarly folded and modified to act as a sucker. The projecting cup-like part (Fig. 1, *r.*) of the sucker

is coated with chitin, so as to be thick and strong, although still flexible. At its base the skin is almost free from chitin, thrown into fine folds, and bent in toward the interior of the body and then out again. Here it is greatly thickened by a circular, lens-shaped deposit of chitin (Fig. 1, *st.*), which is slightly larger than the inner neck of the sucker, which it closes internally. The neck of the sucker is the apparent central opening and the lens-shaped thickening is the bell-shaped structure, which closes this opening internally, as seen in looking at the sucker from the under or external side. The structure of the sucker is all plainly shown in Fig. 1, B, and can be much more readily understood from an inspection of the figure than from reading this description. Attached to the inner face of the lens-shaped "stopper" of the sucker are two great muscles (Fig. 1, *mus.*), which run dorsally and somewhat diagonally clear through the body cavity to the dorsal walls, to which they are attached. The muscles do not rise directly from the "stopper," but are fastened to it by strong, short tendons (Fig. 1, *t.*). The manner of the sucker's functioning can now be understood. With the rim resting on a smooth surface, the rock bed of the stream, and the "stopper" well down in the neck of the air cavity of the sucker, the lifting muscles may be contracted, the "stopper" raised (the folds at the neck give chance for a considerable movement of the "stopper") and a partial vacuum formed with the sucker. What muscles are used when the insect desires to loosen the hold of a sucker is not so evident. Probably the contraction of certain dorso-ventral muscles which lie lateral of the muscles which lift the "stopper" serves to force the "stopper" down by flattening the body dorso-ventrally. So firmly can the larva hold to the rock-bed by means of these suckers that one often tears a larva in two in attempting to remove it.

The larvae breathe by means of small tufts of short, thick, cylindrical, tracheal gills (Fig. 1, *g.*). There is a pair of these gill tufts on the ventral aspect of each of the first to fifth abdominal segments. Each tuft consists of five or six short branches springing from a common short basal stem. On the sixth (last) abdominal segment there is no tuft of slender, branching gills, as in the other segments; but there are two

pairs of much larger, thicker, finger-like processes, which may be tracheal gills of another kind.

II.

The Pupa. The peculiar shape of the pupa, with its flat ventral aspect and strongly convex, heavily chitinized dorsal wall is well shown in Prof. Comstock's illustration (Fig. 508, Manual of Insects). The pupa has a pair of dorsal, prothoracic tracheal gills, each one of these organs consisting of four small elliptical, erect plates (Fig 2, *g*). The whole of the flat ventral aspect of the pupa is applied to the rock, and the pupal cuticula is thin and membranous. The wings and legs are folded on this flat ventral aspect.

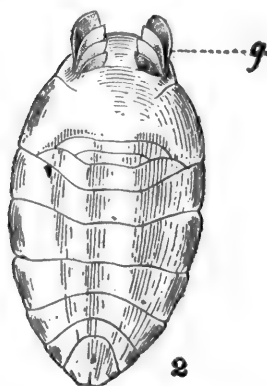


FIG. 2 *Blepharocera capitata* Loew; pupa, dorsal aspect; *g*, tracheal gills.

In the interior of the pupal body occur the interesting phenomena associated with the histolysis of many of the larval tissues and organs and the histogenesis of the imaginal tissues, which are as yet imperfectly understood. More than thirty years ago Weissman published his account of

the post embryonal development of *Musca* (*Calliphora*) *vomitaria*, in which he told of the great breaking down or disintegration undergone by certain larval organs and of the development of the imaginal wings and legs from small groups of cells called imaginal discs, which could be found in the larva at an early age. Since then a few men have restudied the development of *Calliphora*, and, in addition, more or less completely the development of a few other insects of complete metamorphosis, including a butterfly, a beetle, an *Encyrtus*, the little brown ant, and a few others. What has been found out is chiefly this, that in insects with complete metamorphosis many of the larval organs and tissues disintegrate during the pupal stage, while the corresponding imaginal organs develop from small scattered groups of primitive cells, which are not derived from the cells of the larval organs, but are distinct from them; some of them are, indeed, derived directly from

the embryo. These groups of indifferentiated cells are called imaginal discs or histoblasts. The legs and wings of the imago develop each from a single histoblast, which is simply originally an invaginated part of the embryonic skin. Among those tissues and organs of the larva which break down are most of the muscles, most of the alimentary canal, the salivary glands, much of the tracheary tissue, the fat body, etc. The reproductive organs, the nervous system and probably the heart of the larva do not break down, but pass over with simple modifications into the imaginal body. One of the most interesting things about these remarkable phenomena is the fact that in many insects—in *Calliphora*, for example—the breaking down of the larval tissues is accomplished by phagocytosis. That is, the tissues are attacked by certain cells of the blood tissue, which destroy the tissues by eating them; hence the name of the cells, phagocytes. But the disintegration can occur, and does in the case of certain insects, without the intervention of the phagocytes.

Now because the study among the Diptera of these phenomena of post embryonic development have been confined almost wholly to the specialized flies, the study of the post embryonic development of some Nematoceros form ought to be of special interest. But *Blepharocera*, although belonging to the generalized Nematoceros flies, and with an imago in really very generalized condition (see the account later of the mouth parts of the female), has such a highly modified larva that it shows a very specialized condition of post embryonic development. It is believed by some morphologists that phagocytes aid in the disintegration of the larval tissues only where the post embryonic development takes place in a very short time, as in the Muscidae. But my preparations show that phagocytosis occurs conspicuously and on a large scale in the development of *Blepharocera*, and this development is not specially hurried, the pupal stage lasting probably about two weeks. I am inclined to believe, therefore, that a high specialization of the larva, with the more radical differences between the larval and imaginal organs necessitating a greater destruction of larval tissues and organs, is quite a sufficient cause for phagocytosis, as rapid development.

The course of this histolysis and histogenesis, whose finding out has been the chief object of my study of *Blepharocera*, is, however, too complex a subject for consideration in these brief notes.

The Imago. The imagines have the general seeming of small Tipulids (Fig. 3, A). The legs are very long and the bodies slender. The females are larger than the males, and have more robust abdomens. To two specially interesting points in the structure of the imagines I wish to call attention.

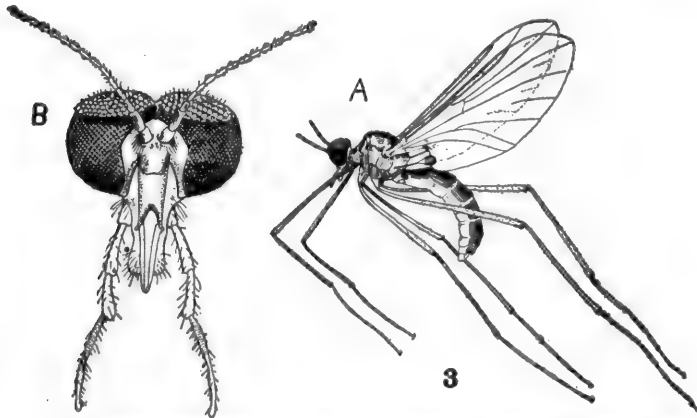


FIG. 3. *Blepharocera capitata* Loew; A, female; B, head of female, cephalic aspect.

In attempting to understand the specialized mouth parts of the sucking and piercing insects it is necessary for us to find the most generalized condition of the mouth parts existing in any of the groups of sucking insects whose mouth parts are to be studied. Among the Lepidoptera, for example, there exist in two or three small moths (*Eriocephala*, *Micropteryx*) mouth parts of such generalized condition that their parts can be readily and certainly homologized with the familiar, simple orthopterous biting type. Between these simplest, easily understood mouth parts of *Eriocephala* and the highly specialized mouth of the sphinx moth there exist all the gradations necessary to allow us to understand the course of specialization and the homologies of the extraordinary sphinx proboscis. Among the Hymenoptera a similar condition prevails, and the complex "tongue" of a honey bee is understood, and the

manner of its derivation is understood, because the generalized Hymenoptera, the saw-flies, have mouth parts sufficiently like the orthopterous type to make the homologies apparent, and because there are among the various Hymenopterous insects conditions of mouth parts gradatory from saw-fly to honey bee.

Now among the Diptera we search for the generalized mouth among the presumably generalized flies, the Nematocera.* And among all the Nematocera perhaps none has a mouth which is more generalized, i. e., more nearly in the condition of the typical biting mouth, than *Blepharocera*. The females of *Blepharocera*, like the females of *Simulium*, *Ceratopogon*, *Dixa*, *Culex* and some other Nematocera, are blood-sucking, and,

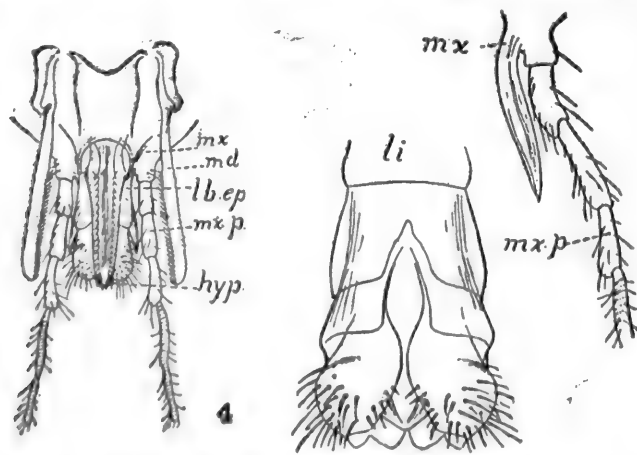


FIG. 4. *Blepharocera capitata* Loew, mouth parts; *lb. ep.*, labrum epi-pharynx; *mx.*, maxilla; *mx. p.*, maxillary palpus; *md*, mandible; *hyp.*, hypopharynx; *li*, labium.

while the mouth parts of these forms are not strictly biting, the mandibles are present, as cutting or sawing or piercing organs. The males of these forms are nectar-feeding and have lost the mandibles. In the mouth parts of the female *Blepharocera* all of the parts of the typical biting mouth are present, the mandibles, maxillæ and labium. The mandibles

* For an account of the mouth parts of all the Nematocerous families see Kellogg, "The Mouth parts of Nematocerous Diptera," *Psyche*, Vol. viii, Nos. 273, 275, 276, 277, 278.

(Fig. 4, *md.*) are long and serrate on their inner edges, so as to be effective lacerating instruments. The maxillæ (Fig. 4, *mx.*) are elongate and blade-like and have four-segmented palpi. The labium (Fig. 4, *li.*) is, though somewhat elongated, truly tip-like and has its terminal lobes not coalesced and without pseudo-tracheæ. The hypopharynx is not short and tongue-like, as in the orthopterous mouth, but is long and slender, and stylet-like. Altogether the difference between the mouth parts of *Blepharocera* and the racial biting type is one of modification, and of modification not sufficient to obscure the homologies, although a modification more profound than that shown by the most generalized Lepidoptera or Hymenoptera. On the other hand, there is not much difficulty in tracing the development of the Dipterous mouth from the generalized condition of *Blepharocera* (or *Simulium*, or *Dixa et al.*) to that extraordinary specialized condition shown by *Musca*, where the mandibles and maxillæ are lost and the labium is so modified that it has no longer any likeness to the "lower lips" of the orthopterous mouth.

The other specially interesting point in the imaginal anatomy of *Blepharocera* is the structural condition of the compound eyes. It has long been observed that several flies (*Simulium*, *Tabanaset al.*) and certain other insects (*Libellulidæ*, *Ascalaphus*, *Ephemeridæ*, *et al.*) have two sizes of facets in each compound eye; that some have the field containing these differently sized facets well delimited, the fields being in some cases actually separated from each other by a non-faceted line or by a constriction. When this constriction is so complete that the eye is truly divided we may fairly say that there are two pairs of compound eyes, the two eyes of each lateral pair differing in the size of the facets. This last extreme condition exists in the case of the males of certain *Ephemeridæ* and in both males and females of *Blepharocera capitata*.

The eyes of our *Blepharocera* are plainly divided, or are two on each side (Fig. 3, A and B). One of these eyes is dark colored, has small facets, and faces anteriorly and laterally. It is fairly convex. The other is reddish-brown, is composed of much larger facets, faces dorsally and has a nearly flat surface. This red, large faceted dorsal eye has the appearance of

flattened mushroom head, or thick plate, resting above the other eye. In the males the dorsal, large faceted eye is much smaller and less conspicuous than in the female, but both parts of the eye (or both eyes) are plainly present. This difference in the two parts of the eye is more radical, however,

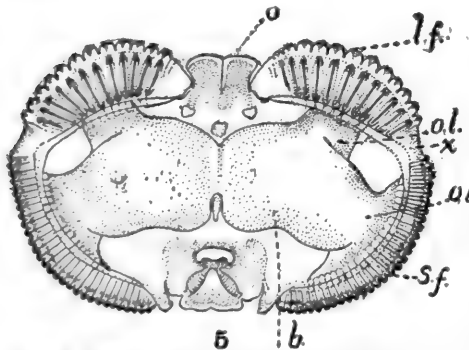


FIG. 5. *Blapharocera capitata* Loew, section of head through the eyes; *b*, brain; *o*, ocelli; *o. l.*, optic lobe; *l. f.*, large faceted eye; *s. f.*, small faceted eye; *l.*, unfaceted region between the two eyes of each side.

than can be discovered by a mere examination from without. The ommatidia or eye elements of each of the regions differ, as shown by sections (see Fig. 5), in many particulars. Corresponding with the difference in size of the facets (the corneal lenses of the

ommata) there is a marked difference in the diameter of the ommatidia from the two regions. The ommatidia of the dorsal large faceted eye are nearly twice as wide and they are fully twice as long as the ommatidia of the small faceted eye. Another striking and important difference is this, the larger ommatidia are very much less strongly pigmented than the smaller ommatidia. There are, also, some differences in the character of the inner optic "layers" lying between the hypodermal portion of the eye and the brain; characters too technical for discussion here. In sum, however, it is evident that there is so marked a difference in structure between the two eye regions that there must be a difference in function. The seeing by one of the eye regions differs from the seeing by the other eye region.

In a brief discussion elsewhere of the "divided eyes of arthropods" * I have referred to the observations of Chun, †

* Kellogg. "The Divided Eyes of Arthropods," *Zoologisches Anzeiger*, 1898, No. 557, pp. 280-281.

† Chun, Carl. "Atlantis, Biologische Studien über pelagische Organismen," in *Bibliotheca Zoologica*, 1896, Bd. 7, Heft 19.

who has described the structure of the divided eyes of certain pelagic crustaceans, and to the observation of Zimmer, † who has studied the divided eyes of certain male May flies. In both of these cases the eyes show two sizes of facets, and accompanying this are both those other structural differences which are apparent in *Blepharocera*, viz.: the large ommatidia and small amount of pigment of the large faceted eyes as compared with the small ommatidia and heavy pigmentation of the small faceted eyes. Here are three groups of arthropods, certain crustaceans, May flies and flies, widely separated genetically and of widely varying habits, showing a common structural modification of the eyes. We have evidently to do with independent adaptations determined by some common functional need.

The large size of the ommatidia and the small amount of pigment are characters which adapt the large faceted eyes for seeing in poor light (in the dark) and for readily perceiving moving objects (delicate perception of shadows).* The normal small faceted eyes see more accurately the actual shape of visible objects; they have better definition, but require much light. Chun explains that the large faceted eyes of the pelagic crustacea enable them to perceive their prey (for the crustacea possessing these eyes are all predaceous) in the poorly lighted levels of the water. The large faceted eyes of the male May flies enable them, according to Zimmer's explanation, to perceive the advancing female during the twilight marriage flights peculiar to these forms. What is the special use of the large faceted eyes in the case of *Blepharocera*?

The females are predaceous; they capture other smaller live insects, and, lacerating them with the saw-edged mandibles and blade-like maxillæ, lap their blood. The males, on the other hand, presumably, do not capture insects; they have no mandibles and are probably nectar-feeding. The females might advantageously be possessed of a number of those large, weakly pigmented eye elements which are specially adapted

† Zimmer, Carl, "Die Facettenaugen der Ephemeriden," Zeitsch. f. wiss. Zoologie, 1898, Bd. 63, pp. 236-262, pl. xii-xiii.

* To present the proof of this statement, which is well based on the researches of Exner and others, would require a technical discussion which space and the character of this paper forbids.

to the quick perception of moving objects. But what makes this explanation less convincing is the fact that the males also possess these large faceted ommatidia, although, to be sure, in fewer number. Perhaps both males and females are active at twilight. Search as carefully as I might I could never find but very few of the adult *Blepharocera* along the stream, from which they were certainly issuing by thousands. Until the habits of our fly is better known, then, it is hardly profitable to speculate on the special use of its large faceted eyes.

In closing I wish to call attention to three other accounts of the life-history and structure of Blepharoceridæ, one being a paper (in Russian, which I have not seen) by Wierzejskii;* another a description of the larva and pupa of *Liponeura brevirostris*, the specimen being found near Goslar, in the Hartz Mountains, Germany; the other a detailed account (in Portuguese) of the structure of the larva, pupa and imago of *Palto-stoma torrentium*, found in the province of Santa Catharina, Brazil.† In this last account Dr. Muller claims that the females are dimorphic, one kind of female having divided eyes, mandibles and long tarsal claws; and, being blood-sucking in habit, while the other kind lacks the dorsal large faceted eyes and mandibles, has short tarsal claws and is nectar-sucking in habit. Baron Osten Sacken has not been able to satisfy himself that Muller is correct in his claim of dimorphism, despite the fact that Muller's reiterations are very emphatic. With this question of dimorphism in mind I have examined all of the females of *Blepharocera capitata* which I have collected, twenty-three in number. All these females agree in possessing dorsal large faceted eyes and mandibles, and agree in all other structural characters. There is no dimorphism among these specimens. Now almost all of the specimens were taken just at the moment of issuance from the pupal case in different parts of the stream at different times. The criticism that one kind of female may have habits rendering it more easily discovered and captured than the other kind, and, hence, that my few specimens include only the easily taken ones, is not valid in this case. I have, beside, dissected or sectioned many pupæ, and, in the case of all females thus examined, the mandibles were present. It seems probable to me that there is no dimorphism among the females of *Blepharocera capitata* Löw.

* Dewitz, H. "Beschreibung der Larve u. Puppe von *Liponeura, brevirostris* Löw," Berliner Ent. Zeitsch., vol. xxv, 1880, pp. 61-66, pl. 1v.

† Muller, Fritz. "A Metamorphose de um Insecto Diptero," Archivos do Museu Nacional do Rio Janeiro, 1881, vol. iv, pp. 47-85 pl. 1v-vii.

ADDITIONAL LIST OF INSECTS TAKEN IN ALPINE REGION OF MOUNT WASHINGTON.

By ANNIE TRUMBULL SLOSSON.

I give herewith the names of some 170 species of insects taken in the summer of 1899, and not included in my former lists. I visited Mount Washington the last of June and remained thirteen days. Again in August I spent eleven days there. For identifications I am indebted to Messrs. Ashmead, Coquillett, Liebeck, Fox, Van Duzee, Fernald, Banks, Blanchard and Uhler.

PROCTOTRYPIDÆ.

- Chelognus slossonæ* Ashm. MS.
Helorus paradoxus Prov.
Pantoclis washingtonensis Ashm. MS.
Pantoclis crassicornis Ashm.
Zelotypa fuscicornis Ashm.
Prosacantha tarsata Ashm. MS.
Prosacantha argentispilis Ashm. MS.
Galesus quebecensis Prov.

CYNIPIDÆ.

- Allotria brassicæ* Ashm.
Ceroptres ficus Fitch.

CHALCIDIDÆ.

- Perilampus platygaster* Say.
Chalcis tarsalis Ashm.
Chiloneurus albicornis How.
Chiropachys color Linn.
Miscogaster alticola n. sp., Ashm.
Omphale livida Ashm.
Dibrachys boucheanus Ratzb.
Euderus elongatus Ashm.
Tetrastichus basinotatus Ashm.
Eulophus alticola Ashm. MS.

EVANIIDÆ.

- Aulacus rufitarsis* Cr.

ICHNEUMONIDÆ.

- Ichneumon seminiger* Cr.
Ichneumon versabilis Cr.
Amblyteles ormenus Cr.
Phæogenes vincibilis Cr.
Bathymetis tegularis n. sp. Ashm.
Medophron monticola Ashm. MS.
Phædroctonus coxalis Ashm. MS.

- Diachasma mellea* *Ashm.* MS.
Mesostenus candidus *Cr.*
Pimpla indigatrix *Walsh,*
Ecthrus luctuosus *Prov.*
Ecthrus abdominalis *Cr.*
Polysphincta tricolor *Ashm.* n. sp.
Ctenochira leucozonata *Ashm.*
Polyblastus pedalis *Cr.*
Ctenacme monticola *Ashm.* MS.
Cosmocômus americanus *Ashm.* MS.
Syrphoctonus bilineatus *Ashm.* n. sp.
Pyraemon sp.
Chorinæus costalis *Davis.*
Exolytus grandis *Ashm.*
Anomalon relictum *Fab.*
Temelucha scutellata *Ashm.*
Thersilochus provancheri *Ashm.*

BRACONIDÆ.

- Aphidius montivagus* *Ashm.* MS.
Hormiogaster slossonæ *Ashm.* MS.
Chelonus carinatus *Prov.*
Rhogas aciculatus *Cr.*
Microdus annulipes *Cr.*

POMPILIDÆ.

- Ceropales fraterna* *Sm.*

CRABRONIDÆ.

- Crabro 6-maculatus* *Say.*
Crabro nigrifrons *Cr.*

VESPIDÆ.

- Vespa diabolica* *Sauss.*

ANDRENIDÆ.

- Halictus similis* *Sm.*
Agapostemon æruginosus *Sm.*

DIPTERA

- Mycetophila obscura* *Walk.*
Mycetophila punctata *Meig.*
Culex pungens *Wied.*
Dicranomyia globithorax *O. S.*
Erioptera chrysocoma *O. S.*
Trichocera sp.
Pachyrrhina eucera *Lw.*
Tipula trivittata *Say.*
Rhyphus punctatus.
Odontomyia cineta *Olv.*
Tabanus cinctus *Fab.*
Holcocephala abdominalis *Say.*

Rhamphomyia mutabilis *Lw.*

Platypalpus apicalis *Lw.*

Platypalpus lateralis *Lw.*

Ardoptera irrorata *Fall.*

Neoplasta scapularis *Lw.*

Chilosia lasiophthalma *Will.*

Pyrophæna ocy mi *Fab.*

Temnostoma æquale *Lw.*

Corops sylvosus *Will.*

Oncomyia loraria *Lw.*

Actia palloris *Coq.*

Zelia vertebrata *Say.*

Pegomyia n. sp.?

Lispa hispida *Walk.*

Cænusia nudiseta *Stein.*

Cordylura n. sp.?

Allophyla lævis *Lw.*

Calobata antennipes *Say.*

Trypeta bella *Lw.*

Palloptra jucunda? *Lw.*

Sapromyza n. sp.

Prochyliza chrysostoma.

Hydrina opposita *Lw.*

Drosophila funebris *Fab.*

Drosophila inversa *Walk.*

Drosophila quinaria *Lw.*

Hippelates flavipes *Lw.*

Hippelates pusio *Lw.*

Chlerops proxima *Say.*

Agromyza jucunda v. d. w.

Agromyza melanopyga *Lw.*

* *Gymnophora arcuata* *Meig.*

Phora picta *Lehm.*

COLEOPTERA.

CARABIDÆ.

Calosoma scrutator *Fab.*

Elaphrus clairville *Kirby.*

Patrobus septentrionis *Dej.*

Amara erratica *Sturm.*

Platynus reflexus *Lec.*

Harpalus pennsylvanicus *De G.*

DYTISCIDÆ.

Cœlambus impressopunctatus *Sch.*

Agabus punctulatus *Aube.*

STAPHYLINIDÆ.

Philonthus lomatus *Er.*

* Not before recorded from this country."—COQUILLET.

Philonthus brunneus? Grav.

Conosoma knoxii Lec.

Homalium lapponicum Zett.

ENDOMYCHIDÆ.

Endomychus biguttatus Say.

CUCUJIDÆ.

Laemophlæus adustus Lec.

NITIDULIDÆ.

Epuræa sp.

DASYLLIDÆ.

Cyphon ruficollis Say.

ELATERIDÆ.

Dolopius lateralis Esch.

Limonium aurifer Lec.

Estodes tenuicollis Rand.

Sericosomus honestus Rand.

LAMPYRIDÆ.

Plateros canaliculatus Say.

Podabrus lævicollis Kirby.

Telephorus rectus Welsh.

PTINIDÆ.

Anobium notatum Say.

Xyletinus lugubris Lec.

CERAMBYCIDÆ.

Leptura proxima Say.

CHRYSOMELIDÆ.

Longitarsus turbatus Horn.

CURCULIONIDÆ.

Thysanocnemis fraxini Lec.

Rhinoncus pyrrophopus Lec.

SCOLYTIDÆ.

Hypothenemus sp.

Hylurgops pinifex Fitch.

ANTHRIBIDÆ.

Cratoparis lunatus Fab.

LEPIDOPTERA.

HETEROCERA.

Actias luna Linn.

Edema albifrons S. and A.

Benta asperatella Clem.

Crambus agitatellus Clem.

Platyptilla marguidactyla Fitch.

Tortrix conflictana Walk.

Steganoptycha crispata Clem.

Argyresthia gædertella Linn.
Buccalatrix canadensisella Cham.

HEMIPTERA.

HETEROPTERA.

Podisus cynicus Say.
Podisus serieventris Uhl.
Banasa calva Say.
Acanthosoma cruciata Say.
Corizus novæboracensis Sign.
Nysius thymi Wolff.
Cymus sp.
Lygus n. sp.
Lygus var. flavomaculatus Prov.
Lygus monachus Uhl.
Lygus hirticelus Uhl.
Inacora malina Uhl.
Largidena opaca Uhl, MS.
Neoborus saxeus Dist. var.
Agalliaestes associatus Uhl.
Agalliaestes n. sp.
Plagiognathus fraternus Uhl.
Phytocoris n. sp.
Cyrtorrhinus n. sp.
Psallus n. sp.

NEUROPTERA.

Chloroperla montana Bks.
Centroptilum luteolum Muell.
Chrysopa ypsilon Fitch.
Hemerobius stigmaterus Fitch.
Hemerobius venusta Bks.

ARANEIDÆ.

ARACHNIDÆ.

Epeira carbonaria Koch.
Cornicularia communis Hentz.

SOME NOTES AND DESCRIPTIONS OF SEVEN NEW SPECIES AND ONE NEW GENUS OF DIPTERA.

By CHARLES W. JOHNSON.

The new species here described are some that have been discovered in preparing the list of Diptera for Prof. John B. Smith's list of the insects of New Jersey, now in press.

***Cecidomyia oxycoccana* Johnson,**

Cecidomyia vaccinii J. B. Smith. Special Bull. K., N. J. Agri. Exp. Sta., pp. 31-37, figs. 16, 17, 18, 1890. Catl. Ins. N. J., 360, 1890. (not Osten Sacken, Monogr. Vol. I, p. 196, 1862).

Cecidomyia oxycoccana Johns. Ent. News, X., 80, 1899.

This species was well described and figured by Prof. Smith in his special bulletin on "The Insects Injurious Affecting Cranberries." As the name is preoccupied, I herewith take the liberty of redescribing it from Prof. Smith's work under the above name.

"In color the female is recognizable at once by the deep red abdomen, the grayish upper side of thorax, sides more yellow and black head and eyes. The male is smaller than the female, of a more uniform yellowish gray and also with black eyes. The legs are very long and yellowish, covered with fine hairs. The antennæ of the male are long and very handsome, appearing like a string of beads, each bead set with long hairs in a circle around it. The antennæ of the female are much shorter, the joints oval and closely joined. The female is furnished with a long extensile ovipositor, by means of which she thrusts her eggs into the very heart of the young shoot, probably depositing them at the base of one of the minute leaves just forming. The imago is about one sixteenth of an inch in length, the wings expanding about one-eighth of an inch, covered with fine hair.

"The larva is a minute orange red or yellow grub, about .06 inch or a trifle more in length. When fully grown the larva spins a very thin and delicate pure white cocoon, in which it changes into a pupa, with all the members of the future fly distinctly traceable. The pupa wriggles out of the cocoon before the fly emerges and makes its way to the edge of the leaf by means of the little rough points with which the abdomen is set.

"There are at least four, and probably five, broods of this insect, ranging in time from the beginning of May to the middle or end of September, and requiring from larva to imago about thirteen days."

Infests the terminal buds of the cranberry and "Loose Strife" (*Lysimachia terrestris*) in the vicinity of Jamesburg and other sections of the State.

***Teucholabis complexa* Osten Sacken.**

The larvæ of this species was found in considerable number under the bark of a decayed oak in the woods below Peermont (Avalon), on June 8th. They commenced pupating

about the 13th, the imagos continuing to emerge from the 22d to the 27th.

Sargus cœruleifrons, n. sp.

♂ ♀. Upper half of the front and the vertex bluish green, shining, about one-third narrower in the ♂ than in the ♀; lower half of the front yellow, with a prominent transverse ridge, the upper edge of which is pure white; this ridge occupies about the middle of the front; face and occiput black, facial orbits yellow, palpi whitish, antennæ yellow with black hairs, aristæ black, the first joint of the antennæ slightly longer than in most species. Dorsum of the thorax, the scutellum and metanotum green, in the male, blue, with a slight green shade; humeral callus and pleura yellow, sternum black. Abdomen bright blue in the ♀, blue black in the ♂, sparsely covered with whitish pile, that is, thicker on the sides and at the margin of the segments; venter black, the anterior margins of the segments yellowish. Legs light yellow, terminal half of the posterior femora (on the upper side) and tibiæ and the three last joints of the tarsi dark brown. Wings, brownish hyaline, stigma and veins dark brown. Length, ♂ 7mm., ♀ 8mm.

Two specimens were taken in copulation along Dunnfield creek, Delaware Water Gap, N. J., July 12, 1898.

Theriopectes politus, n. sp.

♂ Face black, pile whitish, oral margins brownish, with white pile that is longer than that on the face, mouth parts brownish; front black, densely covered with a grayish pubescence. Antennæ reddish, with black hairs, upper edge of the third joint brown, tip black. Thorax and scutellum black, shining, with sparse black pile; two subdorsal stripes, formed by grayish bloom, extends from the anterior margin to the suture, antecalar tubercle yellow, humeri and postalar tubercle brownish, pleuræ black, with long yellow pile, especially below the base of the wing and tegulæ. Abdomen; first three segments yellow, shining, translucent, with a broad dorsal stripe and lateral margins brown, the remainder of the segments shining black, narrowly margined posteriorly with yellow, anterior margin of the four segments on each side and an obsolete spot connected with the posterior margin also yellowish, pile sparse blackish, second and third ventral segments yellow, translucent, first and fourth brown, the others black, all except the first with a posterior band of whitish bloom. Wings hyaline, veins and the greater portion of the marginal and submarginal cells brown. Legs black, base of the anterior tibiæ and the tibiæ and tarsi of the middle and posterior legs brown. Length, 10mm.

One ♂, collected at Merchantville, June 28, 1899. Anxiously looking for more material, I have refrained until now in describing this interesting species.

Daulopogon terricola, n. sp.

♂ ♀. Head with a dense, grayish pubescence, in certain lights the middle of the front and a line across the vertex is dark brown mystax, and the hair on the lower part of the occiput white, the antennæ and mouth parts black. Thorax and scutellum covered with a thick, grey pubescence, with two dorsal and a dorso-pleural line of brown, pleuræ, also with a dense grayish pubescence. Abdomen black, with a thin, whitish pubescence, segments minutely punctate, with a narrow, shining posterior border, which in some specimens show a more or less brownish color, a lateral margin expanding toward the posterior angle of each segment, is of a light gray on a yellowish ground, venter with grayish pubescence, hypopygium brownish. Wings, hyaline veins dark brown, halteres yellow. Legs reddish brown, coxæ, front and usually the middle femora, except the tip black, pubescence and hair white, terminal joints of the tarsi more or less blackish, hairs and bristles on the tibiæ and tarsi black. Length, 7mm.

Ocean County (Prof. J. B. Smith), Clementon, May 9th, 30th; Wenonah, May 14th; Riverton, May 29th. This species is quite common during the spring on the low, damp ground of southern New Jersey. I have seen it from no other locality.

Rivellia brevifasciata, n. sp.

♂ ♀. Lower half of the face shining black, upper half opaque, front brown, opaque, vertex with three shining black spots, the central one surrounding the ocelli, frontal and facial orbits silvery; occiputs black, antennæ reddish, tip of third joint dark brown, Thorax and abdomen a uniform dark green. Legs entirely light yellow. The four bands on the wings are obsolete or greatly abbreviated, the first and second costal cells are hyaline; the first band consists only of a spot in the marginal cell; the second and third bands do not extend beyond the fourth longitudinal vein; the fourth, or apical band, about the same as in *R. flavimana*, but not connected with the third along the costal margin. Length, 4mm.

This species is nearest related to *R. flavimana* Loew, from which it is at once separated by the obsolete bands and hyaline costal cells.

Atco, June 18, 1893. I have also two specimens from Dr. Garry deN. Hough, collected by Mr. G. R. Pilate at Tifton, Ga., June 6th.

Chetopsis apicalis, n. sp. Fig 1.

Resembles *C. aenea* Wied., except in the color of the wings, which in this species are yellowish, with a large brownish-black apical



spot, bordered by a subarcuate whitish band; in some specimens there is a slight brownish tinge along the inner edge of the white band toward the costa; in others the apical spot is broken into three parts, forming wide margins to the veins, with hyaline stripes in the middle of the cells. Length, 4 to 6mm. ♂ ♀.

Cape May, June 14th; Anglesea, July 16th; Sea Isle City, July 22d; also at Ormond, Fla. (Mrs. Slosson), and St. Augustine. This may possibly be only a variation of *C. ænea*, but in the large series before me I fail to find satisfactory intermediates. It seems to be confined to the sea coast and is quite common in and along the salt water marshes.

Sepsisoma, n. gen.

Body slender, resembling *Sepsis* in form. Front very broad, face but slightly projecting, occiput fully one-third the total length of the head. Ocelli not approximate, the two upper ones being on the posterior edge of the vertex, the other near the front, aristæ distinctly pubescent. Two prominent lateral *prothoracic* and two *mesothoracic* bristles, scutellum small with two bristles. Metathorax abruptly sloping. Abdomen subpedunculate. Legs slender, femora not thickened, *front and hind femora only*, with four or five small spines on the under side toward the tip. Wings similar to those of the genus *Stenomacra* Loew. It belongs to the section *Richardina*, family Ortalidæ.

Sepsisoma flavescens, n. sp. Fig. 2.

Head, thorax, abdomen, legs and antennæ reddish yellow, ocelli brownish black, third joint of the antennæ slightly more than double the length of the second and third together, oblong and tapering slightly toward the tip; vertex shining with four bristles, one on each side of the anterior ocelli, the others on the orbits, occiput also with four bristles, two on each side near the vertex. Thorax subopaque, halteres light yellow. Abdomen somewhat darker toward the base, the whole covered with a short yellowish pile. Legs covered with short yellowish hairs, middle and posterior tibiæ and tarsi with a more or less brownish tinge. Wings hyaline, with a small brown spot at top, extending equally along the margin on each side of the end of the third longitudinal vein. Length, 6mm.



2

Three specimens, one of which was taken along Big Timber Creek, a short distance above Westville, August 19, 1897.

***Neaspilota achilleæ*, n. sp. Fig. 3.**

Head light yellow, first and second joints of the antennæ also light yellow, third joint of a slightly darker shade. Thorax and scutellum light yellow, dorsal portion and the metathorax blackish with a whitish bloom and pubescence. Abdomen dark yellow, with blackish pile. Ovipositor shiny, legs yellow, wings



as shown in figure, except that in some specimens there is only a wide costal margin, the short transverse stripe becoming obsolete or wanting. Length, 4mm.

Common on the Yarrow or Milfoil (*Achillea millefolium*) at Avalon, June 30, 1895; one specimen, Edge Hill, Montgomery County, Pa., July 4th; also one specimen from Dr. Garry deN. Hough, collected by Mr. G. R. Pilate at Tifton, Ga., June 6, 1896. It resembles in general appearance a small *N. vernoniæ* Lw.

— 0 —

NOTES ON NORTH AMERICAN DIURNALS WITH SOME ADDITIONS AND CORRECTIONS TO DR. SKINNER'S CATALOGUE.

WILLIAM BARNES, M. D., Decatur, Illinois.

Heliconius charitonius Linn. This species, so common in Florida, is only rarely found in Texas and Arizona. I have occasionally received specimens from near Kerrville, Texas, and from Cochise Co., Arizona.

Agraulis vanillæ Linn. Occasionally found as far north as Colorado.

Argynnis cybele Var. *carpenterii* Edw. The original types of this variety were taken on Taos Peak, northern New Mexico, and not in Arizona as is stated in both Edwards' and Skinner's catalogues. I have this year received specimens from near Durango, South-west Colorado. *Cybele*, as it occurs with us in the East, I have never seen in the mountainous regions of Colorado, nor west of the continental divide. Typical *leto* occurs as far east as Utah, and possibly in the extreme western part of Colorado along the line. In the intermediate territory between where *leto* and *cybele* fly we find the forms of *carpenterii* and *charlottæ*, the former more to the eastward, the latter west and north. *Charlottæ* forms a very close connecting link between *leto* and *cybele*, and its occurrence in the intermediate territory is of interest as showing the path along which at some former time the species probably spread across the continent.

Argynnis oweni Edw. A long series of specimens of this species, some from Prof. Owen himself, others from Idaho, compared with the types, show such close gradations into *hippolyta* that in most cases it is impossible to tell under which name to place the specimens.

Argynnis rhodope Edw. Specimens taken in Yellowstone Park and Idaho are but a shade lighter on the under surface of the secondaries than typical specimens taken in British Columbia.

Argynnis behrensii Edw. Mendocino, California, is the only locality mentioned in Skinner's Catalogue for this species. It is, however, not at all rare at Glenwood Springs, Colorado, as has already been recorded by Mr. Edwards. I have also received it from Utah and Durango, Colorado.

Argynnis meadii Edw. This is one of the commonest species of *Argynnis* in the canons around Denver, Colorado. It is also found in Idaho and Wyoming in addition to the localities given by Skinner.

Melitæa nubigena Var. *wheeleri* H. Edw. Is found in Nevada, Utah and Western Colorado, while the variety *capella* Barnes is found around Denver and Manitou, Colorado.

Melitæa gillettii Barnes. Since the types were taken in Yellowstone Park, I have also received specimens from Idaho.

Melitæa rubicunda H. Edw. Is found in Oregon, as well as in Northern California.

Melitæa acastus Edw. Is common in Western Colorado.

Melitæa whitneyi Behr. Is found in Washington and Oregon as well as California and Nevada.

Melitæa alma Str. Examples from Durango, Colorado, do not differ from those taken in Utah and Arizona.

Melitæa nympa Edw. Is quite common in the Huachuca Mountains, Southern Arizona.

Melitæa arachne Edw. Is not rare around Kerrville, Texas.

Melitæa definita Aaron. Is common on the Nueces River, Southern Texas.

Eresia tulcis Bates (*punctata* Edw.) Common along the Lower Nueces River, Southern Texas

Grapta satyrus Edw. Is not at all rare in Arizona.

Eunica tatila Herr Schaff. Must be extremely common around Miami, Florida, as I have received more than 500 specimens from there this season.

Heterochroa californica Butl. Is found in New Mexico and California in addition to the localities mentioned by Skinner. It is common in Southern Arizona.

Neonmypha henshawi Edw. I have taken this species as far north as Denver, Colorado, but its home is in Arizona, in the southern part of which State it is very common. Like others of the genus its flight is rather slow and jerky, flitting under and through the

thorny bushes which form most of the vegetation in that delightful country. The rough, rocky nature of the land and the abundance of rattle snakes add additional charms to collecting. *Rubricata* is also found there, but is not so common as in Texas.

Cænonympha haydenii Edw. Is very common in Hayden Valley, Yellowstone Park, and adjacent parts of Idaho. It flies out upon the open grassy plains and is very easy to capture. Along in the middle of July one can easily take a couple of hundred specimens in a day.

Erebia discoidalis Kirby. Skinner puts the habitat of this species as Boreal America, but it is common at least as far south as Calgary Alberta.

Erebia softa Str. This species must be very local in its habits. It is found in Yellowstone Park, on the north side of the low hills where the grass and herbage is rank and green, and where the trees are few and so scattered as to permit the sun to shine in in broad patches. Its flight is regular and slow, and it does not wander far from home. When they are frightened they fly only a few feet and then drop down among the rank grass and crawl into the tangled herbage, where they remain motionless. It is very difficult, indeed, to find them and almost impossible to make them fly up again. The beautiful bright yellow spots change to a dirty yellowish white after death. They are not at all rare in Yellowstone Park about the middle of July, if one knows exactly where to look for them.

Gyrocheilus tritonia Edw. This species is found quite plentifully at an elevation from 4,000 to 6,000 feet in the mountains of Southern Arizona. It flies in the same sort of country as *henshawi*, and its capture is attended with the same difficulties.

Epinephele xicaque Reak. This beautiful Satyrid is not at all rare in the Huachuca Mountains of Southern Arizona, and adds a new genus as well as species to our list.

Satyrus paulus Edw. Is quite common in Colorado, both around Denver and Glenwood Springs.

Satyrus atus Bd. Idaho and Wyoming may be given as additional localities for this species.

Thecla crysalus Var. *Citima* H. Edw. Is common around Glenwood Springs, Colorado.

Thecla spinetorum Bd. Several specimens taken the past summer in the Huachuca Mountains, Southern Arizona, show a much greater range for this species than hitherto suspected.

Thecla leda Edw. Is quite common around Mesquite in May, in Southern Arizona.

Thecla apama Edw. Is very common in May and June in the mountains of Southern Arizona.

Thecla affinis Edw. I have only received this species from Utah, though specimens of *Dumetorum* from Colorado are often taken with only the slightest trace of the white spots.

Thecla sheridanii Edw. Is common early in the spring around Denver, Colorado, but is very local in its habits.

Chrysophanus editha Mead. Is found in Southern Oregon, California and Utah, giving it a much more extensive range than credited to it by Skinner.

In addition to localities given by Skinner, I have *mariposa* from Washington and Oregon; of *zeroe* from Utah, Wyoming and Idaho; of *Florus* from Idaho and Wyoming, and of *cupreus* from Beaver Cañon, Idaho. *Dorcus* is quite common at Port Arthur in July.

Lycæna glaucon Edw. Is much more common in Utah than in Colorado.

Archonias lyceas Godm. and Salvin. This species is occasionally found in Southern Arizona. Both Mr. Poling and myself have received examples from there the past season.

Anthocharis olympia Var. *rosa* Edw. Is quite common in the early spring around Denver, Colorado.

Gonepteryx clorinde Godt. Placed by Strecker on our list, but was omitted by Edwards and Skinner. Two quite fresh specimens taken this season in the Huachuca Mountains, Southern Arizona, prove that it is occasionally found north of the Mexican boundary.

Colias eurydice Bd. A specimen taken near Kerrville, Texas, gives a much more extensive range for this species than it has hitherto been credited with.

Colias meadii Edw. and *elis*, Str. A long series of specimens from Yellowstone Park, compared with typical *meadii* from Colorado, and *elis* from Laggan, show all gradations and would puzzle anyone to tell to which species they belong.

Colias emilia Edw. Is very common around Pullman, Washington, and at Osoyoos, British Columbia.

Pamphila taxiles Edw. Is common in Colorado around Denver, Manitou and Glenwood Springs. Also very common in Southern Arizona.

Pamphila siris Edw. Is extremely common at Taylor's Ranch, about half way between Beaver Cañon and Yellowstone Park.

Pamphila bellus Edw. A number of specimens of this species taken this year in the Huachucas Mountains, Arizona, are, I believe, the first taken since Morrison got the types many years ago.

Pamphila python Edw. Is not rare in the same mountains.

Pamphila lunus Edw. Seems to be much rarer than *deva*, which it so closely resembles, but a single specimen was obtained this season.

Pamphila phylace Edw. This species seems to be common around Las Vegas, New Mexico, and is occasionally taken around Denver, Colorado.

Amblyscirtes cassus Edw. and *nanno* Edw. Are both rather common in the Huachuca Mountains, Arizona.

Grais stigmaticus Mab. A single specimen of this large Hesperid

was taken near Kerrville, Texas, last season. It is rather worn and was probably driven by the wind from its natural home in Mexico.

Eudamus idas Cram. I have specimens of this species from Kerrville, Texas, also from Southern Arizona and New Mexico, so that it probably deserves a place on our list.

Eudamus outis Skinner. Is not rare in Southern Arizona as well as Texas.

Eudamus coyote Skinner. A few specimens of this species were taken in the neighborhood of Corpus Christi, Texas.

Eudamus epigona Herr. Schaff. Is not at all rare in the Huachuca Mountains, Arizona.

Eudamus cellus Bd. Lec. Is very common in the same region, and *dorus*, Edw. is also found there, but much less plentifully.

Erycides amyntas Fab. Is extremely common at Miami, Florida, as several hundred specimens received from there this season testify. I also have the species from Texas and Arizona.

Pyrrophyga araxes Hew. This species is very common in the Huachuca Mountains in June and July.

Ægiale streckeri Skinner. Not rare around Durango, Colorado. Varies greatly in size and markings.

Ægiale neumoegeii Edw. This species is not rare in Southern Arizona, but seems to be local in its habits and to fly only during a short season. A series of fifty or more specimens show little variation.

—o—

A DESCRIPTION OF A VARIETY OF ARGYNNIS NITOCRIS FROM CHIHUAHUA, MEXICO.

By W. J. HOLLAND, LL.D.

I recently received from C. H. Tyler Townsend a collection of Lepidoptera made by him in the State of Chihuahua, Mexico. The collection was taken at the head of the Rio Piedras Verdes, in Chihuahua, at an elevation of from 7,100 to 7,300 feet above sea level in the Sierra Madre region. The collection was quite devoid of novelties, consisting almost wholly of common species of wide distribution. The only exception to this observation is found in a varietal form of *Argynnis nitocris* Edwards, for which I propose the varietal name of *cærulescens*.

Argynnis nitocris, var., *cærulescens*, var.

♂. The male does not materially differ from the types of *nitocris* contained in the Edwards' collection, except that the basal and median area are darker on the upper side than in the type and the spots more confluent. On the under side the deep red of the basal

and posterior portion of the primaries is darker and more intense and the black spots broader.

♀. The female differs greatly in appearance from the typical female of *nitocris*, because of the fact that the quadrate limb markings on the primaries and the secondaries are blue, of the same tint as the corresponding spots in *Argynnis diana*. The basal and median portions of the upper side of the wings are deep black, shot in certain lights with a violet lustre. On the under side the wings correspond to the type of *Nitocris* in the disposition of all the spots and markings, but the red of the primaries is darker. The secondaries in some specimens have the wing before the median band of silvery spots dark olive green, with the submarginal band of light quadrate spots pea green in color. In other specimens the inner area of the wing before the median band of silvery spots is deep maroon. In all specimens examined by me the submarginal band of light spots is more or less tinged with green, never pale honey-yellow, as in the type.

There is considerable variation in the expanse of the specimens, but in no case do they depart in the matter of size from the types of *nitocris* which are before me.

This form appears to be not uncommon in the month of September in the locality from which the specimens came.

The superficial resemblance of the female of this species to the female of *diana*, because of the blue color of the light spots on the upper side of the wings, is at first sight quite striking and the variety is altogether one of the most beautiful in the genus.

Carnegie Museum, Pittsburg, December 13, 1899.



A NEW COCHILDIAN OF THE PALEARATIC GROUP.

By HARRISON G. DYER.

I have had in my collection for several years a species of *Tortricidia* from Iowa, which I could not place with any described species. Lately Mr. W. F. Fiske has sent me another from Durham, New Hampshire.

Tortricidia fiskeana, n. sp.

Body and fore wings brownish, ochereous, glistening; hind wings brown black, the fringe lighter. Fore wings with two blackish transverse lines, as in *T. graffi*, *T. pallida* and *T. flexuosa*; the inner line, slightly beyond the middle of the wing is straight, sharply defined inwardly, a little diffuse outwardly and in the Iowa specimen continued as a dusky cloud half way to the termen; outer line curved from costa, where it joins the inner line, to in-

ternal margin before anal angle; in the New Hampshire specimen obsolete, represented by a just perceptible series of dots. Expanse, 14-15mm. Two males; U. S. Nat. Mus., type No. 4413.

This species is allied to *T. graffi* Pack., but is larger, the hind wings black and the inner line on fore wings straight, not curved. Reakirt's *Kronæa minuta* is unknown to me, as no specimens have been taken since Reakirt bred the types, and these, which were in Dr. Strecker's collection, are at present lost. The genus *Kronæa* will probably prove a synonym of either *Heterogenea* or *Tortricidia*. Reakirt says the palpi "slightly exceed the head" and the hind tibiæ have "three spurs." The first statement is indefinite, the second erroneous. If the palpi slightly exceed the *front* and the tibiæ have two spurs, the genus is *Heterogenea*; if the palpi slightly exceed the *vertex* and the hind tibiæ have *four* spurs, it is *Tortricidia*. The latter seems more probable, yet the description of the larva as possessing "densely spined papulæ" strongly suggests the former. It is possible, therefore, that *T. fiskeana* is a maculate form of *Kronæa minuta*; but if so, the form deserves a name in any case.



A NEW *Sphinx* for this locality called *Cocytius cluentius* was caught here in Chicago about October 6th by a friend of we butterfly hunters, Mr. Stupe, who told us about it and gave it to Mr. Paul Vollbrecht. This specimen measures a little over seven and one-half inches across the wings, and is quite a good specimen for a collection. The colors look fresh, as if not long after leaving the chrysalis, although it is rubbed a little on the body, probably on account of the struggle Mr. Stupe had in catching it, he not being familiar with cyanid bottles. This *Sphinx* is frequently seen in collections of Brazil in Lepidoptera, and has been caught as far north as Mexico and the West Indies. I happen to have a specimen in my collection from Mexico. No matter whether the wind or the railroad cars brought it such a distance from the south, it should be added to our list of U. S. Sphingidæ. I am not certain whether the name given me is correct, and I therefore describe the specimen. The general color of the wings and body is a dark brown. The forewings are shaded with dark zig-zag lines, similar to our *Sphinx carolina*; the under wings are almost transparent, with a broad dark rim; there is a yellow shade, almost a spot, where the wings start near the body. The body is dark brown with orange yellow spots on each side, similar to *carolina*.

A. TROSCHEL

NOTE.—The description applies fairly well to *Cocytius (Sphinx) cluentius* Cram. or *C. duponcheli* Poey. Our largest specimen of the former measures about four and one-half inches, and of the latter five and one-half inches.

HENRY SKINNER.

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 three 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, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., JANUARY, 1900.

Another volume has rolled into the past, and we are prepared to go on with THE NEWS and make it better than ever. It is our purpose to increase the number of pages and thus give more matter of interest and be able to more rapidly put into print the many papers that we receive. We also hope to be able to give colored illustrations, in addition to the usual half-tones and line engravings. We will welcome more articles of a popular but instructive nature, as many of our readers are non-professional and care little for the dry details of systematic work, although articles of this latter class will not be ignored. While we will give our readers still more for their money, the price will be the same as it was when we only published sixteen pages a month. In 1890, when THE NEWS was commenced, we hardly thought it would grow to a forty-page journal, and we feel grateful to those who in the past ten years have given us their aid and encouragement.

DEPARTMENT OF ECONOMIC ENTOMOLOGY

Edited by Prof. JOHN B. SMITH, Sc. D., New Brunswick, N. J.

Papers for this department are solicited. They should be sent to the editor, Prof. John B. Smith, Sc. D., New Brunswick, N. J.

LIFE HISTORY OF A TICK.

The scantiness of the present knowledge of the life history and habits of the tick kind may render the following observations on the South African Bont Tick *Amblyomma hebraeum* Koch of some interest to American students. Other species found at the Cape present a similar life history, and the same is doubtless true of some of the American species, as, for instance, the Lone Star Tick and the Dog Tick of the South, which Professor Morgan, of the Louisiana Experiment Station, states are to be found as nymphs and adults in pastures.

The mother Bont Tick deposits her eggs on or in the soil or in rubbish, by preference just beneath the surface in soft ground. The young tick ascends the nearest support, whether grass, bush, fence post or anything else, and there, in company with its kind, awaits the passing of an animal. It generally remains motionless, but a movement in its vicinity usually causes it to extend its fore legs and to vigorously claw the air; this admits of its securing a hold on an animal with little waste of energy. Once on and attached, little enlargement takes place until after the third day. Then rapid distention occurs, and in a day or two the tick lets go its hold and drops. The duration of this period on the host varied from five to eight days in the thousands of larvæ reared in the course of recent studies; the greatest number always fell on the sixth day. The reason for the variation is unknown, but is suspected to be connected with the difference in the flow of blood from different tissues.

The distended larva is very active until a place for concealment is found. Then it becomes sluggish and gradually dormant. After a period of variable length the skin ruptures across the front and the nymph stage begins. If the tick is kept continually in a temperature of ninety degrees or above, the change to the nymph is complete in sixteen days from the voluntary dropping. Under ordinary conditions of temperature, however, the period must be a long one; in the case of some of the ticks reared it exceeded eleven weeks. The nymph behaves much as did the larva, but, naturally, as it is separated from its brothers, it generally waits alone. In time it usually secures a host. Then, as before, there is little change in size

for a few days; rapid distention follows and it soon falls off voluntarily for the second time. The duration limits of this host period, as shown by the thousand or more individuals reared under observation, are four and one-quarter and eight days; as in the case of the larva, most of the "drops" occurred on the sixth day. The distended nymph roams about until a suitable hiding place is found, which, where possible, is in the cover of the soil or plant stems, and then it settles down to moult. Incubation at 100 to 103 degrees has, in the case of two large batches, indicated the minimum period from the drop to this moult to be twenty-four days. The maximum limit has not yet been determined, but exceeds eleven weeks at a temperature averaging 65 degrees.

The sex, which in the larval and nymphal stages appears indistinguishable, is clearly indicated by the colors, markings and other characters in the adult. So distinct are the markings and so thin the old skin, that the sexes may be separated two or three days before the moult actually takes place. In general appearance the adult is as different as can be from the earlier stages, and therefore, until these studies were made, it is not strange that the different stages of the species failed to be associated with one another.

After its second and final moult the tick again seeks its host, and in its quest it now does relatively much more traveling and less resting than as a larva or nymph. The male fastens to a beast without much hesitancy, but the female is very reluctant to attach herself except in front of or close by one of the opposite sex. Almost or quite invariably the female does the courting. She will not, however, take notice of a male prior to the latter's attaching himself, and neither will the male give her encouragement. For a number of days, the minimum of which appears to be four, the male continues unattractive, and although a female may come up and touch him with her fore legs she passes him by. Then an entire change takes place in his behavior, and on the approach of a female he is thrown into wild excitement. He brings his body at right angles with the skin of the animal and waves his eight legs frantically. His would-be-mate rushes up, is caught by the waving legs, and in a few seconds the pair is in close embrace, the limbs of each entwining the other. The female then proceeds to penetrate the skin of the host just in front of where her mate is attached. Sometimes several females dispute over one male; and in such a case the unlucky ones may settle down, even to half a dozen in number, around the pair.

A few days after mating in this manner the female begins to swell, at first slowly and then more rapidly; by about the fifth day she may be half distended. Full distention is generally attained on the seventh or eighth day and the tick then falls. Development may, however, be complete in six and one-half days, or may not be

until the ninth. A female which takes up her position alone develops little, and is almost sure to let go within a week and renew her search for an eligible male. An unmated male may also relax his hold and search for a mate, but this does not appear to be a common habit, and in such cases as it has been noticed the male settled down near a lone female and left her to change her position to effect the match he evidently desired. The duration of a male's life on the host has still to be determined, but many specimens now on cattle under observation have been attached already over five weeks. During its stay it may have several successive mates. Sometimes it turns or is pulled about so as to embrace a second before the first has fallen, and a third has been observed to closely follow a second.

The period which elapses between the dropping of the distended female and the beginning at oviposition has varied in instances observed from two to ten weeks. Oviposition has extended from three to nine weeks and incubation from eleven weeks to six months. Under ordinary conditions it is estimated that the entire round of life normally occupies at least a twelvemonth. Larval ticks hatched six months ago are still alive. The hungry nymphs have less vitality and few have survived thirteen weeks, although the majority not utilized in tracing the life history survived full three months. The waiting adult ticks seem to become exhausted in a shorter time, but those kept did not begin to die off until the tenth week. The different stages have been kept the periods mentioned, principally at the office or in living rooms. The vitality of all has no doubt been severely tested by frequent disturbances and by being carried on long train and cart journeys. The larvæ have been kept in a cork-stoppered bottle, the nymphs in a glass-topped jar, and the adults in glass-topped pasteboard boxes. No moisture or anything from which nourishment could be derived has been given them.

The larvæ when on the host naturally gorge themselves with blood, but many specimens reared evidenced by their cream or pink body color that they had drawn colorless fluids wholly or in part. When distended the larvæ measure 2mm. in length. The nymphs reared were very uniform in their color; when distended fully they measure 5mm. to 6mm. in length, but exceptional individuals drop when even less than 4mm. A critical examination may show sexual differences in this stage but a superficial one; all that has thus far been made shows none at all. The adults measure from 4mm. to 6mm. in length when they emerge from the nymphal skin. The male does not increase perceptibly in length or breadth during its stay on the host. The female generally increases to at least 20mm in length, and individuals measuring 25mm. long, 19mm. wide and 13mm. thick are not uncommon. These details are in-

cluded here merely to give one an idea of the size of this gigantic species.

Owing to the size of the tick there is no difficulty in observing the interesting process of oviposition. For this act a broad furrow forms under the depressed rostrum and the genital orifice, which normally is beneath the body, is thus brought to the front margin. The lips of the orifice extrude, act as an ovipositor, and carry the egg upward almost half way over the depressed rostrum. Meanwhile a pale colored, glandular organ, cleft for much of its length, protrudes from a cavity situated immediately beneath the fore margin of the shield. Gradually unfolding its glistening arms, this gland extends itself downward over the rostrum, grasps the egg and apparently envelopes it in slime, which it secretes. It then retracts, dragging the egg with it for a distance, but eventually leaving its charge resting on the rostrum. The latter organ with the palpi then comes into play, and rising together they push the egg forward and out of the way. The whole operation usually occupies from fifty-five to sixty-five seconds. The slightest touch causes a suspension of the work, and several hours generally elapse before it again begins. If repeatedly disturbed, as for instance by the daily removal of the eggs, the tick may cease laying altogether. By careful computation the egg complements of three ticks taken at random have been found to be, respectively, about 10,000, 13,400 and 17,600. It is presumed that the largest individuals lay as many as 20,000. The eggs adhere to one another and form an irregular mass in front of the body.

The adult male does not appear to draw blood but to live on serous matter. There is always some inflammation about the "bites" of all stages, and at least a slight suppuration occurs where the adults settle. Great sores sometimes form, and it is this result of tick attack more than the actual loss of blood that makes the tick problem so important in South Africa. Heifers on badly infested farms sometimes lose from one to all four teats before they calve, and there are stock farms on which a cow with a sound udder is exceptional. The transmission of several blood diseases is attributed to the agency of the species by the farmers, and in the course of studying the life history it was incidentally discovered that the farmers were perfectly correct as far as Red Water (Texas or Southern fever) was concerned. This malady was transmitted to a stabled cow located a thousand miles from where the original female ticks were obtained.

The Bont Tick in all stages attacks all kinds of stock farmed in South Africa, and that without apparent discrimination. Different classes of stock may be infested by the same tick in the different stages of its development. The tick does not do well where the hair is thick and long, or it would be nearer the truth to say that it is not

adapted to climbing through hair. Therefore few, particularly in the adult stage, are found away from the relatively bare places, and hence some classes of stock become far more infested than others. Animals in high condition are less subject to attack than those in poor condition, but an animal in the very pink of condition may become much infested. Some individual animals are far less susceptible than others, but "tick-proof" animals have not been observed. The less susceptible animals are probably found by as many ticks as the others, but for an unexplained reason or reasons the ticks do not take hold. In this connection it may be mentioned that most ticks get on and tumble off a number of times before securing a hold. Horses are made lame by infestation beneath the fetlock; sheep and goats by attack between the toes. Ostriches are able to reach almost all parts of their bodies to remove the tick, and so keep themselves relatively free, the whole surface considered. Larvæ, nymphs and adults have all fastened on to the writer, but not so freely as on to cattle. Oddly, the pubic regions appear to be most attractive to them. This apparent preference was at first thought to be due to the arrangement of the clothing, but latterly it has been learned that native children, clad in a single garment hanging from the shoulders, suffer the same experience.

CHARLES P. LOUNSBURY.

Cape Town, South Africa.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

KINGBIRDS EATING DRAGONFLIES.—During July and August, 1899, at Cottage City, Martha's Vineyard, Mass., kingbirds were frequently observed to catch and eat a large species of dragonfly which occurred abundantly about the house and downs. The captured insects were invariably carried to a convenient perch, usually a fence, on which they were held with the bird's feet, while the wings were stripped off and discarded, when the body was pulled to pieces and eaten.

J. PERCY MOORE.

[The dragonfly referred to was *Epiaschna heros* Fabr.; the kingbird is, of course, the common *Tyrannus tyrannus* L. This is the most definite observation yet recorded, to my knowledge, on this subject, J. L. Hersey, Can. Ent., April, 1873, p. 160, having merely recorded that dragonflies are a favorite food for kingbirds. See also M. J. Elrod in THE NEWS for January, 1898, p. 9, at bottom—P. C. P.]

ENTOMOLOGICAL HONORS.—Dr. L. O. Howard, Professors John B. Smith, F. M. Webster and H. F. Wickham were unanimously elected honorary members of the Entomological Society of Ontario at its meeting of October 11 and 12, 1899.

IN response to an invitation sent out by Mr. H. H. Newcomb, a number of gentlemen met at his office in the Puritan Building, 35 Court street, Boston, on the evening of Friday, November 24, 1899, to take steps toward the formation of an Entomological Club. Mr. Newcomb presided, and Mr. W. L. W. Field was appointed to fill the office of secretary-treasurer pending the regular election of officers. The selection of a name for the club was deferred to the next meeting. It was agreed that the organization should be as informal as possible, and that its chief purpose should be to furnish opportunities for social intercourse among local entomologists. It was voted to meet again in the same place on Friday, December 15th, at 7:00 p. m. Beside those already mentioned there were present Messrs. P. G. Bolster, E. B. Clapp, J. A. Field, A. P. Hall, W. F. Low, G. A. Smalley, L. W. Swett, C. O. Zerrahn.

WE learn from Mr. Philip Nell, 1836 North Seventh street, Philadelphia, that he is printing pin labels for entomologists all over the United States and Canada. This greatly pleases us, as it marks a great advance in the study of entomology. The carelessness of the past in regard to lack of data is greatly to be deplored, and many specimens collected by our predecessors are worthless on this account. We advise all our readers, subscribers and friends who do not use these labels to immediately get a supply and properly label the pins of all their specimens and send a supply of labels along with any specimens they send in exchange to correspondents.

THE BRITISH-BOER WAR—MUTILATED IN A HOTEL.—November 19th.—The latest eccentricity of the enemy was the firing of three rounds from a howitzer at half past seven o'clock last evening. The second missile pierced the roof of the Royal Hotel. Mr. Stark, a naturalist, who was preparing a book on "The Entomology of Natal," was standing in the doorway. He was hurled into the street, both his legs being torn off. He said, "Look after my cat," and then died.—*Philadelphia Ledger, November 30th.*

[Mr. Stark was preparing a work on "The Ornithology of South Africa;" the first volume of which he had completed. The work is to form part of Slater's "Fauna of South Africa."—EDS.]

ON PERENNIAL YOUTH.—Fads and fancies, or other pleasures and occupations, may become out-of-date, grow old or lose their charms, but nature study never. It is to be enjoyed by the really young at eight, to the young at heart at eighty and upwards. Pleasant memories are stored in youth for a beautiful harvest in old age, increased steadily by yearly accumulations. The naturalist may number his years by many, but he is never old.—*Popular Science, September, 1899.*

THE drawing for the cover was made by our good friend Mr. Browning, of Salt Lake City, Utah.

Entomological Literature,

COMPILED BY P. P. CALVERT.

Under the above head it is intended to mention papers received at the Academy of Natural Sciences of Philadelphia pertaining to the Entomology of the Americas (North and South). Articles irrelevant to American entomology will not be noted. Contributions to the 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; * denotes that the paper in question contains descriptions of new North American forms. Titles of all articles in foreign languages are translated into English; usually such articles are written in the same language as the title of the journal containing them, but when such articles are in other languages than English, French, German or Italian, this fact is indicated in brackets.

4. The Canadian Entomologist, London, Ont. Nov., '99.—5. Psyche, Cambridge, Mass., Dec., '99.—7. Bulletin No. 20, new series, U. S. Department of Agriculture, Division of Entomology, Washington, '99.—11. The Annals and Magazine of Natural History, London, Nov., '99.—15. Biologia Centrali-Americana, pt. cl, London, Sept., '99.—35. Annales, Société Entomologique de Belgique, xliii, Brussels, '99.—55. Le Naturaliste, Paris, '99.—60c. Comunicaciones, Museo Nacional de Buenos Aires, ii, 4, Sept. 20, '99.—74. Naturwissenschaftliche Wochenschrift, Berlin, '99.—81. Biologisches Centralblatt, Erlangen, '99.—82. Centralblatt für Bakteriologie, Jena, '99.—84. Insekten Börse, Leipsic, '99.—89. Zoologische Jahrbücher, Abtheilung für Systematik, xii, Jena, Sept. 28, '99.—119. Archiv für Naturgeschichte, lxxv, i, 3, Berlin, Oct., '99.

The General Subject.—Bachmetjew, P. On the temperature of insects according to observations in Bulgaria, figs., Zeitschrift für wissenschaftliche Zoologie, lxxvi, 4, Leipsic, Oct. 20, '99.—Boas, J. E. V. Some remarks on the metamorphosis of insects, figs., 1 pl., 89.—Comstock, J. H., and Needham, J. G. The wings of insects, v., American Naturalist, Boston, Nov., '99.—Felt, E. P. Memorial of life and entomologic work of Joseph Albert Lintner, Ph. D. [New York] State Entomologist, 1874-98. Bulletins, New York State Museum, v, 24, Albany, Oct., '99.—Id. Voluntary entomologic service in New York State, 7.—Frühstorfer, H. Diary leaves [with remarks on American entomological collections], 84, Nov. 9, 16, 23.—Henslow, G. The fertilization of flowers by insects and other agencies, Journal, Royal Horticultural Society, xxiii, 2, London, Nov. '99.—Korschelt, E., and Heider, K. Text-book of the Embryology of Invertebrates. Translated from the German by Matilda Bernard. Revised and edited with additional notes by Martin F. Woodward. Vol. III. Arachnida, Pentastomida, Pantapoda, Tardigrada, Onychophora, Myriopoda, Insecta. London: Swan, Sonnenschein & Co., Ltd. New York: The Macmillan Co. 1899. Pp. xii, 441. 194 figs.—Krüger, G. The London insect market, 84, Nov. 9.—Oudemans, J. T. De Nederlandsche Insecten, Aflevering 12,

13. s'Gravenhage, Martinus Nijhoff, 1899. Pp. 529-588, figs., Dip-
tera; pp. 589-596, Siphonaptera; pp. 597-640, figs., pls xxviii-xxxii,
Coleoptera Rec'd. Dec., '99.—Rousseau, E. On the histology
of insects, ii. Spermatozoids and spermatogenesis, figs., 35, No.
11, Nov. 27.

Economic Entomology.—A non. Phylloxera in Spain, 55, Nov. 1.
—Burgess, A. F. A destructive tan-bark beetle, 7.—Cao, G.
On the passage of micro-organisms through the intestine of
some insects, 82, Oct. 28.—Celli, A., and Del Pino, G.
Contribution to knowledge of malaria-epidemiology from the latest
etiological standpoint, 82, Nov. 7.—Felt, E. P. Notes of the
year for New York, 7.—Fletcher, J. Insect pests, remedial
treatment. Evidence before the Select Standing Committee [of the
Canadian Parliament] on Agriculture and Colonization. Printed
by order of Parliament. Ottawa, S. E. Dawson, 1899.—For-
bush, E. H. The destruction of hairy caterpillars by birds, 7.
—Id. Recent work against the gipsy moth, 7.—Francis, M.,
and Conaway, J. W. Texas fever [and tick infestation], figs.
Bulletin No. 53, Texas Agric. Exper. Stations, College Station,
Brazos Co., Tex., Oct., '99.—Grassi, B. Observations on the
report of the Second Malarial Expedition in Italy presided over by
Prof. Koch, etc. Rendiconti, Accademia dei Lincei, Rome, Oct.
15, Nov. 5, '99.—Howard, L. O. A remedy for gadflies: Port-
schiki's recent discovery in Russia, with some American observa-
tions, 7.—Id. The present status of the caprifig experiments in
California, 7.—Howard, L. O., and Marlatt, C. L.
The original home of the San José scale, 7.—Johnson, W. G.
The Emory fumigator: a new method for handling hydrocyanic
acid gas in orchards, 7.—Id. Miscellaneous entomological notes, 7.
—Id. The destructive pea louse, a new and important economic
species of the genus *Nectarophora*, 7.—Id. The stalk worm: a
new enemy to young tobacco, 7.—Kirkland, A. H. A prob-
able remedy for the cranberry fireworm, 7.—Id. An improvement
in the manufacture of arsenate of lead, 7.—Id. Proceedings of the
Eleventh Annual Meeting of the Association of Economic Entomol-
ogists, Columbus, O., Aug. 18 and 19, '99, 7.—Lebois, D. A
roach-trap, La Nature, Paris, Nov. 25, '99.—Lounsbury, C.
P. et al. Ants, spraying locusts with paraffine, aphids on peach
trees, vine beetle, Agricultural Journal, Cape Town, Oct. 26, '99.—
Marlatt, C. L. The laissez faire philosophy applied to the
insect problem, 7.—Id. Temperature control of scale insects, 7.
—Id. An account of *Aspidiotus ostreaformis*, figs., 7.—Pit-
caithley, A. Notes on the larch disease, Transactions and Pro-
ceedings, Perthshire Society of Natural Science, iii, pt. 1, Perth, '99.
Plimmer, H. G., and Bradford, J. R. Preliminary
notice on the morphology and distribution of the parasite found in
tsetse fly disease, 82, Oct. 28.—Quaintance, A. L. Some

important insect enemies of cucurbits, figs. Bulletin No. 45, State College of Agriculture and Mechanic Arts, Georgia Exper. Station, Experiment, Ga., Oct., '99.—Id. Some insects and fungi destructive to truck and garden crops, figs. Proceedings, Twenty-third Annual Meeting, Georgia State Horticultural Society, Augusta, Ga., '99.—Id. Some insects of the year in Georgia, 7.—Schwein-furth. On the cause of malaria, 74, Oct. 15.—Scott, W. M. Fatal temperature for some Coccids in Georgia, 7, Smith, J. B. Three common orchard scales, figs., Bulletin 140, New Jersey Agric. Experiment Station, New Brunswick, N. J., Oct. 31, '99.—Webster, F. M. Insectary and office methods 7.—Id. An interesting outbreak of chinch bugs in northern Ohio, 7.—Webster, F. M., and Mally, C. W. Insects of the year in Ohio, 7.—Wilcox, E. V. Abstracts of recent papers, Experiment Station Record, xi, 3, U. S. Dep't. of Agriculture, Washington, '99.

Arachnida.—Cambridge, F. O. P. Arachnida Araneidea, vol. ii, pp. 57-64,* 15.—Molliard, M. On the histological modifications produced in stems by the action of *Phytoptus*, Comptes Rendus, Academie des Sciences, Paris, Nov. 20, '99.—Simon, E. Results of a voyage to the Pacific (Schauinsland, 1896-'97), Arachnoids, 89.—Smith, F. P. An introduction to British spiders, figs., Science Gossip, London, Dec. '99.

Myriopoda.—Verhoeff, C. Contributions to knowledge of palaearctic Myriopods, iv: On the classification, phylogeny and comparative morphology of the Julidæ and on some other Diplo-pods, 4 pls, 119.

Orthoptera.—Scudder, S. H. *Pseudopomala* and its allies,* 5.

Neuroptera.—Needham, J. G. Directions for collecting and rearing dragonflies, stone flies and May flies, figs., Part O of Bulletin No. 39, U. S. National Museum, Washington, '99.

Hemiptera.—Ball, E. D. Some new Deltocephalinæ (Jassidæ),* 4.—Bergroth, E. A new genus of Corixidæ, Entomologists' Monthly Magazine, London, Dec., '99.—Cockerell, T. D. A. Tables for the determination of the genera of Coccidæ (cont.), 4.—Holmgren, N. Contributions to knowledge of the female sexual organs of the Cicadaria, 89.—Howard, L. Of See Economic Entomology.—Johnson, W. G. See Economic Entomology [*Nectarophora**].—Kirkaldy, G. W. Aquatic Rhynchota in the collection of the Royal Museum of Belgium, notes and descriptions, 35, No. 10, Nov. 6.—Marlatt, C. L. See Economic Entomology.—Montandon, L. Hemiptera cryptocerata, sub-family Mononychinæ, notes and descriptions of new species, Buletinul Societatii de Stiinta din Bucuresti, viii, 4-5, Bucharest, July-Oct., '99.—Smith, J. B. See Economic Entomology.

Coleoptera.—A r r o w, G. J. Notes on the classification of the Coleopterous family Rutelidæ,* 11.—E v a n s, J. D. List of Coleoptera from Halifax, N. S., 4.—J a c o b s o n, G. On the external structure of wingless beetles, 1 pl. Annuaire, Musee Zoologique l'Academie Imperiale des Sciences de St. Petersburg, '99, No. 1.—K n a b, F. Coleoptera in September, 4.—L e a, A. M. Revision of the Australian Curculionidæ belonging to the sub-family Cryptorhynchides, pt. iii, Proceedings, Linnean Society of New South Wales, '99, pt. ii, Sydney, Oct. 10, '99.—P i c, M. Description of new Coleoptera, 55, Nov. 15.—S h a r p, D. Coleoptera vol. ii, pt. 1, pp. 553-560, pl. xvii [Cucujidæ],* 15.—W e i s e, J. Some new Cassidine genera and species, 119.

Diptera.—B e r g, C. Dipterological notes, 60c.—C o q u i l l e t, D. W. New genera and species of Nycteribidæ and Hippoboscidæ,* 4.—H o u g h, G. d e N. Some Muscinæ of North America,* figs., Biological Bulletin, i, 1, Boston, Oct., '99. Rec'd. Nov. 27, '99.—V i g n o n, P. On the histology of the alimentary canal in the larva of *Chironomus plumosus* [translated from Comptes Rendus, Paris Acad.], 11.—v a n d e r W u l p, F. M. Diptera, vol. ii, pp. 393-408, pl. xi [Ortalinæ, Trypetinæ*], 15.

Lepidoptera.—v. A i g n e r A b a f i, L. The last "oiling" of caterpillars [in Magyar, summary in German], Rovartani Lapok, Buda-Pesth, Oct., '99.—B e r g, C. *Brenthis cytheris* and *B. dexamene*, 1 pl., 60c.—D r u c e, H. Lepidoptera Heterocera, vol. ii, pp. 553-568, pls. c, ci,* 15.—D y a r, H. G. Life-histories of North American Geometridæ, vii, 5.—F i n n, F., and L a t t e r, O. H. Birdscapturing butterflies, Nature, London, Nov. 16, '99.—F o r b u s h, E. H. See Economic Entomology.—G r o s e - S m i t h, H. Rhopalocera Exotica, part 50. London: Gurney and Jackson. Oct. 1, '99. Rec'd. Dec., '99.—H a n h a m, A. W. A list of Manitoba moths, pt. iv, 4.—K a t h a r i n e r, L. Experiments on the influence of light on the color of the pupa of the peacock butterfly (*Vanessa io* L.), 81 Nov. 1.—v o n L i n d e n M. [Notice of] J. T. Oudemans' "Lepidoptera from castrated, larvæ, their appearance and behaviour," 81. Oct. 15.—S o u l e, C. G. Color-variation in larvæ of *Papilio polyxenes*, and other notes, 5.

Hymenoptera.—A s h m e a d, W. H. Classification of the entomophilous wasps or the super-family Sphegoidea, paper No. 6, 4.—C o c k e r e l l, T. D. A., and P o r t e r, W. Contributions from the New Mexico Biological Station, viii: the New Mexico bees of the genus *Bombus*,* 11.—D a w s o n, C., and W o o d h e a d, S. A. Problem of honeycomb, Natural Science, London, Nov., '99.—E m e r y, C. Results of a voyage to the Pacific (Schauinsland, 1896-'97), Formicidæ, 89.—F o r e l, A. Hymenoptera, vol. iii, pp. 81-104, pl. iv [Myrmicidæ],* 15.—K o l b e,

H. J. E. Wasmann's "Psychical capabilities of ants, 74, Oct. 1.—Perkins, R. C. L., and Forel, A. Hymenoptera Aculeata, Fauna Hawaiiensis, vol. i, pt. 1, pp. 1-122, 2 pls., map. Cambridge [England], University Press. March 20, '99. Rec'd. Dec. 7.—de Ridder, P. J. The bee and rain. *Revue Scientifique*, Paris, Nov. 4, '99.—Terre, L. Contribution to study of the histolysis and histogenesis of the muscular tissue in the bee, *Comptes Rendus, Société de Biologie*, Paris, Nov. 18, '99.—Weld, L. E. R. D. The sense of hearing in ants, *Science*, New York, Nov. 24, '99.

DOINGS OF SOCIETIES.

At a meeting of the Entomological section of the Academy of Natural Sciences of Philadelphia, Mr. Fox reported the presentation by Mrs. Slosson of a specimen of *Mellinus bimaculatus*, taken at Franconia, N. H. It is a very rare species. Mr. Lancaster Thomas said that collecting at Cranberry, N. C., has been very poor this past season. There was but one-third the usual rainfall, which made it the dryest summer there for twenty years. The absence of *Terias jucunda* and *delia* was mentioned. Mr. Gerhard, who had spent a year collecting Lepidoptera in Bolivia for Mr. A. J. Weeks, Jr., of Boston, Mass., said he collected first at Mollendo on the coast, but took but few species. Thence he went to Arequipa, 108 miles inland. This place would be a desert except for irrigation. Collecting was done along the ditches and on the Alfalfa and a few additional species found. Puno at 12,000 feet was a dry place without much vegetation; about five species were found here. Other places at high altitudes were mentioned, but did not produce much. He then went to La Paz, the starting point to the interior, or more tropical part of the country. About five species of diurnals were found at La Paz. Chulumani (5,000 feet) was the next place visited, where he remained seven weeks on account of the difficulties of travel and the breaking out of the revolution. The foot of the valley was the best place to collect, but the roads were very poor and zigzag in character and quite steep. The rain greatly interfered with collecting, but were often intermittent in character and the sun would shine between the showers. In seven weeks 1,800 specimens were taken. Owing to the illness of the mules locomotion was difficult and walking compulsory. The Indian guide walked through the cold rains and snow in a state of nudity without apparent discomfort. The great beauty of the mountain scenery was graphically described. The hotels were poor and hardly worthy of the name and are called tambos. The rooms were cheerless and almost without furniture. By collecting locally better results were obtained than by trying to cover too much territory. The second journey was made to the tropical country, about three days,

journey from La Paz. The difficulty of obtaining pasture for the animals was mentioned, and thus stopping was made impossible except at tambos. Many specimens were obtained on animal excrement along the roads, the dense vegetation making other places inaccessible. A few miles would often make quite a difference in the species, and different *Morphos* were mentioned as being taken only three miles apart. A place called Choro was described as a good collecting ground. It was eleven days to Cochabamba from La Paz and three more to Choro. The region was disappointing, the ground dry and vegetation sparse. After twelve more miles an undulating, mountainous country was entered. After a time a place was reached where collecting was good and species found not taken on previous journeys. Three weeks were spent at this place. Picking *Papilios* from moist places by means of the fingers was described. The difficulties and means of travel in this country were graphically dwelt on. Dr. Skinner exhibited specimens of *Colias philodice* and *eurytheme*, captured by Mr. Lancaster Thomas at Cranberry, N. C. A large series showed no differences except in color, and in some the color intergraded. The extreme probability of these two being forms of one species was mentioned. Mr. Thomas called attention to a pallid form which was white above and dark beneath. Mr. Laurent showed a sport of *Cicindela vulgaris* and also two of *C. repanda*. The same gentleman exhibited a specimen of *Catopteryx maculata* with parts of the wings spotted. Dr. Calvert said that some specimens were irregularly marked and that the name came from the spotted character of the type.

HENRY SKINNER, M. D., Recorder.

At the November meeting of the Feldman Collecting Social, held at the residence of Mr. Frank Haimback, 1309 Allegheny Avenue, thirteen persons were present. Prof. J. B. Smith exhibited specimens of larvæ and cocoons of a large hymenopterous insect which captured and stored katydids. This fact led one observer to believe that these larvæ were an early stage of the katydid because of the numerous parts of that insect which were found in the cells of the larvæ. The larvæ were unidentified, but from its large size and from the imago's habit of preying on Orthoptera was supposed to be *Monedula carolina*. Discussed by Messrs. Johnson and Fox.

Mr. H. W. Wenzel showed an unidentified chrysalis, which while in the larval state had bored into a pine log and dug out a cell before pupating.

Prof. Smith stated that it is probably a species of moth of the genus *Acronycta*, several species of which have such habits.

Dr. H. Skinner stated that Mr. Lancaster Thomas had collected many specimens of *Colias philodice* on October 26th at Cranberry, N. C., which were all extremely dark. Mr. Thomas was of the opinion that *C. philodice* and *eurytheme* were but one species, and

in this view Dr. Skinner concurred. Specimens of both these species had been collected which show all intergrades of coloration.

Prof. Smith suggested that a study of the genitalia of these species should be made before asserting them to be the same.

Dr. Skinner agreed with Prof. Smith in this matter.

Prof. Smith spoke of the frequent difficulty of determining species from superficial characters. Although orange and yellow forms may be considered as one species, it is not at all certain that specific characteristics will not be found in the genitalia of the males of each form.

Mr. C. W. Johnson exhibited *Myrmicomysia myrmicodes* greatly resembling an ant, and a probable species of *Stenomacra* which he proposed to call *S. flavescens*.

Mr. H. Wenzel exhibited two specimens of *Elater militaris*, a rare insect in this locality. Also recorded in addition to the local list of Pselaphidæ *Eumycrus motschulskii*, only known heretofore from Florida.

The secretary called attention to the disproportionate number of females against males in a collection of Eumenidæ from Brazil.

Dr. Skinner spoke of the present tendency of scientific workers to specialization, which he defended.

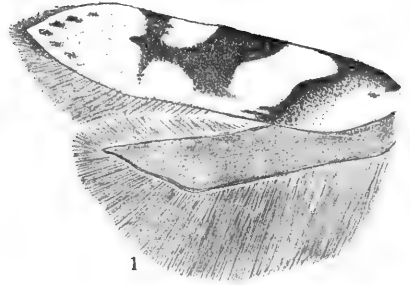
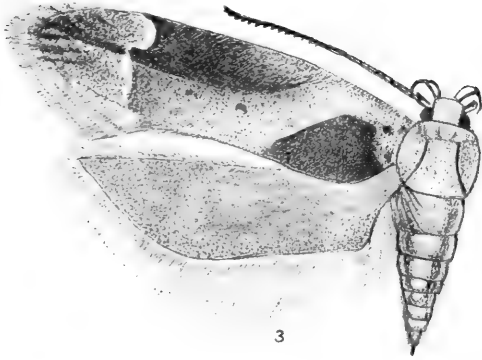
Prof. Smith commended the entomological portion of the *Cambridge Natural History* by Dr. David Sharp and referred to the high quality of the illustrations. An American elementary work on insects published during the past year forms quite a contrast to the former, not only in ideas but in illustrations.

The meeting then adjourned to a collation prepared by our host, Mr. Haimbach, at which the social side of the gathering was much in evidence.

WILLIAM J. FOX, Secretary.

A regular meeting of the Newark (N. J.) Entomological Society was held at Turn Hall Sunday, November 12th, Vice-President Kemp presiding and ten members present. Mr. Erb remarked that *Catocala* were rare during the past season, but added that he was very successful in rearing *Sphinx* larva, taken mostly on Long Island. Other members reported that collecting was poor last season. Mr. Weidt exhibited several specimens of the genus *Crocata*, which were bred from eggs laid August 17th (second brood). The first imago emerged November 1st and the last November 11th. Pupæ were kept in cellar since September. The specimens were two ♂, with a heavy black band on lower wing, one showing a tendency to break into spots. There was one ♀, with the same black band. This makes the third brood. The balance of pupæ will probably lay over until spring. Mr. Kemp reported taking a nearly full-grown larva of *Oedemania badia* on bay (name of plant) in the middle of June. Imago emerged July 5th. A. J. WEIDT, Secretary.

200 200

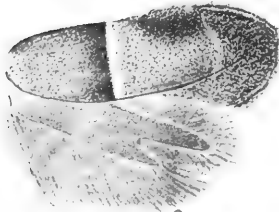


3

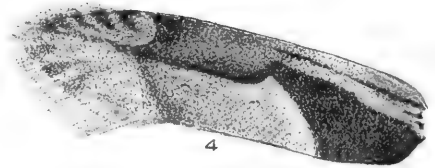
1



1a



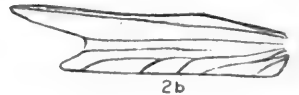
2



4



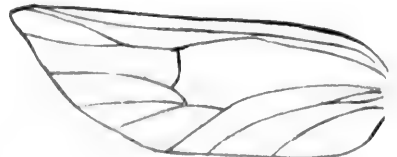
2a



2b



3a



3b

NEW MICRO-LEPIDOPTERA (Dietz).

Vol. XI.

No. 2.

ENTOMOLOGICAL NEWS



Stenopelmatus fasciatus.

FEBRUARY, 1900.

EDITOR :

HENRY SKINNER, M. D.

PHILIP P. CALVERT, Ph.D., Associate Editor.

ADVISORY COMMITTEE:

EZRA T. CRESSON.
PHILIP LAURENT.

CHARLES A. BLAKE.
WILLIAM J. FOX.

CHARLES LIEBECK.
CHARLES W. JOHNSON.

PHILADELPHIA :
ENTOMOLOGICAL ROOMS OF
THE ACADEMY OF NATURAL SCIENCES,
LOGAN SQUARE.

1900.

ENTOMOLOGICAL NEWS

Published monthly, **excepting July and August**, in charge of the Entomological Section of the Academy of Natural Sciences, Philadelphia, and the American Entomological Society.

ANNUAL SUBSCRIPTION, \$1.00 IN ADVANCE.

Outside of the United States and Canada, \$1.20.

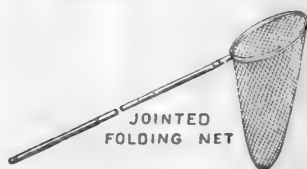
Advertising Rates: 30 cents per square inch, single insertion; a liberal discount on longer insertions. No advertisement taken for less than 60 cents—Cash in advance.

J. S. All remittances should be addressed to ENTOMOLOGICAL NEWS, Academy of Natural Sciences, 19th and Race Streets, Philadelphia, Pa.

Over six hundred species of American diurnals in duplicate for exchange. Butterflies named gratis.

DR. HENRY SKINNER, M.D.,
1900 Race Street, Philadelphia, Pa.

A. SMITH & SONS, 269 PEARL STREET, NEW YORK.



MANUFACTURERS AND IMPORTERS OF

GOODS FOR ENTOMOLOGISTS,

Klaeger and Carlsbad Insect Pins, Setting Boards, Folding Nets, Locality and Special Labels, Forceps, Sheet Cork, Etc. Other articles are being added, Send for List.

American Entomological Co.

1040 DE KALB AVE., BROOKLYN, N. Y.

Lepidoptera Price List, No. 1, of North American and Exotic Lepidoptera.

Price 5 Cents—refunded to buyers.

Postage of any Country Accepted. No Attention Paid to Postals.

DEALERS IN ALL KINDS of ENTOMOLOGICAL SUPPLIES

Manufacturers of the Original and Celebrated

SCHMITT INSECT BOXES.

BUILDERS OF

CABINETS AND CASES FOR COLLECTIONS.

Plans and Drawings on Application.

When Writing Please Mention "Entomological News."

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XI.

FEBRUARY, 1900.

No. 2.

CONTENTS:

Dietz—Some New Genera and Species of <i>N. A. Tineina</i>	349	Snyder—Silver Lake, Utah.....	363
Kincaid—Notes on the Species of <i>Cra-</i> <i>bro</i> found in the State of Wash....	353	Editorial.....	369
Fernald—Zoology as Taught at the Mass. Agricultural College.....	395	Economic Entomology.....	370
		Entomological Literature.....	376
		Doings of Societies.....	380

Some New Genera and Species of *N. A. Tineina*.

By W. G. DIETZ, M.D.

Believing that the genera and species here described are new to science, I offer the following as a small contribution to our knowledge of *N. A. Tineina*:

Eucordylea gen. n. fam. Gelechiidæ.—Labial palpi strongly developed, robust; first joint porrect; second erect, with a dense brush of stiff hair the entire length of its upper surface, capable of being extended in a line with the first joint, and a lateral, fanlike spreading out of the brush; third joint shorter than the second, sharply pointed. Head about as wide as long, face perpendicular, smooth-scaled; occiput somewhat rough scaled. Eyes prominent, round; tongue wanting; no maxillary palpi; antennæ rather stout, simple, joints close set, scarcely more than two-thirds the length of the anterior wings. Thorax and abdomen moderately slender. Posterior tibiæ with long, appressed stiff hair along their upper margin; middle pair of spurs at two-fifths from the apex, inner spur more than twice the length of outer one. Anterior wings elongate, dull pointed, nearly five times as long as wide, margins nearly straight from near the base to the apical fifth, then equally narrower from both margins to the apex. Neuration: costal to margin before the middle, cell closed, pointed posteriorly, vein 7 and 8 stemmed, 7 to costa. Hind wings rhomboidal, anterior and inner margins straight parallel, apex slightly

produced, posterior margin oblique, feebly bisinuate. A pencil of stiff hair arises between the insertion of the wing and the anal angle. Cilia twice the width of the wing. Neuration; cell closed; vein 2 arises remotely from hind angle of cell, veins 3-5 closely together from the latter.

While alive and at rest, the extended palpi, with its dense brush of stiff, bristly hair spread out laterally, give the insect a very peculiar, bearded appearance. The statements as to the neuration given above are such as are discernable without denudation; the single specimen in my possession does not warrant such procedure. Careful examinations with high power fails to reveal the presence of a tongue.

E. atrupictella n. sp. (Plate I, fig. 1, 1a).—Pale creamy yellow. Palpi; outer surface of first joint, a transverse line about the middle and a broader band at the apex of the second joint and both of which extend across the brush of bristly hair; an annulus at the middle and another at the apex, not including the extreme tip of the third joint, blackish. Antennæ annulate with fuscous. Anterior wings with blackish markings as follows: extreme costa, from base to one-fifth its length, an oblique fascia beginning at one-fifth from the costa and reaching the dorsal margin at one-third, less distinct at the latter, bisinuate externally and shading off gradually to the ground color at the base; a broad and less oblique fascia before the middle, narrowed toward and not attaining the dorsal margin; bisinuate toward the base; a third fascia, narrower than the last, at a little less than two-thirds the length, slightly oblique, becoming narrower toward the dorsal margin without attaining it; this fascia is further removed from the base at its costal than at the dorsal extremity; a long stripe in the middle of the wing extends from the second fascia through the third and a trifle beyond; five larger and several very small and indistinct spots around the apex. Underside of wing, corresponding to the dark markings of the upper surface, but more diffused, dark fuscous. Cilia at apex dusted with dark fuscous scales. Hind wings pale cinereous, cilia concolorous, pale stramineous toward their base. Anterior legs annulate and spotted with dark fuscous; middle and posterior femora, with broad, irregular fuscous band before the apex, latter tipped with fuscous; middle tibiae fuscous externally, posterior with a few scattered spots of fuscous scales, tarsi annulate with dark fuscous. Length of anterior wing 5.0 mm.; exp. 12.0 mm.; 0.48 inches.

Hab.—Hazleton, Pa. A single ♂ specimen taken August 4th, 1899.

Noalyda gen. n. fam. Elachistidae.—Head transverse, moderately convex; face somewhat receding beneath; ocelli present; tongue strong

scaly at its base. Labial palpi of moderate length, curved, ascending rather remotely from the face, cylindrical, close scaled, apex not attaining the level of the antennal insertion, second joint somewhat thickened toward the apex, longer than the pointed, third joint. Maxillary palpi rudimentary. Eyes round, moderately convex, visible from the front. Antennæ slender, scarcely three-fourths the length of anterior wings, basal point very little wider than the stalk, less than twice as long as wide, the latter finely denticulate beneath. Thorax robust, convex. Abdomen rather short, in the male with small anal tuft and lateral claspers. Posterior tibiæ smooth, inner spur of middle pair twice the length of the outer and slightly thickened toward the apex. Anterior wings oblong lanceolate, costa evenly curved from the base. All veins present, cell narrow, nearly pointed posteriorly, closed, transverse vein very faint between veins 6 and the common stem of 7 and 8; costal attains costa at about two-fifths from the base, vein 2 arises closely to the short stem of 3 and 4, 5 approximates to 4; 7 and 8 long stemmed, 7 to costa; 7-11 attain the costal margin at approximately equal distance. *1b* distinctly furcate at base. Cilia less than width of wing, scale-dusted. Hind wings three-fourths as wide as fore wings, outer margin deeply emarginate, causing the wing to become bifid; costal margin straight for two-fifths its length, thence feebly emarginate to the apex; dorsal margin straight from the distinct anal angle to the apex of lower apical cusp. Cilia nearly twice the width of the wing. Neuration: costal running close to the costa and nearly reaching the extreme apex, cell open between veins 4 and 5, closed between 5 and 7, by the margin of the emargination, 2 arises before the middle, 3 and 4 remote, 5 independently from near the base and forms the costal margin of the lower cusp; the anterior median reaches the deepest part of the emargination and forms the dorsal margin of the upper branch of the fork. *1b* furcate at base.

The characters thus represented are so anomalous as to find no counterpart anywhere among the *Tineid* genera, as far as my knowledge goes, nor elsewhere among the Lepidoptera except the Pterophoridae, to which the genus under consideration, however, bears no relationship. Its rather robust body, general habitus and palpi would perhaps place it near *Scythris* Hb. (*Butalis* Tr.).

N. bifidella n. sp. (Plate I, fig. 2, 2a, 2b).—Palpi fuscous, annulus at end of second joint and extreme apex of third, white. Antennæ pale brown. Head and thorax greyish, tinged with brown. Fore wings pale brown, tinged with golden; a dark brown fascia at two-fifths, equidistant from the base at its costal and dorsal extremity, sharply defined externally and edged by a line of silvery white; toward the base it passes

gradually into the ground color of the wing; extreme costa from base to fascia dark brown; a large costal patch of dark brown scales, beyond the middle, apical part and cilia densely dusted with nigro-fuscous scales, a subterminal line and extreme edge of latter, paler; before the darkly-dusted apical part of the wing is an indistinct, curved line of silvery scales, concave toward the base. Hind wings pale cinerous, cilia colorous, pale stramineous toward the base. Abdomen pale fuscous. Anterior and middle legs dark fuscous, indistinctly spotted with pale, points of tarsi with a pale annulus; posterior legs paler. Length of fore wing 4.5 mm., 0.18 inch. Exp. 9.5 mm., 0.38 inch.

Hab.—Glenwood, Colo., August and September.

Varies somewhat in coloration of fore wings, ground color from a silvery grey to golden brown. In some specimens there is also a dorsal, less pronounced patch of brown scales, opposite the costal one. The pale line in apical part of wing is not evident in some specimens.

Pseudochelaria walsinghami n. sp. (Plate I, fig. 3a, 3b).—Palpi ashen grey, long, recurved, brush of second joint grooved, third joint longer than the second, pointed; outer side of first joint and base of second dark fuscous, brush dusted with fuscous, third joint with broad annulus above the base, rest dusted with fuscous scales. Antennæ slender, dark brown above, faintly annulate with pale grey, paler on the underside, finely denticulate toward the apex. Head grey; thorax, abdomen and anterior wings ashen grey, with feeble purplish reflections; a dark brown triangular spot on the posterior end of the thorax. Anterior wings marked with a dark, rich brown, as follows: basal space limited externally by a sharply-defined oblique line, twice as far removed from the base at the dorsal than at the costal margin, but not including the latter and a narrow space of the adjacent surface; a longitudinal stripe, beginning at two-fifths and extending through the middle of wing to the apex, rather sharply defined along its dorsal margin, but becoming more or less diffused with the dark shading in the costal half; a whitish fascia at the beginning of the apical cilia, interrupted by the longitudinal stripe and passing gradually into the dark shading of the apical part of the wing; the costal part of the fascia is concave toward the apex, the dorsal part straight, and passes obliquely backward to the dorsal margin; apical part with dark lines radiating into the cilia. The median space is washed with brownish, having a slight golden reflection, becoming darker in the costal portion, and more so toward the apical fascia; in the dorsal half are two brown spots at two-fifths and three-fifths of wing respectively, the former surrounded by raised white scales. Cilia pale with two darker lines, basal line more distinct. Underside fuscous. Posterior wings pale fuscous, paler toward the base; cilia pale fuscous around the apex, a faint darker line at two-thirds, and another, still less distinct, subterminal one.

Underside fuscous toward the apex. Underside of body and legs pale ochreous, last ventral segment more or less fuscous; femora and tibiae banded with fuscous, tarsi annulate with the same. Posterior tibiae with stiff appressed hair on the upper side. Length of anterior wing 7.5 mm.; exp. 17.0 mm., 0.68 inch.

Hab.—Hazleton, Pa.

Larva pale green, with isolated hairs, lives under a white web on the under side of the leaflets, and also along the petioles of *Sumach* (*Rhus typhosa*), where it may be found from the latter part of August and during September. Pupa brown. The imago appears the latter part of May and early part of June the following year.

It gives me pleasure to dedicate this species to Lord Walsingham, who established the above genus and the type of which (*E. pennsylvanica* Wlsm.) is in my collection. The latter species differs from the above-described one in the wing markings, as may readily be seen by a comparison of the figures. It was taken at electric light. Larva not known. Plate I, fig. 4.

EXPLANATION OF PLATE I.

Fig. 1.—Anterior and posterior wing of *Eucordylea atripictella*. 1a, lateral view of head and labial palpus of same.

Fig. 2.—Anterior and posterior wing of *Nealyda bifidella*. 2a, neuration of anterior wing; 2b, neuration of posterior wing of same.

Fig. 3 —*Pseudochelaria walsinghamsi*. 3a, neuration of anterior wing; 3b, neuration of posterior wing of same.

Fig. 4.—Anterior wing of *Pseudochelaria pennsylvanica* Wlsm.

Notes on the Species of *Crabro* Found in the State of Washington.

By TREVOR KINCAID, University of Washington.

Thanks to the excellent monograph of the *Crabroninae*, published by Mr. William J. Fox, of the Academy of Natural Sciences of Philadelphia, it is possible for the American student of this group to readily determine such forms as he may discover.

During the last few years the writer has procured a considerable number of representatives of the genus *Crabro* from various parts of the State of Washington, and desires to place on

record such notes and data as may seem of interest to hymenopterists.

Mr. Fox, in his monograph, indicates twenty species of *Crabro* as occurring within the limits of this State. The following list includes twenty-eight species, the additional number being due to the extension of the range of six species to this region, and two species are described as new.

In their flower-visiting habits the members of the genus *Crabro* seem to have a preference for the blossoms of the Umbelliferae. Most of the specimens recorded from Olympia were taken upon the flowers of an umbelliferous plant growing in an open meadow along the Deschutes River. At Seattle a number of specimens were taken during the Summer upon the flowers of cultivated parsnips, and in the Fall upon those of *Carum gairdneri* and *Angelica genuflexa*. A few specimens occurred at plants of other families, such as *Anaphalis margaritacea*, *Achillea millefolium*, etc. A series taken at Corvallis, Oregon, were, with few exceptions, found upon the flowers of *Heracleum lanatum*.

The localities mentioned in the following notes are all within the Puget Sound basin, except Pasco, Wawawai, Almota and the Blue Mountains, which are in Eastern Washington. Hence the former are in the Transition zone, while the latter are in the Upper Austral zone, as indicated by Dr. Merriam in his paper on the faunal areas of the United States.

In the preparation of this paper the writer wishes to acknowledge the assistance of Mr. Fox in determining some of the more difficult species.

***Crabro producticollis* Pack.**

Ranges to New York and Texas.

Olympia, Wash., 3 ♀ June 23-26, 1897. Seattle, Wash., 1 ♂ at flowers of parsnip, June 10, 1897; 1 ♀ collection of Professor O. B. Johnson. Whidby Island, Wash., 3 ♂ ♂ and 3 ♀ ♀, collected by Mr. N. L. Gardner.

***Crabro bellus* Cress.**

Ranges to Colorado, Nevada and Oregon.

Olympia, Wash., 1 ♀ June 3, 1895, 1 ♂ June 25, 1897. Corvallis, Oregon, 1 ♂ on *Heracleum lanatum*, June 5, 1898.

Crabro montanus Cress.

Ranges to New York.

Olympia, Wash., 25 ♀ ♀ and 24 ♂ ♂ June 5 to July 4, 1895-97, on Umbelliferæ. Seattle, Wash., 17 ♂ ♂, May 15 to June 15, 1897-98; 2 ♀ ♀ July 8, 1898, on *Achillea*; 1 ♀ June 10, 1897, on parsnip; 5 ♀ ♀ August 20, 1898, on *Carum gairdneri*; 3 ♀ ♀ August 25, 1898, on *Angelica genuflexa*. Whidby Island, Wash., 3 ♂ ♂ collected by Mr. N. L. Gardner. Chehalis, Wash., 1 ♀ June, 1897, collected by Mr. W. R. Coffman.

Crabro parvulus Pack.

Ranges to New Hampshire and Oregon.

Olympia, Wash., 1 ♀ September 3, 1894; 3 ♂ ♂ June 28 to July 3, 1897. Seattle, Wash., 6 ♀ ♀ May 21 to July 9, 1897-98; 1 ♂ July 8, 1898, on *Achillea*; 1 ♀ and 1 ♂ August 20, 1898, on *Carum gairdneri*.

Crabro gracilissimus Pack.

Recorded from Dakota and California.

Olympia, Wash., 46 ♂ ♂ May 13 to July 2, 1894-97; 10 ♀ ♀ June 12 to October 3, 1894-96. Seattle, Wash., 3 ♂ ♂ June 10, 1897, on parsnip, 1 ♂ May 18, 1897; 3 ♀ ♀ and 3 ♂ ♂ Aug. 20 to 22, 1898, on *Carum gairdneri*. Whidby Island, Wash., ♂ collected by Mr. N. L. Gardner; 2 ♂ ♂ and 1 ♀ August 6, 1898. Blue Mountains, Wash., 1 ♂ July 15, 1896, collected by Prof. C. V. Piper. Cornvallis, Oregon, 1 ♀ June 12, 1898, on *Heracleum lanatum*.

Crabro nigrifrons Cress.

Ranges to New York, Nevada, California.

Olympia, Wash., 5 ♂ ♂ June 13 to June 24, 1894-96; 1 ♀ June 29, 1896. Seattle, Wash., 2 ♀ ♀, June 9, 1897. Whidby Island, Wash., 1 ♂ collected by Mr. N. L. Gardner, July 30, 1898.

Crabro sexmaculatus Say.

Ranges to Delaware and California.

Olympia, Wash., 10 ♀ ♀, June 5 to June 26, 1895-96; 23 ♂ ♂, June 4 to June 26, 1895-6. Seattle, Wash., 3 ♂ ♂, June 10 to July 1, 1898, on parsnip; 1 ♀ August 24, '99, on *Anaphalis*.

Whidby Island, Wash., 1 ♀ and 1 ♂, collected by Mr. N. L. Gardner. Chehalis, Wash., 3 ♀ ♀ and 3 ♂ ♂ collected by Mr. W. R. Coffman. Portland, Oregon, 1 ♀ collected by Miss Emily Cauthorn. Corvallis, Oregon, 27 ♀ ♀ and 44 ♂ ♂ June 4 to June 22, 1898, on *Heracleum lanatum*.

Crabro foxii n. sp.

♂—Antennæ with the fourth joint emarginate beneath, first joint but little longer than the second; head with distinct punctures, closest anteriorly; space between hind ocelli slightly less than that between them and the nearest eye margin; pronotum crested, lateral tooth small but distinct; dorsulum rather coarsely striato-punctate; mesopleuræ coarsely striato-punctate; middle segment above striato-rugose, separated from the posterior face by a series of large foveæ; posterior face transversely and less strongly rugose than the upper face, bounded outwardly by a foveolated furrow; longitudinal furrow broad and deep, divided into foveæ above; sides coarsely striated; abdomen finely punctured; first joint of medial tarsi scarcely as long as the two following joints combined, first and second joints moderately produced within. Black; two spots on pronotum, spots on metanotum, spot at tips of fore and medial femora, all tibiae outwardly, basal joints of tarsi to a variable extent, an elongated spot on each side of dorsal abdominal segment 2-6, yellow; the spots on segment 2 largest, those on 6 small and almost forming a band; wings subhyaline, nervures and stigma black. Length 7.0 mm.

Olympia, Wash., 2 ♂ ♂, June 17, 1897; 1 ♂ June 26, 1896.

This species belongs to Mr. Fox's group *sevmaculatus*, and is closely allied to *C. trifasciatus* Say, from which it differs principally in the length of the first joint of medial tarsus. In *C. trifasciatus* this joint is as long as the three following joints combined, whereas in *C. foxii* it is scarcely as long as the two succeeding joints, and is dilated somewhat, beyond middle. Named in honor of Mr. William J. Fox, of the Academy of Natural Sciences of Philadelphia.

Crabro spiniferus Fox.

Ranges to California, Nevada and Arizona.

Pasco, Wash., 1 ♂ May 25, 1896. Corvallis, Oregon, 16 ♂ ♂ June 2 to June 23, 1898; 2 ♀ ♀ June 22 and 23, 1898.

Crabro packardii Cress.

Ranges to Nevada and Oregon.

Seattle, Wash., 1 ♀, collection of Prof. O. B. Johnson.

Crabro chrysarginus St. F. & B.

Ranges to Canada and Florida.

Olympia, Wash., 1 June 4, 1896. Seattle, Wash., 1 ♂ at *Angelica genuflexa*, August 20, 1898; 1 ♂ at *Carum gairdneri*, August 23, 1898.

Crabro dilectus Cress.

Ranges to Montana and California.

Almota, Wash., 1 ♂ Prof. C. V. Piper; Pasco, Wash., 1 ♂; Wawai, Wash., 1 ♀, collection of Prof. O. B. Johnson.

Crabro singularis Sm.

Ranges to Maine and Louisiana.

Olympia, Wash., 2 ♀ ♀ October 3, 1894. Whidby Island, Wash., 2 ♂ ♂, collected by Mr. H. L. Gardner.

Crabro pleuralis Fox.

Vancouver, Wash.; Seattle, Wash., collection of Prof. O. B. Johnson.

Crabro argus Pack.

Ranges to New York.

Olympia, Wash., 53 ♂ ♂ June 10 to July 3, 1896-97-98. Seattle, Wash., 11 ♂ ♂ July 26, 1898. This species always occurs hovering about the branches of the alder *Alnus rubra*.

Crabro medius Fox.

Ranges to Nevada.

Whidby Island, Wash., 1 ♂, collected by Mr. N. L. Gardner.

Crabro latipes Sm.

Ranges to Nova Scotia, Montana, California and Arizona.

Olympia, Wash., 2 ♂ ♂ June 2, 1894. Chehalis, Wash., 1 ♂ May 25, 1898, collected by Mr. W. R. Coffman. Pasco, Wash., 1 ♂ May 25, 1896. Whidby Island, Wash., 1 ♂ June 30, 1898, collected by Mr. Eldred Jenne.

Crabro vicinus Cress.

Ranges to Colorado, Arizona and California.

Olympia, Wash., 1 ♀ June 13, 1893. Seattle, Wash., 1 ♀, collection of Prof. O. B. Johnson. Corvallis, Oregon, 3 ♀ ♀ June 3 to June 16, 1898, on *Heracleum lanatum*. Newport, Oregon, 1 ♀ June 10, 1898.

Crabro cingulatus Pack.

Ranges to Texas and Illinois.

Olympia, Wash., 5 ♀ June 14 to July 1, 1896, flying about clumps of *Lysichiton kamtschatense*. These represent a variety, lacking the scutellar spots.

Crabro advenus Sm.

Recorded from Washington by Mr. Fox.

Crabro confertus Fox.

Ranges to Colorado.

Olympia, Wash., 1 ♀ June 14, 1895. Corvallis, Oregon, 10 ♂ June 10 to June 23, 1898.

Crabro pinguis Fox.

Recorded from Washington by Mr. Fox.

Crabro maculiclypeus Fox *var.*

Ranges to Colorado, Utah, New Jersey.

Olympia, Wash., 1 ♂ June 23, 1897. Seattle, Wash., 1 ♀ June 10, 1897.

Crabro scutellatus Say, *var.* (?)

Ranges to Pennsylvania and Colorado.

Seattle, Wash., 1 ♀ July 5, 1898.

Crabro angelicus n. sp.

♀—Anterior margin of clypeus dentate laterally and with a median truncated projection; head finely and distinctly punctured; impressed lines from frontal depression to fore ocellus and from lateral ocelli to eyes, distinct; first joint of flagellum one-fourth longer than the second; ocelli in an equilateral triangle; space between hind ocelli much less than between them and nearest eye margin; pronotum with a rounded crest, subangular laterally; dorsulum finely punctured, mesopleurae less distinctly so, the episternal suture curved; middle segment with the enclosed area of the upper face bounded posteriorly by a semi-circular line of foveae divided by the longitudinal finely foveolated furrow into two shining prominences, between which at the base there is a triangular striated area; posterior face finely roughened, lateral ridges distinct below, becoming obsolete above; sides shining; abdomen as long as head and thorax combined, shining, microscopically punctured, the last dorsal segment more strongly so; pygidium broad, flat, distinctly punctured. Black: large spots on each side of clypeus, line outwardly on scape, small spots on pronotum, tubercles, line on metanotum, fore and

medial tibiæ outwardly, base of hind tibiæ, fore and medial tarsi, white; spot at tip of fore femora, lateral spots on fore tibiæ, reddish; wings subhyaline; nervures and stigma brown. Length 6.5. mm.

Seattle, Wash., July 16, 1898, 2 ♀ ♀ taken at flowers of *Angelica genuflexa*. This species belongs in Mr. Fox's group *minimus*, and is closely allied to *C. scutellatus*.

Crabro tarsalis Fox.

Recorded from New York by Mr. Fox.

Seattle, Wash., 1 ♂ July 26, 1898.

Crabro ater Cress.

Olympia, Wash., 3 ♂ ♂ June 20, 1897, June 27, 1898; 1 ♀ June 27, 1897.

Crabro pedicellatus Pack.

Ranges to New York and Michigan.

Olympia, Wash., 2 ♂ ♂ June 23, 1897.

Zoology as Taught at the Massachusetts Agricultural College, with Reference to Entomology.

By Prof. C. H. FERNALD, Ph. D.

Physiology.—This course is offered to the sophomore class during the Winter term, and extends throughout the entire eleven weeks, four hours a week. It is taught by means of a text-book, Martin's "The Human Body" (advanced course), supplemented by lectures and demonstrations on the skeleton and models. The aim is to give, as thoroughly as may be, a knowledge of the anatomy of the human system, the physiology of its various parts, a general idea of hygiene, and to urge upon the student the practice of its teaching. The course presupposes an elementary knowledge of the subject, so that the result, aside from its own worth, forms a valuable aid to the study of zoology which follows.

Zoology.—Zoology is a required subject, junior year, and may be divided into three parts—a laboratory course in comparative anatomy, a lecture course in general zoology, and a course in elementary entomology. During the fall term eight hours a week, for sixteen weeks, are spent mainly in the laboratory, where a series of typical forms, ranging from the amoeba and

other microscopic animals, through the earthworm, clam, squid, lobster, star-fish, sea-urchin, shark, frog and pigeon to the cat, are dissected, studied and drawn. Previous to the dissection of any form a short lecture is given, which, supplemented by a full list of laboratory guides and text-books, gives the student a sufficient knowledge to enable him intelligently to study the creature before him. Each man provides himself with a set of dissecting instruments and note books, but all other apparatus and books are owned by the laboratory. During the Winter term a series of thirty lectures is given, covering the entire subject of zoology, except that portion having reference to the insects, which, because of their importance, are treated as a separate science. The aim here is to supplement and render orderly the knowledge already gained through the medium of the microscope and scalpel, and the lectures are abundantly illustrated by the very complete museum belonging to the department and containing over twelve thousand specimens. Collateral reading is encouraged, and occasional quizzes are given as a test of the student's knowledge from all sources.

Entomology.—A course of six hours a week is offered in entomology, during the Summer term, its aim being to give a general knowledge of insect anatomy and physiology and a systematic review of the entire group, taking as types, as far as possible, those forms of economic interest to man, and at the same time giving an idea of the life history of each species so taken, and the means of combating it. A knowledge of insecticides and insecticide machinery and their use is given. An interesting feature of the course is the collection which each student makes and arranges of the more common species which may be found on the college grounds and the nearby region. A very full museum collection serves as an aid to identification and arrangement.

Senior Entomology.—During the senior year such members of this class as elect advanced entomology take a course of lectures on the external and internal anatomy of insects and on the various methods by which injurious forms are destroyed or held in check. The laboratory work consists of a critical study

of the external and internal anatomy of members of the different groups, followed by the determination of insects of each group. In connection with this work a careful study of the literature is made, and familiarity with the analytical keys and the more important articles on injurious species is obtained. During the Spring term much of the time is spent in the field, where the student is taught how to look for and find injuries caused by insects, to recognize the species by the nature of these injuries, and how best to deal with each case, either by the use of insecticides or other methods. Finally each student is required to prepare a thesis on some insect or group of insects pertaining to the business in which he intends to engage. He is asked at the beginning of the year what occupation he intends to follow after graduation, and is then advised to prepare his thesis on those insects with which he will have most to deal in the business he has selected. In the preparation of this thesis the work is carried on in the most approved methods, so that he may obtain the most scientific and at the same time practical knowledge of the subject. In fact he is taught such methods of investigation that, if new insect pests appear on his crops, he will know how to properly investigate them and discover the best and cheapest methods for their destruction. If this thesis, when completed, contains information of public interest, whether of an economic character or otherwise, it is published, with whatever illustrations are necessary.

This course is primarily for the student of agriculture or horticulture, but, when taken in connection with botany and chemistry, is especially adapted to one wishing to fit himself as a teacher of science in our public schools, or to one intending to study medicine, but in this case his laboratory work would be devoted mainly to histology.

Graduate Entomology.—This department is now prepared for and is receiving graduates, from this and other colleges, who wish to continue the study of entomology beyond what they were able in their undergraduate course. These advanced studies will fit them for positions in the experiment stations or as State entomologists, and also give them most excellent training as teachers in our high schools and colleges.

A three years' course leading to the degree of Doctor of Philosophy is in active operation, three subjects—Botany, Chemistry and Entomology, arranged as a major and two minors—being required. In those cases where entomology is chosen as the major subject the course consists of lectures and laboratory work, some of the topics treated being the following :

Morphology and Development of Insects.—Embryology. Transformations. Histology. Phylogeny. Hermaphroditism. Hybrids. Parthenogenesis. Pædogenesis. Colors; chemistry of insect colors. Mimicry. Warning coloration. Luminosity. Deformities of insects. Insect variation. Duration of life.

Ecology of Insects.—Life histories of insects. Instincts of insects. Insect architecture. Dimorphisms. Polymorphisms. Fertilization of plants through the agency of insects. Insect products of value to man. Insects as disseminators of disease. Enemies of insects; vegetable and animal, including parasitism. Geographical distribution in the different faunal regions. Methods of distribution. Insect migrations. Geological history of insects.

Economic Entomology.—Principles. Insecticides. Apparatus. Special cases (borers, etc.). Photography of insects and their work. Methods of drawing for illustrations. Field work on insects. Insect legislation.

Systematic Entomology.—History of entomology, including the classification of various authors and the principles of classification. Laws governing nomenclature. Literature; how to find and use it. Indexing literature. Number of insects in collections and in existence (estimated). Lives of prominent entomologists. Methods of collecting, preparing, preserving and shipping insects. Important collection of insects of the world.

In connection with these topics corresponding laboratory work is given so far as possible, and in addition investigations on subjects not previously studied are made, and the results published in the form of graduate theses.

SILVER LAKE, UTAH.

By A. J. SNYDER.

And after the Fourth was over, especially that part of it described by the Doctor in December NEWS; when we had emerged from the mouth of the canon, removed the dust collected during a day's journey of not less than eighteen miles, during which even the Doctor had shown marvelous ability to "get over sage brush," and our friend Laurent had absolutely refused to travel farther for either flies or beetles; when Mrs. Browning had again provided refreshment for the hungry "bug-hunters," and the captures of the day had been discussed and recorded, we walked twelve of those long Salt Lake City blocks to call upon the owners of a cottage at Silver Lake and gain permission to camp on their premises and use the cottage during our stay in the mountains.

One other incident, however, inasmuch as it affords another illustration of the depravity of man, and is connected with City Creek Canon, must be related by the subject of the plot, who considers himself better able to relate the facts than the perpetrator of the deed. Papilios were abundant, and about every moist spot in the road they were collected in great numbers. Papilios, as everyone knows, may be decoyed by placing some of their kind in conspicuous places, where their brilliantly-colored wings will attract all passers. One of the party, let his name be anon, saw numerous fine butterflies about a small moist spot in the road, and, stealthily creeping upon them, slowly lowered his net for a stroke, but pausing to select only the perfect ones for capture, perceived that all were second-class specimens. At the same instant he decided not to make a stroke, for, beneath a convenient bush, he heard a suppressed chuckle, and at a glance saw the Doctor, in imminent danger of bursting his sides with laughter because his friend had attempted a still hunt and had almost made a "pot-shot" at his decoys.

Silver Lake, Utah, is a small Summer resort back in the mountains, thirty-three miles from Salt Lake City, and at the head of Big Cottonwood Canon. In the Winter this little

valley is literally filled with snow, and during the early part of July some of the lakes above Brighton's, as the only hotel is called, have ice upon their surfaces. All through the Summer, snow may be seen upon the high mountains surrounding Silver Lake, and up to the middle of July the snow banks cling to the margin of Twin Lakes and Mary's Lake, while the ice water from the surrounding snow constantly cools the waters of several lakes which are well stocked with speckled beauties. These are large enough to allure even the most ardent chaser of butterflies and cause him to drop a fly or worm into the clear depths, where the artful dodgers are plainly visible, and where they are likely to remain, spurning, at that season of the year, the most tempting bait.

Eight or more miles from the city the stage road enters the foot-hills, and the rest of the journey to Silver Lake is up hill. Most of the distance the road is close beside the foaming current known as the Big Cottonwood. About half way up a pause is made for lunch and to change horses at the Half Way House. The driver turns into a small yard and stops before a house. We alight and find that we are in a small glen enclosed on all sides by rocks which rise almost perpendicularly hundreds of feet. On the right still rushes our mountain stream and ahead there seems no opening wide enough for a wagon road, but it is there, and winds upward, now on this side, then on that, of the stream, but ever onward, with ever-changing and constantly more beautiful scenery.

Parnassius clodius flits through the glen while we rest and lights upon a dwarf flower; *Pieris pallida* hovers about the small irrigation ditch; *Pamphila comma* lights upon a leaf in the sunshine; *Thecla californica* is found in its usual resting place, upon the leaves of the choke cherry, and on the same plant are found the larvæ and eggs of *Papilio rutulus*; *Papilio daunus* sails haughtily by and *Pyrameis carye* haunts the bunch of nettles by the water. *Melitæa acastus* flits about the door yard and the omnipresent *Vanessa antiopa* darts at the intruder from his resting place on a convenient tree. A fresh *Argynnis leto* hesitates beside a thistle blossom, but seems to realize that a bounty is placed upon its scalp (the Doctor is constantly re-

minding us of the scalp-locks and insists that nature always places such locks upon the thoraxes of butterflies, especially of the *Pamphilas*) and *A. leto* disappears down the canon. As we rest and notice the butterfly visitors to the glen we also see the mountain tops in the distance and think of the treasures we have found in similar localities, until our Jehu cracks his whip, and once more we journey upward. The first time we cross the stream we see many *Papilio*, and among them several *Papilio indra*. To our great sorrow we cannot take time to pursue, for we are going into a strange camp, and hope to arrive before dark.

A fourth member had joined the party that morning, Mr. J. B. Short, of Salt Lake City, a gentleman whose locks had been silvered by the icy fingers of time, and who carries the scars and a bullet received in fighting for his country; a gentleman who, no matter how many years may have passed over his head, will always love life in the open air, and will always be the same generous, hospitable, open-hearted host, whom we learned to know and appreciate during the days spent at Silver Lake. It was largely due to his courtesy and to the hospitality of Mrs. Short and their family that our stay here was so pleasant and profitable.

A tent, with comfortable cots for the night; a cottage, with food, stove and the necessary cooking utensils; what more could anyone want than sunshine and time to study the numerous insects, plants and animals? Everywhere on the mountain sides and tops butterflies were abundant when the sun shone. The stream before our cottage and the lakes about us were well stocked with trout; the rocks on the mountains sheltered numerous marmots, gophers and conies; a pair of eagles dwelt on the peak back of camp, and when waiting for meals, or when the sun failed to shine, innumerable beetles beneath the rocks and pieces of bark longed for our attention. The white-crowned sparrow picked up the crumbs about our door and a woodpecker fed its noisy young within a stone's throw of our tents. Mt. Millicent rose before us, Mt. Majestic at our backs, Mt. Scott towered on the right, and from our little valley numerous paths led to ideal places of collecting.

A somewhat lengthy introduction, dear readers, I know; but the writer believes that in the hearts of many others is the same love of the beautiful, appreciation of natural and grand scenery, and sympathy with all children of nature, which make these outings so delightful to him, and he would share the inspiration which he receives from his brief visits to and studies in the Rockies.

Come, join the party of three, as, on Monday morning, with all the essentials for collecting and preserving insects, they begin the day's work. It is useless to begin collecting butterflies before nine o'clock in the morning, for you will find none moving. From ten to two is the best time, and every moment included in those hours should be improved. If a cloud covers the sun the collector may as well seek a sheltered place and rest, for every butterfly will have disappeared.

This morning the sun shines, and as our path up the mountain leads into more open territory we see butterflies flitting here and there. There goes a beautiful *Anthocharis julia*. Its captor must be both quick and sure. Here and there an *Eudamus nevada* rests in an open spot on the bare ground. A careful stroke, and a quick one, if you would catch *E. nevada*. A few *Lycænas* are resting on the white flowers, and as the brow of the first mountain is approached we find a large patch of *Mertensia*; and noiselessly traveling from flower to flower is a "buzzless bee," as we early nicknamed *Hemaris brucei*. This species is usually rare in the parts of Utah I have visited, but a few days later we found it abundant about the blue and yellow flowers on this mountain side, and learned that the way to capture it was to wait, as it came up the mountain, and then be sure to capture the specimen at the first stroke.

Among the rocks near the top we found the wily *Chionobas chryxus* abundant, and after capturing enough to learn how it is done, and to gain some skill in detecting these wonderful insect mimics, as they rested with closely-folded wings upon the rocks, we turned our attention to other species.

Thecla sheridani was abundant on this mountain side, and associated with it was *Thecla affinis*. Not a single *sheridani* was found during either of my previous trips, but here their

green undersides were beautifully blended with the vegetation upon which they usually rested, and they were at home. Even when resting on the small white flowers of which they were very fond they were not easily seen. On the wing no eye could follow them, but fortunately for the collectors they had a habit of always returning to some spot near the one from which they were frightened, and then were easily captured.

Argynnidids were scarce and hard to capture, but a few *meadii*, *snýderi*, *platina* and *chitone* were taken near the peaks or at the tops of mountain ridges. On the highest point of each mountain, resting on the rocks, were always found a few specimens whose sole duty seemed to be to chase others away. Here one usually found *Pyrameis cardui*, *Pieris occidentalis*, a *Pamphila* or two, several *Chionobas chryxus*, an *Eudamus*, and perhaps an *Argynnis* or a *Melitæa*. Most of these specimens were not worth capture, but their actions were interesting. Each newcomer was sure to be attacked, regardless of size or color. It was enough that he should move while others rested. There would be a flash and a buzz, and the two specimens, darting back and forth at each other, would gradually rise in the air until they disappeared in the distance. In a moment one would return and light in its former place as though nothing had happened, but be just as ready to attack the next arrival.

At the edges of the snowbanks we usually found *Melaporphyria ononis* and *belladonna*.

These are but a few of the species taken any day on the mountains. One is always being surprised in the Rockies. Perhaps he takes a friend to a place where he found a rare species abundant a previous year, all the conditions are favorable, but not a specimen is to be found. Why? I don't know. Some species are in their homes abundant, but only found in small areas. One year a species fairly swarms and then is not seen for years. Then, again, when one has found a species at a certain place and time he may be able to find it at the same place and time every year. All these peculiarities of insect life are like the physicians *sure* remedy for disease. "Sometimes it cured and sometimes it didn't." After collecting to the top of the first mountain one usually finds a

ridge or "hog-back" leading to the next peak, and so it is easy to go on and on until the day is spent, and then there is the long journey home.

The comparing of specimens at the end of the day's trip is one of the many pleasures, and identifying species in the field is another. A certain savant, once upon a time, offered fifty cents for each specimen that he could not identify in the field. When he arrived home after the trip he wrote to a friend: "Field identification is worth almost nothing." In the last statement he was certainly correct.

After a few days amid such scenes as here described two of the party found it necessary to turn their steps homeward. As the stage started down the thirty-three mile trail one morning two of the party were aboard, and the writer bade them a sorrowful adieu as he turned his lonesome footsteps toward Scott's Peak, of which and other scenes, both old and new, more anon.

THE paragraph relating to my report of captures, published on page 348 of the January number of ENTOMOLOGICAL NEWS, just received, should read *Catocala badia* instead of *Oedemasia badia*. I reported also, at the same meeting, the capture of a number of larvæ of *Oedemasia concinna*, on the same food plant, viz., bayberry, in October; hence, possibly, the slight confusion of names. These larvæ, at the end of October, spun cocoons very similar in texture and appearance to that of *Hyperchiria io*, but almost transparent. I have twenty-one of these cocoons, and the larvæ can still be distinguished, lying dormant, and apparently awaiting the arrival of spring before pupating.—S. T. KEMP, Elizabeth, N. J.

In the NEWS for June, 1899, page 189, among the Doings of Societies, is a short account of *Feralia jocosa*, setting forth some of its habits, which do not agree with what we have observed here. We take this species every year by beating from willow flowers, and during the evenings of May 8th and 9th, 1898, we took eight or ten specimens by shaking from small plum and cherry trees which were in full bloom, it being an unusually early spring. We also take them quite often flying in the evening. We do a good deal of collecting by taking a lantern and net, and walking slowly along the numerous wood roads near here, and netting everything, as far as possible, that comes within reach. In this way we get many good things, and *jocosa* as often as any other equally rare species. It seems to have a short season—only about fifteen days between our earliest and latest dates.—CHARLES F. GOODHUE, Webster, N. H.

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, three 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, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., FEBRUARY, 1900.

OUR *former* printer made a blunder in regard to the January NEWS, in placing on the title-page Vol. X, No. 11, instead of Vol. XI, No. 1. The copies had all been mailed to subscribers, and we feared double references if we reprinted the number and started the pagination with page 1. We have decided to put a reprint of the first leaf of the January number in this number, and continue the same paging through this volume (Vol. XI).

WE have already spoken of what might be termed peripatetic entomology, or walking—nowadays riding—over the country in search of types, with a view of getting correct names by comparison of specimens. There have been so many persons afflicted with the *mih*i itch who have described slight geographical variations as species that it becomes necessary to see the identical specimens from which their descriptions were made. If entomologists would only wait until proper series of specimens were at hand, or until they become sufficiently versed to know the meaning of variations—whether specific or the contrary—much of this trouble could be avoided. Lately we have had a number of gentlemen visit us on the errand of type-seeing, and we have wondered whether the time would come when entomologists would only describe species that are specific enough in character to enable an identification to be made without a railroad ticket in one's pocket. Probably there will always be persons who will describe these geographical forms; and so long as this is done, peripatetic entomology will be necessary, as every hundred miles changes the facies of a species, and evolution makes any description or identification impossible unless one's specimens came from the very fence-corner where the types were found. It is true that individuals in the human species are given names, and also cats and dogs; but, unfortunately, the individuals in insects are so numerous that their identification—to us, at least—seems impossible.

DEPARTMENT OF ECONOMIC ENTOMOLOGY.

Edited by Prof. JOHN B. SMITH, Sc. D., New Brunswick, N. J.

Papers for this department are solicited. They should be sent to the editor, Prof. John B. Smith, Sc. D., New Brunswick, N. J.

The Association of Economic Entomologists.—Bulletin No. 20, new series, of the U. S. Department of Agriculture, Division of Entomology, contains the proceedings of the 11th annual meeting of this body, at Columbus, Ohio, August 18 and 19, 1899. It is a pamphlet of 112 pages, most of them well worth reading, and some of them worthy of careful study.

By all odds the most comprehensive and valuable paper is the presidential address by C. L. Marlatt, entitled "The Laisser-Faire Philosophy Applied to the Insect Problem." I do not often quarrel with a title, but I consider this a somewhat unfortunate one, since, from the start, it tends to lead to a misunderstanding of the address.

Mr. Marlatt considers the subject from much broader, more philosophic grounds than has been done before, and shows conclusively that against certain *natural* movements we are powerless, whether we enact State or national laws. His example is the San José or pernicious scale, and, after rehearsing something of the efforts made to stem the tide of this insect's spread, he asks: "Does anyone think for a moment, and at all seriously, that the San José Scale is to be exterminated, and that its dissemination is to be prevented, whatever may be the legislation, and whatever quarantine steps may be adopted or exterminative measures put in operation?"

No one who has had any real experience in field work, and has ever lifted himself above the narrow little horizon bounded by spraying machines, dusters, poisons or fumigating outfits, and has viewed the processes before him with any real understanding, can fail to agree with Mr. Marlatt's conclusions. The processes of nature are slow, but they are as inevitable and irresistible as our "*laws*" are futile in opposition.

Mr. Marlatt explains why insects introduced into a new environment are often so much more injurious than natives, or than the strangers themselves were in their native home, and he points out that all these are mere local conditions that have little effect upon the balance of nature in the long run.

Now here is a chance for a misunderstanding and for the suggestion that the economic entomologist is a useless incumbrance, for if matters even themselves up in the long run they might as well be left to themselves altogether. But Mr. Marlatt's essay does not authorize this view. While we cannot stop the natural spread of the pernicious scale, now that it has secured a foothold, there is no reason why we should not prevent

its *artificial* spread by means of nursery stock as much as possible, or why we should not kill it off on our fruit trees, at intervals, to prevent any serious damage to the crops. We can palliate, or we can often avoid injury by dodging, and the entomologist has an overly-great field to cover in this direction.

Personally, I am glad Mr. Marlatt has spoken, and as definitely as he did. It is an indication that the San José scale scare is about over, and that we can now estimate it at a little nearer its true value. We have had conventions, have had lurid speeches and papers, have had State laws galore and attempts at national legislation as well. The result is that we have our nursery stock shut out of all foreign countries, and have annoying and expensive restrictions upon our fruit trade in some others. The scale has, meanwhile, marched on unconcernedly; more fruit is raised now than ever before; the farmers, where it has been established longest, have lost their dread of it; and how much of all the *good* is to be credited to the laws and to the great outcry?

Mr. Marlatt's point of view is, it seems to me, the completely correct one.

Dr. Howard presented the results of experiments made by the Russian, Prof. I. Porchinski, who finds that the Tabanids may be greatly reduced in number by covering pools which they frequent with a film of kerosene. An interesting and perhaps generally unknown fact is that Tabanids are so much addicted to drink!

One of the new fields into which applied entomology has recently entered is brought to our attention by Dr. Howard's intensely interesting account of the present status of the Caprifig experiments in California. It marks another step forward in the really scientific consideration of the relation of insects and plants to each other, and that two such papers as those by Marlatt and Howard should have been presented at one meeting shows that the Division of Entomology at least, in Washington, has risen above the dull routine of ascertaining the actual percentage of scales killed by any particular application, and its influence for good will increase in proportion to the encouragement which is given to the broad study of the problem. Mr. Marlatt has pointed out, not originally, indeed, but pertinently, that there is such a thing as a balance of nature, and, as all our interference, by introducing plants and insects into new localities, tends to unsettle this balance to our disadvantage, our studies should be directed toward restoring, so far as in us lies, this condition of equilibrium.

And, by the by, referring to the matter of judging an insecticide by the percentage of the specimens killed, this has always had an absurd side to it, from my point of view. If I apply a material, like tobacco for instance, and, after a day or two, find that it has killed ninety per cent. of the plant lice, this does not prove that it is the fault of the tobacco that the others were not killed, but simply that the insecticide did not reach

those that escaped. I know that crude petroleum will kill pernicious scales whenever it is brought into direct contact with them, and if, a month after a tree has been sprayed, I find ten per cent. of living examples, it does not occur to me to blame the oil, but the man who put it on.

Lest it be not sufficiently considered, Messrs. Howard and Marlatt present another communication on the pernicious scale, this time reviewing the evidence as to its original home. The conclusion is that really we do not know anything at all about it, and this expresses my own opinion exactly.

Dr. E. P. Felt gave an account of his endeavor to establish a voluntary entomological service in New York, and, under some circumstances and in some directions, such a service will undoubtedly prove useful.

Mr. W. G. Johnson described the Emory fumigator, devised for applying the hydrocyanic acid gas to orchard trees, and it seems clear that on the smaller trees an apparatus such as that described can be very successfully used.

The value of such work is undoubted, but I sometimes wonder if it is really entomological. Has not the entomologist done all that pertains to his office when he has studied the life history of a species, has discovered and pointed out the weak point where it is most subject to attack, and has indicated the killing agents that should be used? The practical application of his suggestions really does not belong to his office at all. I am aware that this limitation of our work is not practical, but personally I never go into that branch more than is absolutely necessary.

Mr. F. M. Webster spoke on "Insectary and Office Methods," and the seeming necessity for such machinery as he describes reconciles me to my lack of both insectary and assistants. There is, incidentally, the other advantage, that no one can ever charge that your assistants really did all your work.

Mr. A. H. Kirkland presented arsenate of lead as "A Probable Remedy for the Cranberry Fire-worm," and I have little doubt it will prove effective, as will any other of the arsenites if applied properly and at the right time.

The chinchbug received attention from Mr. F. M. Webster, who described an interesting outbreak in northern Ohio. It indicates very forcibly the effect of the prevailing industry of a region upon the abundance of a particular species. Dairying is a leading feature of the region mentioned, and the consequent number of timothy meadows offers ideal conditions for the development of the brachypterous forms of the *Blissus*.

Mr. A. L. Quaintance presented notes on "Some Insects of the Year in Georgia," which cannot well be condensed. A rather interesting note, however, charges *Monocrepidius vespertinus* with being a scavenger in habits, feeding upon the excrement of cotton ball-worms. In New

Jersey it has been at times and locally troublesome on beans, of which it has undoubtedly eaten the foliage, but none of the elaterids known to me feed very much at the worst.

The attempted use of poisoned bran against *Allorhina nitida* failed as, theoretically, it ought to, for the small mouth parts of these beetles, with the weak, compound mandibles, are not well adapted to mastication.

Dr. E. P. Felt presented "Notes of the Year for New York." The forest tent caterpillar seems to have found the season much to its liking in that and indeed some of the New England States, and widespread injury has been caused to sugar bush as well as to orchard and shade trees in the infested region. The elm leaf beetle is spreading and very injurious in its new localities. In this connection it is interesting to note that this is now the third successive season during which very little injury has been done in New Jersey, more, however, this year (1899) than during the two last preceding it.

It is decidedly interesting to note that the *Diabrotica 12-punctata* has spread far into northern New York and has reached Buffalo in its progress, which seems to become more rapid each year. Brood XIX of the periodical *Cicada* occurred in several counties in western New York.

Mr. W. G. Johnson presented "Miscellaneous Entomological Notes" on a variety of species of local economic importance.

Messrs. Webster and Mally presented notes on the "Insects of the Year in Ohio," mentioning a great number of species. An interesting statement is: "At last we have found out how to kill the rose-chafer, *Macrodactylus subspinosus*. * * * One half pound of fish oil soap, dissolved in a gallon of water and sprayed upon them, will kill ninety-five per cent. of the adults, the females being especially susceptible, if the suds is sprayed directly upon them." This sounds suspicious, and will certainly not apply in New Jersey, where suds of double that strength have proved ineffective. The fact that females were the more susceptible recalls the results of one experiment with sludge-oil soap, where females were so generally killed that I examined closely and found that all were wornout specimens that had oviposited and were ready to die naturally.

Mr. Marlatt discussed "Temperature Control of Scale Insects," a point which was incidentally referred to by others, and formed the subject of another paper by W. M. Scott, of Georgia. It seems that, to the South especially, the low temperatures of the early part of 1899 were fatal to a variety of species, while others were unharmed. Further to the north the effect was less marked, and it is notable that the lowest recorded temperatures failed to affect the pernicious scale. Species that wintered in the egg stage suffered as much as those that were partly grown. "It will be seen that the cold of the winter in question was as efficient as an ordinary treatment with the best of our insecticides."

Mr. Marlatt also gave an account of *Aspidiotus ostreaformis*, a European species which has been introduced into the United States, and has

become established in some localities. I remember that when, in the early spring of 1898, I showed Dr. Ritsema Bos, the Dutch entomologist, some of our scaliest trees in New Jersey, he was not at all impressed, and said that he had seen trees in German orchards quite as badly covered by this newly-introduced pest. Now, let us pass laws excluding all European and Canadian fruit stocks.

Incidentally, Mr. Webster expressed himself on the effect of cold on the pernicious scales: "Doubtless the cold of winter kills the young, but the mature scales survive and continue breeding." My own experience is exactly opposite. Specimens that begin breeding in fall *never* survive the winter, and the young produced late in the season are also apt to succumb. The specimens that set in October and become dormant in the form of little round black scales are the forms that survive and resume breeding the June following.

Mr. E. H. Forbush spoke on the destruction of hairy caterpillars by birds, and gave a list of those that had been found feeding upon them in Massachusetts. Our good friend the English sparrow is very close to the end of the list, and I cannot but think the habit exceptional in this bird. At all events my experience with this species has been that it keeps off more effective birds than itself, and thus far counterbalances what little good it may, actually do. Nevertheless, Mr. Forbush is right in urging more systematic field observation to help us to a real knowledge of bird habits.

Mr. Johnson spoke on "The destructive pea louse, a new and important economic species of the genus *Nectarophora*." This was an account of a most remarkable invasion by a species not even described, which extended along the Atlantic Coast region from Connecticut to North Carolina, but was, perhaps, more severe in the southern range of the species. At all events, the percentage of injury was not as great in New Jersey as Mr. Johnson made it in Maryland. Toward the end of the season Mr. Johnson found predatory forms in such quantities that the aphids were disappearing and a fungus developed in many specimens. Similar conditions developed in New Jersey a little later and the fungus was determined for me by Dr. Thaxter as the common *Entomophthora aphidis*.

I can scarcely agree with Mr. Johnson, however, when he says: "As to the future, candidly, I am of the opinion that it will be many a day before we will see a repetition of such destruction to the pea crop by *Nectarophora destructor*." Mr. Johnson spoke in August, and at that time I would have been inclined to agree with him. But since that time the field peas on the college farm have been ruined, precisely as they were in the fall of 1898, though the character of the season was exactly opposite. I have advised our growers for canneries to place no dependence on crops to mature after June 15, the date when, in New Jersey, this insect became destructive.

Mr. Johnson also described "The Stalk Worm, a new enemy to young tobacco," though new only on this food plant. The species itself, *Crambus caligniosellus*, is old enough and common enough on corn, as Mr. Johnson pointed out.

Mr. A. H. Kirkland spoke of "An improvement in the manufacture of Arsenate of Lead," whereby nitrate of lead is used in place of the acetate. The resulting product contains about five per cent. more arsenic than that made with the acetate, and the cost is somewhat less. Unfortunately no exact formula is given, except that which is to be inferred from the fact that it requires 880 pounds arsenate of soda, 2398 pounds nitrate of lead to make one ton arsenate of lead, as compared with 758 pounds arsenate of soda and 2593 8 pounds acetate of lead to produce the same quantity.

Mr. E. H. Forbush reported on the progress of "Recent Work Against the Gypsy Moth," from which it appears that, while much had been accomplished in reducing the numbers of the insect in the known infested districts, three new colonies in outside districts have been discovered.

Mr. A. T. Burgess reported on "A Destructive Tanbark Beetle," *Dinoderus substriatus*, which he found developing in great numbers in the stock of a tannery at Malden, Mass.

Finally, before adjournment, the association adopted a set of resolutions which, as a whole, are admirable, but from one part of which I wish to dissent emphatically. It states: "The association is also in full sympathy with judicious national and State legislation for the purpose of enacting and enforcing laws to prevent the importation of foreign insect pests, and controlling or exterminating such as have become already established in this country."

That this was the sentiment of the majority in attendance is probably true, and it is in the nature of a direct contradiction to the conclusions of the presidential address. The association consists of *all* the members, and Mr. Marlatt's dissent at least is clearly enough expressed. It is one of those perfunctory resolutions which will be used wherever legislation is attempted and to support whatever the party using it happens to consider "judicious." Is any legislation that imposes a burden upon commerce "judicious"?

JOHN B. SMITH.

SITODREPA PANICEA LINN, LIVING IN AND FEEDING UPON ARGOL.—Recently Prof. F. L. Odenbach, S. J., Ignatius College, Cleveland, Ohio, has sent me specimens of this well nigh omnivorous beetle, which he finds burrowing in Argol. During fermentation the juices of the grape deposits tartaric acid ($C_4 H_6 O_6$) in the form of hydropotassic tartrate or bitartrate of potash, which, in commerce, is known as tartar or argol. As, in this case, the deposit was from red wine, the beetles were working in red tartar, many of the pieces of hard dry argol being almost honey-combed with burrows.—F. M. WEBSTER.

Entomological Literature.

COMPILED BY P. P. CALVERT.

Under the above head it is intended to mention papers received at the Academy of Natural Sciences of Philadelphia pertaining to the Entomology of the Americas (North and South). Articles irrelevant to American entomology will not be noted. Contributions to the anatomy, physiology and embryology of insects, however, 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; * denotes that the paper in question contains descriptions of North American forms. Titles of all articles in foreign languages are translated into English; usually such articles are written in the same language as the title of the journal containing them, but when such articles are in other languages than English, French, German or Italian, this fact is indicated in brackets.

3. The American Naturalist, Boston, Dec., 1899.—**4.** The Canadian Entomologist, London, Ont., Dec., '99.—**5.** Psyche, Cambridge, Mass., Jan., 1900.—**6.** Journal of the New York Entomological Society, Dec., '99.—**8.** The Entomologist's Monthly Magazine, London, Jan., 1900.—**10.** Nature, London, '99.—**11.** The Annals and Magazine of Natural History, London, Dec., '99.—**12.** Comptes Rendus. L'Academie des Sciences, Paris, '99.—**21.** The Entomologist's Record, London, Dec., 15, '99.—**37.** Le Naturaliste Canadien, Chicoutimi, Quebec, Dec., '99.—**41.** Entomologische Nachrichten, '99, No. 23, Berlin, Dec.—**46.** Tijdschrift voor Entomologie, xlii, 3, The Hague, Dec. 6, '99.—**74.** Naturwissenschaftliche Wochenschrift, Berlin, '99.—**79.** La Nature, Paris, '99.—**82.** Centralblatt für Bakteriologie, Jena, '99.—**84.** Insekten Börse, Leipsic, '99.—**108.** The Agricultural Journal, Cape Town, '99.—**120.** Consular Reports, U. S. Dept. of State, lxi, No. 231, Washington, Dec., '99.—**121.** Archives des Sciences Physiques et Naturelles, civ, No. 11, Geneva, Nov. 15, '99.

The Insect World: a Monthly Magazine, Edited Y. Nawa, Gifu, Japan, and printed entirely in Japanese, completed the twelfth number of the third volume Dec. 15, '99; we wish our contemporary long life!

THE GENERAL SUBJECT.—**Anon.** Obituary of Rev. Vincent Clementi, **4.**—**Carret, A.** M. F. Guillebeau and his entomological works (concl.), L'Echange Revue Linnéenne, Lyon, Dec., '99.—**Coupin, H.** Propriety in insects, **79**, Dec. 23.—**Distant, W.L.** Biological suggestions, mimicry (cont.). Zoologist, London, Dec., '99.—**Dury, C.** Random notes on natural history [Odonata, Lepidoptera, Diptera, Coleoptera], Journal, Cincinnati Society of Natural History, xix, 5, Jan. 4, 1900.—**Felt, E. P.** Collection, preservation and distribution of New York insects, Bulletin, New York State Museum, vi, 26, Albany, Apr., '99. Received Dec. 13.—**Hepden, A. S.** Entomological science in schools, **21.**—**Jänichen, R.** A new aberration to the third generation of *Lasiocampa populifolia* Esp. var *autumnalis* Jaen, **84**, Dec., 28.—**Keilhack, K.** On soil-forming activity of insects, **74**, Dec. 24.—**v.**

Linden, M. Edgar Krügers "On the development of the wings of insects with especial reference to the wing-covers of beetles", *Biologisches Centralblatt*, Erlangen, Dec. 1, '99.—**de Meijere, J. C. H.** On a case of dimorphism in the two sexes of a new Cecidomyid (*Monardia* van der Wulp), 2 pls., **46**.—**Roy, S.** Entomological notes, **37**.—**Sharp, D.** *Insecta*, and **Brown, A. W.** *Arachnida, Myriopoda and Prototracheata* in: *The Zoological Record*, Volume the Thirty-fifth. Being Records of Zoological Literature relating chiefly to the year 1898. Edited (for the Zoological Society of London) by David Sharp, London, '99.—**Tutt, J. W.** Entomology as a subject of instruction in schools, **21**.—**Weed, C. M.**, and **Murtfeldt, M. E.** *Stories of Insect Life*, Second Series, Summer and Autumn. Boston, U. S. A. Ginn & Co. 1899. Pp. x, 72. 34 figs.

ECONOMIC ENTOMOLOGY.—**Anon.** The malarial expedition to West Africa, *Science*, New York, Jan. 5, '99.—**Barchet.** Silk-worms in China, **120**.—**Beutelspacher, G.** Suppressing the San José scale in Canada, **120**.—**Clement, A. L.** Tobacco insects, **79**, Dec. 2.—**Däubler.** The Malaria Expedition to Sierra Leone, **82**, Dec. 23.—**Hanitsch, R.** Mosquitoes and malaria, **10**, Dec. 21.—**Hopkins, A. D.** Preliminary report on the insect enemies of the forests in the northwest: an account of the results gained from a reconnaissance trip made in the Spring and early Summer of 1899. Bulletin No. 21, new series, U. S. Dept. of Agriculture, Division of Entomology, Washington, '99.—**Lawrie, E.** The "Laveran body" in birds and the mosquito theory of malaria, *New York Medical Journal*, Dec. 30, '99.—**Lounsbury, C. P.** Grain bug, Codling moth, Bagrada bug, **108**, Nov. 9.—**Id.** The bont tick, *Anblyomma hebraicum* Kock., its life history and habits, figs., **108**, Nov. 23.—**Id.** Report of the Government Entomologist for the year 1898, 9 pls. Cape of Good Hope Dept. of Agriculture, Capetown, '99.—**Lowe, V. H.** The forest tent-caterpillar, figs., Bulletin No. 159, New York Agricultural Experiment Station, Geneva, N. Y., Oct., '99.—**Reh.** Indigenous orchid scale-insects, **74**, Dec. 17.—**C. B. S.** Insects as carriers of disease, **10**, Dec. 14.—**Zimmermann, A.** The combatting of animals injurious to cultivated plants by means of their natural enemies, **82**, Dec. 1, 5.

PROTOTRACHEATA.—**Bouvier, E. L.** Biological observations on *Peripatus capensis* Grube, **12**, Dec. 4.—**Id.** New observations on the American Peripati, **12**, Dec. 11.

MYRIOPODA AND ARACHNIDA.—**Fritsch, A.** *Myriopoda pars ii [and] Arachnoidea. Fauna der Gaskohle und der Kalksteine der Permformation Böhmens*, Bd. iv, heft 2. Prag., '99. Pls. 145-154.—**Silvestri, F.** Contribution to the study of Chilian Chilopods, *Revista Chilena de Historia Natural*, Valparaiso, Oct. and Nov., '99.

ORTHOPTERA.—**Edes, R. T.** Relation of the chirping of the tree cricket (*Ecanthus niveus*) to temperature, **3**.—**Hancock, J. L.**

Synopsis of subfamilies and genera of North American Tettigidae, **5**.—**Petrunkewitsch, A.** The digestive organs of *Periplaneta orientalis* and *Blatta germanica*, histological and physiological studies, 1 pl., Zoologische Jahrbücher, Abtheilung für Anatomie u. Ontogenie, xiii, 1, Jena Dec. 5, '99.—**Tümpel, R.** Die Geradflügler Mitteleuropas, Lieferung 6, Eisenach, Verlag. von M. Wilckens. Pp. 137-157, Perlidæ, Psocidæ, pls. xviii-xx [Acrididæ, Locustidæ].

NEUROPTERA.—**Calvert, P. P.** A contribution to knowledge of the Odonata of Paraguay, Anales, Museo Nacional de Buenos Aires, vii, Nov. 17, '99.—**Currie, R. P.** New species of North American Myrmeleonidæ, v*, **4**.—**McLachlan, R.** Concerning *Teratopsocus maculipennis* Reuter, with notes on the brachypterous condition in females of Psocidæ, **8**.

HEMIPTERA.—**Cholodkovsky, N.** Aphidological communications, 1 pl., Zoologischer Anzeiger, Leipsic, Nov. 27, '99.—**Cockerell, T. D. A.** A coccid from the far north*, **4**.—**Id.** New records of Coccidæ, **6**.—**Distant, W. L.** Rhynchotal notes, iii: Heteroptera, Discocephalinæ and Pentatominae (part.), **118**.—**Kirkaldy, W.** A new Hawaiian Fulgorid genus and species, **41**.—**Slater, F. W.** The egg-carrying habit of *Zaitha*, **3**.—**Webster, F. M.** Distribution of broods xxii, v and viii of *Cicada septendecim* in Indiana, map. Proceedings Indiana Academy of Science for 1898. Extract, no paging or date!

COLEOPTERA.—**Blackburn, T.** Revision of the genus *Paropsis*, part v, Proceedings, Linnean Society of New South Wales, '99, pt. iii, Sidney, Dec. 9, '99.—**Bordas, L.** General considerations on the male reproductive organs of Coleoptera with compound and racemose testes, **12**, Dec. 26.—**Chagnon, G.** *Cychnus viduus* Dej. captured at Saint-Hilaire, P. Q., **37**.—**Fischer.** [Oviposition and cocoons of] *Hydrophilus piceus*, **121**.—**Horn, W.**—Description of a new species of *Cicindela* [from S. America], Annali, Museo Civico di Storia Naturale di Genova, (2) xix, '99.—**Jacobson, G.** The genus *Alurno* (Coleoptera, Chrysomelidæ) [in Latin], Annuaire, Musée Zoologique de l'Académie Imperiale des Sciences de St. Petersburg, '99, No. 3.—**Mead, C. E.** *Collops bipunctatus* as an enemy of the Colorado potato beetle, **3**.—**Wickham, H. F.** On Coleoptera found with ants, fifth paper, **5**.

DIPTERA.—**Coquillett, D. W.** Notes and descriptions of Trypetidæ*, **6**.—**Hecht, E.** Biological and histological notes on the larva of a Dipter (*Microdon mutabilis* L.), 1 pl., Archives de Zoologie Experimentale et Generale, (3) vii, No. 3, Paris, '99.—**de Meijere, J. C. H.** See the General Subject.—**Webster, F. M.** Species of Diptera reared in Indiana during the years 1884 to 1890, Proceedings, Indiana Academy of Science for 1898. Extract, no paging or date!

LEPIDOPTERA.—**Beutenmüller, W.** Descriptions of and notes on some North American Lepidoptera*, **6**.—**Cappel, H. A. de V. T. N.** On the spine on the fore tibia in the genus *Agrotis*, 3 pls. [in

Dutch], **46.**—**v. Caradja, A.** On some *Spilosoma* hybrids [transl. from "Iris", '98]. Entomologist, London, Dec. '99.—**Crampton, H. E.** An experimental study upon Lepidoptera, figs., 3 pls., Archiv für Entwicklungsmechanik, ix, 2 Leipsic, Dec. 12, '99.—**Dyar, H. G.** Life histories of North American Geometridæ, viii, ix, **5.**—**Id.** The life histories of the New York slug caterpillars (concl.), 3 pls., **6.**—**Id.** Description of the mature larva of *Acronycta connecta*, fig., **6.**—**Fyles, T. W.** Observations upon *Bombyx cunea*, Drury, etc., **4.**—**Gibson, A.** *Lepisesia ulalume* Strecker in British Columbia, **4.**—**Moffat, J. A.** Butterfly wing structure, 1 pl., **4.**—**Moore, F.** Lepidoptera Indica, pts. xl, xli. London, Lovell Reeve & Co., '99. Recd. Jan. 15, 1900 [Pp. 65-112 of vol. iv, pls. 309-324. Nymphaliniæ, group Nymphalina.]—**Ottolengui, R.** A contribution to the discussion of *Spilosoma congrua*, **4.**—**Rippon, R. H. F.** Icones Ornithopterorum, a monograph of the Rhopalocerus genus Ornithoptera or bird-wing butterflies. Pt. 14. Published by the author, London. Recd. Jan. 15, '99.—**Smith, J. B.** New Noctuids and notes*, **6.**—**Soule, C. G.** The "cocoon" or "cases" of some burrowing caterpillars, **5.**—**Standfuss, M.** The dampening of the surface of the body which takes place in certain larvæ before pupation, **84**, Dec. 21.—**Stichel, H.** *Parnassius apollo bartholomæus* n. subsp. and monographic treatment of the named palæartic forms of *apollo*, **84**, Dec. 7, 14.—**Tutt, J. W.**—Migration and dispersal of insects: Lepidoptera, **21.**—**Wilson-Barker, D.** Butterfly-shadows, **10**, Dec. 7.

HYMENOPTERA.—**André, E.** The mushroom-raising ants [12 pp.]. Extrait de la Société Grayloise d'Emulation (année 1899).—**Anglas, J.** On the histogenesis of the imaginal muscles of Hymenoptera, Comptes Rendus, Société de Biologie, Paris, Dec. 2, '99.—**Ashmead, W. H.** Classification of the entomophilous wasps, or the superfamily Sphegoidea, No. 7, conclusion, **4.**—**Cockerell, T. D. A.,** and **Porter, W.** Contributions from the New Mexico Biological Station, vii: Observations on bees with descriptions of new genera and species, **11.**—**Dunning, S. N.** Notes on *Philanthus*, **4.**—**Emery, C.**—Vegetarianism among ants, **121.**—**Hunter, S. J.** The honey-bee and its food-plants with special reference to alfalfa, figs. Bulletin of the Dept. of Entomology, University of Kansas, Lawrence, '99. Recd. Dec. 26, '99.—**Konow, F. W.** New Tenthredinidæ, **41.**—**Id.** New South American *Stromboceros* species (fam. Tenthredinidæ)*, Wiener Entomologische Zeitung, xviii, 10, Dec. 24, '99.—**Marshall, T. A.** Braconidæ, pp. 289-334. pls. xiii-xv, in 67e Fascicule (July 1, 1899) and **Andrá, Ernest.** Mutillidæ, pp. 1-64. pls. i-iii in 68e Fascicule (Oct. 1, 1899) of Species des Hyménoptères d'Europe et d'Algérie fondé par Edmond André et continué sous Ernest André. Paris, Vve Dubosclard, éditeur.—**Robertson, C.** On the classification of bees, **4.**—**Smith, W. W.** Large colonies of ants in New Zealand, **8.**

Doings of Societies.

At a business meeting of the American Entomological Society held December 28th, 1899, the following officers were elected to serve during the coming year: *President*, Philip P. Calvert, Ph.D.; *Vice-President*, H. W. Wenzel; *Treasurer*, E. T. Cresson; *Recording Secretary*, Henry Skinner, M.D.; *Corresponding Secretary*, W. J. Fox; *Curator*, Henry Skinner; *Librarian*, W. J. Fox; *Publication Committee*, E. T. Cresson, C. Few Seiss, B. H. Smith; *Executive Committee*, P. Laurent, C. Liebeck, H. W. Wenzel; *Finance Committee*, J. W. McAllister, C. S. Welles, C. C. Cresson. HENRY SKINNER, *Sec.*

At a meeting of the Entomological Section of the Academy of Natural Sciences of Philadelphia, held December 28th, 1899, the following were elected officers for the year 1900: *Director*, Philip Laurent; *Vice-Director*, H. W. Wenzel; *Treasurer*, E. T. Cresson; *Conservator*, Henry Skinner, M.D.; *Recorder*, Henry Skinner, M.D.; *Secretary*, W. J. Fox; *Publication Committee*, C. W. Johnson, J. H. Ridings.

Mr. J. C. Bradley was duly elected an Associate of the Section. HENRY SKINNER, M.D., *Recorder*.

At the December meeting of the Feldman Collecting Social, held, on the evening of the 20th, at the residence of Mr. H. W. Wenzel, 1523 S. 13th St. Ten persons were present.

Prof. J. B. Smith called attention to larvæ of a species of *Tineid* which had burrowed in a mass of casein, which is not a natural food for insects of that kind.

The habits of the bee-moth larvæ were dwelt on by Messrs. H. Wenzel and Smith.

Mr. H. W. Wenzel exhibited specimens of *Ichalia costata*, a very rare insect in this locality; two specimens were taken on December 3d and 10th respectively. The capture of *Cryptorhynchus fuscatus* from Clementon, N. J., on December 17th, and two specimens of *Mycetina perpulchra* from Newtown Square, Pa., were recorded, as was also the collecting of *Cychnus* on December 10th and 17th in New Jersey.

Dr. H. Skinner remarked on the occurrence of *Hemaris Brucci* in Wasatch Mountains, Utah; it was quite plentiful at high altitudes. Also specimens of *Anarta melanopa* from the same locality were shown.

Prof. Smith stated that he had found that in collecting in various canons in the southwest, each canon would have a peculiar fauna of its own. He therefore pointed out the advisability of labelling specimens with the exact locality in which they were found.

A vote of thanks was extended to Mr. Frank Haimbach for the elegant collation tendered the members at the November meeting. WILLIAM J. FOX, *Secretary*.

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XI.

MARCH, 1900.

No. 3.

CONTENTS:

Holland—Alaska Insects.....	381	Williamson—Tachopteryx Thoreyi....	398
Rivers—A New <i>Metrius</i>	389	Fox—Extra-American Species of <i>Mu-</i>	
Doane—A New Sugar-Beet Pest.....	390	<i>tilla</i>	400
Hine— <i>Pangonia Chrysocoma</i>	392	Editorial.....	402
Bowditch—Collecting Notes.....	392	Economic Entomology.....	404
Osborn—A New Species of <i>Eutettix</i> ...	395	Entomological Literature.....	407
Newcomb—Smith's List.....	356	Doings of Societies.....	411

ALASKA INSECTS.

BY W. J. HOLLAND, LL.D.

PART I.

Enumeration of the insects collected in Alaska by Rev. S. Hall Young and Rev. M. E. Koonce, during the Summer of the year 1899, with descriptions of some new species and varieties.

The labors of Rev. S. Hall Young as a missionary and explorer in Alaska are well known in ecclesiastical and educational circles. His young associate, Rev. M. E. Koonce, has only recently entered upon his field of labor on Alaskan soil. Though their professional duties leave but scant leisure for the prosecution of researches in the domain of nature, they have both kindly fulfilled the promise, given me before starting upon their journey to the north, to collect such insects as they might happen to find in their journeyings to and fro. The accompanying list is published as serving to throw some light upon the fauna of this, as yet, only very imperfectly explored quarter of our continent.

ODONATA.

Genus **ANAX** Leach.1. **A. junius** Drury.

1 ♂, mountains between Mission and Forty-Mile Creeks, Alaska, July 25. (Young.)

1 ♂, Eagle City, Alaska, Aug. 3. (J. Murray Presnall.)

ORTHOPTERA.

Genus **ARPHIA** Stål.2. **A. frigida** Scudder.

Three specimens, Eagle City, Alaska, July 12. (Koonce.)

I am indebted to Dr. S. H. Scudder for the identification of the species.

LEPIDOPTERA.

Rhopalocera.

Family NYMPHALIDÆ.

Sub-family NYMPHALINÆ.

Genus **BRENTHIS** Hubner.3. **B. helena** Edwards.

The specimens referred to this species are somewhat smaller than the types, and not so brightly colored. The specimens are, however, somewhat worn. Among them is an aberrant female, which, while agreeing quite closely on the under side with the other specimens, is much brighter upon the upper side, and has the inner area of the wings less heavily marked with fuscous, and the dark spots and lines quite fine and light.

2 ♂♂, 3 ♀♀, mountains between Forty-Mile and Mission Creeks, Alaska, July 20-26. (Coll. Young.)

4. **B. chariclea** var. **arctica** Zetterstedt.

This small, dark-colored variety has hitherto only been known from Greenland. I obtained a small series from Mr. Young, agreeing perfectly with specimens in my collection obtained a number of years ago from Dr. Staudinger, who received them from Greenland.

2 ♂♂, American Creek, Alaska, July 15; 9 ♂♂, 2 ♀♀, mountains between Forty-Mile and Mission Creeks, July 20-26. (Coll. Young.)

5. **B. boisduvali** Duponchel.

One specimen only was obtained. I cannot agree with Elwes in treating this form as a mere variety of *B. chariclea* Schneider.

6. **B. pales** Schiffermueller, var **alaskensis** var. nov.

Unfortunately, the collection contains only a single specimen of this interesting form. It differs widely upon the upper surface from specimens of *B. pales* coming from various European localities and contained in my collection. It comes nearer in general aspect to the variety named *generator* by Staudinger, coming from the Pamir and Transalai regions of Asia, but is smaller. The fuscous area of the basal portions of the primaries and secondaries is reduced, extending outwardly only to the middle of the cell, and the entire wing beyond this is bright reddish fulvous, with the characteristic lines and spots narrow and fine. The under side is marked much as in typical *pales*.

Expanse 33 mm.

1 ♂, mountains between Forty-Mile and Mission Creeks, July 20. (Young).

7. **B. freija** Thunberg.

There is an interesting series of this species, mostly females, all more or less worn, showing that, when obtained, they had already been long upon the wing. If collections could be made in the locality where they were found at an earlier date, no doubt better specimens could be obtained.

2 ♂ ♂, White Horse, N. W. Territory, June 24; 2 ♀ ♀, Lake Labarge, June 27; 1 ♀, Fort Selkirk, June 28; 3 ♀ ♀, mountains between Forty-Mile and Mission Creeks, July 20-26. (Young legit).

8. **B. polaris** Boisduval.

The collection contains one good pair and one badly worn female of this species. All of the specimens agree perfectly with typical examples obtained from European localities and various points in boreal America.

1 ♂, 2 ♀ ♀, mountains between Forty-Mile and Mission Creeks, July 20. (Young, Coll.)

9. **B. youngi** sp. nov.

♀—The upper side of both wings is pale fulvous, with the base of the primaries as far as the middle of the cell, and the secondaries from the

base outwardly to beyond the end of the cell and as far as the inner angle grayish fuscus. On the primaries, the space between the middle spot on the cell and the K shaped spot at the end of the cell is pale, almost white. The transverse median line of spots and the submarginal lines of rounded dots are marked on either sides by paler shades, almost white. On the secondaries, the transverse median band of spots is heavy and black, and coalesces near the origin of the median nervules with the dark fuscous shade which obscures the base of the wing. Standing out prominently between this band and the dark fuscous inner shading are two pale quadrate spots situated just beyond the end of the cell. The fringes are white, checkered with fulvous at the end of the nervules. On the lower side, the primaries are quite evenly very pale fulvous, with the characteristic markings of the genus very faintly indicated. The secondaries on the inner half are reddish-ochraceous, the median band of spots characteristic of the genus being faintly indicated in a slightly lighter shade, each spot being defined inwardly and outwardly by fine reddish lines. From the origin of the third median nervule and the inward inner margin just beyond this median band is a dark brown shade. The outer half of the wing is very pale ochraceous, inclining to whitish, with the discal row of spots and the submarginal row of hastate markings very faintly indicated. The costa is marked by a narrow even line of silvery white. The only spot showing a tendency to present a silvery appearance is the spot shaped like an hour-glass, forming the upper spot in the median band; the upper edge of which spot, immediately contiguous to the fine silvery line, shows a silvery reflection. The upper side of the thorax and abdomen is blackish, the lower side reddish. The antennæ are black on the upper side, reddish on the under side. The legs are reddish-brown throughout.

Expanse 30 mm.

1 ♀, mountains between Forty-Mile and Mission Creeks, N. E. Alaska, June 20. (Young).

This interesting form is so thoroughly distinct, from the character of the markings on the under side, that I do not hesitate to describe it as a new species. I cannot bring myself to regard it as a mere aberration, after careful comparison with all the other species of the genus known to me; and my collection contains a good series of specimens of every species which has been described.

10. *Melitæa helvia* Scudder.

?—Closely allied to *M. taylori* Edwards. The resemblance upon the upper side is very close, but the median band of light spots on the secondaries is less strongly developed, and the marginal and submarginal spots on the primaries are much larger and not nearly so heavily bordered with

black as in *taylori*, the black borders of these spots being reduced to fine lines, so that the general appearance of the wings is that of a paler insect. The most characteristic difference, however, is found in the markings of the under side of the wings. In *M. taylori* the light spots are conspicuous, and are well defined, both externally and internally, by heavier shades. In *M. helvia* only the spots in the middle and end of the cell and a few near the apical region are bright and distinctly defined. All below the median vein and the upper median nervule in *M. helvia* are quite obscure and stand forth indistinctly upon a much paler fulvous ground than in *M. taylori*. In *M. taylori*, on the secondaries, the median band of light spots is bordered externally by two fine black lines, including between them a dark reddish-brown or almost blackish shade. The median band in *M. helvia* is not thus externally defined by a heavy dark shade. The facies of the under side of the specimen is wholly different from any specimens of *M. taylori* known to me, because of these facts which I have pointed out.

♀—The female is like the male, but larger. The same differences from *M. taylori* which were noted in the case of the male reveal themselves in the case of the female as to the markings on the under side of the wing, and it will be perfectly easy to discriminate the two forms by noting the points to which I have called attention.

Expanse ♂ 32 mm.; ♀ 35 mm.

2 ♂ ♂, White Horse, N. W. Territory, June 24. 1 ♀, Eagle City, Alaska, July 8. (Young).

The type of *helvia* is reputed to have been destroyed in the Chicago fire. After carefully comparing Dr. Scudder's description with the specimen before me, in which work I was joined by Dr. Skinner, I am forced to the conclusion that the specimens before me are this long-lost species. Because of its evident nearness to *M. taylori*, which is well known to collections, I have given the foregoing comparison of the two forms to aid in their proper discrimination.

Genus **PHYCIODES** Doubleday.

11. *P. pratensis* Behr.

I refer the specimen before me to this species, although upon the under side they are much paler, and prevalently less distinctly marked than specimens of *P. pratensis* coming from more southern latitudes. Most of the specimens are, however, too badly worn to enable me to be quite sure whether this is a positive characteristic of the form. The species of this genus appear to me to badly need revision.

2 ♂ ♂, Fort Selkirk, N. W. Territory, June 28; 1 ♂, 3 ♀ ♀, Eagle City, Alaska, July 8-12. (Young *legit.*)

Genus **GRAPTA** Kirby.

12. **G. hylas** Edwards.

1 ♂, Tagish Lake, British Columbia, July 21. (Koonce *legit.*)

2 ♀ ♀, Rampart, Alaska, August 12. (Young, *legit.*)

13. **G. gracilis** Grote and Robinson.

1 ♂, Tagish Lake, B. C., July 21. (Koonce *legit.*)

1 ♂, 1 ♀, White Horse, N. W. Territory. (Young.)

1 ♂, 5 ♀ ♀, Rampart, Alaska, August 6-17. (Young.)

1 ♂, American Creek, Alaska, August 18. (Young.)

Genus **VANESSA** Fabricius.

14. **V. milberti** Godart.

Three badly worn females, Skaguay, Alaska, June 12. (Young.)

15. **V. antiopa** Linnæus.

One female with the blue submarginal spots near the inner angle of the secondaries obsolete. Eagle City, Alaska, August

18. (J. L. W.)

Subfamily SATYRINÆ.

Genus **CÆNONYMPHA** Westwood.

16. **C. kodiak** var. **yukonensis** var. nov.

♂—The primaries on the upper side are bright ochraceous, with the outer margins and the costa shading into gray. A whitish subapical band, very poorly defined, extends beyond the cell from below the subcostals to the second median nervule, as in *C. kodiak* Edw. and *C. ampelos* Edw. The secondaries on the upper side are dark gray, very slightly tinged with ochraceous, traversed by an obscure whitish, irregular median band, interrupted between the first and second median nervules. On the under side the primaries are dark ochraceous (in one example deep chestnut-brown), fading at the apex and on the outer margins into pale cinereous. The white band indistinctly seen on the upper side is reproduced on this side, sharply defined and solidly white. A small dark-pupiled ocellus is located near the outer margin, between the upper and lower radials. The secondaries on the lower side are dark fuliginous, passing into pale cinereous on the outer margin, with the median band of white clearly and sharply defined. A submarginal series of ocelli is faintly indicated.

♀—The female is like the male, but larger, and throughout paler in color on both sides of the wings.

Expanse ♂ 30 mm.; ♀ 32 mm.

This form in the arrangement of the markings comes nearest to *C. kodiak*, with the type of which I have carefully compared it; but in color is nearer to *C. inornata*. It may be a distinct species.

2 ♂♂, Dawson, Yukon Territory, July 1; 1 ♂, Eagle City, Alaska, July 14; 2 ♂♂, American Creek, July 18. (Young legit.)

Genus **EREBIA** Dalman.

17. **E. disa** var **mancinus** Doubleday and Hewitson.

3 ♂♂, 1 ♀, White Horse, N. W. Territory, June 24. (Young.)

18. **E. rossi** Curtiss.

2 ♂♂, 1 ♀ mountains between Forty-Mile and Mission Creeks, N. E. Alaska, July 20-26. (Young.)

19. **E. epipsodea** Butler.

The collection contains two specimens departing somewhat widely from the typical form, but agreeing with examples labeled *E. epipsodea* in the Edwards' Collection, which came from Colorado, and presumably are conspecific with other examples conformed to type. These Alaskan and Coloradan specimens are characterized by their smaller size, the obsolescence of the ocelli and the diminution of the expanse of the red areas surrounding the ocelli which survive, and the breadth and distinctness of the dark median band on the lower side of the secondaries. The form has been named *brucei* by Elwes = *sine-ocellata* Skinner.

1 ♂, Eagle City, Alaska, July 11; 1 ♂, mountains between Forty-Mile and Mission Creeks, Alaska, July 20. (Young.)

20. **E. sofia** var. **alaskensis** var. nov.

The specimens are all characterized by the reduction of the number of the light spots, both on the upper and lower sides of the wings. In almost all of the specimens before me there are three spots on the primaries above and below, and but two spots on the lower side of the secondaries. Only one specimen approximates the typical form in the number of spots on the lower side of the wings.

9 ♂♂, Eagle City, Alaska, July 8-12; 1 ♂, American Creek, Alaska, July 18. (Young.)

21. *E. youngi* sp. nov.

♂—The upper side of both wings is dark velvety brown, almost black. The primaries are marked by a short, but relatively wide submarginal band of red spots, extending from the upper radial to the first median nervule, each spot pupilled with black. On the secondaries there is a submarginal series of similarly colored, rounded spots, most conspicuous between the median nervules, but not confluent, as on the primaries. On the under side the wings are a little paler than on the upper side. The primaries have the band of submarginal red spots of the upper side reproduced on this side, but the spots, while more confluent, if possible, than on the upper side, are less sharply outlined. The secondaries are crossed by a broad curved, median, dark band, defined both externally and internally by narrow black lines. This band is followed externally by a paler band, the ground-color being more or less profusely dusted with hoary scales, giving this band a grayish appearance. Succeeding this grayish band is a moderately wide marginal band of dark brown, of approximately even width along the outer margin of the wing. The ocelli of the secondaries are only faintly indicated on the under side as minute black points, corresponding in location to the black pupils of the red spots on the upper side.

♀—The female is a trifle less dark upon the upper side of the wings than the male, with the ocellated red spots more strongly developed on both the upper and under sides of the wings. The marginal dark band on the lower side of the secondaries is, in the specimen before me, more sharply defined internally than in the males, and is darker; so that the hoary band between the dark median band and this outer band stands forth very conspicuously and very clearly defined.

Expanse ♂ 33 mm.; ♀ 35 mm.

The species is not far from *E. dabanensis* Erschoff (cf. Romanoff, Mém. sur les Lépidoptères, Vol. I, Pl. XXI, Fig. 1), and it has some resemblance to *E. vidleri* Elwes, with a specimen of which, in the possession of Dr. Skinner, I have compared it. It is, however, plainly distinct from both of these species.

3♂♂, 1♀, mountains between Forty-Mile and Mission Creeks, N. E. Alaska, July 20. (Young.)

Genus **ÆNEIS** Hübner.22. *O. chryxus* Doubleday and Hewitson.

One of the females agrees fairly well with the type of *O. calais* Scudder. The others grade off toward the common Colorado forms, but are dingier in color than most examples from Colorado. The solitary male does not differ materially from

males taken in Colorado, in which there occurs but one ocellus in the sub-apical region of the primaries.

1 ♂, 1 ♀, White Horse, N. W. Territory, June 24; 1 ♀, Fort Selkirk, June 28; 1 ♀, Eagle City, Alaska, July 10. (Young.)

23. *O. jutta* var. *alaskensis* var. nov.

The wings are thinner and more diaphanous than in *jutta* from Maine, Quebec and other localities to the south and east, as well as in examples of the typical form from Europe. The prevalent color is a sooty gray, and the spots on the upper side are far less conspicuous than in the normal form of *jutta*, and on the under side the wings are quite evenly marked by minute spots and strigæ, without any trace of a darker median band on the secondaries.

3 ♂♂, 2 ♀♀, mountains between Forty-Mile and Mission Creeks, N. E. Alaska, June 20; 2 ♂♂, 1 ♀♂, American Creek, Alaska, July 18. (Young.)

At first I was inclined to identify this with the form named *balder* by Boisduval; but a careful comparison of the specimens with his figures and his description in the *Icones* persuades me that the two forms are not the same.

Concluded in next issue.

A New *Metrius* from California.

By J. J. RIVERS.

Metrius sericeus n. sp.

More robust, broader and darker than in *M contractus* Esch, and with a faint sericeous lustre. Head broad, with a deeply impressed arcuate line reaching over the frontis, curving upwards from the front ends of the super-orbital ridges, which latter finally deflexes behind the eyes. Prothorax subquadrate, with the side margins less sinuate than in the other species of the genus; hind margin bisinuate as usual, but the narrow elevated edges that extend inward from the angles are not present in this species, through the disc runs a median polished line that shines in contrast with the sombre tone that surrounds it. Elytra a third wider than the thorax, ventricose obscurely punctate-striate, the punctures distinct; the scutellum polished black like the median line of the thoracic disc; underside and legs black, shining, towards the tarsi growing reddish. Length 9 mm.

Two examples, found by Mr. Max Albright the present season upon the slopes of Mount Whitney, at an altitude of 7,000 feet.

Notes on a New Sugar-Beet Pest, with a Description of the Species.

By R. W. DOANE,

Washington Agricultural College and School of Science,
Pullman, Washington.

The way in which a seemingly harmless insect may, under changed conditions, become, in a very short time, of serious economic importance is well illustrated by a species of *Aphis* that has been giving more or less trouble to beet-growers of this section during the last two or three seasons. We have here, feeding upon the roots of the *Polygonum aviculare* and *Achillea millefolium*, and more rarely on other plants also, a species of *Aphis*, which, while seldom occurring in large colonies, is pretty well distributed throughout the soil wherever these plants grow. The large amount of the white flocculent secretion with which the insect is covered makes its presence easily detected; the little spaces where the roots formerly ran, and any cracks or crevices in the soil near the infested plants, are more or less completely lined with this substance, which looks very much like a white mould, and indeed is often mistaken for such.

As long as this insect attacked only uncultivated plants, little or no attention was paid to it. But during the last three years it seems to have developed a remarkable liking for sugar beets, with a result that those interested in the growing of this plant have suffered considerable loss from the ravages of this new pest. If the season is favorable and the insect attacks the beets early, the yield may be very materially affected. It feeds wholly on the roots—sometimes occurring in sufficient numbers to entirely destroy the smallest rootlets; thus, of course, stopping the growth of the plant, and causing it to shrivel and become spongy. Certain growers report a large part of their crop thus destroyed; while others have only suffered from having the yield more or less decreased. In a bulletin soon to be issued by this station, the life-history of this insect, so far as it is now known, will be given in detail. Only brief notes need be given here.

The colonies found during the winter months consist of a

small number of individuals in all stages of development—from the small larva to the full-grown, viviparous, apterous female. During the months of April or May these colonies begin to grow rapidly, and by mid-Summer the whole root of the infested plant is often quite covered with the *Aphis* and the cottony secretion. Some time during the Summer—just how early has not yet been determined—winged forms begin to appear; these increase in number until as late as November 15th, when the winged individuals in the colony frequently outnumber the wingless forms. These winged forms are also agamic, viviparous females, no males having as yet been discovered. After leaving the plant, they sometimes fly for considerable distances before settling at the root of another plant, where a new colony, the Winter colony, is established. The beets may become infested either by one of these winged females establishing a colony on them, or, as is probably more often the case, by forms which are already in the soil attacking the small rootlets as soon as they are sufficiently developed.

The wing venation and the structure of the antennæ place this species in the genus *Pemphigus*, among the root-inhabiting forms; but, so far as I can learn, it has never been described. So a brief description is given:

Pemphigus betæ n. sp.—Winged, viviparous females: length 2 mm.; alar expanse 6.75 mm.; head, thorax and appendages bluish black, pruinose. Abdomen, after the hoary secretion is removed, dark-green with considerable flocculent matter on the posterior segments. Antennæ 1 mm. long, annulations indistinct; joints all somewhat constricted at base; third joint longest, last joint next in length and more slender than the rest; unguis distinct. Third and fourth joint with transverse sensoria. Eyes large, very dark brown. Wings somewhat smoky; stigma, all the veins and the narrow space between the costal and subcostal veins, brown; first and second discoidals arising close together, more rarely a very short distance apart; basal third of cubital obsolete. Apterous individuals yellowish, sometimes so covered with the whitish secretion as to make them appear almost white; legs, antennæ, distal half of back, and a rather large spot on the dorsal aspect of the head very dark brown; eyes very small, almost black; the white flocculent secretion is confined to the last three or four segments of the abdomen, and is often 1 mm. long, sometimes even longer.

Larvæ like the apterous individuals, only more slender, and in the earlier stages with only five joints to the antennæ, the last of which is the longest.

Pangonia Chrysocoma, Osten Sacken.

By JAMES S. HINE.

It was five or six years ago that I read in *Psyche*, Professor Aldrich's description of *Goniops hippoboscoides*. I was much interested in the species at the time, as it occurred so near the locality in which I had collected oftentimes, and also as I had previously become interested in the Tabanidæ, its natural family. On July 25, 1898, while collecting in a rocky woods in Medina County, Ohio, I was successful enough to procure a female of the species, and within the next ten days two more, but was not able to procure or see the male. The past Summer, in the same locality, on July 19th, a male was taken, but upon comparing it with males of *Pangonia chrysocoma*, Osten Sacken, taken at Pittsburg, Pa., I was convinced that it is that species.

Upon investigation of literature I find that Osten Sacken's description of the female of *P. chrysocoma* exactly describes the female which I identified by Aldrich's description and figure in *Psyche* as *G. hippoboscoides*, but does not mention the acute angle in which the eyes terminate above, a characteristic which is mentioned as one of the best characters of the genus *Goniops*. Since the wide front and small, acute-angled eyes are not to be found in the female of other species placed under *Pangonia* it might be well to retain *Goniops* for *chrysocoma*.

The habits of the species in the field are interesting. Several of the specimens taken were first located by means of the peculiar noise they make while at rest. They stationed themselves on the upper side of a leaf and by vibrating their wings, striking the leaf at each downward stroke, make a rattling noise which could be heard plainly several feet away.

COLLECTING NOTES.

By FRED. C. BOWDITCH.

I passed the last three weeks of August at Northfield, Mass., a small town on the east bank of the Connecticut River, and adjoining the New Hampshire line. Early in the season I should judge the locality would be a fine collecting ground, as there is a good variety of meadow, hill, valley and forest suffi-

cient to afford a rich fauna. My visit was the fag end of the season, and though I worked hard the results were not very large. Five common species of *Cicindela* were in evidence, *repanda* being very abundant in the river banks. The Carabidæ were pretty well represented. The river banks producing various species of *Bembidium*, *Tachys* and *Dyschirius*, as well as *Omophron*, *Harpalus*, *Platynus*, *Amara*, etc. I looked particularly for *Cychrus*, but found only two specimens of the common *lecontei*.

Water-beetles were very abundant in numbers, though not particularly so in variety. Four species of *Dytiscus*, among them two of *marginicollis* (which is our rarest in Mass.), and six or eight *verticalis*: *Illybius 4-maculatus* Lec. and *biguttatus* Germ. were common, the latter very abundant, two or three species of *Agabus*, innumerable *Hydroporus undulatus* Say showing many interesting variations in spotting, and many hundreds of other specimens representing about a dozen species, also an example of *Hydrophilus ovatus* G. & H.

In this connection I will diverge a moment to describe my water net, which may be new to some readers, and which I find very efficacious and easy to use. Take an ordinary wire dish-cover, such as is used to keep flies from dishes, etc.; remove the handle, and close the wires where it has been inserted, and solder the cover by its narrow iron rim *inside* a short brass netting, which screws into an eight-foot bamboo handle. I use an $8\frac{3}{4}$ -inch cover, and my ring is of quarter-inch brass wire—the whole screwed firmly into a one-inch bamboo stick. This makes an exceedingly stiff, rigid net, which will stand anything in the way of scraping round. The water passes through it with the greatest ease, and, after a little practice, the beetles can be scraped up, kept in, and taken out with amazing rapidity as compared with a cloth net. The motions in using must, of course, always be forward, so as to keep stuff in the net, and a simple shovel-like motion is often very effective, while a single back stroke cleans it. *Dytiscus marginicollis* is very lively in the water. I have known it to jump out of the net if the latter was free from debris, but a quick eye and hand will always be able to frustrate any such attempt. But it is

not only in scraping together material that time is saved, but also in the facilities offered for examining the catch. When sufficient material is in the net, pick out the large specimens, raise the net up and tip it half over, so that the sun will shine in, and, if possible, the wind will blow through it. The water will immediately drain off, and the small beetles will hasten to leave the drying debris and hurry to the edge of the net, where they pass under the eye of the collector, who easily picks out any he desires, and the rest walk out over the edge. Persons who have never used a wire net have no conception of the time saved and the amount of waste and material which can be passed upon by its use, and a net once made will last a long time and stand a deal of rough work. Some minute species pass through the meshes and are easily picked off outside.

One species of *Liodes* and about thirty of Staphylinidæ were turned up, while the *Cocinellidæ* were well represented, and a few interesting varieties occurred. The *Endomychidæ* gave six species, among them *Phymaphora pulchella* New. My first specimen of *Georyssus pusillus* Lec. was picked up on the river bank. A few good species of *Nitidulidæ* and *Histeridæ* occurred, among them one of *Saprinus fitchii* Mars. on sand on the river bank. I suspect this species of living on the sand or under debris on the water's edge, but the closest search failed to turn up a second specimen. In past years I have taken great numbers of *S. estriatus* Lec. on sand under debris on the beaches of Great Salt Lake, Utah. The *Buprestidæ* showed in seven or eight species, among them two examples of *Pacilonota thureura* Say on poplar; it is probably common earlier in the season. About eight or nine species of *Elater* were taken, among them a pair of *Cryptohypnus pectoralis* Say in sand on the edge of a brook. Scarabs and Longhorns were sadly wanting, and the few that presented themselves were common. The *Chrysomelidæ* were fairly represented in number of species, but not specimens. *Tenebrionidæ* were conspicuous by their absence, while the *Rhyncophora* showed up a fine number of species and some few good things, notably a pair of *Splenophorus* found at the roots of water plants in a dried-up bog-hole.

There were a good many species scattered through the other small families, a considerable part of which would be classed by the collector as good or desirable things.

Last season I had the opportunity of overhauling two nests of the ordinary gray squirrel. Aside from fleas or one or two ticks, I found about a dozen or eighteen *Dendrophilus punctulatus* Say, three pairs of *Trox scaber* Linn. and one small undetermined species. A number of mouse nests showed three minute species, one of them a *Falagria*. I think a careful study of these nests will reveal many small forms, and somebody who is favorably situated should make a point of digging out and examining the burrows of our woodchucks, rabbits, foxes, etc., and the chances are they will be well repaid. On June 17, 1897, a great number of *Lixus concavus* Say were taken both singly and in pairs in *Rumex brittanica* Linn. (the great yellow water dock). Though a common species elsewhere, I have never seen it here before, so that its occurrence in numbers was rather interesting. By the way, I have a theory—which, perhaps, is shared by others—that no species is rare if collectors know when and where to look for it. They may be extremely local and be found only for a few days, but in that time and place they are common, or if even a part of the life-habits of a species can be found out, it usually ceases to be a rarity, while the pleasure of such a discovery compensates the finder for many disappointments and much hard work.

Brookline, Mass.

A New Species of *Eutettix*.

(JASSIDÆ, HOMOPTERA.)

By HERBERT OSBORN, Ohio State University, Columbus, O.

***Eutettix magnus* n. sp.**

General aspect of *virida*, larger, more conspicuously marked; elytra broader apically. Yellow, with dark brown fuscous and blackish markings on head, pronotum and elytra. A broad, black, frontal band extending to and enclosing the light-yellow ocelli at each side. Length, to tip of elytra, ♀ 6.75 mm; ♂ 5 mm. To tip of abdomen, ♀ 5.50 mm; ♂ 2 mm. Width of pronotum, ♀ 2.50 mm.; ♂ 2 mm.

Head broadly lunate, vertex slightly longer at middle than next eye, a distinct but rather shallow transverse depression on anterior third in and

behind which the surface is minutely, longitudinally striate while in front, and passing over on to the front it is transversely striate; front, except at upper border, scarcely striate, very minutely punctate; antennæ overhanging by a slight ridge; clypeus rather long, widening toward tip; loræ oval, slightly more elongate than in *lurida*, the margins of genæ meeting clypeus by a narrow margin. Pronotum short, sides rounded, carinate, posterior border scarcely concave, transversely striated; scutellum with very faint punctures and impressed lines. Elytra broad, narrowing slightly beyond the middle, with narrow appendix.

Color: vertex yellow, except anterior margin which is invaded by the broad frontal band which extends between the ocelli, enclosing one at either end, and which is broken at the center by a narrow line; face below the frontal band uniformly light yellow in the ♀, and with broken semi-arcs and borders of clypeus and loræ fuscous in the ♂; eyes, except for narrow yellow margin, brown; ocelli yellow; pronotum yellow with broad transverse fuscous band, broader in ♂ than in ♀; scutellum yellow; elytra brown in ♀ fulvous in ♂, the claval border in both deeply fuscous and apical part of clavus bearing in each a conspicuous yellow spot, forming with its fellow an oval sutural spot; apex with deep fuscous border in both sexes, costal border in ♀ whitish hyaline, in ♂ fuscous.

Beneath: ♀ light yellow, ♂ with pleural pieces fuscous; legs light yellow.

Genitalia: ♀ last ventral segment rather short, lateral lobes rounded; a median semi-circular lobe faintly carinate; pygofer with scattered short bristles near apex, scarcely exceeded by ovipositor. ♂, valve with a median, short, broad lobe, black; plates elongate-triangular; outer margin straight, with a fringe of short hairs.

Two specimens received from Mr. F. M. McElfresh, Champaign, Ill.; the female labeled "Marion Co., Ark., June 27, 1897," and the male "Morgan Co., Ill., June 29, 1892."

It is a large and striking species, and must be rather rare to have escaped notice heretofore. While there is quite a difference in size and some difference in color markings between the male and female as well as a wide difference in the recorded localities of capture, they possess so many striking points of agreement that I cannot doubt their affinity.

SMITHS' LIST.

By H. H. NEWCOMB.

Now that Prof. J. B. Smith's List of the Lepidoptera of Boreal America is out of print would it not be wise, before another list is published, to obtain an expression of opinion

from collectors of Lepidoptera of their ideas or preferences so that suggestions may be received which will point out the defects of the old list and make possible a new or revised list which will meet the requirements of the majority.

On this supposition I venture to submit my own ideas on this subject.

I believe that it is a good plan to have a number for each species, and that if these numbers could be made permanent their effectiveness would be greatly increased. The general tendency is to use numbers on our exchange lists, and it is a great convenience, saving both time and labor. Numbers are even more useful for material in envelopes and boxes. For instance, suppose, after a hard day's collecting one has a lot of material to put up in papers, maybe 30 or 40 of one kind, 20 of another and so on, it is much easier to put on the numbers than to write the names in full.

And in order that each number may be permanent I would suggest that several vacancies be left in each genus, so that when a new species is named and numbered it may be inserted in the list. There is no need to economize as to numbers, as there is an inexhaustable supply from which to draw.

I would have each family commence on the even hundred, as, for instance, Lycaenidæ at 300, the Papilionidæ at 500, etc., and each sub-order on the even thousand as Heterocera at 1000, Noctuidæ at 2000, etc. A number would then have more value than at present, as it would indicate at once the sub-order and family.

What a convenience it would be to those who keep records and notes on cards to have the cards arranged numerically, and how much confusion it would save where one insect has several names, as *Limenitis ursula*, which we hardly recognize as *Basilarchia astyanax* or *Nymphalis epistemon*.

When the next list is published I would suggest that at a small additional expense a portion of the edition be printed on one side only of each page so that it might be cut up to serve the purpose of cabinet labels.

A simple but effective way of checking off one's collection is to place a small o in front of the name on the list where but

one specimen is possessed, or two o's, thus oo, if there are two or more of the same species in the cabinet, and add the necessary strokes to complete the male (♂) or female (♀) sign when the sex is determined. A list checked off in this manner is particularly useful when studying other collections.

I hope that a general expression of opinion on this subject will be forthcoming.

On the Habits of *Tachopteryx Thoreyi*. (Order Odonata.)

BY E. B. WILLIAMSON.

Tachopteryx Thoreyi Hagen has been taken in Massachusetts, New York, Pennsylvania, Maryland, Kentucky, North Carolina, Texas and Florida. Mr. J. L. Graf first observed the species in Pennsylvania; and I am indebted to him for the dates indicating the seasonal range of the species in Allegheny County, where he found it. Mr. H. D. Merrick, during the season of 1899, took the species in Beaver and Fayette counties, Pennsylvania. During June of 1899, Mr. Graf and the writer collected a few specimens near Pittsburg, in Allegheny County, in the locality where Mr. Graf had observed the species the year before. Our collecting ground was along Squan Run, a small western affluent of the Allegheny River, a few miles above the Ohio River. The creek has a length of ten or fifteen miles. A mile above its mouth it flows through a level valley, possibly an eighth or a quarter of a mile wide. The valley consists of pastured or cultivated fields, with some waste patches of willows and elders. The sides of the valley are shaly bluffs or hills, fifty or one hundred feet high, covered with brush, hemlocks and small timber. The stream zigzags across this valley, striking first one side, then the other. It has been a larger stream, and its course has changed from time to time during recent years, leaving occasional pools scattered over the valley. At one place there is a small swampy tract, an acre or two in extent, near the southern side of the valley. Here sedges, the brackenfern, turtle's head and closed gentian grow. In this valley, a mile in length, closed in by its wooded sides and cut by the small stream which wanders through it, *Tachop-*

teryx seemed to be at home. Oftenest we found them resting on the rail and board fences which separated the woodland from the open fields. Sometimes they were on logs or trees or clinging to a twig; always in the sunshine and in an open place, where sudden dashes in any direction after insect prey were possible. Rarely one was seen over the fields, possibly passing from one side of the valley to the other with swift, strong flight. At rest, they seem careless of danger. Possibly, as undisputed insect lords of the valley, they have grown to fear nothing. One will hang on a fence-post, its abdomen pressed against the wood. The insect-net is brought within an inch of it; but it never moves. To attempt to brush it from the post into the net may crush it. You touch the abdomen with the rim of the net. The dragon-fly moves impatiently and holds its abdomen away from the post. Then the net is moved up along the post till the abdomen hangs within the ring. A quick stroke and the thing is done. Once a male was seen within two feet of the ground, clinging to the trunk of a small sycamore; the writer was within half a dozen feet of the tree. Suddenly the dragon-fly dashed from the tree, seized a crane-fly, numbers of which were rising and falling within a yard's distance; then returned to the tree, alighting a little higher than its former resting-place. This was repeated several times, till the dragon-fly was resting ten or twelve feet from the ground. Each trip was made with great swiftness and vigor. It is surely its sense of power and superiority over its associates that makes it fall such an easy prey to the insectnet.

The earliest record for the species in Allegheny County is June 1, when one entered Mr. Graf's home in Pittsburg. On July 16, the latest date at which it has been observed, Mr. Graf took a specimen, which, contrary to their usual habits, was resting in the middle of a road. On June 11, recently-emerged individuals were taken. On that date and on June 17 the largest number of individuals was observed. On July 4, a tour of the fences did not yield a specimen; a solitary male came swiftly across the valley and passed out of sight through the woods on the hillside.

The nymphs of this genus are not known.

Arrangement of the extra-American Species of *Mutilla*.

(Described by Cresson and Blake) according to my classification of the Genus.

By WILLIAM J. FOX.

In the synopsis entitled "The North American Mutillidæ,"* it was found necessary to exclude the Mexican, Central American and West Indian species of that family for want of sufficient material from those regions. This want has not yet been remedied, and the species noted in these pages practically form the extra-American collection of the genus *Mutilla* of the American Entomological Society. While an arrangement of all the known species from the regions mentioned would be of more value, the present limited one will, perhaps, be not entirely useless.

2. Group *canadensis*.

M. izucar, chiapa, auripes, psammadroma, lerma, bisignata,† gothica, petricola, minutissima, laticeps, xalapa, zapoteca, robinsoni, all of Blake.

3a. Group *quadridens* nova.

M. quadridens Blake, represents a group not found in the United States, and is another link in the chain that proves the unity of the species of *Mutilla* under one genus. In the large spinose head and fiddle-shaped thorax it approaches group *canadensis*, but it differs in possessing a distinct pygidium, in which characteristic it separates itself from group *simillima*; and in the nodose first abdominal segment it is different from both of these groups. In the latter respect it shows its relation to groups *waco* and *asopus*, from both of which it differs in the large spinose head.

In shape, *quadridens* and *robinsoni* are quite similar, but the latter has a sessile first segment.

5a. Group *gabbii* nova.

In the almost edentate mandibles, *gabbii* Bl. differs from all the preceding groups, but its relation to groups *canadensis* and *simillima* is shown by the broad, sessile, first abdominal segment. There is no distinct pygidium.

* Trans. Am. Ent. Soc., xxv, 1898-99.

† May possibly belong to 3. Group *simillima*.

The *M. capitata* Smith seems to differ only from this group by the larger, spinose head.

6. Group **occidentalis**.*

Females.

a. Thorax elongate or pyriform.

Nortoni Bl., *formosa* Bl., *balopilus* Bl., *altamira* Bl., *nigriceps* Cress.

aa. Thorax shorter, hexagonal.

Cressoni, *toluca*, *ariadne*, *solola*, *xalisco*, all of Blake.

Males.

a. First segment distinctly nodose.

Macilentia Bl., *apicalata* Bl., *Wilsoni* Cres., *azteca* Bl.

8. Group **imperialis**.

Orizaba Bl.

11. Group **hexagona**.

Oajaca Bl., *palliceps* Cress., *leona* Bl.

12. Group **scrupea**.

Tolteca, *cubensis*, *cinaloa*, *yucatanica*, all of Blake.

THE HARRIS CLUB is the name which has been chosen for Boston's new entomological society, whose second meeting was held in the Puritan Building, 35 Court street, on the evening of December 15, 1899. Twelve persons attended the meeting, of whom four—Messrs. John Lowell, Lawrence Brooks, A. H. Clark and C. F. Bowers—were new members. Mr. H. H. Newcomb showed a double cocoon made by larvæ of *Samia cynthia*; outwardly it gave no hint of abnormality, but sectioning disclosed two inner chambers, placed end to end, each sheltering a pupa. Both pupæ had died prematurely. Some dwarf imagos of the same species, reared from underfed larvæ by Mr. F. H. Foster, were also shown. Both sexes are represented in the series. Mr. Lowell told of experiments made by him in the taming of butterflies; considerable success was had with *Papilio asterias*, which has a habit of patrolling a definite area, and is not easily frightened away. Mr. E. B. Clapp gave an account of a collecting trip to Florida, and exhibited some Florida specimens of *Neonympha eurys* which differ markedly from those commonly taken in the North. Mr. Clark reported the capture of a specimen of *Melitæa phæton* var. *superba* Strk. in Newton, Mass.—
W. L. W. FIELD, *Secretary*.

* *Rubriceps* Cress. from Cuba, *istapa* Bl. from Honduras, *proserpina* Bl. from same region probably belong here. These are the only three exotic species described by these authors which I have not seen.

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, three 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, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., MARCH, 1900.

WE had printed on the NEWS mailing envelopes for last month the words "PLEASE DO NOT FOLD," but were compelled to cut them out by the Post Office authorities. This month we have pasted slips over them, as unfortunately our mailing envelopes have been printed in advance for the entire year. If your copy of the NEWS is neatly folded into halves and any plates ruined you have no redress and must grin and bear it, as "Uncle Sam" prefers to have it that way.

SCIENCE IN THE HIGH SCHOOLS.

To the Editor of the Leader:

Why should pupils be compelled to study the anatomy of bugs and small animals in the high schools? It is of no use whatever, unless one is going to be a scientist or an explorer. Girls are not supposed to be either, and yet the girls have to study with the boys in the same rooms. It makes them feel out of place, and besides, what use is it in after life? Can not some more useful study, for instance, French, be substituted for it? Most of the pupils have a natural abhorrence of bugs and other small animals, and when they are dead it makes it next to impossible to handle them. Also, the teachers allow the bugs to lie on the tables day after day, which breeds disease among the pupils. Why do they allow it? Why do they compel the pupils to study something they detest? Those who dislike it dread the hour during which they must pull the legs off of harmless animals. If the Board of Education thinks science is a necessary study to one's education, why do they not make it an extra study like

music, drawing, or reading? Either one or all three are considered necessary if one is out in society. One does not converse about bugs, as a rule, but more about music, or something more interesting than bugs. Can not something be done for the pupils of the high schools who dislike bugs and everything connected with them?

A HIGH SCHOOL PUPIL.

Cleveland, O., Leader, December 19, 1897.

Prof. F. M. Webster sent in the above clipping and asked whether Lepidopterists are bug hunters. Of course Lepidopterists are not bug hunters. Bug hunters are Coleopterists, Dipterists, Hemipterists, etc., including economic entomologists. Of course, "High School Pupil" is correct. Polite society cannot tolerate bugs. Just imagine a social gathering of the élite of the town discussing bugs. Then, there remains the horrible idea of the conveyance of disease. Again, some of the pupils might become interested in bugs and neglect French and music and then be ostracized by polite society; what a cruel fate! It does seem an unmitigated outrage to compel "High School Pupil" to pull off the legs of beetles, and something should really be done. "High School Pupil" will doubtless become a politician (although for this profession French and music are not essential), and give the non élite of society nice liquid mud to drink and filthy streets to walk through (the élite of society ride behind cobs).* The whole subject is painful, and our eyes grow so misty with tears that we must cease.

PROF. JOHN B. SMITH'S Check-List of the Lepidoptera of Boreal America is out of print and cannot be supplied.

In the issue for December (p. 293) reference was made to the occurrence of "*Actias luna*" in Mexico. Since writing the note I have received the bulletin of the "Laboratoire d'Etudes des Soies" of Lyon, in which M. Sonthonnax describes as a new species the Mexican moth which much resembles *A. luna*. The differences are slight, but in the six or eight specimens which I have examined of *Tropæa truncatipennis*, as the moth is now called, there is no variation whatever toward the typical *A. luna*. The ♂♂ have the primaries distinctly produced at the apex and truncated; the tails are longer and broader in proportion than in *A. luna*; the maroon border is much more distinct, and the moth itself considerably larger.—O. W. BARRETT, Museo, Tacubaya, Mex.

* Cobs are horses with the tails sawn off pretty close. This is not nearly as painful as pulling the legs off of beetles and other bugs.

DEPARTMENT OF ECONOMIC ENTOMOLOGY.

Edited by Prof. JOHN B. SMITH, Sc.D., New Brunswick, N. J.

Papers for this department are solicited. They should be sent to the editor,
Prof. John B. Smith, Sc.D., New Brunswick, N. J.

SOME RUSSIAN ECONOMIC ENTOMOLOGY.

By E. V. WILCOX, Department of Agriculture, Washington, D. C.

As is well known to all scientific workers, the Russians are very active along most lines of natural science, and the published results of their investigations are of great value and importance. Unfortunately these results are for the most part published in the Russian language, and are, therefore, less accessible to the average worker than they would be if published in French or German. Frequently abstracts are published by the authors in French or German periodicals, but the complete articles and illustrations are for the most part found only in the original Russian publications.

It is the purpose of this note to call attention to a few articles in economic entomology which may be of interest to American workers. The articles referred to are found in two publications. The one is called "Selskoe Khozyaistvo i Lyesovodstvo," and is published in St. Petersburg by the Ministry of Agriculture and Imperial Domains. It is a very valuable agricultural journal, and contains articles on all agricultural and forestry subjects. The other publication mentioned is the "Year Book" of the St. Petersburg Forestry Institute, the first number of which was published in 1886. The following is a list of the more important articles from these two publications which the writer has had occasion to read during entomological work:

Concerning the grasshoppers which are injurious to grains and grasses in the governments of Perm, Orenburg and Tobolsk, I. A. Porchinski (Selsk. Khoz. i Lyesov., 1895, No. 1, pp. 79-108, figs. 16).—A discussion of the parasites of grasshoppers and of the steppe or Russian species.

The nun and its associates in the forests of middle and eastern Russia during the summer of 1894, I. Shevnirov (Selsk. Khoz. i Lyesov., 1895, No. 8, pp. 471-489).—Notes on *Oenieria mouacha*, *O. dispar*, *Tomicus typographus*, *Trachea piniperda* and other forest insects.

Diseases of tobacco in Tashkent, their causes, and measures for combating them, V. Polovtsov (Selsk. Khoz. i Lyesov., 1895, No. 2, pp. 109-136).—A detailed account of the life history, habits, host plants and remedies for *Siphonophora scabiosa*.

Combating injurious forest insects in Bavaria, V. Ogievski (Selsk. Khoz., i Lyesov., 1895, No. 9, pp. 31-44).—An account of species of *Tomicus*, *Hylesinus*, *Hylobius* and *Pissodes*.

Combating phylloxera, P. Stroev (Selsk. Khoz. i Lyesov., 1895, No. 10, pp. 183-208, figs. 22).—A general discussion of the forms and life history of the insect, with recommendation of remedies.

Sericulture in the province of Turkestan, A. Shakhnazarov (Selsk. Khoz. i Lyesov., 1896, No. 5, pp. 137-153).—A study of the actual condition of sericulture in Turkestan, with an account of the extent and future of the industry.

Combating phylloxera in Russia, B. Witmer (Selsk. Khoz. i Lyesov., 1896, No. 6, pg. 375-407 ; pp. 609-625).—A discussion of methods adopted in different parts of Russia in fighting this insect.

Observations on bark beetles in 1895, G. Jacobson (Selsk. Khos. i Lyesov., 1896, No. 6, pp. 419-442, figs. 11).—Notes on the 20 species of bark beetles.

Destructive increase of bark beetles in central Russia from 1882-94 and experiments in combating them, I. Shevuirev (Selsk. Khoz. i Lyesov., 1896, No. 10, pp. 523-545).—Notes on *Polygraphus*, *Xyleborus* and other species.

Apiculture, N. Sharov (Selsk. Khoz. i Lyesov., 1896, No. 11, pp. 751-770).—A general discussion of the subject.

Injurious insects of Semiretchinsk, I. Inenitzki (Selsk. Khoz. i Lyesov. 1897, No. 1, pp. 177-197, figs. 3).—An account of *Pachytylus migratorius*, *Caloptenus italicus*, and species of *Psyche*, *Agrotis*, etc.

Insects injurious to the sunflower, A. Krulikovski (Selsk. Khoz. i Lyesov., 1897, No. 6, pp. 585-598, figs. 10).—Notes on *Agapanthia dahliæ* species of *Clytus*, *Strangalia*, *Leptura*, *Heliethis*, etc.

Combating locusts in the Danube delta, 1884-88 and 1893-95, E. Rekaló (Selsk. Khos. i Lyesov., 1897, No. 10, pp. 99-125).—An elaborate study of the methods of fighting locusts.

Injurious field insects in the government of Ufa, S. Torski (Selsk. Khos. i Lyesov., 1897, No. 1, pp. 395-411).—Notes on species of *Trachea*, *Mamestra*, *Entomocetis*, etc.

The enemies of agriculture in the Trans-Ural region, Y. Polferov (Selsk. Khoz. i Lyesov., 1897, No. 12, pp. 583-593).—Notes on grasshoppers, the corn weevil, field mice, etc.

Injurious insects in the government of Kiev, S. Torski (Selsk. Khoz. i Lyesov., 1898, No. 2, pp. 413-427).—Notes on *Gastropacha neustria*, *Ocneria dispar*, *O. monacha*, etc.

Simple apiculture as a result of the work of the Agricultural Society in the central zone of European Russia, A. Popov (Selsk. Khoz. i Lyesov., 1898, No. 5, pp. 347-383 ; 6, pp. 577-616).—An elaborate account of bee culture in this region.

Tabanidæ and a simple method of destroying them, I. Porchinski (Selsk. Khoz. i Lyesov., 1899, No. 3, pp. 557-573).—The author's obser-

vations were made upon species of *Tabanus*, *Chlorops* and *Hæmatopota*. Species of the first two named genera have the habit of darting down upon the surface of pools to take water, and advantage was taken of this fact in devising a remedy for their destruction. Pools were covered with films of oil and the insects were destroyed by coming in contact with this substance.

Injury caused to hazel trees in Crimea by a scale insect (*Lecanium corni*, Bouché, or *L. robiniarum*, Doug), S. Mokrzhetzki (Selsk. Khoz. i Lyesov., 1899, No. 2, pp. 413-420, figs. 4).

General survey of the life history of injurious insects and means of combating them, I. Shevuirov (Selsk. Khoz. i Lyesov., 1899, No. 6, pp. 587-628).—Economic notes on a large number of noxious insects.

Combating the enemies of agriculture, V. Morachevski (Selsk. Khoz. i Lyesov., 1899, No. 8, pp. 193-225).—Notes on Orthoptera, especially *Pachytylus migratorius*, and a detailed discussion of the means adopted in different governments of Russia for fighting them.

Combating the enemies of agriculture, V. Morachevski (Selsk. Khoz. i Lyesov., 1899, No. 9, pp. 445-454).—Notes on species of *Agrotis*, *Anisoplia* and the Hessian fly.

Materials for the study of the geographical distribution of bark beetles in Russia, I. Shevuirov (Ezhegod. Lyesn. Inst., St. Petersburg, 2 (1888), pp. 173-183.

Pissodes strobili, N. Zhilyakov (Ezhegod. Lyesn. Inst., St. Petersburg, 3 (1888), pp. 113, 114, figs. 2).

The restraining influence of the weather of 1888 upon plants and insects, A. A. Silantev (Ezhegod. Lyesn. Inst., St. Petersburg, 3 (1888), pp. 115-118).—Notes on species of *Melolontha*, *Tomicus*, *Lophyrus*, etc.

Entomological notes, A. A. Silantev (Ezhegod. Lyesn. Inst., St. Petersburg, 3 (1888), pp. 119-121).—Notes on *Cryphalus tiliæ*, *Chermes pini*, *Lymexylon dermestoides*, etc.

The galleries of bark beetles, N. A. Kholodkovski (Ezhegod. Lyesn. Inst., St. Petersburg, 3 (1888), pp. 181-197, figs. 13).—Notes on the habits and burrows of a large number of species of Scolytidæ.

The biology of bark beetles, A. A. Silantev (Ezhegod. Lyesn. Inst., St. Petersburg, 4 (1891), pp. 223-231, figs. 2).—Notes on species of *Tomicus*, *Myelophilus*, *Hylastes*, etc.

Biology and classification of the genus *Chermes*, N. A. Kholodkovski (Ezhegod. Lyesn. Inst. St. Petersburg, 4 (1891), pp. 255-290, figs. 17).—A detailed account of a large number of species of this genus.

This brief list of articles may be of service to economic entomologists in America if in no other way than by calling attention to the existence of articles of considerable size upon definite entomological subjects which affect us in this country. Many of these articles are abstracted by the writer at some length for the *Experiment Station Record*. It is hoped, however, that the brief notes added to most of the titles will serve to indicate the general trend of each article.

Entomological Literature.

COMPILED BY P. P. CALVERT.

Under the above head it is intended to mention papers received at the Academy of Natural Sciences of Philadelphia pertaining to the Entomology of the Americas (North and South). Articles irrelevant to American entomology will not be noted. Contributions to the anatomy, physiology and embryology of insects, however, 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; * denotes that the paper in question contains descriptions of North American forms. Titles of all articles in foreign languages are translated into English; usually such articles are written in the same language as the title of the journal containing them, but when such articles are in other languages than English, French, German or Italian, this fact is indicated in brackets.

4. The Canadian Entomologist, London, Ont., 1900.—**5.** Psyche, Cambridge, Mass., Feb., 1900.—**8.** The Entomologist's Monthly Magazine, London, Feb., 1900.—**9.** The Entomologist, London, Feb., 1900.—**11.** The Annals and Magazine of Natural History, London, Jan., 1900.—**13.** Comptes Rendus. Société de Biologie, Paris, 1900.—**15.** Biologia Centrali-Americana, London, pt. cli, Nov., '99. Recd. Feb. 5, 1900.—**21.** The Entomologist's Record, London, Jan. 15, 1900.—**36.** Transactions, Entomological Society of London, 1899, pt. iv., Dec. 30.—**74.** Naturwissenschaftliche Wochenschrift, Berlin, 1900.—**78.** The Gardener's Chronicle, London, 1900.—**86a.** Annales, Société Entomologique de France, Paris, 1898, Trimestres 1 et 2, Oct. '98; 3, Dec., '98; 4, May, '99; all rec'd. Jan., 1900.—**86b.** Bulletin of the same, 1898, rec'd Jan., 1900.—**122.** Transactions, City of London Entomological and Natural History Society, 1898. Recd. Jan., 1900.

THE GENERAL SUBJECT.—**Anon.** Henry Herbert Lyman [Biographical notice], portrait, **4**, Jan.—**Anon.** The rôle of leucocytes in histolysis of the muscles of the bee during metamorphosis, Revue Generale des Sciences, Paris, Dec. 30, '99.—**Boas, J. E. V.** New remarks on the metamorphoses of insects [in Danish], 1 pl., Oversigt kongelige danske Videnskabernes Selskabs Forhandling, 1899, No. 4, Copenhagen.—**Bordage, E.**—On regeneration in the Phasmids, **86a**, 1 and 2.—**Brunner von Wattenwyl.** Note on the coloration of insects [translation], **21**.—**Burr, M.** Brunner von Wattenwyl, portrait, **21**—**Causard, M.** On the rôle of air in the last moult of aquatic nymphs, **86b**.—**Clement, A. L.** Observations on different anomalies in insects, figs., **86b**.—**Dominique, J.** Parthenogenesis and thelytokie in the Phasmidæ, Bulletins, Société des Sciences Naturelles de l'Ouest de la France, ix, 2, Nantes, June 30, '99. Recd. Jan. 26, 1900.—**Gadeau de Kerville, H.** On tetratological forking of the feet, the antennæ and palps of insects, figs., **86b**.—**Lucas, R.** Insects in general, and **Seidlitz, G.** Coleoptera in Review of scientific results in the field of Entomology during the year 1896, Archiv für Naturgeschichte lxiii, ii, 2, 1 Hälfte, Berlin, Nov., '99.—**V. L.** On the development of insects, with

especial reference to the elytra of beetles, **74**, Jan. 7.—**Perez, C.** On muscular histolysis in insects, **13**, Jan. 6.—**Pic, M.** List of his own zoological publications (1889-1897), **86a**, 1 and 2.—**Prout, L. B.** On some heredity experiments with *Coremia ferrugata*, **122**.—**Vignon, P.** Criticism of the vesicular theory of secretion, figs. [special reference to Diptera], Notes et Revue, Archives de Zoologie Experimentale et Generale (3), vii, 2, Paris, Dec. 20, '99.—**Witchell, C. A.** Stray notes on mimicry, Zoologist, London, Jan. 15, 1900.

ECONOMIC ENTOMOLOGY.—**Anon.** Phylloxera in Italy, Revue Scientifique, Paris, Jan. 20, 1900.—**Fuller, C.** Notes and descriptions of some species of Western Australian Coccidæ, 1 pl., **36**.—**Galli-Valerio, B.** Do the fleas of rats and mice play an important rôle in the transmission of bubonic plague to man? Figs. Centralblatt für Bakteriologie, Jena, Jan. 6, 1900.—**Gennadius, P.** Treatment of psoriasis of Hesperidæ in the Levant, **86b**.—**Giard, A.** The army worm in France, **86b**.—**Laveran.** On the subject of the destruction of the larvæ of mosquitoes by oil and petroleum, **13**, Jan. 20.—**Lesne, P.**, and **Martin, J.** Notes on some attempts at destruction of the kola-nut weevil (*Balanogastrius kolæ* Desbr.), **86b**.—**Lounsbury, C. P.** Insect bites and the effects thereof, **4**, Jan.—**Pergande, T.** A new species of plant-louse injurious to violets,* **4**, Feb.—**Prowazek, S.** On the natural history of the "Rapserrdflöh" (*Psylliodes chrysocephala*), figs., **74**, Jan. 14.—**Simon, E.** On a fabric made from spiders' silk in Madagascar, **86b**.—**W. S.** The "Hatfield" cure for red-spider, **78**, Feb. 3.—**Tangye, E.** Trapping the codlin moth, **78**, Jan. 27.—**Webster, F. M.**, and **Mally, C. W.** The purslane sawfly, *Schizocerus Zabriskei* Ashm. MS., figs., **4**, Feb.—**Wilcox, E. V.** Abstracts of recent literature, Experiment Station Record, xi, 4, Washington, '99.

ARACHNIDA.—**Banks, N.** On two genera of mites, **4**, Feb.—**Cambridge, F. O. P.** Arachnida Araneidea, vol. ii, pp. 65-80, pl. v,* **15**.—**Lomann, J. C. C.** The Opilionidæ of the Plate Collection, 1 pl. Fauna Chilensis, Bd. ii, Heft 1. Jena, Gustav Fischer, Dec. 20, 1899.—**Simon, E.** Description of a new senoculous genus (*Symposia*) of the family Agelenidæ, **86b**.—**Id.** Description of a new genus of Arachnida, family Lycosidæ, **86b**.—**Trouessart, E.** Preliminary diagnoses of new species of plumicolous Acarina, additions and corrections to the sub-family of the Analgesinæ, pls.,* Bulletin, Société d'Etudes Scientifiques d'Angers (n. s.), xxviii, '99.—**Id.** Preliminary diagnoses of new species of plumicolous Sarcoptidæ (three papers),* **86b**.

PROTOTRACHEATA.—**Bouvier, E. L.** On the structure of *Peripatus Tholloni* Bouv., **86b**.

MYRIAPODA.—**Brölemann, H. W.** Voyage of M. E. Simon to Venezuela (Dec., 1897-Aug., 1888), 27th memoir: Myriapods, 8 pls., figs., **86a**, 3.—**Id.** Myriapods from High and Low Sarare, Venezuela, given by M. F. Geay to the Museum of Natural History of Paris, 2 pls., **86a**, 3.—**de Zograf, O.** On the lateral cephalic organs of *Glomeris*, **11**,

ORTHOPTERA.—**Bordage, E.** See the General Subject.—**Dominique, J.** See the General Subject.—**Hancock, J. L.** Notes on species of the Tettigian group of Orthoptera,* **4**, Jan.—**Rehn, J. A. G.** *Melanoplus differentialis* in New Jersey and Pennsylvania, **4**, Jan.—**Sayce, O. A.** On the structure of the alimentary system of *Gryllotalpa australis* (Erichs.), with some physiological notes, 2 pls., Proceedings, Royal Society of Victoria, xi (n. s.), pt. ii, Melbourne, '99.

NEUROPTERA.—**McLachlan, R.** Psocids on the wing: a query, **8**.—**Needham, J. G.** How to rear nymphs of dragonflies [extract], **8**.

HEMIPTERA.—**Baker, C. F.** Four new species of *Platymetopus*,* **4**, Feb.—**Bergroth, E.** Description of two new *Reduviidæ*,* **86b**.—**Champion, G. C.** Rhynchota Heteroptera, vol. ii, pp. 265-288, pl. xvi,* **15**.—**Enock, F.** [Oviposition of *Nepa*], **36**, Proceedings.—**Fowler, W. W.** Rhynchota Homoptera, vol. ii, pp. 249-256, pl. xvi [*Tettigonia*],* **15**.—**Giard, A.** On the scale insects of the genus *Orthezia* Bosc., **86b**.—**Hempel, A.** Descriptions of three new species of Coccidæ from Brazil, **4**, Jan.—**Johnson, W. G.** The destructive green-pea louse, figs.,* **4**, Feb.—**King, G. B.** Bibliography of Massachusetts Coccidæ: supplementary to the knowledge of Massachusetts Coccidæ, **4**, Jan.—**Id.** The fifth species of *Kermes* [*andrei*], **5**.—**Kirkaldy, G. W.** On the nomenclature of the genera of the Rhynchota, Heteroptera and Auchenorrhynchous Homoptera, **9**.—**Martin, J.** Descriptions of new species of Nepidæ, figs.,* **86b**.—**Pergande, T.** See Economic Entomology.*

COLEOPTERA.—**Arrow, G. J.** On sexual dimorphism in the Rutelid genus *Parastasia* with descriptions of new species, 1 pl., **36**.—**Bennett.** Notes on the habits of *Goliathus druryi*, **36**, Proceedings.—**Boileau, H.** Note on the "Catalogue of the Lucanidæ," by M. Carl Felsche, **86a**, 3.—**Bordas, L.** Contribution to the study of the reproductive organs of the Coleoptera: male genital glands of the Cleridæ, 1 pl., **86a**, 4.—**Clouët des Pesruches, L.** Notes on various Aphodiidæ, **86a**, 1 and 2.—**Croissandeau, J.** Monograph of the Scydmanidæ (cont.), 14 pls., **86a**, 1 and 2.—**Dierekx, F.** The pygidial glands of *Pheropsophus Bohemani* Chaud., figs., Zoologischer Anzeiger, Leipsic, Jan. 8, 1900.—**Gahan, C. J.** Et al. [Stings of beetles], **36**, Proceedings.—**Giard, A.** See Hymenoptera.—**Grouvelle, A.** New Clavicorns from America, 2nd memoir,* **86a**, 3.—**Guillebeau, J. F.** Revision of the genus *Scydmanus* Latr. (*Eumicrus* Lap.), **86a**, 1 and 2.—**Heasler, H.** Beetle coloration, **122**.—**Lesne, P.** Revision of the Coleoptera of the family Bostrychidæ, 3rd memoir, figs.,* **86a**, 4.—**Id.** Description of the adult larva of *Julodis albopilosa* Chev., and remarks on various characters of the larvæ of Buprestidæ, figs., **86b**.—**Leveillé, A.** Description of five new Temnochilidæ, **86b**.—**V. L.** See the General Subject.—**Raffray, A.** Diagnoses of three new Pselaphidæ, **86b**.—**Seidlitz, G.** See the General Subject.

DIPTERA.—**Coquillett, D. W.** New genera and species of Ephydriidæ,* **4**, Feb.—**Ricardo, G.** Notes on the Pangoninæ of the family Tabanidæ in the British Museum Collection, 1 pl., **11**.—**Vignon, P.** See the General Subject.—**Wahl, B.** On the tracheal system and the imaginal disks of the larvæ of *Eristalis tenax*, figs., 5 pls., Arbeiten des Zoologischen Instituten, Universität Wien, xii, 1, '99.

LEPIDOPTERA.—**Barnes, W.** New species and varieties of North American Lepidoptera,* **4**, Feb.—**Dyar, H. G.** *Bombyx cunea*, **4**, Jan.—**Id.** Critical notes [on J. W. Tutt's British Lepidoptera, vol. i], **21**.—**Id.** Notes on some North American Yponomeutidæ,* **4**, Feb.—**Id.** Life histories of North American Geometridæ, **5**.—**Fyles, T. W.** *Metzneria lappella* L: a curious life-history, **4**, Jan.—**Grote, A. R.** The neuration of *Argynnis*, **4**, Jan.—**Howard, L. O.** A popular name for *Clisiocampa disstria*, **4**, Feb.—**Hulst, G. D.** A new genus and species of Phycitidæ,* **4**, Jan.—**Mayer, A. G.** On the mating instinct in moths, **5**.—**McLachlan, R.** [*Deilephila lineata* in Colorado at 9000 ft], **36**, Proceedings.—**Merrifield, F.**, and **Poulton, E. B.** The color-relation between the pupæ of *Papilio machaon*, *Pieris napi* and many other species, and the surroundings of the larvæ preparing to pupate, **36**.—**Motelay.** Note on a butterfly which is attracted by sight and not by odor of flowers, Actes, Société Linneenne de Bordeaux, liii, '98. Recd. Jan. 26, '1900.—**Prout, L. B.** See the General Subject.—**Slingerland, M. V.** A new popular name for *Clisiocampa disstria* ["forest tentless caterpillar"], **4**, Jan.—**Tutt, J. W.** Migration and dispersal of insects: Lepidoptera, **21**.

HYMENOPTERA.—**André, E.** Study on the Mutillidæ of the Museum of Paris,* **86a**, 1 and 2.—**Id.** Description of two new ants from Mexico,* **86b**.—**Anon.** See the General Subject.—**Bethe, A.** Still more on the psychical qualities of ants, Archiv für die gesammte Physiologie (Pflüger's), lxxix, 1 and 2, Bonn, Jan. 18, 1900.—**du Buysson, R.** *Chrysis shanghaiensis* [anatomy], 1 pl., **86a**, 1 and 2.—**Id.** The nest and the larva of *Tripoxylon albitarse* F., 2 pls., **86a**, 1 and 2.—**Cockerell, T. D. A.** Tables for the determination of New Mexico bees, Bulletins, Scientific Laboratories of Denison University, xi, 3, Granville, Ohio, Nov. '98. Recd. Jan. 1900.—**Id.** What is the proper name of *Lophyrus* Latr.? **9**.—**Dawson, C.**, and **Woodhead, S. A.** The hexagonal structure naturally formed in cooling beeswax, and its influence on the formation of the cells of bees, **11**.—**Enock, F.** [Life history of *Prestwichia aquatica* Lubb.], **36**, Proceedings.—**Ferton, C.** On the habits of *Sphæcodes* Latr. and *Halictus* Latr., **86b**.—**Forel, A.** Hymenoptera, vol. iii, pp. 105-136 [Formicidæ],* **15**.—**Giard, A.** On *Cephalonomia* (Hymen. Proctotryp.), parasites of the larvæ of Ptinidæ, **86b**.—**Id.** On the development of *Litomastix truncatellus* Dalman (Chalcid), **86b**.—**Kieffer, J. J.** Remarks on the eggs of Cynipidæ, fig., **86b**.—**Marchal, P.** The evolutionary cycle of *Encyrtus fuscicollis*, **86b**.—**Robertson, C.** Homologies of the wing veins of Hymenoptera, Science, New York, Jan. 19, 1900.—**Webster, F. M.**, and **Mally, C. W.** See Economic Entomology.*

Doings of Societies.

At the regular monthly meeting of the Newark Entomological Society, held in the Turn Hall January 14th, the following officers were elected: *President*, Mr. S. T. Kemp; *Vice-President*, Mr. O. Buchholz; *Secretary*, Mr. Wm. H. Broadwell; *Treasurer*, Mr. S. Seib; *Librarian*, Mr. J. Engelman, and *Curators*, Mr. H. Brehme and Mr. Bischoff.

WM. H. BROADWELL, *Sec. pro tem.*

At the January meeting of the Feldman Collecting Social, held at the residence of Mr. H. W. Wenzel, 1523 So. 13th St., eleven persons were present.

This being the annual meeting of the society, the President delivered his address, reviewing the progress of the society and dwelling on the good fellowship existing among the members.

Mr. P. Laurent exhibited specimens of a dipteran which he had found at Silver Lake, Wasatch Mts., Utah. Mr. Johnson identified these as belonging to the genus *Chironomus*, and spoke on habits of certain species of that genus. In one instance, at Palatka, Florida, a species was so abundant as to completely cover the fence-posts.

Mr. Laurent also exhibited two specimens of *Soronia ulkei*, taken under fresh chips of wood at Westville, N. J., on May 4th. It is a rare coleopteron in this locality.

Some lumber bored by the larva of *Hylotrupes bajulus* was also shown.

Mr. Bland recorded the capture of *Apion puritana* Fall, in large numbers in May at Westville, N. J.

Mr. H. Wenzel described collecting in swamps along the New Jersey coast. In such places sifting gives good results for many beetles. On Dec. 14th last he had visited a swamp surrounded by high trees and screened from the sun. Here he had found numbers of species not before met with by him, the coleopterous fauna seeming to differ almost entirely from the more open swamps only a short distance beyond. This difference in the faunæ seemed to hold true of all open and closed swamps visited.

Mr. Bland spoke of the abundance of coleoptera in newly-mown hay which had lain on the ground over night, especially *Atomaria* and small *Staphylinidæ*.

Mr. Laurent referred to Prof. Smith's remarks, at the last meeting, on the peculiar faunæ of the various canons in the Southwest, and stated that he had found similar conditions existing in the canons of Wasatch Mts., Utah.

The following officers for the ensuing year were elected :

President, Dr. D. M. Castle.

Vice President, Charles W. Johnson.

Secretary, William J. Fox.

Assistant Secretary, C. Few Seiss.

Treasurer, Henry W. Wenzel.

Mr. W. Reinick, 216 Epsley St., Germantown, and Henry G. Harbeck, 1635 N. 15th St., were proposed for membership in the society.

WILLIAM J. FOX,
Secretary.

PERSONS having duplicate copies of the December, 1899, News will kindly return them to the editors, and receive their grateful acknowledgments.

OUT of a few dozen larvæ of *Pyrameis* which I found and raised on the hollyhock (*Althea*) last season at Denver, Colorado, about 90 per cent. were parasitized, the chrysalids of the remainder yielding imagos of *Pyrameis caryæ*. The larvæ were present in swarms on the leaves of the hollyhock from the middle of July to the end of the first week in August. The first imago emerged on August 14th and the last on August 23d. Henry Edwards' description of the early stages credits the species to California, and it has been reported from Utah; but I think this is the first record of its occurring as far east as Denver. HOMER Y. READ.

OBITUARY.

Richard Henry Meade, the English Dipterologist, died at Bradford, England, December 23d, 1899. He was born in 1814, was a practicing surgeon, and for twenty years a Justice of the Peace. He wrote chiefly on Muscidæ (in the broad sense.) From a sketch by R. McLachlan in *Ent. Mo. Mag.*, February, 1900.

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XI.

APRIL, 1900.

No. 4.

CONTENTS:

Skinner—North American Hesperidæ.....	413	Banks—A New Genus of Atropidæ....	431
Holland—Alaska Insects.....	416	Dodge—List of Catocalæ.....	433
Wheeler—Genus Hypocharassus.....	423	Editorial.....	434
Marlatt—Aspidiotis Diffinis.....	425	Economic Entomology.....	436
Barrett—Papilio Electryon.....	428	Entomological Literature.....	440
Coquilett—New Genera of Diptera....	429	Doings of Societies.....	446

North American Hesperidæ.

By HENRY SKINNER, M.D.

Pamphila hobomok was described by Dr. Harris in 1862, since which time it has been confused with *zabulon* by a number of authors. Students have had so much trouble with these species that I thought it desirable to show them side by side. *Hobomok* has two females; a yellow tawny one like the male, and a black one (*pocahontas*), whereas *zabulon* has but one kind of female, and that is black or dark brown. Yellow females of *zabulon* have been mentioned and described, but I have never seen one in a collecting experience of twenty-five years. I have also examined all the large collections of the country excepting one. If any person can send me a yellow female *zabulon* I will be greatly indebted; *zabulon* is decidedly the smaller species of the two and lacks the pronounced black nervures of the other. The golden spots on the *zabulon* female are much more sharply defined, and on the underside it is much brighter and has a pronounced purple color. Mr. Philip Laurent has frequently reared these two species and found them abundantly distinct. With the aid of the figures no one can

fail to readily separate these two species. *Pamphila scudderi* was described in ENT. NEWS, Vol. x, p. 111, and was taken along the White River in Colorado, between July 24th and Aug. 13th, by Dr. S. H. Scudder, who has a good series of the species.

Pamphila bellus was described by Mr. W. H. Edwards in 1884, and has been very rare in collections. During the past Summer it was taken in abundance in the Huachuca Mts., Cochise Co., Arizona. It is a rather handsome and interesting species.

Pamphila panoquin is found in great abundance along the Jersey coast in Cape May County, where the members of the Feldman Social succeed in getting nice specimens annually.

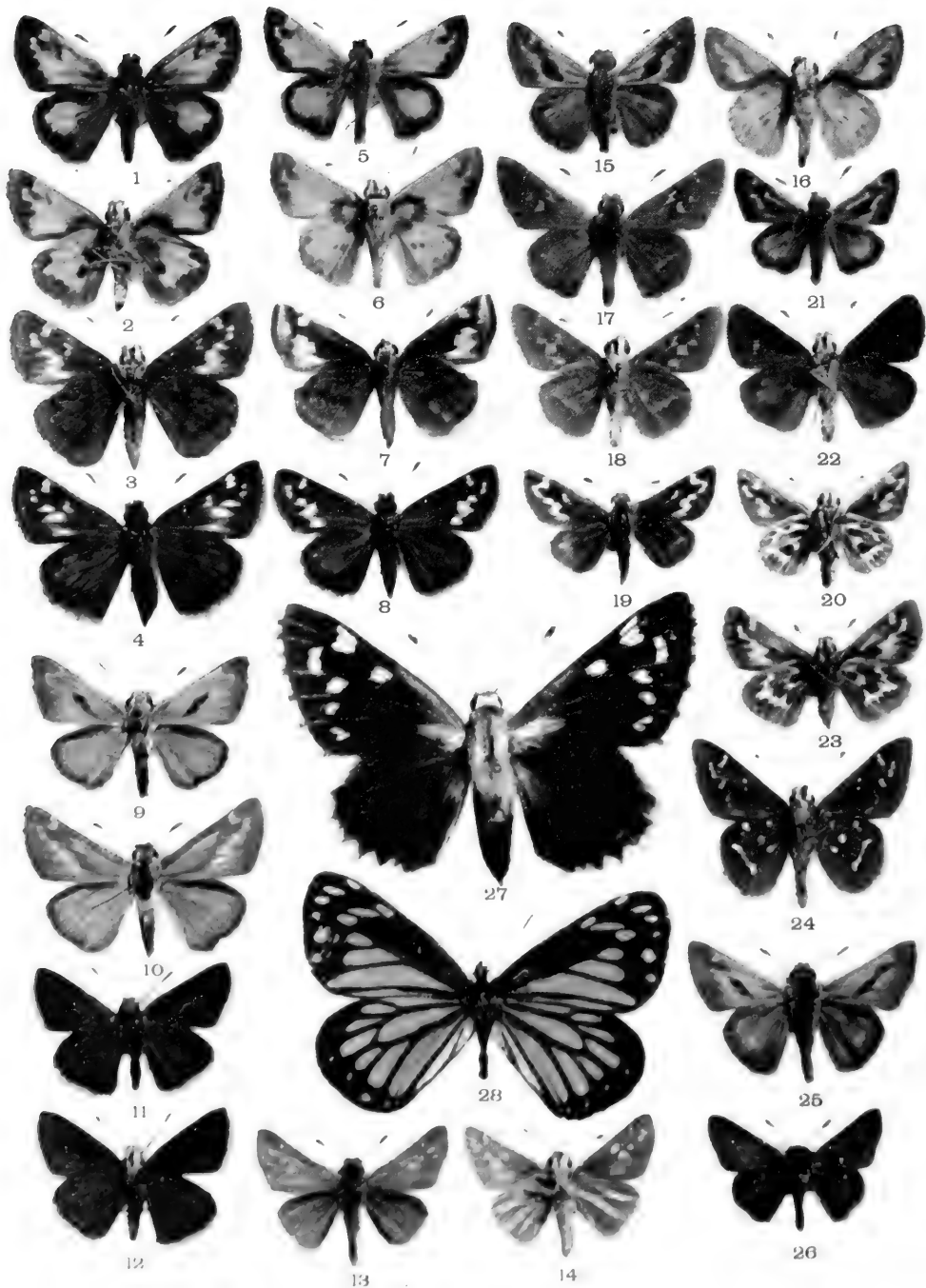
Pamphila panoquinoides is smaller and darker than *panoquin* and lacks the spots on the fore wings. Below it resembles *panoquin* in the character of the maculation. *Pamphila stigma* is a very distinct species. It is found in Texas and New Mexico and probably also in Central and South America. *Pamphila pittacus* has only been found in Arizona, as far as I am aware. *Pamphila nemorum* has a very characteristic stigma and immaculate secondaries beneath. It is common in the Yosemite Valley in California.

Pamphila rhesus is a very handsome Colorado species and is not uncommon.

Pamphila massasoit suffusa is readily known by the obliteration of the yellow in the secondaries below. The types came from Westville, New Jersey.

Pamphila draco is a very distinct butterfly but is often incorrectly named. The country was flooded with this species sent from Colorado under the name of *manitoba* some years ago. *P. loammi* is a rather rare and fine Florida species. I have also had it from Wilmington, N. C. The figure of *P. alcina* represents the type of the male. When more material is at hand and proper comparisons made it is not unlikely that this may prove a synonym of *rheua* Edwards. *Aigiale streckeri* is a very fine insect and has been found in Colorado, Texas and Arizona. Mr. E. J. Osler during last Summer found them in numbers in S. W. Colorado, and has given an interesting account of their habits in a paper to appear in the NEWS. The yellow spots on the female are about twice the size of those on the fore wings on the male. The female is also several shades





lighter in color and lacks the long hair on the hind wings, which is such a prominent character in the male. *Archonias lyceas* was taken in Cochise Co., Arizona, and the specimen figured was sent to me for identification by Mr. O. C. Poling, who very kindly permitted me to retain it for some weeks so that the NEWS family might have the pleasure of seeing it also. It looks somewhat like a little *Danais*, but belongs to the *Pieridae*. Dr. Barnes also sent me a specimen for identification along with a lot of other extra faunal species mentioned in his paper in the January NEWS. *Lyceas* was described in the Biological Centrali-Americana, Rhop., Vol. ii, p. 123, August, 1889. Two male specimens are mentioned by Messrs. Godman and Salvin from Bugaba.

DESCRIPTION OF PLATE.

- Fig. 1. *Pamphila hobomok* Harris, ♂, upperside.
 Fig. 2. " " " " underside.
 Fig. 3. " " " ♀, "
 Fig. 4. " " " " upperside.
 Fig. 5. *Pamphila zabulon* Bdl. Lec ♂, upperside.
 Fig. 6. " " " " underside.
 Fig. 7. " " " ♀, "
 Fig. 8. " " " " upperside.
 Fig. 9. " *scudderi* Skinner, ♂, " (type).
 Fig. 10. " " " ♀ " (type).
 Fig. 11. " *bellus* Edwards ♂, "
 Fig. 12. " " " ♂, underside.
 Fig. 13. " *panoquin* Scudder ♂, upperside.
 Fig. 14. " " " " underside.
 Fig. 15. " *stigma* Skinner ♂, upperside, (co-type).
 Fig. 16. " " " " underside.
 Fig. 17. " *pittacus* Edwards ♂, upperside.
 Fig. 18. " " " " underside.
 Fig. 19. " *rhesus* " " upperside.
 Fig. 20. " " " " underside.
 Fig. 21. " *nemorum* Boisduval ♂, upperside.
 Fig. 22. " *massasoit* var. *suffusa* Laurent ♂, underside.
 Fig. 23. " *draco* Edwards ♀, underside.
 Fig. 24. " *loammi* Worthington ♂, underside.
 Fig. 25. " *alcina* Skinner ♂, upperside (type).
 Fig. 26. " *panoquinoides* Skinner ♂ upperside (type).
 Fig. 27. *Ægiale streckeri* Skinner ♂, upperside.
 Fig. 28. *Archonias lyceas* Godman and Salvin, upperside.

ALASKA INSECTS.

BY W. J. HOLLAND, L.L.D.

PART II.

Family LYCÆNIDÆ.

Genus **LYCENA** Fabricius.24. **L. sæpiolus** Bdv.

1 ♂, Fort Selkirk, N. W. Territory, June 28. (Young.)

25. **L. afra** Edwards.

1 ♂, Tagish Lake, B. C., June 21 (Koonce); 1 ♂, White Horse, N. W. Territory, June 24 (Young); ♂ ♂, Lake Labarge, N. W. Territory, June 27 (Young).

26. **L. sp.?**

I have a number of specimens of a form which is near *L. afra* Edw., and yet still nearer to *L. lydamas* Doubleday, which puzzle me. They are not exactly referable to either species. They may represent a boreal race of *L. lydamas*, but I am in doubt, and therefore withhold further comment.

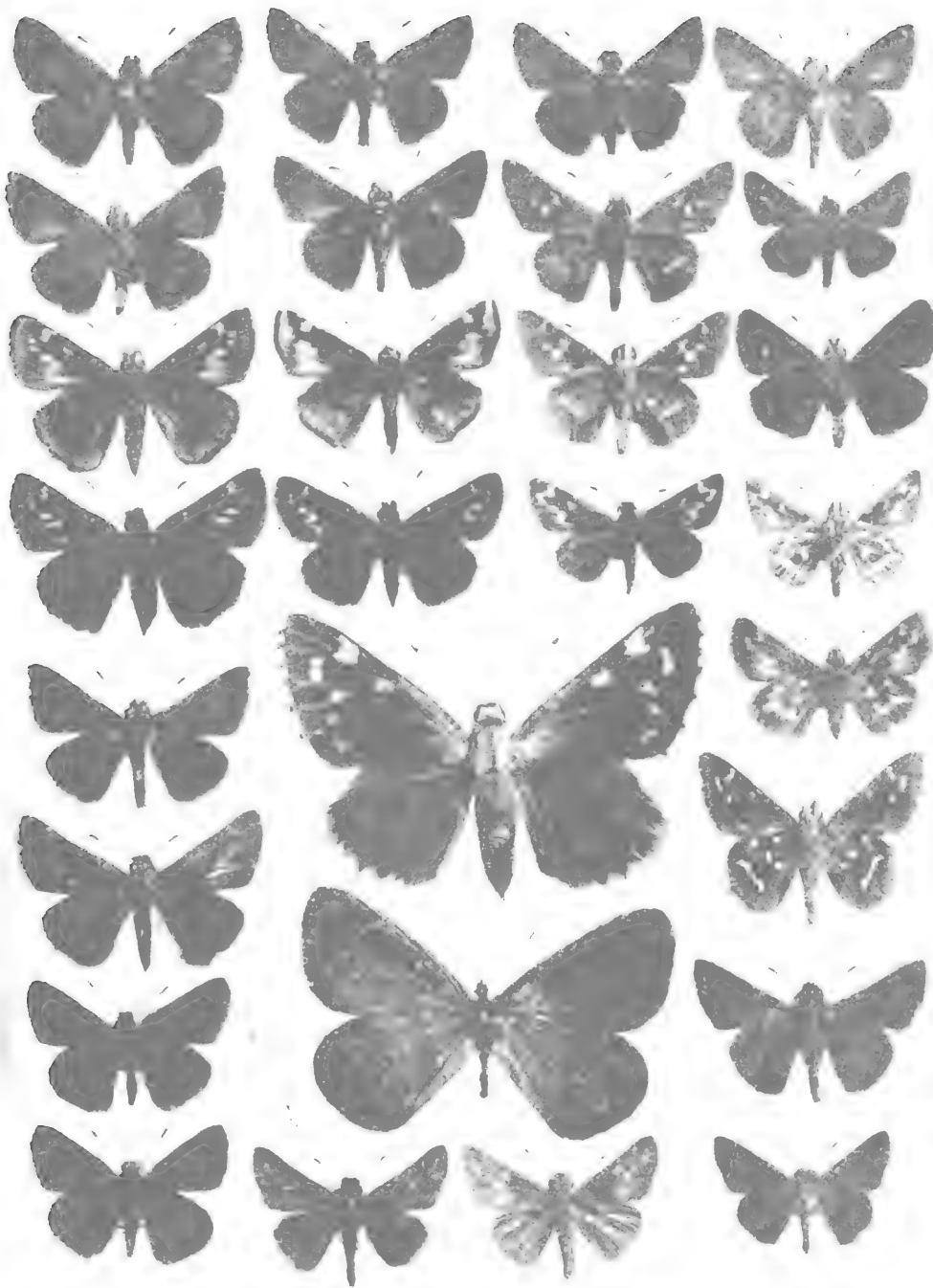
27. **L. lotis** Lintner.

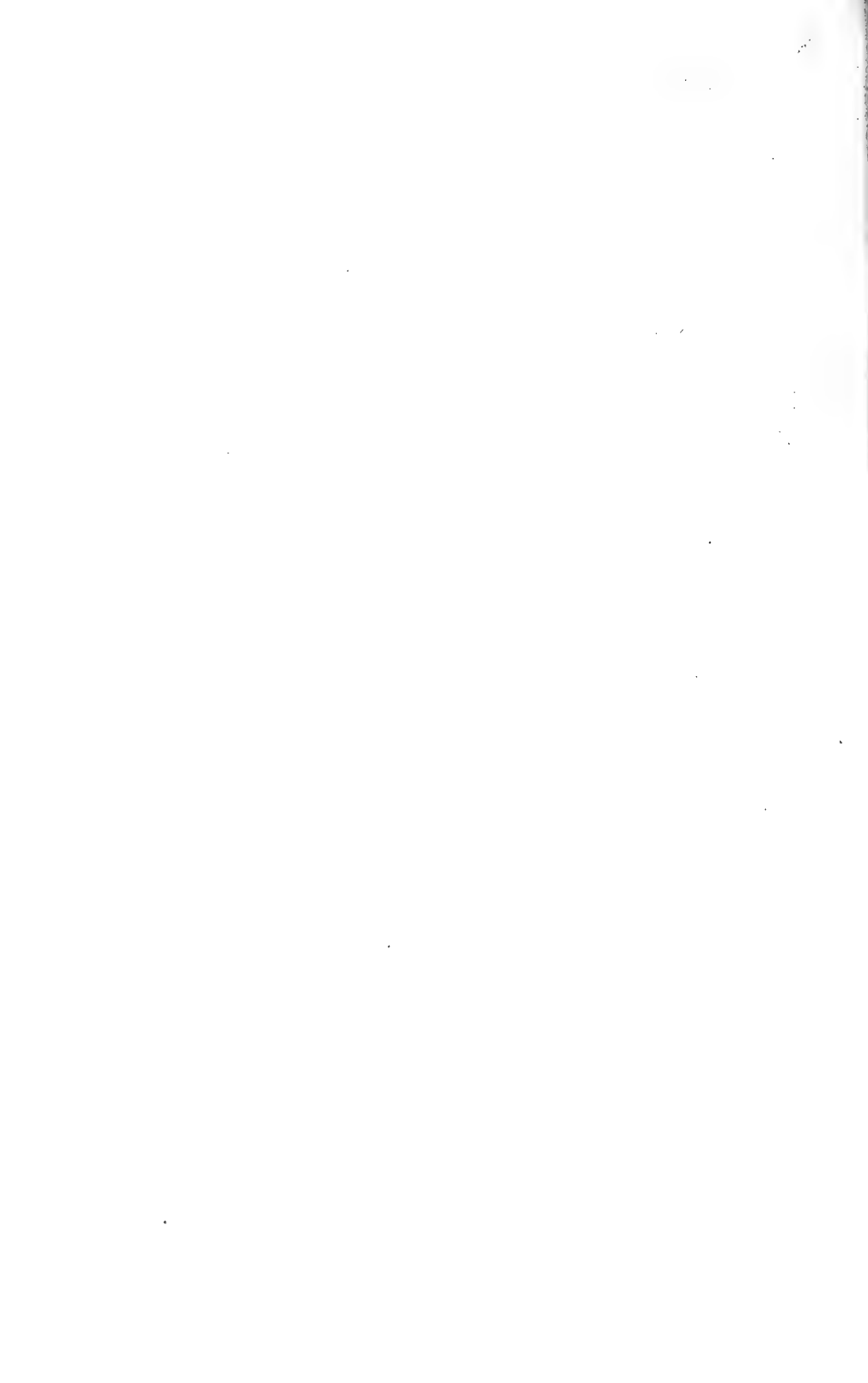
This species was originally described from Mendocino, California. The specimens probably came from Mt. Shasta. It appears to be common in Alaska.

25 ♂ ♂, 9 ♀, Eagle City, Alaska, July 8-14. (Young.)

28. **L. yukona** sp. nov.

♂—Wings on the upper side uniformly dark purplish violet, the outer margin of both wings marked by a very narrow brown line, the fringes whitish. On the under side the wings are obscure ashen-gray, both wings at the base obscured by bluish gray scales. The primaries have a discal mark at the end of the cell surrounded by a light whitish circle. Beyond this there is a transverse line of discal spots, six in number, gradually increasing in size from the costa to the inner margin, the spot nearest the inner margin being double. Beyond this along the margin is an even row of fine narrow dark linear spots, succeeded inwardly by a corresponding series of heavier sagittate markings, the points turned toward the base. The secondaries are marked by three small black spots near the base, arranged in a straight series, one above the cell, one on the cell, and one about the middle of the inner margin. At the end of the cell is a transverse linear dark spot margined with white; beyond this a curved limbal series of black spots margined with white; the upper five spots forming an evenly curved series beyond the cell, the sixth, which is a double spot,





being near the inner margin and nearer the anal angle than the last of the series of five. The marginal series of fine narrow lines surmounted by darker sagittate markings, which appears on the primaries, is repeated on the secondaries, the spots growing larger and more distinct toward the anal angle. Between the first and second median nervules, between the outer spot and the inner sagittate spot, there is a red spot. The abdomen on the under side is white; on the upper side the body is fuscous tinged with bluish. The legs are bluish gray.

♀—The wings on the upper side are fuscous, with the primaries on the costa near the base and the secondaries in the region of the cell shot with purplish violet. On the under side the female is marked like the male, but with all the spots larger and heavier.

Expanse ♂, 22 mm.; ♀, 24 mm.

4 ♂ ♂, 1 ♀, Mountains between Mission and Forty-mile Creeks, N. E. Alaska, July 20–24. (Young.)

I have hesitated to add another species to the list of North American *Lycænidaë*, but after carefully examining all the collections which are available, and having read up the entire literature on the subject, I am convinced we are dealing here with an undescribed form. I possess the types or cotypes of almost all the species attributed to our fauna, with the exception of *L. amica*, *L. pambina*, *L. ardea* and *L. kodiak*, species described by Mr. Edwards, but the types of which were not contained in his collection at the time I purchased the same. I had hoped that the insect above described was one or the other of these, but after carefully going over the published descriptions with the insect before me, in which work I was aided by Dr. Skinner, it has been impossible for me to believe that I was in any case justified in regarding the insect before me as having been already described by Edwards.

29. *L. pseudargiolus* var *lucia* Kirby.

2 ♂ ♂, Skaguay, May 24, 3 ♂ ♂; Skaguay, June 12. (Young.)

Family PAPILIONIDÆ.

Sub-family PIERINÆ.

Genus *PIERIS* Schrank.

30. *P. nelsoni* Edw.

The male of this species has been described and beautifully figured by Edwards, *Butterflies of North America*, Vol. II, Plate 1, of *Pieris*. The type, a male, came from St. Michael's,

Alaska. The solitary specimen taken by Mr. Young happens to be a female in excellent, in fact, perfect condition. The female does not differ from the male in the disposition of the markings on both sides of the wings, but they are all much heavier, especially on the under side of the secondaries, where the veins are all heavily bordered on each side by grayish green. The species, as has already been pointed out by Edwards, is near to *P. callidice* Esper, but quite distinct.

♀, White Horse, N. W. Territory, June 24. (Young.)

41. *P. napi* var *bryonia* Ochseneheimer.

The collection contains three females taken at Skaguay, June 12, which are remarkably dark.

32. *P. napi* var *hulda* Edw.

This is the prevalent form of the species in the interior. I find thirty-four males and seventeen females in the collection coming from Eagle City and American Creek, Alaska, with a couple of specimens taken at Fort Selkirk, all taken in July.

Genus **EUCHLOE** Hübner.

33. *E. ausonides*, Bdv.

Six specimens, White Horse, N. W. Territory, June 24; 2 specimens, Fort Selkirk, N. W. Territory, June 28; 1 specimen, near Dawson, N. W. Territory, July 1. (Young.)

Genus **COLIAS** Fabricius.

34. *C. hecla* Lef.

There are two female specimens which I refer to this species, agreeing fairly well with specimens I have under this name from Greenland.

35. *C. chione* Curtis (?)

There is a solitary orange yellow specimen in the collection which corresponds almost exactly with the figure of *C. chione* given by Curtis in the appendix to Ross' Expedition. In the absence of more material I cannot be quite positive as to the correctness of the determination.

36. *C. chippewa* Edwards.

There are twelve males and four females agreeing exactly with the types of *C. chippewa* in the Edwards collection and

showing very little if any variation. Skinner sinks *chippewa* as a synonym for *G. palaeno* Linn., but with a suite of nearly forty specimens of *C. palaeno* before me from various localities in Europe and Asia, I can at a glance separate the specimens from Alaska. On the upper side the dark marginal band of the males is much narrower, and the specimens are smaller. The females on this side are almost without any dark margin, resembling in this the females of *C. scudderi*. On the under side of the wings they are quite different from *C. palaeno*, one marked feature being the light-colored ray which runs from the discal spot of the secondaries toward the base, through the darker grayish green ground color of the wings. If *C. chippewa* Edw. is not a good species, it is at all events a very strongly marked varietal form, which, when known, is not easily mistaken.

37. **C. nastes** Bdv.

1 ♂, 1 ♀, Mountains between Mission and Forty-mile Creeks, N. E. Alaska, July 20. (Young.)

Sub-family PAPILIONÆ.

Genus **PARNASSIUS** Latreille.

38. **P. eversmanni** Ménétrés.

9 ♂♂, 1 ♀, Mountains between Mission and Forty-mile Creeks, N. E. Alaska, July 20-24. (Young.)

Genus **PAPILIO** Linnæus.

39. **P. machaon** var **aliaska** Scudder.

1 ♂, Eagle City, Alaska, July 8; 5 ♂♂, Mountains between Forty-mile and Mission Creeks, July 20-24. (Young.)

40. **P. turnus** Linn.

The collection contains numerous examples, mostly in bad condition, of the small Alaskan form in which there is a considerable range of variation in size and in color. One female is decidedly dark, showing a tendency toward melanism. Some of the males are abnormally light, and three examples have the ground-color of the wings whitish, almost as light as in *P. eurymedon*. The specimens, twenty-one in number, were mostly taken at White Horse, N. W. Territory and Eagle City, Alaska.

Family HESPERIDÆ.

Genus **THANAOS** Boisduval.41. **T. persius** Scud.

The collection contains one dwarfed specimen of this species, taken at Fort Selkirk by Young, June 25.

HETEROCERA.

Family AGARISTIDÆ.

Genus **ALYPIA** Hübner.42. **A. sacramentf** Grote and Robinson.

1 ♂, 1 ♀, Skaguay, June 15. (Young.)

NOCTUINA.

Genus **EUCOPTOCNEMIS** Grote.43. **E. standingeri** Moeschler.

1 ♂, Mountains between Mission and Forty-mile Creeks, July 20. (Young.)

I am indebted to Prof. J. B. Smith for this determination.

Genus **PLUSIA** Fabricius.44. **P. californica** Speyer.

♂, Rampart, Alaska, August 6. (Young.)

45. **P. octoscripta** Sanborn.

1 ♀, Rampart, Alaska, August 6. (Young.)

Genus **DRASTERIA** Hüner.46. **D. distincta** Numoegen.

1 ♂, Mountains between Mission and Forty-mile Creeks, Alaska, July 21. (Young.)

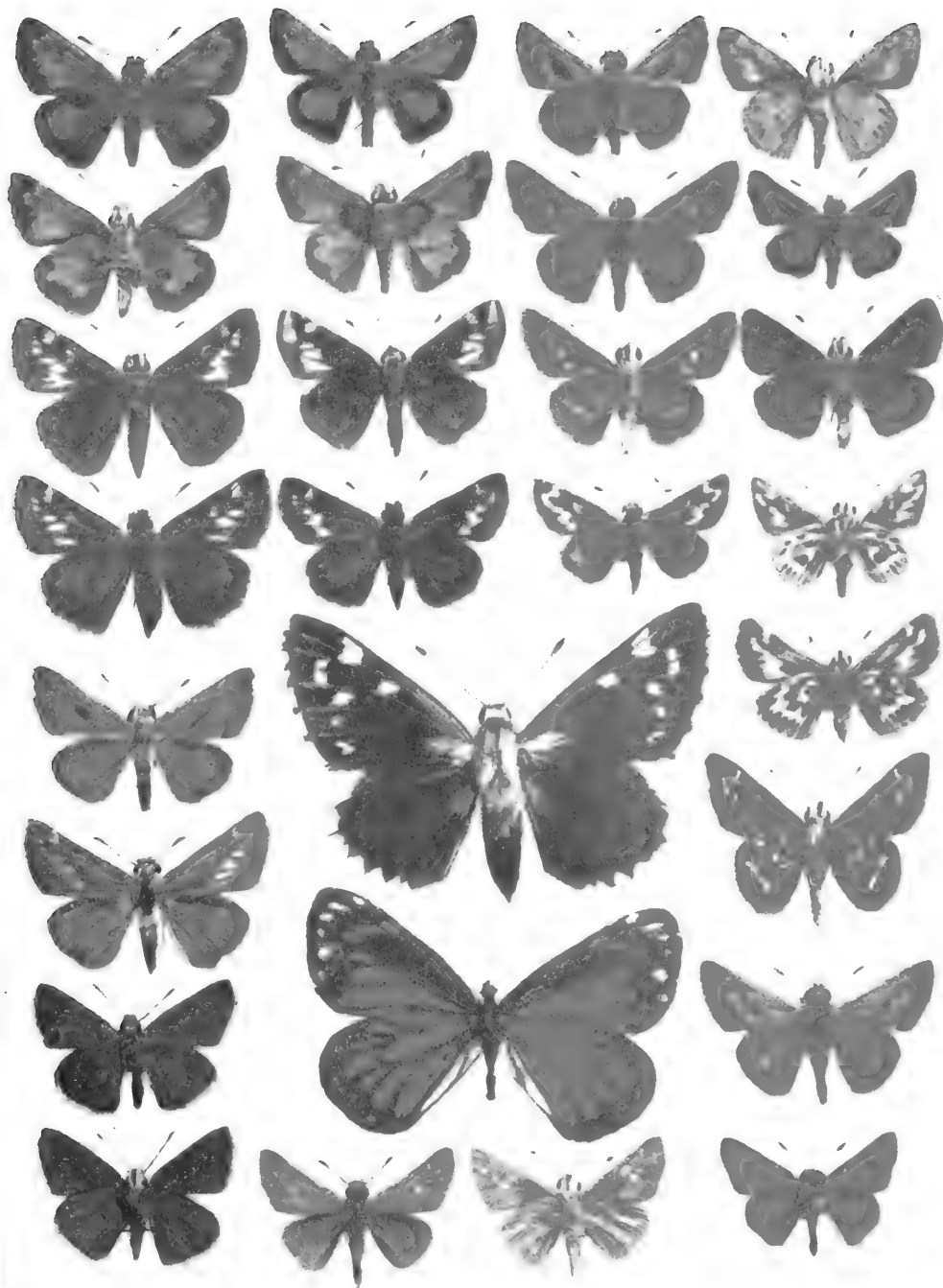
Genus **SYNEDA** Guenée.47. **S. hudsonica** Grote and Robinson.

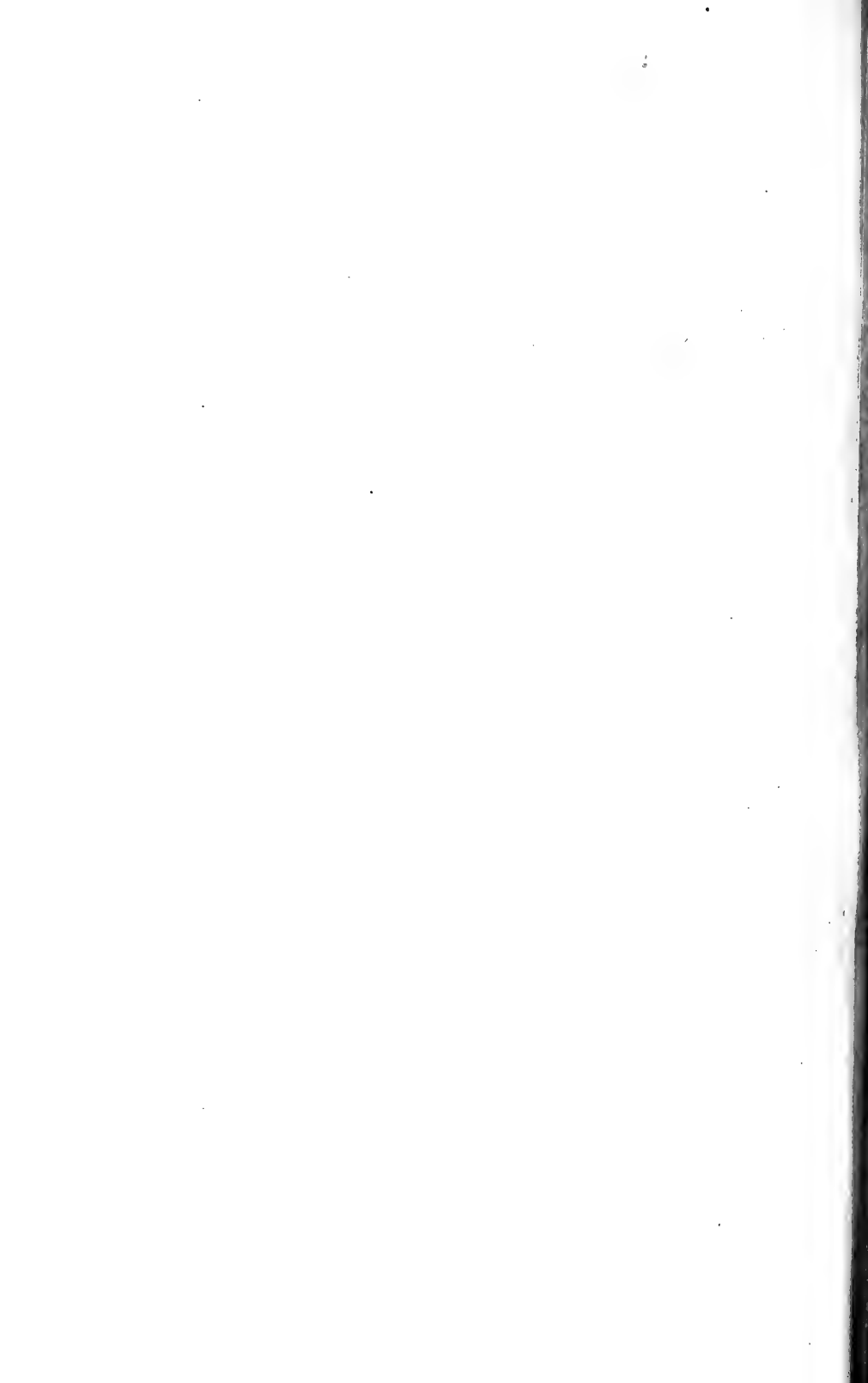
1 ♂, Tagish Lake, June 21. (Koonce.)

GEOMETRINA.

Genus **GEOMETRA** Linnæus.48. **G. sp.?**

One poor example, faded and rubbed, Eagle City, July 8. (Young.)





Genus **ACIDALIA** Treitschke.49. **A.** sp.?

Seems to be near *A. frigidaria* Moeschler, but does not entirely agree with the description or the figure.

1 ♂, Eagle City, July 8. (Young.)

50. **A.** sp.?

1 ♂, Fort Selkirk, June 28. (Young.)

Genus **SEMIOTHISA** Hübner.51. **S. granitata** Guenée.

1 ♂, Tagish Lake, June 21. (Koonce.)

52. **S. bisignata** Walker.

1 ♀, Skaguay, June 12. (Young.)

Genus **MARMOPTERYX** Packard.53. **M.** sp.?

There is a specimen of this species without a name in the collection of the U. S. National Museum, labeled "Alaska." It may be undescribed.

1 ♂, White Horse, N. W. Territory, June 24. (Young.)

Genus **FIDONIA** Treitschke.54. **F. truncataria** Walker.

1 ♂, White Horse, N. W. Territory, June 24; 1 ♀, Lake Labarge, N. W. Territory, June 17. (Young.)

Genus **BAPTRIA** Hübner.55. **B. albovittata** Guenée.

3 ♂ ♂, 2 ♀ ♀, Skaguay, June 13. (Young.)

Genus **LOBOPHORA** Curtis.56. **L. montanata** Packard

5 ♂ ♂, mostly poor specimens, White Horse, N. W. Territory, June 24. (Young.)

Genus **RHEUMAPTERA** Hübner.57. **R. lugubrata** Staudinger.

4 ♂ ♂, 2 ♀ ♀, Lake Labarge, N. W. Territory, June 27. (Young.)

58. **R. hastata** Linnæus.

Twenty-six specimens, ♂ ♂ and ♀ ♀, taken all points where collections were made, and showing various varietal modifications.

Genus **OCHYRIA** Hübner.59. **O. ferrugata** Linnæus.

Several specimens, Fort Selkirk, N. W. Territory, June 24.
(Young.)

60. **O. designata?** Hübner.

Three specimens, Eagle City, Alaska, July 8. (Young.)

61. Gen. ? sp. ?

One example, Eagle City, July 8. (Young.)

62. Gen. ? sp. ?

One rubbed example, Skaguay, June 12. (Young.)

63. Gen. ? sp. ?

One example, Fort Selkirk, N. W. Territory, June 28.
(Young.)

The three foregoing species I have been unable to determine. They are not found in the collections in Philadelphia and Washington, and I have not been able to make them out with the help of the literature of the subject. They are possibly new to science.

COLEOPTERA.

Family BURPRESTIDÆ.

Genus **DICERCA** Esch.64. **D. prolongata** Leconte.

Two examples, Dawson, N. W. Territory, July 4. (Koonce.)

65. **D. tenebrosa** Kirby.

One example, Dawson, N. W. Territory, July 4. (Koonce.)

Genus **MELANOPHILA** Esch.66. **M. longpipes** Say.

Two specimens, Dawson, N. W. Territory, July 4. (Koonce.)

Family CLERIDÆ.

Genus **THANASIMUS** Latr.67. **T. nubilus** Klg.

One specimen, Dawson, N. W. Territory, July 4. (Koonce.)

Family CERAMBYCIDÆ.

Genus **XYLOTRECHUS** Chevz.68. **X. nauticus** Mann.

One specimen from Dawson, N. W. Territory, July 4; 1 specimen from Eagle City, Alaska, July 12. (Koonce.)

Genus **PACHYTA** Serv.

69. **P. liturata** Kirby.

One specimen, Eagle City, Alaska, July 12. (Koonce.)

Genus **ACMEOPS** Leconte.

70. **A. proteus** Kirby.

Three examples, Dawson, N. W. Territory, July 4; 1 example, Eagle City, Alaska, July 13. (Koonce.)

Genus **LEPTURA** Serv.

71. **L. quadrillum** Lec.

One specimen, N. W. Territory, July 4; 1 specimen, Eagle City, Alaska, July 12. (Koonce.)

HYMENOPTERA.

Family APIDÆ.

Genus **BOMBUS** Fabr.

72. **B. frigidus** Smith.

73. **B. sp?** a var. of **B. howardi?**

Family ICHNEUMONIDÆ.

74. Gen? sp?

I am indebted to Mr. W. J. Fox for the identification of the Hymenoptera.

On the Genus *Hypocharassus*, Mik.

By WILLIAM MORTON WHEELER, University of Texas.

In the first volume of the *Zoological Bulletin* I described two Diptera* which presented certain peculiarities, mainly in the structure of the antennæ, that seemed to warrant the erection of a new genus. This genus was called *Drepanomyia*. A recent study of Prof. Mik's contributions to dipterology convinces me that one of my species, described under the name of *D. Johnsonii*, was described by Mik some twenty years ago as *Hypocharassus gladiator*.† Like myself Mik had only a male specimen, and like myself he recognized in it the type of a new Dolichopodid genus quite distinct from any of the known

* A new genus of Dolichopodidæ from Florida. Zool. Bull., Vol. I, No. 5, February, 1898, pp. 217-220.

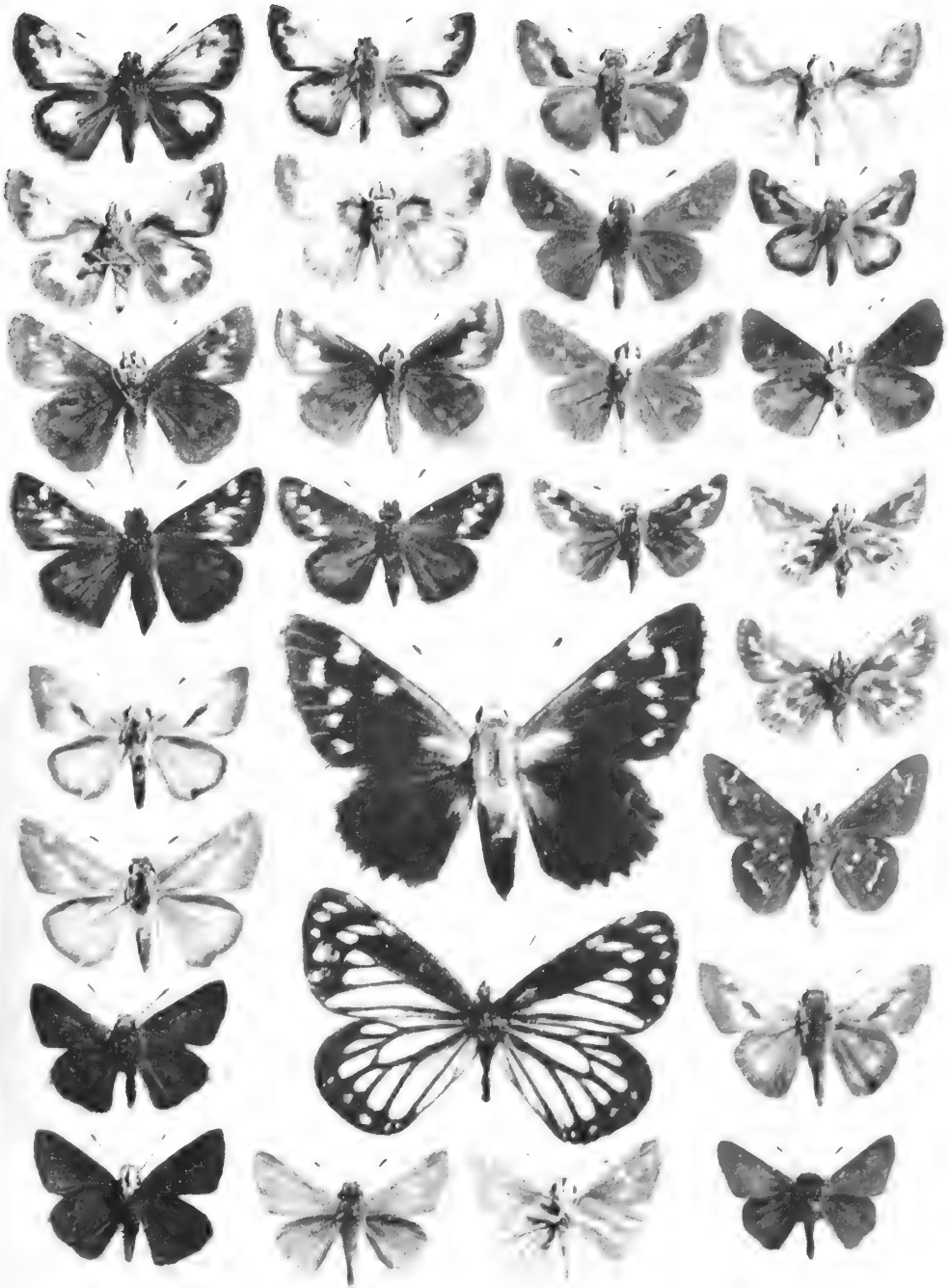
† Mik, J., Dipterologische Beiträge, II *Hypocharassus gladiator*, eine Neue Dolichopodiden. Art aus America. Verhand. Zool. Bot. Gesell., Wien., Bd. XXVII, pp. 627-623., Taf. X, 1878.

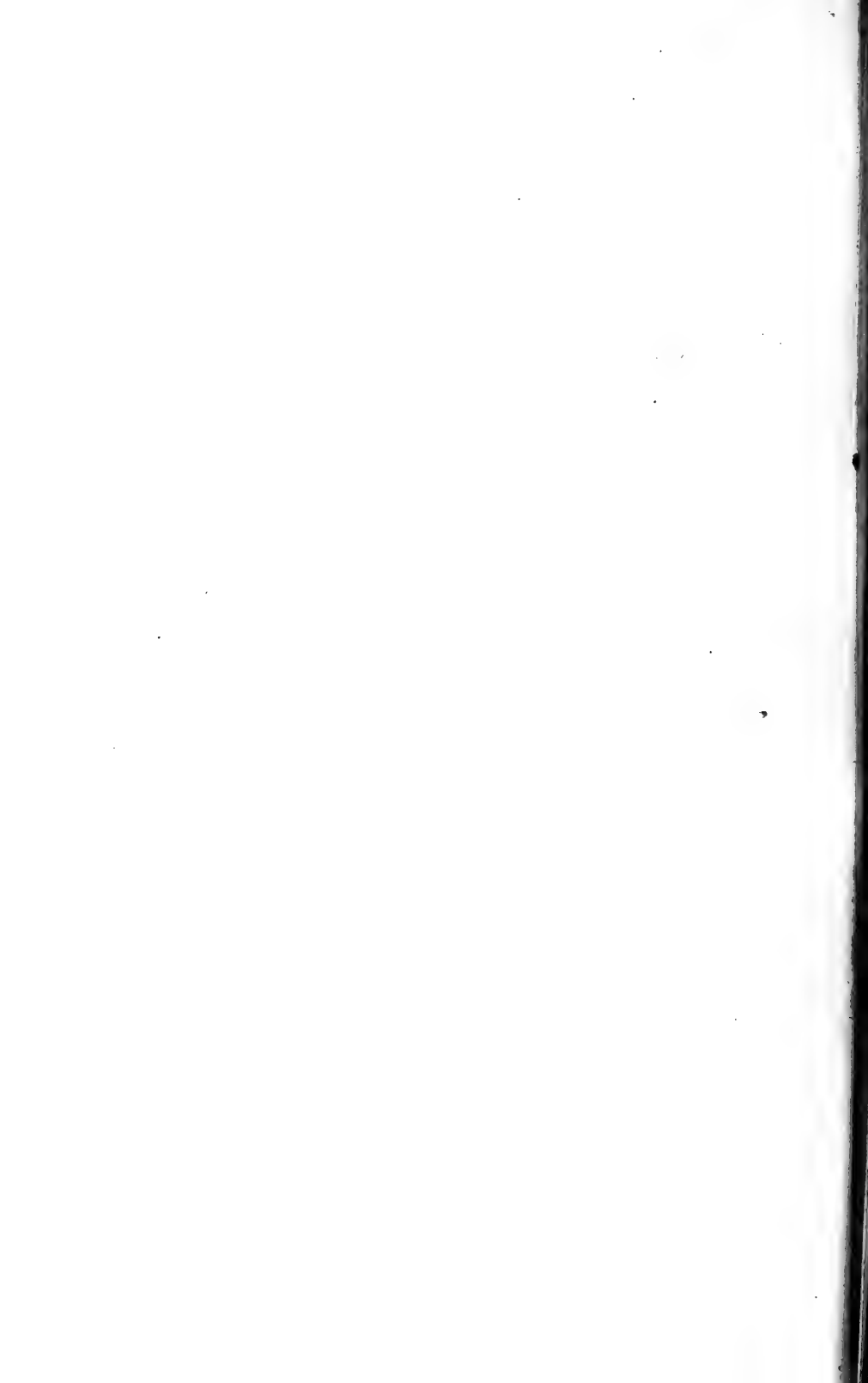
genera. In my description of the species the face is, incorrectly described as not descending below the corners of the eyes, a statement which is contradicted by my figures. Mik is in error in giving four instead of six scutellar bristles in his succinct generic and very detailed specific diagnoses.

The other species described by me as *Drepanomyia pruniosa* was unknown to Mik and is undoubtedly new. It must now be known as *Hypocharassus pruniosus*. It is the more striking of the two species, as the peculiar lobe-like projection on the base of the third antennal joint is very prominent. This species, too, was described from a single male specimen from Florida. During the past summer while collecting diptera at Woods Holl, Mass., I was fortunate enough to encounter both sexes of this remarkable fly in considerable numbers, so that I am able to add some data on the hitherto unknown female of *Hypocharassus* and on the habits of one of the species.

Mik predicted that the female would differ very slightly from the male, and such proves to be the case. In *H. pruniosus* there is no difference in the size and structure of the antennæ. The fore pulvilli are somewhat larger in the male than the middle and hind pairs; in the female all the pulvilli are of about the same size. In the coloring of the legs, however, there is marked sexual difference; all the femora in the females in my possession (seven specimens) being yellow, whereas the three males captured during the past summer and the type of the species, now in the collection of Mr. C. W. Johnson, have the femora more or less dull metallic green dusted with white. The abdomen of the female is broader than that of the male, and compressed dorsoventrally. It has six distinct and a seventh more or less apparent segment. The ovipositor is short, blunt and of a deep black color.

The great similarity of the sexes and of the two species of *Hypocharassus* adds to the validity of the genus which Mik places between the *Hydrophorus* and *Macharium*, representatives of which have not yet been found in America. It is more closely related to the latter genus, although it undoubtedly resembles *Diostracus* in the large size of the palpi and *Thinophilus* in general appearance.





H. pruniosus was observed from July 21st to August 3d of the past Summer. It occurred in small swarms along the shores of Buzzards Bay between the "neck" at Woods Holl and Quisset Harbor. The insects ran about between tides on the wet sand and over the barnacle-coated rocks or flew about in the "thatch-grass," often in the spray of the breakers. Their flight was peculiar and unlike that of any Dolichopodid known to me, being very rapid and in straight lines for a little over a yard at a stretch. Their wings, which have the appearance of ground glass, render them quite conspicuous, so that I could sometimes capture them on the wing. Like the species of *Hydrophorus* they are not easily captured while running.

It thus appears that *Hypocharassus*, so far as its habits are concerned, is to be placed with the maritime Dolichopodid, genera *Thinophilus*, *Aphrosylus*, *Machærium* and *Epithalassius*, an interesting genus described by Mik.* I believe that the larva of the *Hypocharassus* lives in the salt water like that of *Aphrosylus*† for one of the females of *H. pruniosus* captured by me at low water mark was still soft and had evidently just emerged from its pupa.

ASPIDIOTUS DIFFINIS.

Another Scale Insect of Probable European Origin Recently Found in North America.

By C. L. MARLATT, Washington, D. C.

The species named above was described by Mr. Robert Newstead (*Entomological Monthly Magazine*, volume XXIX, August, 1893, pages 186-187) as *Aspidiotus affinis* from the material on an undetermined woody plant sent by a correspondent from the Botanical Garden of Demerara, British Guiana. The material had been sent to Mr. J. W. Douglas during the preceding year, and handed by the latter to Mr. Newstead for study. Later (l. c. page 281), December, 1893, Mr. Newstead corrected the name from *affinis* to *diffinis*, the former name

* Mik. Jos., *Epithalassius sancti marci*, ein neues Dipteron aus Venedig. Wien. Ent. Zeitung, 10. Jahrg., 5. Heft., 12. Juni, 1891, pp. 186-187, and Mik. Jos., Vorläufige Notiz über *Epithalassius Blasigii*, ein neues Dipteron aus Venedig., *ibid* 31, Juli, 1891, pp. 216-217.

† See Wheeler, W. M., A Genus of Maritime Dolichopodidae New to America, *Proceed Cal. Acad. Science*, 3rd ser., Zool., Vol. I, No. 4, 1897, pp. 145-152., Pl. IV.

being preoccupied by a species described by Targioni-Tozzetti, and now known to be a synonym of *A. hederæ* Vall. *Aspidiotus diffinis* belongs to the group containing *A. camelliæ* Boisd., the greedy scale, to which it is closely allied.

In 1899 a basswood scale was received from Mr. John Dearness, London, Canada, and a study of this material led the writer to discover that it was identical in every way with the species described by Newstead referred to above. At the same time it was found that a scale insect which for a number of years, since 1894 in fact, had thickly infested a lilac bush on the Department grounds and which was thought by Mr. Pergande, who first noticed it, to be an undescribed species, also belonged to Mr. Newstead's species.

Further examination of the Department material demonstrated that the species described by Townsend and Cockerell as *Aspidiotus jatrophæ*, (N. Y. Ent. Soc., Vol. VI, p. 178, 1898) must also be referred to the same insect. The type material of the last was represented by a scale insect occurring on *Jatropha*, a cultivated plant whose green juicy stems are cooked for food, collected in Frontera, Tabasco, Mexico, by Mr. C. H. T. Townsend, March 27, 1897.

Belonging to the same species, also, is the material collected by Mr. Townsend, June 9, 1897, at the same locality in Mexico, on "Barenjeno chiquito," and determined by Professor Cockerell as probably a variety of *jatrophæ*.

This record shows a wide range of distribution and also of food plants. In this country, however, the species has evidently been introduced only in a few localities, judging from the paucity of records of occurrence. Its range in latitude is very notable, but its most northern locality, Ontario, is not so significant when it is remembered that the lower districts of this province include both Upper Austral and Transition life zones.

It is evidently an insect which is capable of very serious multiplication, judging from the thick infestation of the bark in the specimens received. In Ontario it seems to have spread into the woods and infests the basswood, *Tilia americana*, quite generally in some districts, —some half dozen lots of infested

material having been sent to this office for determination by Mr. John Dearness and Professor William Lochhead. The lilac bush on the Department grounds is as thickly infested as it is possible for a plant to be with a scale insect; and the injury to it has been considerable, many of the shoots having been much weakened or killed.

It is possible that the specimens from British Guiana are also on lilac, although the fragement of wood received does make accurate determination possible. If lilac should prove to be a common food plant, this fact would easily explain its distribution in this country.

The following bibliography of the species will indicate also the synonymy :

Aspidiotus affinis, Newst.—Ent. Mo. Mag., vol. xxix, p. 186, pl. iii, fig. 2, 1893.

Aspidiotus diffinis, Newst.—Ent. N. Mag., vol. xxix, p. 281, 1893.

Aspidiotus affinis (diffinis), Ckll.—Can. Ent., 1894, p. 130.

* *Aspidiotus diffinis*, Newst. var. *lateralis* Ckll. new var. Can. Ent., 1894, p. 130.

Aspidiotus (Diaspidiotus) diffinis Ckll.—Bull. 6, Tech. Ser. Div. Ent. U. S. D. A., 1897, p. 23.

* *Aspidiotus (Diaspidiotus) diffinis*, var. *lateralis* Ckll.—Bull. 6, Tech. Ser., Div. Ent., U. S. D. A., 1897, p. 23.

Hemiberlesia diffinis, Leonardi.—Rivista Pat. Veg., vi, 132-134, 1897, fig. 8.

Aspidiotus jatrophae, Townsend & Cockerell.—Journ. N. Y. Ent. Soc., vol. vi, p. 178, 1898.

THE ENTOMOLOGISTS DIRECTORY has been completed, and contains the names (1200) and addresses of all those persons who showed sufficient interest to send in their names in answer to our circulars. This publication can not fail to prove exceedingly useful to every individual who takes an active interest in entomology. Those persons who exchange specimens will find it just what they have long desired. Copies may be obtained from Mr. E. T. Cresson, P. O. Box 248, Philadelphia. Price 50 cents.

* As shown elsewhere by the writer, this so-called variety of *diffinis*, was based on immature scales of *Aspidiotus lataniae* Sign. and these citations belong also with the latter species.

Description of *Papilio Electryon*.

By O. W. BARRETT, Tacubaya, Mexico.

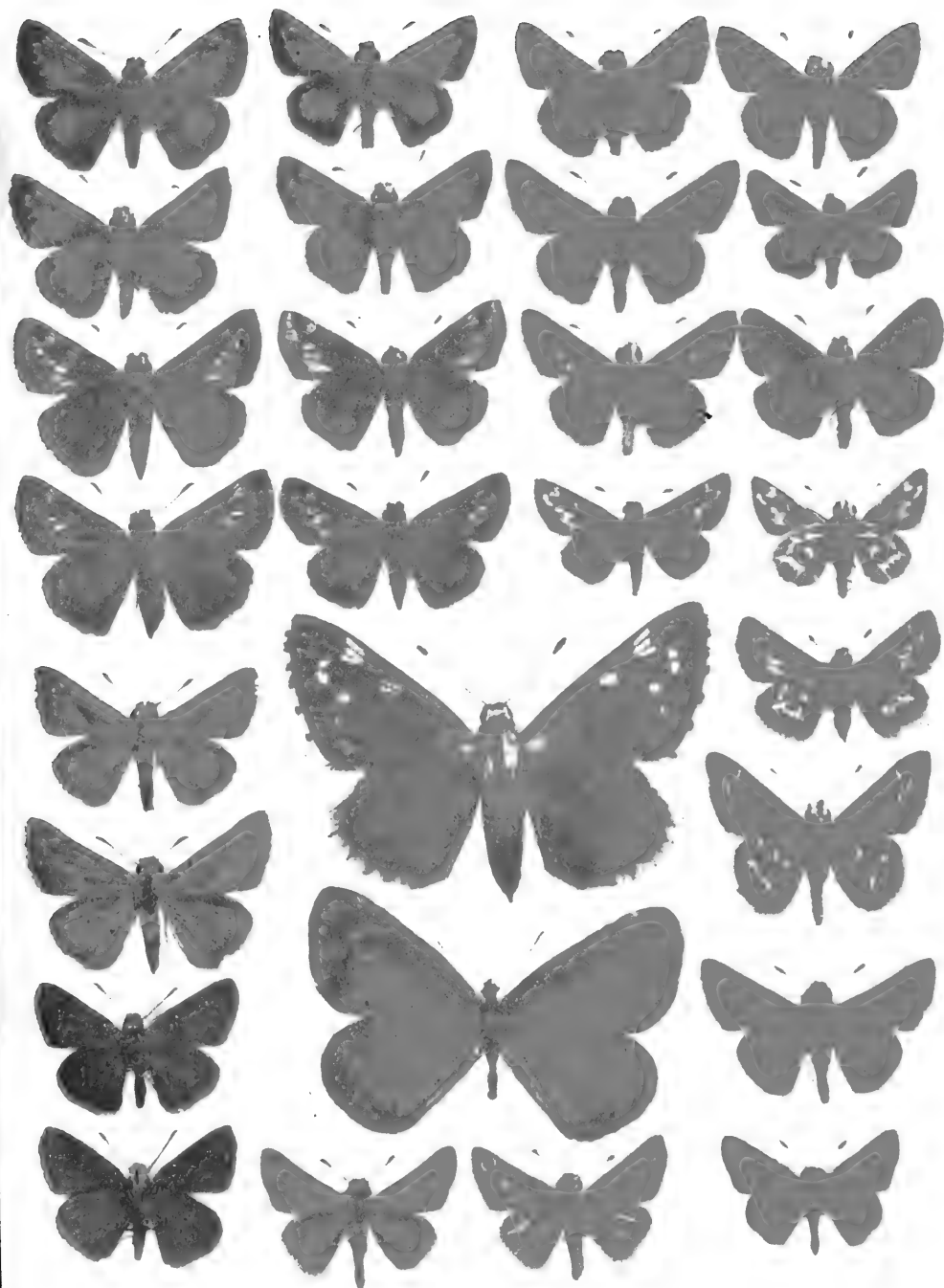
Being unable to find a recorded description of the female of *P. electryon* G. & S., I herewith submit the following :

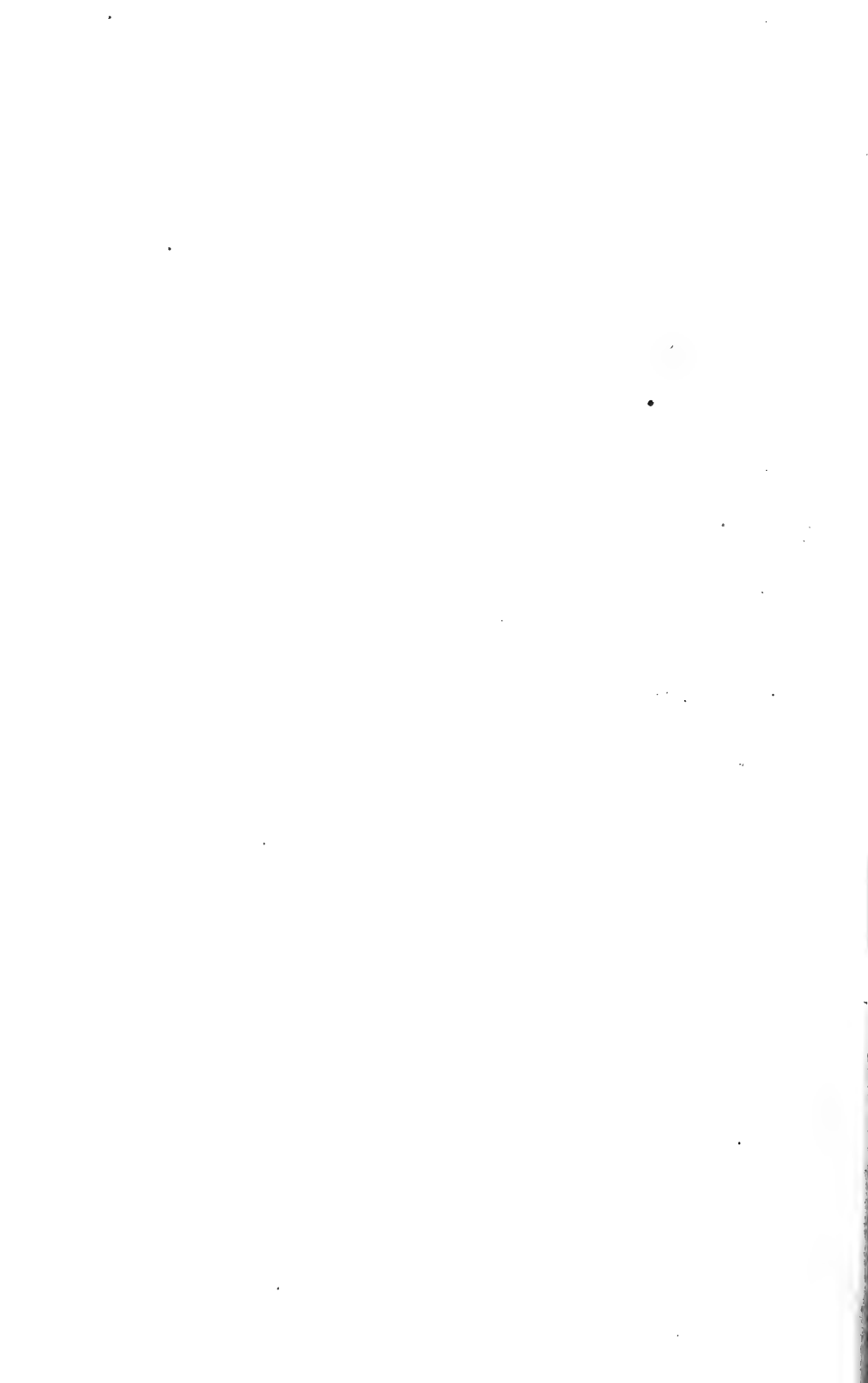
P. electryon G. & S. ♀.—Wings more dusky and primaries less produced at apex than in ♂; primaries above with apical band composed of eight isolated yellowish spots, bent near middle of outer margin at an angle of 110 degrees, and continued to posterior angle; sub-parallel to apical row is a discal row of seven obscure olivaceous patches; no trace of common yellow band of ♂: secondaries with submarginal row of seven flat, thick, rufous lunules, the two nearest apical angle reduced to yellowish patches and the one at anal angle a round spot; the discal row of six glaucous patches of same position as in ♂ but more distinct; inside the glaucous row and well beyond the end of the cell a band of seven rufous lunules extends from the costa to inner margin,—the lunules being appressed, or U-shaped, and separated by the black veins, those near anal angle being thickened, whereas the one at the costa is a curved dash suffused with buff scales. Primaries beneath with two rows of spots as above; the apex paler; the luteous dash on the costa as in ♂; and the extremities of the broad yellow band of ♂ represented by an obscure olivaceous cloud in the cell near the costa, and another on the inner margin near posterior angle: secondaries fuscous beneath; lunules as above, except that those of the inner band are of a nearly even thickness throughout; the glaucous patches are replaced by olivaceous clouds edged with pale blue on the inner side and separated from the rufous lunules by deep black lunulate patches. Fringe between veins whitish. Caudate appendages wider than in ♂. Expanse 110 mm.

Described from one female specimen from Orizaba, V. C., Mexico.

Readily distinguished from melanic ♀ of *P. asclepius* Hbn. by the presence of the row of olivaceous patches on primaries and by the apical row of spots reaching posterior angle, being bent at lesser angle, and containing three isolated spots (not four broad dashes) in its first portion; also by the shape, color and position of lunules on secondaries.

Have never seen a specimen of *P. asclepius* Hbn. from the Eastern Slope of Mexico, nor a specimen of *P. electryon* G. & S. from the Central or Western regions. Doubt has been expressed as to the non-identity of these species, but the ♂♂ as well as ♀♀ show differences as striking as those of *P. pilumnus* Bdv. and *P. daunus* Bdv.



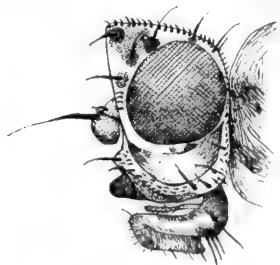


Two New Genera of Diptera.

By D. W. COQUILLET.

Hesperodes n. gen. Mycetophilidæ.

Near *Hesperinus*, but the third and fourth veins united for a short distance, crowding out the small cross vein, as in *Platyura*. Auxiliary vein ending in the costa beyond the base of the third vein, subcostal cross vein nearly midway between the humeral and base of the third vein, the latter forked beyond the apex of the first vein; fourth vein originating from the fifth near its base and just before the union with the third connected by a cross vein with the upper branch of the fifth, forking a short distance beyond the union with the third vein; fifth vein forking midway between the base of the third vein and its union with the fourth; sixth vein prolonged to the wing margin; antennæ about twice as long as the head and thorax united, cylindrical but tapering to the apex, 16-jointed,



Traginops irrorata.



the first joint as broad as long, the second twice as broad as long, and the others twice as long as broad; proboscis very robust, shorter than height of head, palpi 4-jointed, eyes emarginate opposite the

antennæ, ocelli wanting, abdomen slender, more than three times as long as the thorax.

Type, the following species :

Hesperodes johnsoni, n. sp.

Reddish yellow, antennæ and tarsi beyond the base changing to brown, legs destitute of strong lateral bristles, tibial spurs well developed; wings yellowish, becoming grayish hyaline on the posterior margin and at the apex, a brown spot at apex of the first vein.

Length 12 mm.

Delaware Water Gap, N. J., a male specimen collected July 12, 1899, by Mr. C. W. Johnson, after whom the species is named. Type No. 4391, U. S. Nat. Museum.

Traginops n. gen. Agromyzidæ.

Apparently nearest related to *Milichia*. Occiput on its upper part strongly produced forward in the middle, the middle of the front nearly perpendicular, almost on a line with the face, the latter strongly produced forward on its lower part, vibrissæ well developed, clypeus strongly

projecting, cheeks about two-thirds as wide as the eye-height, eyes nearly circular, bare; proboscis robust, fleshy, palpi slender; antennæ shorter than the face, the third joint oval, broader than long, arista dorsal, bare; three ocelli present, ocellar prominence unusually large, ocellar and post-vertical bristles present, two pairs of vertical and three of fronto-orbital bristles (see the accompanying figures); body robust, abdomen less than twice as long as wide, shorter than the thorax; auxiliary vein distinct at its base but toward its apex uniting with the first vein, apex of third vein midway between the apices of the second and fourth, the latter slightly converging toward the third at its apex, hind cross vein situated beyond the last third of the length of the wing, small cross vein at the last fourth of the length of the discal cell, penultimate section of the fourth vein about one-third as long as the ultimate section; sixth vein not reaching the wing margin; the two basal and anal cells complete; pre-apical tibial bristle present, but small; legs otherwise destitute of bristles except near the upper and the under sides of the front femora.

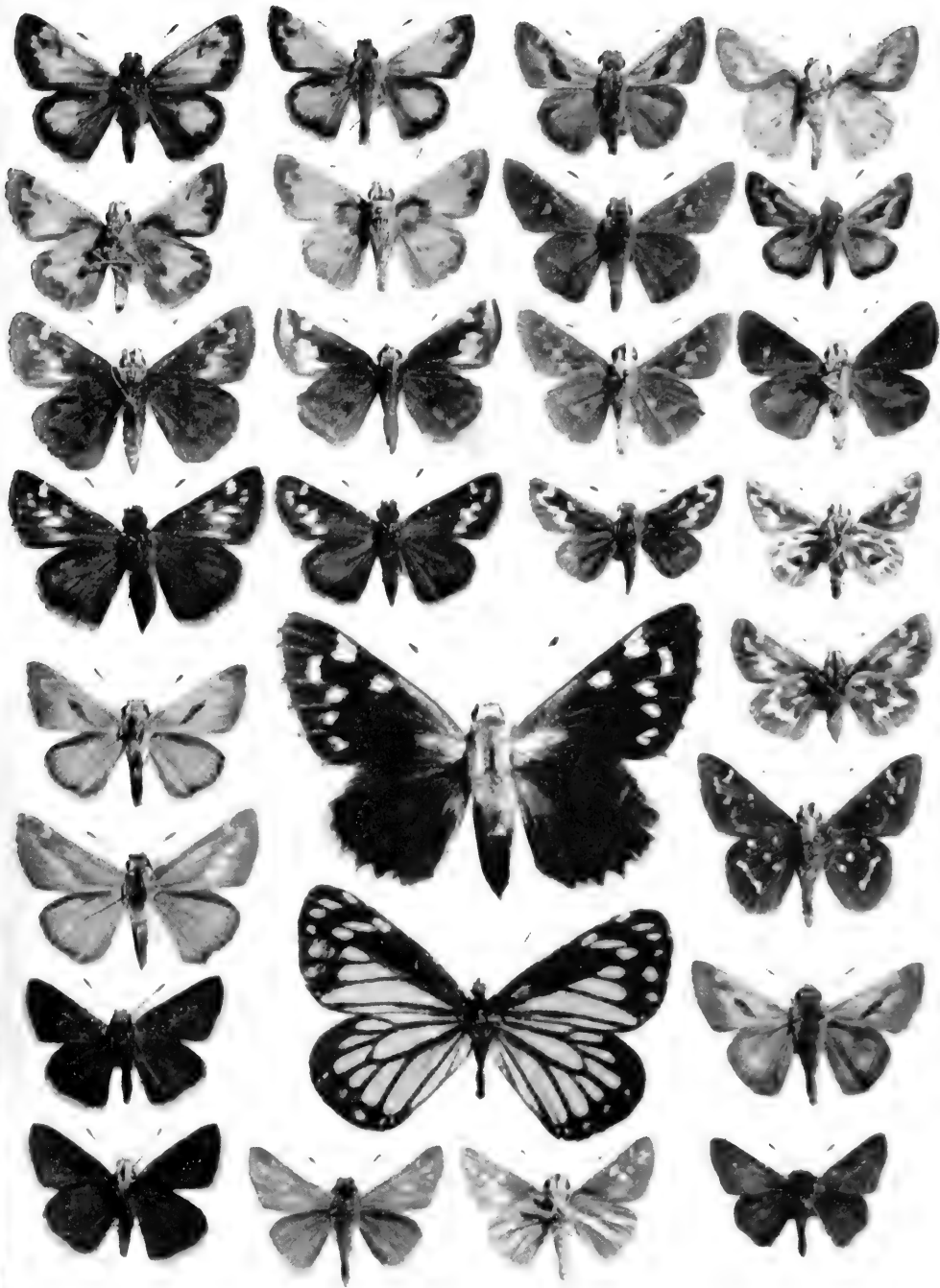
Type, the following species:

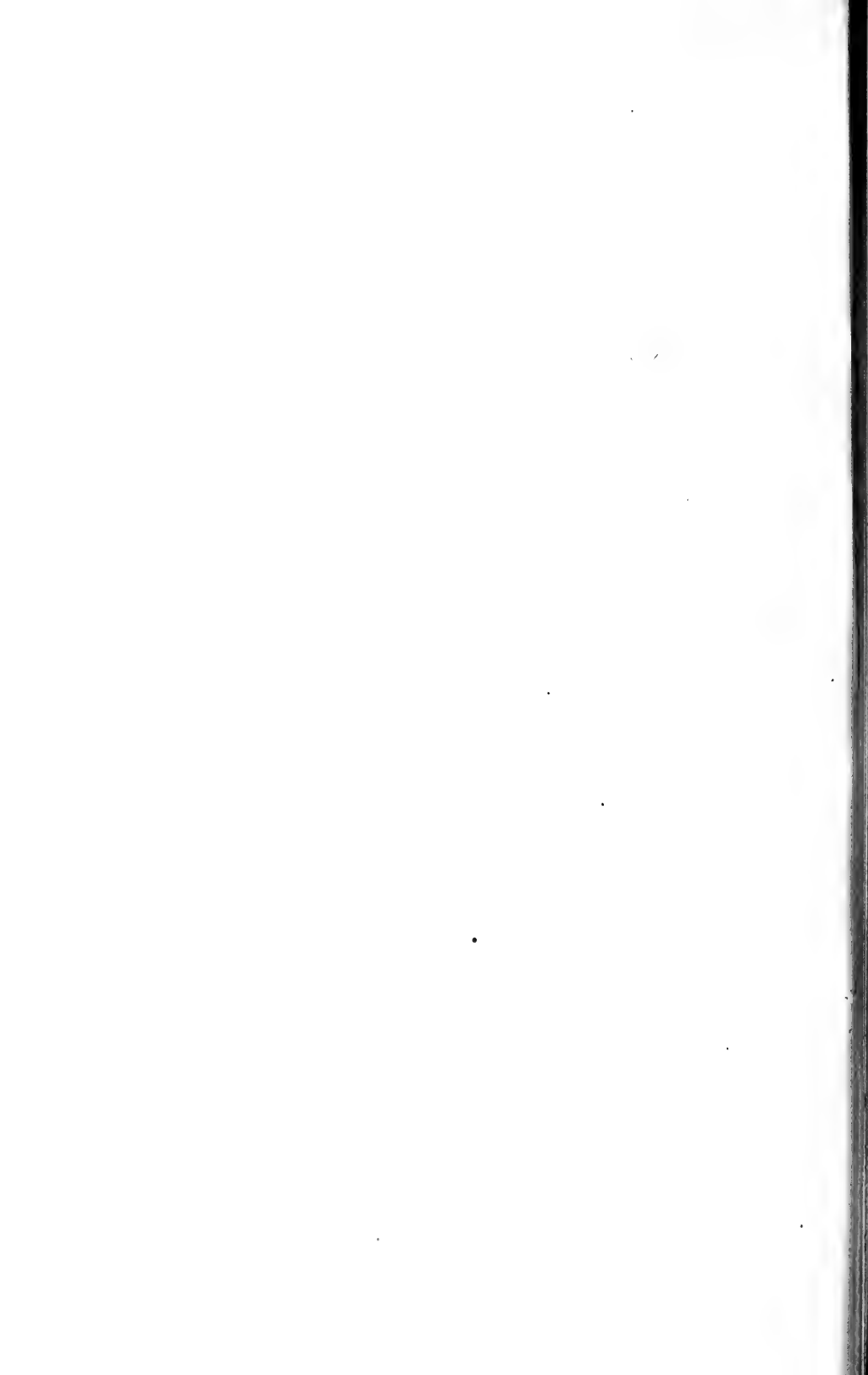
Traginops irrorata, n. sp.

Head black, the middle of the front, of the cheeks, and the antennæ except the the arista, yellow; the face clypeus; proboscis and palpi yellowish brown; occiput and sides of front gray pruinose, a black spot at insertion of each bristle, face and upper and lower edges of the cheeks whitish pruinose, two black spots on the upper part of each cheek. Thorax black, opaque, gray pruinose, rather thickly covered with brown spots and dots, bearing three humeral bristles, two post-humeral, one præsutural, four super-alar, four dorso-central and one acrostichal; pleura gray pruinose, marked on its upper edge and also near its middle with a brown vitta, sternopleura bearing three or four macrochaetæ along its upper edge besides several hairs, prosternal bristle present, pleura otherwise bare; scutellum black, gray pruinose, marked with a central brown spot, the margin yellow, four dots and the front angles brown, bearing four macrochaetæ. Abdomen dark brown, slightly polished, the sides and venter gray pruinose and covered with brown dots and spots. Legs yellow, the front femora except their apices, bases of the others, two bands on each tibia, and the tarsi, except the apices of the joints, blackish brown. Wings whitish hyaline, rather thickly covered with brown dots and spots, as in the accompanying figure (from a drawing by Mrs. C.), the posterior margin bordered with dark gray, veins bare; halteres yellow.

Length, 3 to 4 mm.

Georgia. Ten specimens collected by the late H. K. Morrison. I have also examined two specimens collected by Mr. C. W. Johnson in New Jersey. Type No. 4392, U. S. Nat. Museum.

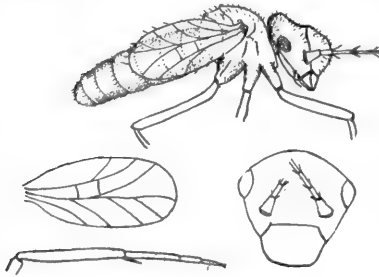




A New Genus of Atropidae.

By NATHAN BANKS.

The Atropidae were in former times known from the Psocidae not only by the absence of ocelli, but also by the absence of wings. Now, however, there are two genera with one pair of



wings, at least in one sex; these are *Psoquilla* Hagen and *Dorypteryx* Aaron. Hagen erected the genus *Psoquilla* for a very handsome species of which he had seen but one specimen, supposedly from Hamburg. McLachlan in his monograph of the British Psocidae recorded two specimens found in England, and gives an excellent figure of the insect. Other than these two references the species appears to be unknown. The species is probably a native of some tropical country, and its occurrence in Europe due to occasional importations.

Dorypteryx was proposed by Aaron for a pale insect found among piles of books in Philadelphia. It is a very active little form and jumps readily. The female appears to be normally apterous, but the male has slender wings, held close to the body, after the manner of *Boreus*. I have found it among books at Washington, D. C. Although it may be an importation it appears to be fully established at the present time.

To these two genera I can now add a third, which was recently sent me by Mrs. A. T. Slosson in a vial of spiders from Biscayne Bay, Florida. Mrs. Slosson writes that this little atropid was caught destroying her butterflies while on the stretching boards. Although the harm done in her case was trifling, the insect could, with a little carelessness, become quite a pest in insect boxes.

To these two genera I can now add a third, which was recently sent me by Mrs. A. T. Slosson in a vial of spiders from Biscayne Bay, Florida. Mrs. Slosson writes that this little atropid was caught destroying her butterflies while on the stretching boards. Although the harm done in her case was trifling, the insect could, with a little carelessness, become quite a pest in insect boxes.

Psocinella n. gen.

No ocelli; two short wings (mesothoracic), somewhat more than twice as long as broad, broadly rounded at the tip, with several veins and a closed central cell; costal vein forked toward tip; the median vein gives off three branches behind and one in front; anal vein simple; no trace of hind wings; legs slender, femora not dilated, tarsi three-jointed, basal joint long and slender, hind tibia longer than the femora (but not as much

as in *Dorypteryx*); head not very broad and the eyes not especially prominent; antennæ filiform; abdomen rather slender.

Type, *P. slossonæ*.

This genus differs from *Dorypteryx* by the shape and venation of the wings; from *Psoquilla* by less prominent eyes, venation and less swollen femora. *Psoquilla* is evidently its nearest ally; in that genus, however, the costal vein is not forked, there are but two branches below from the median vein, the anterior branch of the median is forked; the head is broad and eyes very prominent; and the abdomen is broad and depressed.

The three genera of Atropidæ with veined wings may be tabulated as follows:

1. Wings broad, rounded at tip	2.
Wings lanceolate, femora slender	Dorypteryx.
2. Costal vein forked, femora slender	Psocinella.
Costal vein simple, femora slightly dilated	Psoquilla.

Psocinella slossonæ n. sp.

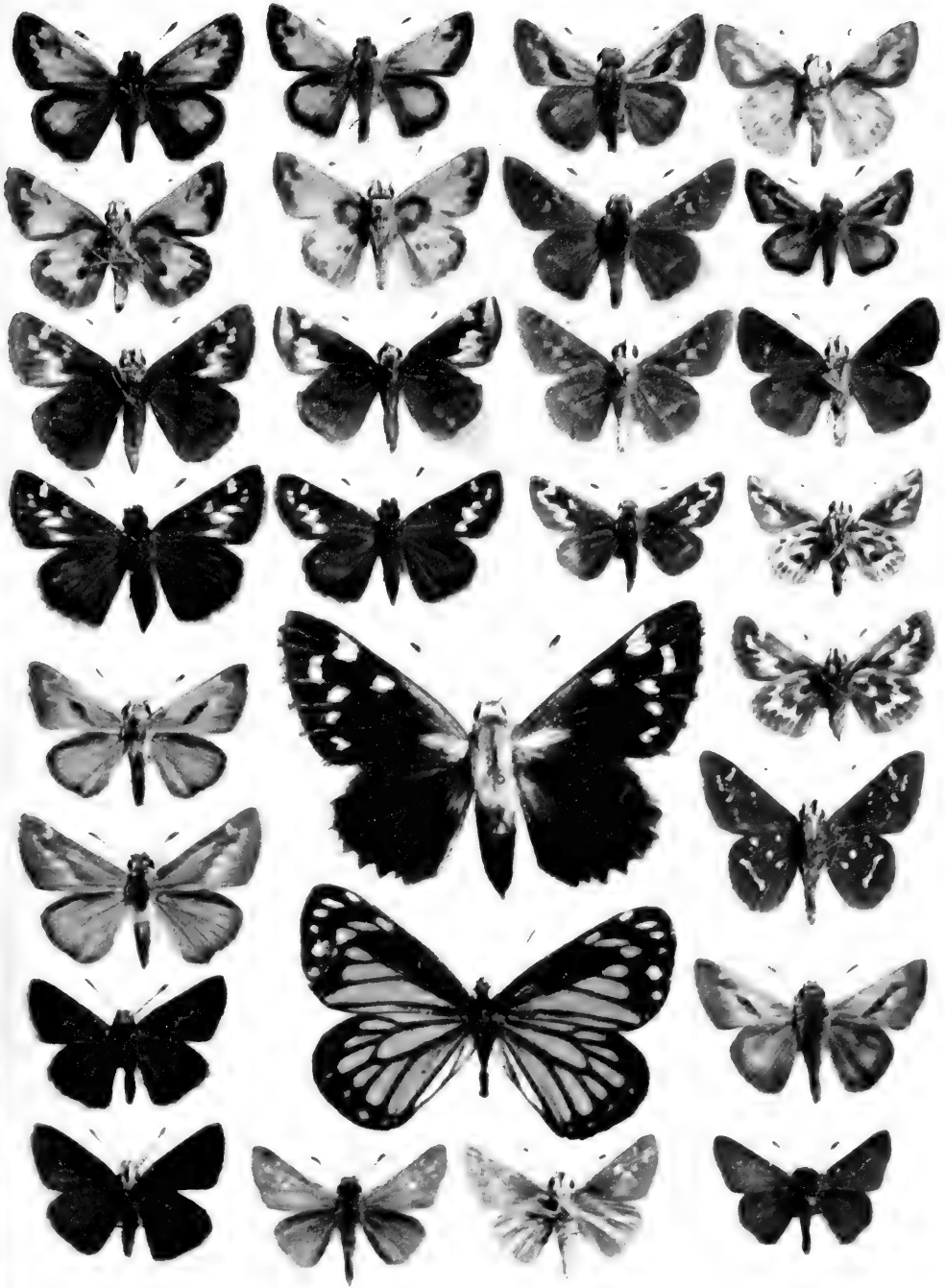
Whitish, head yellowish, antennæ purplish, a black spot above on the fourth abdominal segment, tibiæ blackish. Wings hyaline, veins hyaline, reaching beyond middle of abdomen; the costal vein forked near tip; the median joined to the costal in two places near center of wing thus forming a closed cell; upper branch of median vein simple, three simple branches below; anal vein simple. Antennæ filiform (broken beyond sixth joint). Head not broad above, nasus prominent; legs slender, basal joint of tarsus about one-half as long as tibia; hind tibia plainly longer than hind femora; abdomen slender, subcylindric. Body and legs sparsely clothed with fine short hairs.

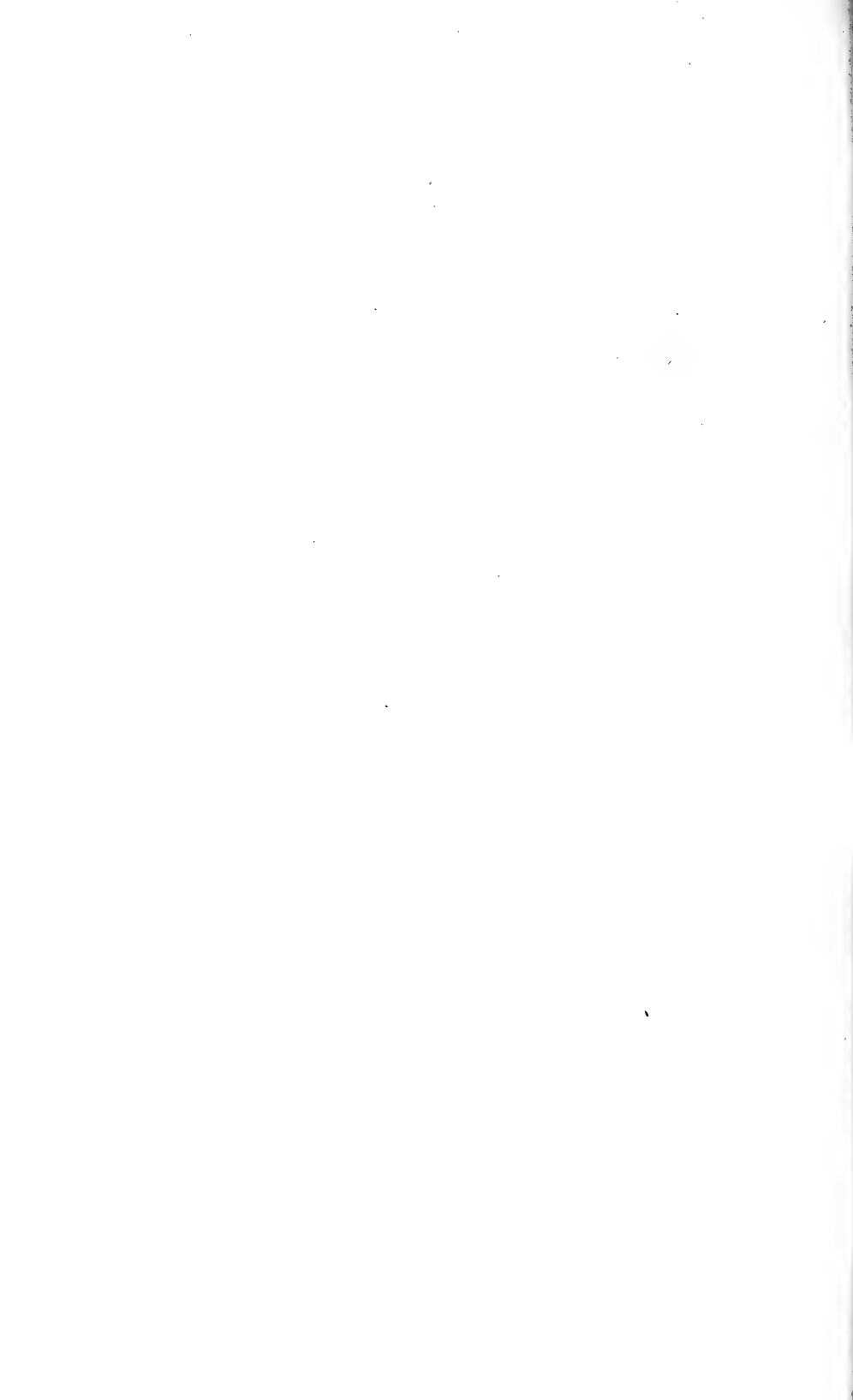
Length, 1.1 mm.

Described from two specimens collected at Biscayne Bay, Florida, by Mrs. A. T. Slosson, to whom the species is dedicated.

Since this paper was written Dr. C. Ribaga has published the description of a new genus and species* similar to the above. His genus, *Psocathropos*, has the venation on the same plan, but the veins are bent out of the straight course observed in *Psocinella*. The thorax of his insect is much smaller than in *Psocinella*. An important difference is that *Psocathropos* has very short hind femora, while in *Psocinella* they are a little longer than the other pairs.

* Descrizione di un nuovo genere e di una nuova specie di Psocidi trovato in Italia. *Revista Patol. vegetale*, VIII, p. 156 (September, 1899).





List of Catocalæ Taken at Louisiana, Missouri.

By G. M. DODGE.

Amnica,	Ilia,	Piatrix,
Grynea,	Cara,	Nebulosa,
Micronympha,	Amatrix,	Judith,
Cratægi,	Junctura,	Robinsonii,
Abbraviatella,	Epione,	Retecta,
Clintonii,	Serena,	Desperata,
Illecta,	Habilis,	Viduata,
Consors,	Inuubens,	Lachrymosa,
Cerogamna,	Palæogama,	Insolabilis,
Ultronia,	Neogamna,	Obscura.
Coccinata,	Subnata,	

Of the thirty-two species of Catocalæ named in this list, all but one (amatrix) were taken during the season of 1899, previous to which we had made no attempt at systematic collecting.

In addition we have four species as yet undetermined, making a total of thirty-six species for this immediate locality and all taken within the limits of 190 acres of land.

Of several of these we saw but a single specimen each; from which we may safely infer that other species were overlooked entirely.

The collector who wishes to make an exhaustive list of the Catocalæ of his district must work in more than one way.

Sugaring is a good method, so is collecting from tree trunks in the day time; but to employ either one to the exclusion of the other will cause the loss of some species. There are species that must be sought under sheds and the eaves of houses, while others, again, are found on flowers at dusk. By collecting the larvæ still other species may be had that would rarely or never be otherwise obtained.

Even when all these methods are employed no person will succeed in taking all the species of a given locality in one season's collecting.

WE can supply extra copies of the three-color plate on heavy paper (9 x 12) suitable for framing or keeping as separata. Price 15 cents in stamps. Apply to the Editor.

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, three 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, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., APRIL, 1900.

In January, 1891, through the kindness of Mr. Julius F. Sachse, a well-known scientific and literary gentleman of this city, we published a half-tone of the larva of *Citheronia regalis*. As far as we know this was the first time that this process of photography had ever been used in a natural history journal. Since then the use of half-tones for illustrative purposes has become general. In December, 1891, we also published "A Suggestion for a Possible Method of Identifying the Colors Photographed." This work was also done by Mr. Sachse and was a step in advance. Since 1891 photographic processes have been improved in various ways, and in this number we give illustrations of the so-called three-color process. Three negatives of the objects are made, each one through a different "color screen," respectively, red, yellow and blue. Three half-tones are then made from these negatives, and then by making an impression on the paper from each half-tone block, and using for each block one of the three inks—yellow, red blue—the perfect print is obtained. Great care must be taken in registering the blocks, so that each color shall properly cover the figures. The process is a wonderful one and is beautifully adapted for natural history work, as it gives mechanically correct maculation and is practically correct for color. This is our first plate of the kind, and was made here in Philadelphia.

Dr. W. J. Holland deserves great credit for having so promptly seen the possibilities of the method and for having used it with such success in his beautiful "Butterfly Book."

We give illustrations showing a print of each color; prints of two colors and the three combined into the finished illustration. We are also indebted to Mr. Sachse this time for advice and assistance. We hope to publish more of these plates, and from the experience gained, make further improvements. The subjects are from the collection of Dr. Skinner, and were selected on account of their non-actinic colors and the difficulties they present for ordinary photographic methods.

"MARY YEOMANS, an English woman now living in California, makes money by catching butterflies. She had some knowledge of the different varieties when she went to the Pacific slope. One day a flock of pansy-like butterflies hovered over her for a moment and then flew up the mountain side. She thought she recognized a rare and valuable species only known in the higher Alps. She followed these honey-loving beauties up the mountain and captured a goodly number of them. She painted a facsimile of one in water colors and sent the sketch to London. The result was an order for twenty-five of the butterflies, for which she received \$575."

Mr. Edward D. Keith, of Providence, R. I., sent us the above clipping and wanted to know if it were not newspaper entomology. We have seen a variation of the above to the effect that a young lady was making a fortune in California as the owner of a butterfly farm. We presume this clipping will interest our subscribers in California, who would like to sell the species at \$23 each.

FORMATION OF AN ENTOMOLOGICAL CLUB, IN BUFFALO.—On January 3d a meeting was called by the Buffalo Society of Natural Sciences for the purpose of getting together those in the city interested in the collection and study of insects. There was a good attendance, and much interest was manifested. As a result of the meeting an entomological section was organized in the Society, and Edward P. Van Duzee elected chairman. For the present season meetings will be held on the second and fourth Wednesdays of each month. During the collecting season at least two field days will be observed each month. These will be in the form of excursions to the best collecting grounds about Buffalo. The special objects in the formation of the section are the mutual sympathy and encouragement and better acquaintance among those in the city interested in this branch of science, the investigation of the local insect fauna, and the formation and preservation of a good collection of insects in the Society of Natural Sciences.

DEPARTMENT OF ECONOMIC ENTOMOLOGY.

Edited by Prof. JOHN B. SMITH, Sc. D., New Brunswick, N. J.

Papers for this department are solicited. They should be sent to the editor, Prof. John B. Smith, Sc.D., New Brunswick, N. J.

SOME INSECT NOTES.*

By B. F. WEBSTER.

The little clover *Halticus uhleri*, has been studied and we have found that there are probably not less than five annual generations at Wooster. This species has a peculiar interest, as there are two forms of females, one having fully developed wings and the other has no wings at all, and instead of flying or walking, as does the first, it hops about like some of the flea beetles, and like them have the posterior femora enlarged.

A peculiar case of retardation in development has come to notice during the last year. On June 6, 1898, a number of saw-fly larvæ, from a strawberry patch near Wooster, were placed in a breeding cage in the insectary. Others from the same source were added a few days after. As nothing had emerged up to June 3, 1899, almost a year after, I instructed Mr. Mally to clear up the cage in which these larvæ had been placed with their food plants, but he was surprised to find the larvæ still alive in the small earthen cells into which they had retired for pupation. The soil in the cage was carefully replaced, but still nothing developed. September 16th, supposing all must have died, it was again decided to clear up the cage, but we were again surprised to find the larvæ alive and in apparently good condition in their cells. The soil was again replaced and we shall await the developments, as, up to date, over eighteen months since the larvæ ceased to feed, nothing has appeared.

At the meeting of the Association of Economic Entomologists in Columbus last August, Dr. E. P. Felt, State Entomologist of New York, called attention to the occurrence of the 12-spotted asparagus beetle, *Crioceris 12-punctata* at Buffalo, and in October, at the meeting of the Entomological Society of Ontario, Canada, Dr. Fletcher reported it in eastern Ontario, opposite Buffalo, so that we may expect it to reach Ohio, even as soon as next summer. This is an introduced species, coming to us from Europe, but was first found here long after *Crioceris asparagi* had begun to make its way westward. It may be stated that the latter species reached Wooster for the first during the last year, and an extended search about Sandusky revealed only a single individual, and this at the Soldiers' and Sailors' Home just south of the city.

* Read before the Ohio Academy of Science, December 22, 1899.

Colaspis brunnea, the larvæ of which are known to attack the roots of strawberry and the beetles feed upon the leaves of grape, was reared from a species of dock (*Rumex*). Adults and larvæ were both observed thus feeding quite extensively. *Allorhina nitida*, the fig eater of the South, has been reported from southern Ohio feeding on ripe blackberries.

In Bulletin 96 of the Ohio Experiment Station was published a brief note on the development of *Oberia bimaculata*, and certain peculiarities of food habit noticed. On January 27, 1899, at Gypsum, Ohio, acting under my direction, Mr. Mally examined a large number of wild blackberry canes in search for any *Oberia* larvæ, and while several were found showing the characteristic girdlings only one contained a larva. The tip of the infested cane had been broken off and the rough surface calloused over. The larva had bored down only about an inch below the girdle, where it was found head upward, the girdled part of the cane being dead. This larva was transferred to a tall blackberry cane in the insectary, January 21st, and began feeding within two hours after, in a temperature of approximately 75 to 85 degrees F., indicating that they commence feeding as soon as warm weather begins. By January 31st the larva had made the first opening through the cane about one inch from the top, and was working industriously. By means of a hand glass Mr. Mally watched the larva protrude the castings and, to his surprise, discovered that the pellets were pushed out with the mandibles. The cane was immediately pared away until the opening was enlarged sufficiently to permit of distinct observation. In a few moments the larva ascended backwards until the jaws were opposite the opening, when it reached out, dropped the pellet, and then descended the burrow, but after feeding for a short time—head downward—it reascended several times in succession, each time pushing out small bits of material. One or two small pellets were noticed on the tip of the last extremity. These drop off and fall down to the bottom of the burrow while the larva is feeding, when it grasps them with its mandibles and carries them to the opening and pushes them out. By February 2nd, the larva had made three excretal apertures, about $1\frac{3}{4}$ inches apart, thus having burrowed farther in twelve days than Mr. Slingerland records for the larvæ of *Oberia bimaculata* observed by him during the middle of July. The castings could be separated into two distinct forms, the oblong rounded pellets, frequently occurring in chains and irregular granular crumbs or chips. At first it was thought that the chips were fragments of pellets that had been broken as they dropped down between the larva and the wall of the burrow. In order to get definite information on this point it was necessary to pare away the woody tissue, so as to show the full length of the burrow, and then securely fasten a narrow strip of mica over the opening, thus exposing the larva to full view while working. At first the larva was very restless, but soon became accustomed to the new conditions and began working energetically, pulling off bits of the pith and pushing them in behind the mica until the irregularities had been adjusted and then pushing them out at the excretal opening. It would stop and feed occasionally, often protruding three to five pellets at a time.

These would be dislodged by an unsteady lateral motion of the tip of the abdomen. The larva would sometimes ascend the burrow, especially after a new excretal opening had been made, and seizing the lower end of the chain pellets before they dropped to the bottom, thus eject them from above the opening. But usually it would seize the chain by the upper end, and dragging it up to the opening eject it from beneath, the chain at first protruding upward at an acute angle, but as the middle was reached, it would balance and hence be very readily pushed out. The ejection of the pellets in chains is made possible by the way the larva makes the opening. When beginning to gnaw through to the outer surface the opening is large and irregular; but gradually narrows down to a small aperture by the time the epidermis is reached, thus making it broadly sub-conical, and admitting the head just far enough for the mandibles to reach the surface. The larva certainly pulled out a great many more chips than is necessary to simply round out the burrow. This must be considered as a waste of food material for which there would be no excuse, unless it is done to make sure of reaching the rootstock before winter, even at the risk of exhausting the food supply, in case the larva was in a small cane. But, as the larva was seen feeding from the sides of the burrow, it may be that, on reaching the rootstalk, it feeds at random.

To determine the necessity of its reaching the rootstock it was placed in a blackberry cane five feet high and left undisturbed. It burrowed down to within three feet of the surface and then stopped working, no more castings appearing. An examination July 10, 1899, revealed the fact that the larva had died, leaving this point still in question. But the fact that we received similar larvæ from the twigs of apple and pear in such position that the larva could not reach the roots, would indicate that they may feed until ready to transform and then pupate, regardless of the rootstock.

On August 21, 1899, at Langsville, Ohio, *Oberia* larvæ were found working in the young canes of red raspberry, the great majority having already burrowed down into the rootstock, thus limiting their food supply and certainly necessitating their transformation in one year, for it is manifestly impossible for them to make their way from one cane to another.

This difference in life history is certainly important, and suggests the possibility that there are two species in question.

Ordinarily the larva of the Hessian fly, *Cecidomyia destructor*, has the effect of destroying the central shoot of the young wheat plants, but this year an exception to this rule was noticed in a plot of wheat sown on unfertilized ground on the Experiment Farm. In quite a number of instances plants having a full grown larva back of the leaf sheath the central shoot was in good condition. In some cases the larva was lodged securely just behind the upper end of the sheath at the base of the leaf, while in others it was half way, and in others close down to the roots. Those at the upper end of the sheath attained the flaxseed stage are quite certain to develop adults. This difference in the effect of the insect could

not have been due to the variety of the wheat as all of the plots were of the same variety but differently fertilized. On the fertilized plots the peculiarity was not observable. It would seem then that the Hessfan fly may attack a wheat plant, the growth of which has been influenced by lack of fertility in the soil, and develop there without destroying the plant. While this phenomenon is easily explainable where larva had developed near the base of the leaf and had clearly drawn its food supply from the leaf instead of the stem, in case of those low down, near the root, explanation seems quite impossible on these grounds.

A CORRECTION.—For Harrison G. Dyer, on page 333 present volume, read Harrison G. Dyar.

W. J. HOLLAND states in his Butterfly Book that *Achalaurus cellus* (the golden banded skipper), is found in Virginia and southward. I have found them abundant in this part of Maryland (Anne Arundel County.)—Alex. A. Girault, Annapolis, Md.

Eutanypus IN NEW MEXICO.—On January 31st I examined the bands placed around the apple trees on the Experiment Station Farm at Mesilla Park, to see what might be hibernating beneath them. The miscellaneous catch included one living Chironomid fly, which I took to be a species of *Tanypus*. I sent it to Mr. Coquillett, and he tells me that it is his *Eutanypus borealis*, described last year from Bering Island and Mt. Washington, N. H. The occurrence of this boreal fly so far south seems worth recording; and it is interesting to note that, whereas in the far north it is caught in July and August, with us it appears in midwinter.—T. D. A. COCKERELL.

DRAGONFLIES CAUGHT BY TENDRILS OF VINES.—“A rather unusual occurrence which created some little interest among local entomologists and others in August of the present year (1899) was the ensnaring of a large green dragonfly, *Anax junius* Drury, by a tendril of wild balsam apple, *Micrampeles lobata* Green.

“It is conjectured that the insect had settled upon the vine and becoming somewhat benumbed by the cool of evening, was easily entrapped by the outreaching tendril, which had wound itself quite tightly about the insect's body, near the joint of the seventh and eighth abdominal segments.

“The prisoner remained quite lively for several days, often flying out to the length of its vegetable rope until it finally perished at the hands of a careless observer.

“After our attention had been drawn to this curiosity, several instances of the entrapping of smaller species of the order Odonata by vine tendrils were also noted. In these cases the insects had been made prisoner by the tendrils entwining [them] selves about their limbs.”—C. E. BROWN in Bulletin of the Wisconsin Natural History Society (new series), i, pp. 67-68. Milwaukee, January, 1900.

Entomological Literature.

COMPILED BY P. P. CALVERT.

Under the above head it is intended to mention papers received at the Academy of Natural Sciences of Philadelphia pertaining to the Entomology of the Americas (North and South). Articles irrelevant to American entomology will not be noted. Contributions to the anatomy, physiology and embryology of insects, however, 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; * denotes that the paper in question contains descriptions of new North American forms. Titles of all articles in foreign languages are translated into English; usually such articles are written in the same language as the title of the journal containing them, but when such articles are in other languages than English, French, German or Italian, this fact is indicated in brackets.

4. The Canadian Entomologist, London, Ont., March, 1900.—**7.** U. S. Department of Agriculture, Division of Entomology, Washington; Bulletin 22, new series, 1900.—**9.** The Entomologist, London, March, 1900.—**11.** The Annals and Magazine of Natural History, London, Feb., 1900.—**13.** Comptes Rendus. Société de Biologie, Paris, 1900.—**15.** Biologia Centrali-Americana, London, part clii, Dec. '99; rec'd. Feb. 20, 1900.—**21.** The Entomologist's Record, London, Feb. 15, 1900.—**24.** Berliner Entomologische Zeitschrift, xlv, 3. Dec. 99.—**33d.** Denkschriften, Kaiserliche Akademie der Wissenschaften, Mathematisch-Naturwissenschaftliche Classe, lxvii, Vienna, '99.—**33s.** Sitzungsberichte of the same, cvii, '98; rec'd. Feb. 19, 1900.—**35.** Annales, Société Entomologique de Belgique, Brussels.—**37.** Le Naturaliste Canadien, Chicoutimi, Quebec, Feb., 1900.—**41.** Entomologische Nachrichten, xxvi, 4, Berlin, Feb., 1900.—**44.** Verhandlungen, Zoologisch-botanische Gesellschaft in Wien, xlix.—**60c.** Comunicaciones, Museo Nacional de Buenos Aires, i, 5, Dec. 30, '99.—**67.** Entomologiske Tidskrift, Stockholm, xx, No. 1, Mar. 22, '99; No. 2-3, Sept. 26, '99; No. 4, Jan. 23, 1900.—**68.** Bulletino, Societa Entomologica Italiana, xxxi, Florence, Dec. 31, '99.—**84.** Insekten Börse, Leipsic, 1900.—**92.** Illustrierte Zeitschrift für Entomologie, Neudamm, '99.—**99.** Bulletins, Cornell University, Agric. Exper. Station, Ithaca, New York.—**104.** Mittheilungen, Naturhistorisches Museum, Hamburg, xvi, 2, Nov. 1, '99.—**123.** Bulletin, Wisconsin Natural History Society, new series, i, 1, Milwaukee, Jan. 1900.—**124.** Schriften, Naturwissenschaftliches Verein für Schleswig Holstein, xi, 2, Kiel, '98; rec'd. Feb. 26, 1900.—**125.** British Bee Journal, London, 1900.

THE GENERAL SUBJECT.—**Brown, C. E.**, See Neuroptera.—**Busck A.** Notes on a brief trip to Puerto Rico in January and February, 1899, **7.**—**Chittenden, F. H.** Insects and the weather: observations during the season of 1899, **7.**—[**Crevecoeur, F. F.**] Notes on Miscellaneous insects in Kansas, **7.**—**Frühstorfer, H.** Leaves of my diary [travels in the U. S.], **84**, Jan. 4-Feb. 15.—**Gilles, W. S.** The use of formalin as a preservative of insects, **9.**—**Harward, W.** Insectivorous habits of lizards, **7.**—**Howard, L. O.** The insects to which the name

"kissing bug" became applied during the summer of 1899, figs., **7**.—**Knuth, P.** How flowers attract insects, **124**.—**Lameere, A.** Discourse on the reasons for the existence of metamorphoses in insects, **35**, xliii, 13, Jan. 23, 1900.—**Pic, M.** Some entomological accidents, *Le Naturaliste*, Paris, Feb. 1, 1900.—**Rudow.** On variations in size of insects, **84**, Jan. 11.—**Terre, L.** Metamorphosis and phagocytosis, **13**, Feb. 17.—**Viré A.** *La Faune Souterraine de France*, Paris, J. B. Ballière et Fils., 1900, 8vo., pp. 148, 4 pls.

ECONOMIC ENTOMOLOGY.—**Anon.** Mosquitos and fever, **84**, Jan. 18.—**Anon.** Caterpillars and maple sugar, **37**.—**Bailey, L. H. et al.** Spraying notes, **99**, No. 177, Jan., 1900.—**B[anks], N.** Cotton insects in Egypt, **7**.—**Bergman, A.** On economic relations of Oestridæ, 2 pls. [in Swedish], **67**, 1.—**Id.** Researches on the larva of *Ocneria dispar* L., **67**, 4.—**Brown, C. E.** Depredations of the cottony maple scale; Fruit feeding habit of the cotton worm moth, **123**.—**Busck, A.** See General Subject.—**Chapais, J. C.** The strawberry saw-fly, the gooseberry fruit-worm, **37**.—**Chittenden, F. H.** Food plants and injury of North American species of *Agrilus*; Notes on two species of "lightning hoppers" [Fulgoridæ]; The recent spread of the Mediterranean flour moth, **7**.—**Coquillett, D. W.** Two new Cecidomyians destructive to the buds of roses, figs.;* a new violet pest, fig.* **7**.—**Dalrymple, W. H., Dodson, W. R., and Morgan, H. A.** Immunization against Texas fever by blood inoculation, figs., Bulletin, Agric. Exper. Station of the Louisiana State College, etc. Second series, No. 57, Baton Rouge, La., 1899.—**Fisher, A. K.** A new clothes-moth remedy [carbon bisulphide], **7**.—**Hanley, A. H.** Tumbe or Kroo fly, *New York Medical Journal*, Mar. 3, 1900.—**Havens, F. G.** Insect control in Riverside, California, **7**.—**Hemenway, H. D.** Experiments with hydro-cyanic acid gas, as a means of exterminating mealy bugs and other insect pests in greenhouses, **7**.—**[Howard, L. O. et al.]** Reported injury by giant scarabæid beetles; Locusts in Argentina and Lourenço Marquez, South-eastern Africa; A cotton stainer [*Dysdercus*] in Peru; The green June beetle of the Southwest [*Allothina mutabilis*]; A Dipterous enemy of cucurbits in the Hawaiian Islands [*Dacus cucurbitæ*]; A troublesome twig-girdler of the Southwest [*Oncideres putator*], **7**.—**Kornhuber, A.** A scale insect as a forest pest on *Robinia Pseudacacia* L., *Verhandlungen, Vereins für Natur- u. Heilkunde zu Presburg* (n. F.), x, 1899.—**Krüger, L.** *Insektenwanderungen zwischen Deutschland und den Vereinigten Staaten von Nordamerika und ihre wirtschaftliche Bedeutung*, Herausgegeben vom Entomologischen Vereine zu Stettin, 1899, 8vo., pp. 174, viii.—**Lagerheim, G.** Contributors to knowledge of galls of *Juniperus communis*, **67**, 2-3.—**Lampa, S.** Report of the State Entomological Institute for 1898, figs. [in Swedish], **67**, 1.—**Id., Meves, J.** The "Nonne" *Zymantria monacha* L., 1 pl. [in Swedish, separate articles], **67**, 2, 3.—**Libbertz, A.** On blood parasites and their transmission by blood-sucking insects, 6 pls., *Bericht der Senckenbergischen naturforschenden*

Gesellschaft, 1899. Frankfurt am Main.—**Lohmann, H.** The San José scale and its allies, **124**.—**Lounsbury, C. P.** Fruit fly notes, Agricultural Journal, Cape Town, Jan. 4, 1900.—**Id.** Two pine apple pests and some reflections on pests in general, figs., *l. c.*, Jan. 18, 1900.—**Morgan, H. A.** Ticks and Texas fever, 9 pls., Bulletin, Agric. Exper. Station of the Louisiana State College, etc., second series No. 58, Baton Rouge, La., 1899.—**Nuttall, G. H. F.** Newer researches on the rôle of mosquitos in the distribution of malaria, Centralblatt für Bakteriologie, Jena, Feb. 12-16, 1900.—**Reh, L.** Researches on American orchard scales, **104**.—**Id.** Scale insects on American fruit imported into Germany [translated abstract from the preceeding.] **7**.—**Reuter, E.** A new competitor with the codlin moth (*Carpocapsa pomonella*) [in Swedish], **67**, 1.—**Sjöstedt, Y.** [On economic entomological stations in the United States and Canada] [In Swedish], **67**, 2-3.—**Slingerland, M. V.** The peach tree borer, figs., **99**, No. 176, Dec. '99.—**Tepper, J. G. O.** Notes on cockroaches in South Australia, **7**.—**Van Slyke, L. L.** Report of analyses of Paris green and other insecticides, Bulletin 165, New York Agric. Exper. Station, Geneva, N. Y., Dec. '99.—**Wilcox, E. V.** Abstracts of recent publications, Experiment Station Record, xi, 5, U. S. Department of Agriculture, Washington, 1900.—**Woldert, A.** A preliminary investigation of the theory of the inoculation of malarial fever through the agency of mosquitoes, 1 pl., Journal American Medical Association, Chicago, Feb. 3, 10, 1900.—Numerous short "Notes from Correspondence," **7**.

ARACHNIDA.—**Cambridge, F. O. P.** Arachnida Araneidea, vol. ii, pp. 81-88, pl. vi,* **15**.—**Cambridge, O. P.** Arachnida Araneidea, vol. i, pl. xxxiii., **15**.—**Kräpelin, K.** On the classification of the Solifugæ, 2 pls.*, **104**.—**Morgan, H. A.** See Economic Entomology.—**Thon, P. C. C.** On an interesting case of parasitism among the Hydrachnidæ, **44**, 9, Dec. 23, '99.

MYRIAPODA.—**Attems, C.** Classification of the Polydesmidæ, part i, 11 pls.,* **33d**.—**Verhoeff, C. W.** On double males among Diplopods, figs., Zoologischer Anzeiger, Leipsic, Jan. 22, 1900.

APTERYGOTA.—**Plateau, F.** [Report on award of prize to V. Willem's] "Anatomical and systematic researches on the insects of the group Apterygota," Bulletin, Classe des Sciences, Academie Royale de Belgique, 1899, No. 12, Brussels.—**Willem, V.** A new type of Sminthurid; *Megalothorax*, figs., **35**, xlv, 1, Jan. 30, 1900.

ORTHOPTERA.—**Bordage, E.** Regeneration of the tarsus and of the two anterior pairs of limbs in the Orthoptera saltatoria; On the absence of regeneration in the posterior limbs of the Orthoptera saltatoria and its probable causes [both translated from French orig.], **11**.—**Burr, M.** On the geographical distribution of European Orthoptera, **21**.—**Hunter, W. D.** An investigation to determine whether *Melanoplus sprchus* breeds permanently in the Turtle Mountains in North Dakota, **7**.—**McNeill, J.** The Orthopteran genus *Trimerotropis*,* Psyche, Cam-

bridge, Mass., March, 1900.—**Id.** *Orchelimum*, Serv., **4**.—**Smith, H. M.** Nocturnal flight of grasshoppers, **7**.

NEUROPTERA.—**Berg, C.** The Mantispidae of the Argentine Republic [in Spanish], **60c**.—**Brown, C. E.** The balsam apple vine as an insect trap, **123**.—**Kolbe, H. J.** The species of the peculiar Neuropterous genus *Nemoptera*, Sitzungs Berichte, Gesellschaft der naturforschenden Freunde, Berlin, Jan. 16, 1900.—**Needham, J. G.** Nymphs of Northern Odonata still unknown, **4**.—**Wasmann, E.** The guests of ants and termites [transl.], **21**.

HEMIPTERA.—**Berg, C.** Hemipterological notes [in Spanish], **60c**.—**Busck, A.** [list of Coccidæ] See the General Subject.—**Caudell, A. N.** A new species of *Sinea*,* **4**.—**Champion, G. C.** Rhynchota Heteroptera, vol. ii, pp. 289-304, pl. xvii,* **15**.—**Cockerell, T. D. A.** New insects from Arizona, and a new bee from Mexico;* Note on the coccid genus *Oudablis* Signoret, **9**.—**Id.** Rhynchota Homoptera, vol. ii, pt. 1-33,* **15**.—**Green, J. A.** A new Western enemy of the Colorado potato beetle [*Perillus claudus* Say], **7**.—**Haglund, C. J. E.** Notes on Hemiptera collected in Chile and Argentina by Mr. P. Dusen, engineer [in Swedish], **67, 1**.—**Handlirsch, A.** How many stigmata are there in the Rhynchota? Figs., **44, 10**, Jan. 19, 1900.—**Howard, L. O.** The two most abundant Pulvinarias on maple, figs., **7**.—**Kirkaldy, G. W.** Notes on Jamaican Rhynchota, No. 2,* **9**.—**Martin, J. O.** A study of *Hydrometra lineata*, figs., **4**.—**May, W.** On the ventral shield of the Diaspinæ; On the larvæ of some species of *Aspidiotus*, **104**.—**Montgomery, T. H., Jr.** Note on the genital organs of *Zaitha*, figs., American Naturalist, Boston, Feb., 1900.—**Tinsley, J. D.** Contributions to Coccidology, ii, **4**.

COLEOPTERA.—**Aurivillius, C.** New or little known Coleoptera Longicornia, figs., **67, 4**.—**Bartlett-Calvert, G.** Monografía de los Elateridos de Chile. Publicado en los "Anales de la Universidad." Santiago de Chile. Imprenta Cervantes, 1898. Stated on the title page to be extracted and translated into Castilian from the works of Candeze and other authors. 8vo. 84 pp. [in Spanish].—**Berg, C.** On some Chileno-Argentine Anisomorphidæ [in Spanish]; The genus *Rhyephenes* Schönh in the Argentine Republic [in Spanish], **60c**.—**Brenske, E.** The *Serica* species of the World, monographically treated (cont.), **24**.—**Chittenden, F. H.** Biologic observations on *Harpalus pennsylvanicus* DeG.; A note on the cocklebur bill-bug [*Rhodobænus 13-punctatus*]; The bronze apple tree weevil (*Magdalis ænescens* Lec.) figs., **7**. Also see Economic Entomology.—**Delfin, F. T.** Data for a knowledge of the Coleoptera and Hymenoptera of the Department of Talcahuano, [In Spanish] Revista Chilena de Historia Natural, Valparaiso, Jan. 1900.—**Heller, K. M.** On the synonymy of the Zygodipidæ, **41**.—**Holmgren, N.** To knowledge of the copulatory sac of the Elateridæ, and a contribution to the classification of this family; preliminary note, **67, 2-3**.—**Horn, W.** On two new species of the genus *Tetracha* from Ecuador, **41**.—

Lewis, G. On new species of Histeridæ and notices of others,* **11**.—**Oudemans, J. T.** De Nederlandsche Insecten. Aflevering 14. s'Gravenhage Martinus Nijhoff, 1899, pp. 641-712, Coleoptera (cont.), figs., pp. 713-739. Hymenoptera, figs. [in Dutch].—**Roeschke, H.** Carabological notes, v. [some types in British collections], **41**.

DIPTERA.—**Bergman, A.** See Economic Entomology.—**Brauer, F.** Contributions to the knowledge of the Muscaria schizometopa, **33s**, 6, June, '98.—**Coquillett, D. W.*** See Economic Entomology.—**Ficalbi, E.** Twenty species of Italian mosquitoes (Culicidæ), classed and described, and indicated according to their chorological distribution, figs. **68**.—**Kellogg, V. L.** An extraordinary new maritime fly, figs.,* Biological Bulletin, 1, 2, Boston, Jan., 1900.—**Mik, J.** Dipterological miscellany, Wiener Entomologische Zeitschrift, xix, 1, Jan. 31, 1900.—**Noe, G.** Contributions to the study of the Culicidæ, **68**.—**Petri, L.** The muscles of the wings of Diptera and of Hymenoptera, 3 pls., **68**.—**Ricardo, G.** Notes on the Pangoninæ of the family Tabanidæ in the British Museum collection (cont.), **11**.—**Rübsaamen, E. H.** How are cecidozoa prepared, **92**, Feb. 1.—**Speiser, P.** On the Streblidæ, pupiparous Diptera parasitic on bats, 2 pls., figs. Archiv für Naturgeschichte lxvi, 1, Berlin, Dec., '99.—**van der Wulp, F. M.** Diptera, vol. ii, pp. 409-416,* **15**.

LEPIDOPTERA.—**Brown, C. E.** See Economic Entomology.—**Butler, A. G.** Note on *Cyaniris pseudargiolus* of Boisduval and Le Conte, **4**.—**Chapman, T. A.** On the moult to pupa in *Pterophorus*, **9**.—**Dernel, P. H.** Swarming of the milkweed butterfly, *Danais archippus*; On the occurrence of the hawk moth, *Argus labruscæ* in Wisconsin, **123**.—**Dodge, G. M.** *Pyramcis huntera*, n. var. *fulvia*,* **4**.—**Druce, H.** Lepidoptera Heterocera, vol. ii, pp. 569-592, **15**.—**Dyar, H. G.** Notes on some North American Yponomeutidæ (cont.),* **4**.—**Fischer, E.** Contributions to experimental Lepidopterology (cont.) pl., **92**, Feb. 1.—**Frings, C.** On the seasonal dimorphism of the species of *Pieris* occurring in Rheinland, Societas Entomologica, Zurich-Hottingen, Feb. 1, 15, 1900.—**Fyles, T. W.** Further observations upon *Bombyx cunea* Drury, etc., **4**.—**Grote, A. R.** Genealogical trees of butterflies, Proceedings, American Philosophical Society, Philadelphia, xxxviii, No. 160, Dec., '99.—**Id.** A new popular name for *Clisiocampa disstria*, **4**.—**Mayer, A. G.** On the mating instinct in moths. [from Psyche] **11**.—**Moffat, J. A.** *Hydroecia stramentosa*, Guen. 1 pl., **4**.—**Pagenstecher, A.** The Lepidopterous fauna of the Bismarck Archipelago, ii part, the night moths, 2 col. pls. Zoologica, heft 29. 12ter Bd., Lieferung 1 and 2., Stuttgart, 1900.—**Rauterberg, F.** Diurnal Lepidoptera of Milwaukee Co., Wis., **123**.—**Rebel, H.** Fossil Lepidoptera from the Miocene formation of Gabbro, 1 pl., **33s**, heft 7, July, '98.—**Id.** On recognition of the Lemoniidæ as a separate family of Lepidoptera, **41**.—**Schultz, O.** Phosphorescent light appearance on the antennæ of *Asteroscopus sphinx* Hufn. (*cassinia* Fabr.) **24**.—**Stichel, H.** *Oreogenes*, a

new Neotropical genus, fig., **24**.—**Weymer, G.** Some new Neotropidæ, 1 pl., **24**.

HYMENOPTERA.—**Anglas, J.** Preliminary note on the internal metamorphoses of the wasp and the bee; lycocytosis, **13**, Jan. 27.—**Anon.** Bees and the knowledge of the weather, **84**, Feb. 1.—**von Buttel-Reepen, H.** Are bees "reflex machines?" Experimental contributions to the biology of the honey bee, *Biologisches Centralblatt*, Erlangen, Feb. 15, 1900.—**Cockerell, T. D. A.** A new oak-gall from New Mexico, * **4**. Also* see Hemiptera.—**Delfin, F. T.** See Coleoptera.—**Forel, A.** Hymenoptera, vol. iii, pp. 137-160 [Formicidæ], * **15**.—**Id.** Ants collected by Her Royal Highness Princess Therese of Bavaria on a journey in South America, figs., **24**.—**Hamlyn-Harris, R.** Parthenogenesis and the part it plays in the development of the honey bee, **125**, Jan. 11, 18.—**Janet, C.** Anatomy of the thorax of *Myrmica rubra* queen, figs., 1 pl., *Memoires Société Zoologique de France*, 1898.—**Id.** Tegumentary glandular system of *Myrmica rubra*; various observations on ants, figs., Paris, G. Carré et C. Naud Editeurs, 1898, 8vo. 30 pp.—**Id.** Sting of *Myrmica rubra*; apparatus for closing the venom gland, figs., 3 pls. Paris, G. Carré et C. Naud, editeurs, 1898. 8vo. 27 pp.—**Konow, F. W.** Analytical tables to identify the hitherto described larvæ of the Hymenopterous suborder Chalastogastra, **92**, July 1.—**Krieger, R.** On some Ichneumonid genera related to *Pimpla*,* *Sitzungsberichte der naturforschenden Gesellschaft zu Leipzig* '97-'98. July 14, '99; rec'd. Mar. 8, 1900.—**Kulagin, N.** The influence of temperature on the eggs, larvæ and pupæ of bees, **92**, July 1.—**Ludwig, F.** Ants in the service of plant distribution, **92**, Feb. 1.—**M., D. M.** A battle royal [of queen bees], **125**, March 1.—**Oudemans, J. T.** See Coleoptera.—**Petri, L.** See Diptera.—**Plawina, O.** The revenge of a wasp, **84**, Jan. 25.—**Rudow.,** Some buildings of the Hymenoptera, **84**, Feb. 8.—**Rüb-saamen, E. H.** See Diptera.—**Smith, J. B.** The life of a digger bee, figs., *Popular Science*, New York, March, 1900.—**Terre, L.** On muscular histolysis of the Hymenoptera, **13**, Jan. 27.—**Id.** On the histolysis of the adipose body in the bee, **13**, Feb. 17.—**Wassmann, E.** See Neuroptera.

WE have received a specimen of *Catocala innubens* var. *scintillans* from Coban, Guatemala. This gives quite a range to this species.—**HENRY SKINNER.**

MR. R. J. WEITH, of Elkhart, Indiana, has sent a specimen of *Tabanus americanus* and also the imago and pupa case of what we take to be the common house-moth. The larvæ of the moth fed on the *Tabanus* and the imago emerged from it. We have also had museum specimens of Lepodoptera injured by the larvæ of this moth and do not believe such injury is uncommon. **Mr. Weith** has not observed such injury before in an experience of many years as a collector and would like any information on the subject.—**EDS.**

Doings of Societies.

The third meeting of the Harris Club was held at 35 Court Street, Boston, on Friday evening, January, 19, 1900. A formal Constitution was adopted, and officers were elected as follows: President, A. G. Weeks, Jr.; Vice Presidents, H. H. Newcomb and P. G. Bolster; Secretary and Treasurer, W. L. W. Field. Communications dealing with Protective Coloration were presented by Messrs. E. B. Clapp, A. P. Hall and A. H. Clark, and were discussed at some length. Mr. H. H. Newcomb mentioned a specimen of *Citheronia sepulchralis* from York, Maine, and Mr. W. F. Low told of the capture of the same species at electric light in Jamaica Plain, Mass.

W. L. W. FIELD, *Secretary.*

At the fourth meeting of the Harris Club, held at 35 Court Street, Boston, on the evening of February 16, several interesting communications were made. Mr. Lawrence Brooks showed an enormous cocoon of *Attacus cecropia*, which he had found attached to the lower part of a bush in a swamp. Mr. R. W. Denton remarked on the frequent occurrence of such inflated cocoons in similar situations; he conjectured that they might have a greater capacity for resisting inundation than is possessed by the usual form, though it would be difficult to account for such an adaptation to extremely local conditions. Mr. W. L. W. Field hazarded the suggestion that an excessive supply of water might increase the production of silk, if not, indeed, the actual size of the larva. Mr. A. H. Kirkland told of the discovery of an egg-cluster of the Gypsy moth, coated with algæ, on piling which was submerged in salt water at high tides. The eggs hatched when the proper time arrived. Apropos of Dr. Mayer's experiments with *Attacus promethea*, he briefly recounted his own investigations of the mating instinct in the Gypsy moth. The finding of two pupæ in a single cocoon of the *Clisiocampa distria* was also mentioned by Mr. Kirkland, and Mr. Brooks told of a like case of co-operative cocoon spinning by larvæ of *Halisidota caryæ*. Mr. Field remarked on the great variation observed from year to year in the insect fauna of New England, and the importance of a

thorough study of the distribution of certain species. Mr. Denton exhibited some beautifully mounted specimens of protectively colored Lepidoptera. W. L. W. FIELD, *Secretary*.

The meeting for March of the Newark Ent. Society was held in Turn Hall. Meeting called to order by President Kemp. Mr. G. Luccareni, of Boonton, N. J., was elected a member of the Society. Prof. Smith gave an interesting lecture on how to distinguish Noctuids from Bombycids and Micros from Tineids, etc., by the veins of the wings. WM. H. BROADWELL, *Sec.*

A regular meeting of the Chicago Entomological Society was held Thursday evening, March, 15, 1900, at the John Crerar Library. Those present were Messrs. Healy, Bates, Hancock, McDade, Longley, Hills, Thiess, and Kwiat with President Westcott in the chair. Visitors present were Messrs. Rowley, Engl, Orbe and Prof. J. G. Needham.

After the reading of the minutes, the Publication Committee made its report on the first issue of "Occasional Memoirs," which was just completed. Bills for same were unanimously approved and ordered paid. Moved and seconded that a price of thirty cents be charged for all copies sold. Carried. Moved that twenty-five reprints be ordered for the use of each contributor to the publication. Seconded and carried. Mr. Healy and Dr. Hancock were then appointed by the Chair to supervise the work of distributing copies of the publication.

Professor Needham then read the article written by him, which appears in the book, entitled, "Insect Drift on the Shore of Lake Michigan." He also complimented the Society on the excellent book, which forms the first issue of its "Occasional Memoirs." He was applauded at the close of his discourse and after some discussion on the subject of the paper the meeting adjourned at 9.30 P.M. A. KWIAT, *Secretary*.

THE STUDENTS' ENTOMOLOGICAL ASSOCIATION.

Although Philadelphia already had two entomological societies,—one the American Entomological Society, of world-wide repute, and the other, the Feldman Collecting Social, for the fostering of social interests,—yet it became apparent that there

was room for another society in which the younger entomologists might associate themselves for study. The object was to form a society in which those who wished could make together a systematic study of their chosen orders of insects. To further this plan the Society was divided up into sections so that any two or more persons interested in a common branch of entomology could form a section for the study of that branch.

Through the kindness of the Academy of Natural Sciences the Association was permitted to meet in their building, and at the organization meeting, Jan. 30, 1900, seven persons were present. At the second meeting scientific work was begun, sections being formed in Coleoptera, Hemiptera, Lepidoptera and Diptera. Since then a meeting has been held every Tuesday evening and in all deep interest in the work on hand has been shown.

Several corresponding members have been elected in various parts of the United States, and it has been thought, that in many towns and cities similar societies might be formed, which by uniting with the Students Entomological Association could carry on scientific correspondence and exchange with it, and with each other.

We, therefore, ask everybody to consider the possibility of forming a chapter in their town or city. Three or more persons will be sufficient. No dues will be required, but chapters will be expected to send a report of the work done at least once in six months, also to subscribe for the Proceedings of the Association in order that we may keep in touch with each other.

It is our desire to make the Association a permanent success, and every prospect seems to be that we will.

J. CHESTER BRADLEY, *Recording Secretary.*

At the February meeting of the Feldman Collecting Social, held at the residence of Mr. H. W. Wenzel, 1523 S. 13th Street, twelve persons were present.

Prof. Smith exhibited sketches of the apple plant louse, *Aphis mali*. He had stocked certain trees with these insects for experimental purposes, and from a badly infested tree he had gathered specimens continuously through 1898, and it was found on examination of the material that at least seven gene-

rations of one species were represented. The heretofore called *Aphis mali* is not that species, and the name should be applied to the one now under observation. The characters of the larva were described, the insect going through four moults prior to maturity. The larvæ have at first a 3-jointed antennæ, which are enforced by an additional joint at the third moult. Two series, winged and wingless, are found in the mature insects, the antennæ of each series showing peculiarities. The young of these two series show quite distinctive characteristics.

Mr. P. Laurent showed 102 species of Lepidoptera collected by him recently in the Wasatch Mountains, Utah, and Manitou, Colorado. Referring to the Argynnids, he stated that each of the several species represented were peculiar to different canons in these Mountains. Specimens of *Papilio rutilus* from the head of Big Cottonwood Canon are much smaller than the typical form. A specimen of *Admetovis* shown is probably new.

Mr. H. W. Wenzel exhibited specimens of *Holoparamesus ragusæ*, *Cartodere costulata*, *Corticaria serrata*, *Monotonæ quadrifoveolata*, *Cryptophagus croceus*, and *Mycetæa hirta*, all of which had been captured in the cellar of his house.

Prof. Smith stated he had received from the author species of *Argynnis cærulescens* Holland, described as a variety of *A. notocris*, and he had found on dissection of the genitalia that the so-called variety is an apparently distinct species.

Dr. Skinner stated that he could find no specific differences in the drawings of the genitalia of males of *Colias philodice* and *C. eurytheme*, which had been made by Prof. Smith from a series of both species.

Prof. Smith stated that he had received the abdomens only of these two insects without any indication of the species to which they belonged, and in his opinion there were two distinct species among them, although an intermediate series was found which is somewhat puzzling, but he believed the differences shown by this series may be due to the different method by which some of the specimens were prepared for microscopic examination. The subject was further discussed by Messrs. Smith and Skinner.

Mr. William Reinick and Mr. S. Harbeck were elected members of the Social.

WILLIAM J. FOX, *Secretary*.

OBITUARY.

Hugo Soltau died last Summer in Europe, after having left this country in May on account of failing health.

He was born at Elmshorn, in the North German Province of Holstein, forty-four years ago, and never married. At the age of eighteen he came to America and had been for many years past in the employ of the drug house of Lehn & Fink, of New York, as traveling salesman. This occupation gave the opportunity of meeting entomologists and making collections in various parts of the country, especially in the South. He went as far west as Salt Lake and was well known to collectors in most of the larger cities and town of the Mississippi Valley and the Eastern States.

Mr. Soltau was a man of remarkable enthusiasm and possessed of much personal magnetism. The long enforced absence from his collections interfered with the acquisition of much technical knowledge of classification, but as a collector he had few equals. To his industry and skill science owes many a hitherto undiscovered species and the recapture of others which had been for years unknown except as relics of some historic cabinet.

Entomology has lost one of her most faithful followers, and many of those who remain will long miss his visits and the inspiration of his ardent interest.—H. F. W.

Andrew Bolter, probably the oldest, and one of the best-known entomologists in the West, died on March 18th. For forty-five years he was a resident of Chicago and was regarded as a high local authority.

Mr. Bolter contributed no books to scientific literature. He frequently, however, in response to requests for information from instructors and students of insect life, wrote lengthy letters on various phases of the subject, and his reputation for practical knowledge was widespread. He was a member of the Academy of Science in Chicago, New York Entomological Society and a corresponding member of the American Entomological Society.

From boyhood until a few years before his death, at 80 years of age, Mr. Bolter's chief pursuit outside of business hours was the collection of insects. His collection of beetles, butterflies and other insects of innumerable kinds, said to be one of the most complete private collections in the world, will probably go to the University of Illinois.

Mr. Bolter, who was born in Sigmeringen, left Germany because the Government resented his supposed connection with the revolution in 1848.

Alfred F. Chatfield died at his home in Lynn, Mass., Feb. 6, in his 84th year. "A native of England, he came to Albany when still a young man, and at first worked at the printer's trade, being employed for a number of years as a compositor on the Albany *Transcript*, in its day one of the famous papers of the capital. At the same time Mr. Chatfield carried on his studies in entomology and horticulture, a love of which he acquired in his native country. Nearly half a century ago he acquired property on what is now Chestnut Street, where he erected greenhouses, which he enlarged from time to time and conducted successfully for many years. The Chatfield nurseries are still very well remembered by most of the old and middle-aged residents of Albany. He was for many years an officer of the New York Agricultural Society and an active promoter and patron of the annual State fairs. He was a man of many accomplishments, possessed a companionable and kindly nature, and made many friends, who will learn of his departure with sincere regret.

Mr. John A. Dakin, an enthusiastic devotee and collector of Lepidoptera, died, after an illness of six days of spasmodic colic, at his home in Syracuse, N. Y., February 21, 1900, at the age of 48 years. In 1893, Mr. Dakin became interested in the study of Lepidoptera, which he pursued until the time of his death, possessing then one of the largest collections of N. A. Lepidoptera in this section. By his death the entomological world loses a valuable and able devotee. He was a charter member and one of the founders of Onondaga Academy of Science and an associate member of A. O. U., and he will be mourned by a large circle of friends.

Prof. F. L. Harvey.—A little less than two years ago, the little band of students of the American Odonata had to mourn the death of Prof. D. S. Kellicott. Within a few days they have suffered another great loss in the person of Prof. F. L. Harvey, who died at Orono, Maine, on the morning of Tuesday, March 6, 1900.

Francis Leroy Harvey was born near Ithaca, N. Y., in 1850. His early education was received in the city schools of Ithaca. Later his parents moved to Independence, Iowa. He entered the Iowa Agricultural College in 1868, and was graduated with the degree B. S., in 1872. In 1874, he filled the chair of natural science in Humboldt College, Iowa, and in the same year took a post graduate course in botany at his alma mater. The Summer of 1877 he devoted to the Harvard Summer

course in mineralogy and geology. From 1875 to 1881 he filled the chair of theoretical and applied chemistry in the Arkansas Industrial University, and from 1881 to 1885 the chair of biology, mineralogy and geology in the same institution. He was in charge of Dr. A. E. Foote's natural history and mineral establishment in Philadelphia in 1885 and 1886. He went to Maine in the latter year to fill the chair of natural history at the University of Maine at Orono, and he held that position until his death. In addition, he was botanist and entomologist to the Maine State Experiment Station connected with the University. In 1890 the Arkansas Industrial University conferred the degree of Ph. D. upon him.

"At the University of Maine he was recognized as a hard and faithful worker along the lines of science, and as an instructor he was well liked and had the esteem of all the students coming under his department. As a resident of Orono he was looked up to as one of the leading men of the town, and many were his friends among the townspeople."

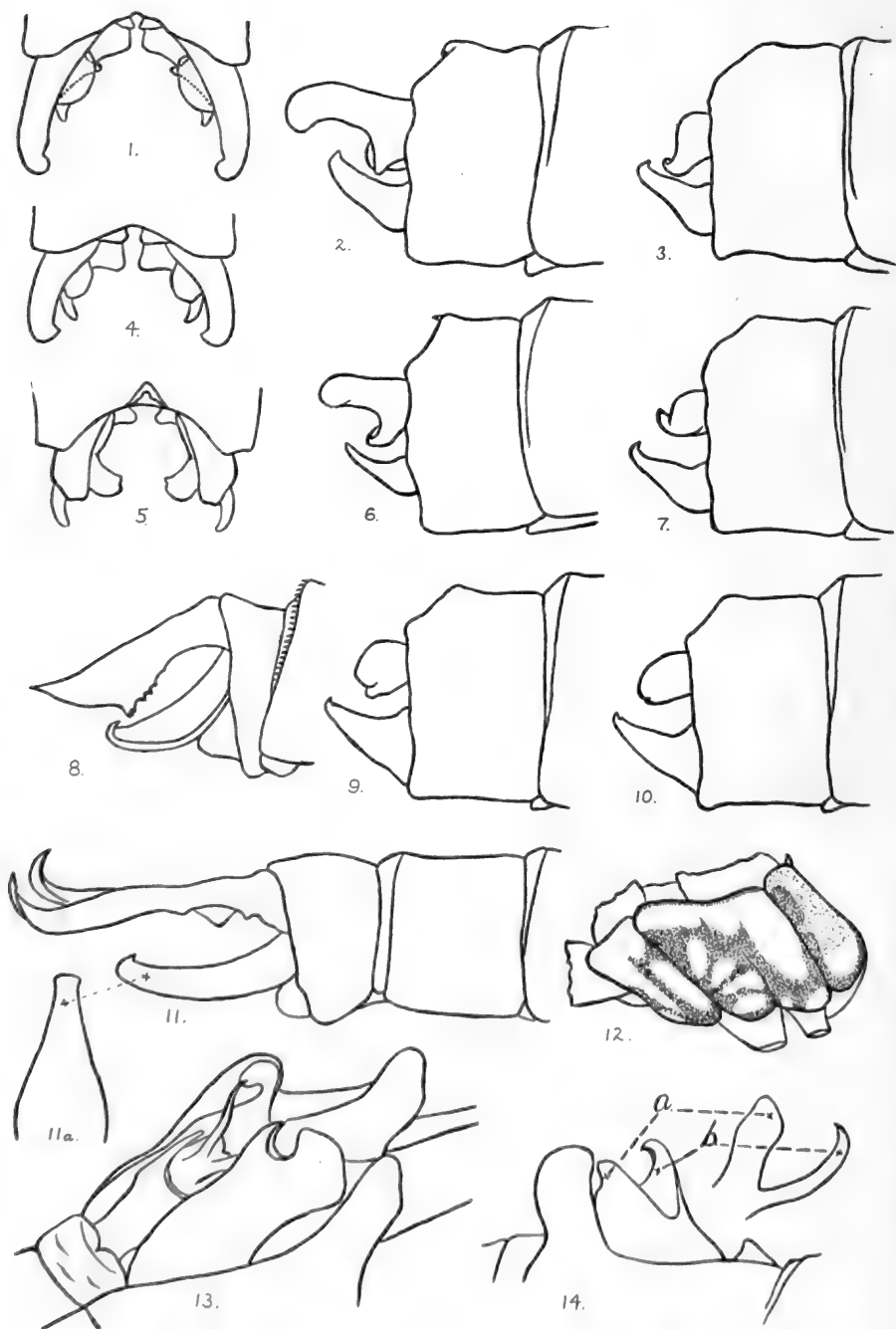
His untimely decease was the result of overwork, leading to nervous debility and melancholia. He is survived by a widow and five children, to whom we tender our deep sympathy.

His work on the Odonata began in 1890, since which time he carefully explored various parts of Maine in the study of its Odonate fauna. He made many interesting discoveries of species hitherto rare or unknown in that region, such as *Gomphus navius* and *Scudderi*, *Neurocordulia yamaskanensis*, *Somatochlora septentrionalis* and the new *Ophiogomphus anomalus*. The last two months of his life, when he could work, were devoted to preparing the results of his collecting trips of 1899 for publication. These manuscripts he committed to our charge three days before his death.

The Thysanura and Collembola of Maine had also received much attention from him, and among them he had discovered a number of new species.

His writings on Economic Entomology were published chiefly in the Annual Reports of the Maine State College Experiment Station. The most extensive and important of these deals with the Apple Maggot (*Trypeta pomonella*) and appeared in 1889. We are informed that he also published on fossil and recent plants, on forestry and allied subjects.—P. P. CALVERT.

4222



1, 2. ENALLAGMA ANNA.
 3, 7. ENALLAGMA ANNEXUM.
 4, 6. ENALLAGMA PRÆVARUM.
 5, 9, 10. ENALLAGMA CALVERTI.
 8, 12, 14. SYMPETRUM SCOTICUM.
 13. SYMPETRUM MADIDUM.
 11, 11a. SOMATOCHLORA ELONGATA, VAR. MINOR.

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XI.

MAY, 1900.

No. 5.

CONTENTS:

Williamson—Wyoming Dragonflies... 453	Johnson—New Peach Mite..... 471
Fall—Coleoptera from Arctic Alaska 459	Dodge—Catocala..... 472
Foster—Rearing Larvæ..... 461	Editorial..... 473
Baker—Notes on Clastoptera..... 463	Entomological Literature..... 475
Smith—Anthocharis Genutia..... 465	Notes and News..... 481
Wolcott—Coleoptera of Central Ill..... 468	Doings of Societies..... 482

Notes on a Few Wyoming Dragonflies.

(ORDER ODONATA.)

By E. B. WILLIAMSON.

According to Banks' *Catalogue* one species of Odonata, *Libellula quadrimaculata* Linné, has been reported for Wyoming. Thirteen other species have been recorded for the Yellowstone. From July 19 till August 6, 1899, the writer, a member of the Wyoming Fossil Fields Expedition, observed the species considered below. Others were seen but not taken. Doubtless Wyoming will be found to be less favored odonatologically than many of the other States; the number of species to be recorded will be small when compared with the number now known to live in New York, Pennsylvania, Georgia, Ohio, and other localities.

1. *Lestes unguiculatus* Hagen.

Laramie, July 19; Medicine Bow, July 20; Sheep Creek, Albany Co., July 23; Little Medicine, Carbon Co., July 30. A common species at all points. The males have the superior appendages at base dorsally and externally more or less pale yellow.

2. **Lestes uncatas** Kirby.

Laramie, July 19; Medicine Bow, July 20; Sheep Creek, Albany Co., July 23; Little Medicine, Carbon Co., July 30. Both sexes taken at all points where the species was observed.

3. **Amphiagrion saucium** Burm.

Sheep Creek, Albany Co., July 23, taken along a small tributary, 3 ♂ 1 ♀. Laramie, July 19, two ♀. Abdomen ♂ 19, ♀ 19-21; hindwing ♂ 15, ♀ 15-18 mm.

These Wyoming specimens have certain differences from the typical form—robustness, darker colors and villose thorax—which are more marked than in any other individuals examined, even from Montana and Washington. The form of the male appendages will not serve to separate them; a female from Washington is indistinguishable from a Wyoming specimen. Judging from my material the variation seems to run from the typical Eastern *saucium* to specimens from Washington, then Montana, and finally the Wyoming forms. These last agree so well with *Pyrrhosoma abbreviatum* Selys, that his name must be considered a synonym of *saucium*.*

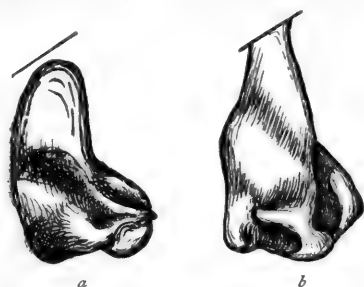
4. **Enallagma annexum** Hagen. (Pl. IX, figs. 3, 7).

Medicine Bow, July 20; Sheep Creek, Albany Co., July 23 and August 6.

When these notes were prepared I had not separated this species from the next, including both under the name *calverti*. I have since been able to distinguish the two by the aid of a drawing of the abdominal appendages of the male in profile of each species, which Dr. Calvert sent me, together with a specimen of each species, *annexum* from Seattle, Washington, June 14, 1894, and *calverti* from Olympia, Washington, July 9, 1893. When sending this material Dr. Calvert raised the question of the distinctness of *annexum* and *calverti*. So far as the Wyoming material goes there seem to be no intermediate forms. A single male of *annexum* from Pasadena, California, July 7, 1899, does not differ from Wyoming specimens of the same species. Between the two species no color differences are

* I have studied some of these Wyoming specimens, as well as those from Montana, Washington, and also Colorado, and hold the same opinion as to the specific identity of *abbreviatum* and *saucium*.—P. P. Calvert.

discernible, and the description of *E. calverti* female, as given below, will serve as well for the female of *annexum*. The amount of black on abdominal segment 10 of the males varies considerably in both species.



Left superior abdominal appendage of (a) *E. annexum* ♂, Sheep Creek, Aug. 6, 1899, and (b) *E. calverti* ♂, same place and date. Both are interno-latero-dorsal views.

The extent of black on the abdominal appendages seems to depend on age. Teneral individuals of *annexum* have the appendages entirely pale, excepting the tip of the lower branch of the superiors and the tip of the inferiors. Older individuals have the appendages entirely black, excepting the base and lower part of the inferiors. In profile the outline of the superiors is often

suggestive of *E. geminatum* Kellicott or *E. divagans* Selys. *Annexum* was the most abundant *Enallagma* observed.

5. ***Enallagma calverti*** Morse. (Pl. IX, figs. 5, 9, 10).

Ab. ♂ 23-26, ♀ 24-26; h. w. ♂ 19-21, ♀ 20.

Medicine Bow, July 20; Sheep Creek, Albany Co., July 23 and August 6. Several pairs were taken and in every case the female was greenish in color. Bright blue males were taken singly. They are older and possibly spent individuals. This applies as well to *annexum*.

♀.—Greenish or bright blue; head and thorax marked with black, as in the male; posterior border of prothorax rounded, entire. First abdominal segment black at base; dorsum of 2-10 black, pale as follows: basal rings on 3-7, interrupted on 3 by the narrowed dorsal stripe, 8 entirely pale, excepting a median cordate spot, point anterior, or this spot may extend backward to the apex and on to the sides of the segment, the point being produced anteriorly to the base; the black dorsal stripe narrows gradually on 9 and 10 to the apex of 10.

6. ***Enallagma civile*** Hagen.

Sheep Creek, Albany Co., July 23, 2 ♂ ♂.

7. ***Enallagma anna*** n. sp. (Pl. IX, figs. 1, 2).

Ab. ♂ 26, ♀ 25; h. w. ♂ 20, ♀ 21.

♂ Head yellowish below; above blue; vertex and frons above black; first joint of antennæ blue; postocular spots connected; rear of head

pale bluish. Prothorax black, blue as follows; a transverse stripe covering the anterior half of the first lobe, a cuneiform spot on either side and the sides of the middle lobe, and narrowly on the posterior border, which is entire, flattened above. Thorax with the following black: a mid-dorsal stripe, a humeral stripe, wider below, and a line on the upper third or fourth of the second suture. Abdomen with the following black: base of 1; an orbicular apical spot and a very narrow apical ring on 2; the dorsal spot and apical ring on each of 3-7 connected; dorsum of 3 with the apical half or third; 4 with the apical half or three-fifths, narrowed anteriorly; 5 with the apical three-fifths or two-thirds, narrowed anteriorly, but wider than the corresponding part of 4; 6 with the apical two-thirds or three-fourths, but little narrowed anteriorly; 7 entirely, excepting a blue basal ring, the black of uniform width; 10 entirely. Legs pale bluish, femora with a black line on the dorsal surface, tibiae with a black line on the anterior surface. Pterostigma black; 3 antenodal cells. Superior appendages in profile about as long as 10, bifid, the lower branch short, extending posteriorly scarcely one-third the length of the appendage, its apex directed ventrally, internally and slightly anteriorly; the upper branch is cylindrical, little curved till in the apical third, which turns inward and downward; between the two branches on the inner surface is a pale tubercle which extends posteriorly beyond the lower branch. Inferiors about three-fifths as long as the superiors, directed upward and inward.

♀. Head and thorax similar to the male; mid-dorsal thoracic carina pale; posterior border of the prothorax with a low median elevation and a smaller one on either side; the lateral elevations are black, continuous with the black of the middle lobe, the remainder of the border pale. Abdomen with dorsum of 2-10 black, 10 very narrowly; sides and basal rings yellow or greenish.

Sheep Creek, Albany Co., July 23, 1899, 8 ♂♂, 3 ♀♀.
Named for Miss Anna Tribolet.

Mr. Hine writes me that specimens of this species, from Arizona, are in the Kellicott Collection under the name *prævarum*. In a specimen of *prævarum* from Mexico, collected by Mr. and Mrs. Deam (Pl. IX, figs. 4, 6), there is no pale tubercle, the appendages are shorter and less conspicuous, the lower branch of the superiors is wider and longer, with the apex directed posteriorly, and not at all anteriorly, as in *anna*; the inferiors are slenderer and, when compared with the superiors, relatively longer. Dr. Calvert says that the differences here indicated between *prævarum* and *anna* are shown by a comparison of a type of *prævarum* and specimens of the Wyoming species which I sent him. Moreover, specimens

from New Mexico differ from *prævarum* in another direction. *Anna* stands between *civile* and *prævarum*. From *civile* it may be recognized at once by the reduced tubercle and lower branch of the superiors.

8. **Ophiogomphus severus** Hagen.

At Medicine Bow this species was transforming by dozens along the banks of the Medicine Bow River. The species was also very common, both as teneral and as fully matured individuals, along Sheep Creek. In the male the two branches of the inferior abdominal appendage are pressed together in their apical half.

Medicine Bow, July 20; Sheep Creek, Albany Co., July 23.

9. **Somatochlora elongata** Scud., var. *minor* Calvert. (Pl. IX, figs. 11, 11 a).

Ab. ♂ 32 mm.; h. w. ♂ 34; pter. 2.75 (2.—2.15 in the types).

Sheep Creek, Albany Co., Aug. 6, 2 ♂♂. One of these was compared by Dr. Calvert with his types and identified in this way. The following differences from his original description (Ent. News, 1x, p. 87, April, 1898) may be noted:

♂. Postclypeus (*nasus*) and vertex black; mesepimeron and metepimeron each with a median oblong yellow or whitish spot.

10. **Libellula quadrimaculata** Linné.

Laramie, July 19, one ♀.

11. **Sympetrum rubicundulum** Say.

Laramie, July 19; Medicine Bow, July 20; Sheep Creek, Albany Co., July 23 and August 6; Little Medicine, Carbon Co., July 30. A very abundant species wherever observed.

12. **Sympetrum scoticum** Donovan. (Pl. IX, figs. 12, 14).

Ab. ♂ 22, ♀ 21; h. w. ♂, ♀ 25.

♂. Labium yellow with a median black stripe; labrum dark brown; clypeus and frons green; the frons above and extending on to the front more or less tinged with brown, black before the vesicle extending to and a short distance around the eyes in front; vesicle and occiput reddish brown; rear of head yellow, each side with three black spots or lines. First two lobes of the prothorax marked with bright yellow and black; hind lobe orange, deeply bilobed. Thorax heavily clothed with white or yellowish tinged pile; above bright yellowish brown extending

to the humeral suture, which is broadly black, interrupted at the middle; sides of thorax bright yellow with black stripes, varying greatly in different individuals. The male figured has the black markings more developed than has any of the other three specimens taken. Abdomen yellowish or reddish, obscure markings above on 1-3 and posteriorly; 9 with a mid-dorsal black spot; 2 with a lateral black spot; an inferior lateral stripe on 3-10. Coxæ and trochanters yellow; legs black. Wings hyaline, pterostigma brown, paler ventrally.

♂. Similar; frons without brown or with less than in the male. Abdominal segments 8 and 9 narrowly black above. Wings orange at base, the color scarcely or not reaching the first antecubital.

Sheep Creek, Albany Co., August 6, 2 ♂♂, 2 ♀♀. One of the males has two cross nervures in the lower basal cell of all four wings. Dr. Calvert has examined a specimen of each sex, and I am indebted to him for the identification of the species.

13. *Sympetrum madidum* Hagen. (Pl. IX, fig. 13).

Ab. ♂ 26; h. w. ♂ 28.

Sheep Creek, Albany Co., July 23.

14. *Sympetrum corruptum* Hagen.

Little Medicine, Carbon Co., July 30, one ♀.

EXPLANATION OF PLATE.

Figs. 1, 2. *Enallagma anna* n. sp., male abdominal appendages, 1 dorsal, 2 profile view. Sheep Creek, July 23.

Figs. 3, 7. *E. annexum* Hagen, id., profiles. Sheep Creek. 3 July 23, 7 August 6.

Figs. 4, 6. *E. prævarum* Hagen, id., 4 dorsal view, 6 profile. Queretaro, Mex., 5900 feet, Dec. 12, 1898.

Figs. 5, 9, 10. *E. Calverti* Morse, id., 5 dorsal view, 9, 10 profiles. Sheep Creek, August 6.

Figs. 8, 12, 14. *Sympetrum scoticum* Donovan, male, 8 profile of abdominal appendages, 12 color pattern of right side of thorax, 14 profile of genitalia, also hamule seen from in front. Sheep Creek, August 6.

Fig. 11. *Somatochlora elongata* Scud. var. *minor* Calvert, male, profile of abdominal appendages, showing also the tip of the left superior appendage; 11a ventral view of inferior appendage. Sheep Creek, August 6.

Fig. 13. *Sympetrum madidum* Hag., male, genitalia seen obliquely from beneath and in front. Sheep Creek, July 23.

List of a Small Collection of Coleoptera from Arctic Alaska.

By H. C. FALL, Pasadena, Cal.

In his Catalogue of the Coleoptera of Alaska the author, the late Dr. John Hamilton, remarks that "there is no record of any named species of coleoptera having been taken in North America, within the Arctic Circle, except *Quedius fulgidus* at Discovery Bay beyond the 82° of latitude." In view of this fact the following list of a small collection of beetles, made for the most part in Arctic Alaska, will be of interest :

In the early summer of 1898 a party of gold seekers left South California for Kotzebue Sound. They spent the following winter at a point some three hundred miles up the Kowak River (latitude 67° 30') and arrived home in November, 1899, after spending some time at Cape Nome—a little to the south of Behring Strait—on the way back.

My ornithological friend Mr. Grinnell, of Pasadena, was a member of the party, and it is to his kindness that we are indebted for the opportunity of making a few additions to Dr. Hamilton's list of one.

Mr. Grinnell does not hesitate to assert that, next to gold, beetles are about the scarcest things to be found in Arctic regions. This is probably not very wide of the mark, still, beetles are always scarcer with ornithologists than with entomologists, and we who seek the smaller game cannot help feeling that had we been there—well, we should have needed another box.

Altogether the collection contains thirteen species and about fifty specimens, and these, so far as it is possible to identify them at the present writing, are as follows :

Carabus truncaticollis Fisch.

1 ♂, Cape Nome, July 27.

Carabus chamissonis Fisch.

One pair (♂ ♀), Cape Blossom, July 26.

Pterostichus sp. near *riparius* Dej.

Two examples, Kowak Delta, June 20 and 24.

Two examples, Cape Blossom, July 10 and 26.

One example, Cape Nome, July 26.

Pterostichus sp. near *hudsonicus* Sec.

Two examples, Cape Nome, July 26 and 27.

Eight examples, Cape Blossom, July 26.

These two species belong to the subgenus *Cryobium*, which contains many species or supposed species from Boreal America. With few exceptions they are imperfectly known, and are to a large degree opinionative.

Amara sp. near *hyberborea* Dej.

Three examples, Cape Blossom, July 10 and 26.

Amara similis Kirby.

Three examples, Kowak River, April, May 22 and September 12.

Silpha lapponica Hbst.

One example, Cape Blossom, July 10.

Quedius brunnipennis.

One example, Kowak Delta, June 24.

Melanophila acuminata De Geer.

Two examples, Cape Nome, September 1.

Tetropium cinnamopterum Kirby.

Numerous specimens "thawed out" of birchwood from March 30 to May 1.

Merium proteus Kirby.**Chrysomela subsalcata** Mann.

These two species—one example of each—were taken in nearly perfect condition from the crop of a rock ptarmigan, which was shot along the snow line of the Jade Mountains at an altitude of about 1000 feet above the Kowak River May 25.

Orchestes rufipes Lec?

One example, Kowak Delta, June 17. The specimen is scarcely distinguishable from *rufipes* in any respect except the color of the legs, the femora being black with the tibiae and tarsi pale; in this particular, therefore, it is intermediate between typical *rufipes* and the variety *minutus*.

The localities named above are all in latitude 67° to 67° 30', with the exception of Cape Nome, which is about 64° 20'. It will therefore be seen that, with the exception of *Carabus truncatipennis* and *Melanophila acuminata*, the species named are all within the Arctic Circle. Of the thirteen only two—*Amara similis* and *Orchestes rufipes*—are new to the Alaskan list.

Some Hints for Rearing Larvæ.

By F. H. FOSTER.

With the hope of helping some fellow worker over difficulties connected with the rearing of lepidopterous larvæ I venture to offer some ideas upon breeding cages which I have found useful.

The problem of providing fresh food, fresh air and cleanliness in a narrow enough space to avoid the risk of losing minute and newly-hatched larvæ presents itself to everyone undertaking this sort of work.

The style of breeding cage described in the text books is expensive, bulky, and newly-hatched larvæ are too easily lost in it.

Leaves of most plants will keep fresh for days in a tightly-closed jelly tumbler or tin box, but the atmosphere in a tightly-closed receptacle soon becomes foul, and larvæ thus confined are prone to disorders of the alimentary canal.

Leaves placed in boxes or jars not airtight soon wither, so that the larvæ reject them.

Leaves or twigs placed with their stems in a bottle of water will keep fresh from a day to a week, according to the nature of the foliage, and if the bottle be placed in a well-aired box some of the important requirements are met, but larvæ, especially when small, have a way of dropping off their food leaves, and they are then very easily lost in a large breeding box. The smooth sides of a glass bottle effectually prevent their return to their food, even if they knew the way. The leaves and the bottle of water are good, but they should be so arranged that the larvæ cannot get lost and can easily return to their food if they fall from it. These conditions are all met by the apparatus described below, which has the merits also of simplicity and cheapness.

Procure a tin dish about four inches in diameter and about as deep (an empty tomato can does very well, if one-third of its upper end is cut off); an ordinary cylindrical Welsbach gas chimney three and a half inches in diameter and four and one-half inches high; a small bottle three or four inches high,

and some gauze. Place the bottle in the center of the dish and fill around it with clean earth nearly to the level of the top of the bottle. This holds the bottle in place and furnishes natural conditions for the larvæ which pupate upon or beneath the surface of the ground. The bottle should be filled with water, the food leaves placed with their stems in it and the gas chimney set over them, resting upon the earth in the dish, the upper end being closed by a removable cover of gauze attached to a rim of pasteboard, which can be very quickly and easily contrived. For the sake of cleanliness it is well



to cover the earth in the dish with a piece of white blotting or other paper, which can be changed as often as necessary until larvæ mature, when the earth should be left accessible to species which pupate beneath the surface.

A little care in arranging the food leaves so that one or more are in contact with the bottom of the cage will insure the speedy return of any larva which drops off.

The writer bred a number of species from eggs with this style of apparatus the past season with very small percentage of loss. Large species can, of course, only be cared for in these cages in their earlier stages, and a larger house, upon the same principle, can be provided by substituting a box for the tomato can, a larger bottle and a cage made of three sheets of glass eight by twelve or ten by twelve inches. The three glasses are placed on end, with edges joining so as to form a hollow prism, and bound together by a few strands of fine wire wrapped around the prism at top and bottom. A cover of gauze and pasteboard can easily be made. With this larger cage the largest bombycids can be successfully reared if too many be not placed together.

A further advantage of the apparatus described above is that the larvæ are all the time in plain view without opening the cage. The neck of the bottle of water should always be closed by a tuft of cotton if the leaf stems do not fully close it. The cages should be placed where there is plenty of light and air, but not in direct sunlight.

Notes on Clastoptera (Cercopidae.)

By C. F. BAKER, Auburn, Alabama.

Clastoptera lineaticollis Stal. (= *Clastoptera delicata* Uhl.) I think the above indicated synonymy will be verified by an examination of the types. Stal's name will take precedence. Stal says distinctly of the thorax in *lineaticollis*, "Lineis pluribus transversis fuscis." In spite of this Mr. Ball has referred it to *obtusa* (see Ia. Acad. Sci., Vol. III.), even the western form of which never has more than two fuscous bands, while the Californian form under the name *lineaticollis* in his scheme is given as having the "pronotum entirely black."

Clastoptera binotata (Ball.) Mr. Ball has merged this manuscript species of Uhler's in *delicata*. I regard it as a good species. Among other things the pronotum in *binotata* is opaque and broadly, shallowly wrinkled, in *delicata* (*lineaticollis*) it is shining and nearly smooth. *Binotata* is further distinguished by the coarser sculpturing of the clavus. A variety of *binotata* occurs in California, having a greater extent of light coloring along the costa and a transverse light band across lower part of face.

According to recognized usage in zoological nomenclature Mr. Ball's "subsp. I. *lineata*" of *delicata* should be known as *delicata*. However, with the removal of *binotata*, there will be no necessity for the use of any name in this connection.

A similar state of affairs exists in connection with Mr. Ball's varieties of *proteus*. He mentions the fact that *saint-cyri* Prov. belongs to his "subspecies I," and yet applies the name *flava* to that subspecies. At the same time it is impossible that Fitch's varietal names should be utterly disregarded. Mr. Ball rearranges the known varieties to conform with his own ideas of their proper limits. This is entirely legitimate. But even in this new arrangement many of the forms must be identical with those studied by Fitch, and in these cases Fitch's names must be used.

Clastoptera osborni G. & B. This species appears in Mr. Ball's arrangement as a "subspecies" of *obtusa*, with *pinu* and *testacea* as varieties. The pronotum in *obtusa* is shining and with about nineteen or twenty distinct, even wrinkles,

which rarely anastomose; in the type of *osborni* the pronotum is opaque, the wrinkles about twenty-eight, much finer and more indistinct than in *obtusa*, and irregular—freely anastomosing. The body is narrower than in *osborni* and the proportions of the clavus are different. The ocelli in *obtusa* are larger and nearer the front edge of vertex. Very light-colored specimens of *obtusa* occur, but these differ from *osborni* in the same manner. Mr. Ball's "Subspecies III" will become subspecies *testacea* (Fh.)

Clastoptera bimaculata n. sp. ♀. Length 3 mm. Of the size and with the ground color of a small pale *C. xanthoccephala*. Pronotum shining, with numerous fine, very faint wrinkles, which are straight and anastomose but little. Scutel coarsely scabrous. Clavus finely, evenly punctured. Inner discoidal, cell much larger than outer. Anterior half of pronotum and a large spot extending across middle of clavus and encroaching on corium, light yellow. Elytral callosities black. Face with a dark transverse shading across middle and about six dark arcs on either side of front above. Mesosternum black; all else below, excepting black tibial spines and two yellow annuli on fore tibæ, same as ground color above.

Described from a single female taken near Vera Cruz, Mexico, by Rev. H. Th. Heyde. This distinctly marked little form presents structural characters which will not admit it to any of our northern species. It may be a near relative of Uhler's Cuban *stolida*.

Calopteryx angustipennis Selys. (note bottom p. 199, ENT. NEWS, Sept., 1899, P. P. Calvert). Two males of this species were sent to Mr. W. F. Kirby, British Museum (Natural History). Mr. Kirby says "We have only a single specimen, with a broken abdomen, and the size is just about the same as your two specimens (Selys, Syn. Calop., gives the abdomen of this specimen as "environ 55 mm." Hagen, Psyche, V, p. 244, gives 56 mm. Ohio and Pennsylvania specimens measure about 46 mm.). It is of a uniform green, whereas your specimens are much bronzed, especially on the vertex and prothorax. Otherwise I see no important differences. I thought I might have found some in the neuration, but there seems nothing tangible, especially as the neuration of your two specimens varies." A female (abdomen not perfect) was sent to Mr. Henshaw, Museum Comparative Zoology. Mr. Henshaw writes: "I have compared your ♀ *Calopteryx angustipennis* with the two in the Hagen collection without finding any specific differences. In breadth of wing your specimen is intermediate between the Berlin specimen and the one from Bee Spring, Ky."—E. B. WILLIAMSON.

Anthocharis Genutia Fabr.

By ELLISON A. SMYTH, JR.

Anthocharis genutia is a regular early Spring butterfly here, near Blacksburg, Va., on the top of the Alleghanies. I find them on the wooded open hillsides bordering ravines, and the cedar-covered, rocky ridges, about a mile east of the College. The eggs are laid on *Dentaria laciniata*, which seems their only food plant in this region. I have followed carefully a female and collected the eggs as they were deposited on the plants. My captures have generally been made on the wing; the flight is weak and uncertain, but when alarmed they manage to give the pursurer a race before capture is possible. They fly only a few feet above the ground, and generally start down hill, over rocks and through tangle when pursued, but seldom taking to the open hill top. *Genutia* is on the wing in mid April and continues emerging until about the 1st of May, by which time well-grown larva can be found upon the tooth-wort (*Dentaria laciniata*).

The fly is very regular in its appearance; April 16th is the earliest, and April 20th the latest date of their first appearance, according to my records for a number of years. Fresh examples continue appearing for a week or more; May 2nd is the last date that I have seen any of the first brood on the wing. The second Spring brood is on the wing as early as May 26th, and seems to fly only about a week; it is not as numerous as the first brood. I have never seen the fly on the wing in the late Summer or Fall, though Dr. Holland speaks of a Fall brood in North Carolina.

The following abridged extracts from my note book for a number of years, will show dates of appearance and relative abundance of flies and eggs of *genutia*:

April 16th. Caught one ♂ *genutia*—first of the season.

April 17th. Caught one ♂ and two ♀ ♀ *genutia*.

April 18th. Saw three male *genutia* and caught two, on top of ravine in open woods, with patches of red cedar here and there; trees not in leaf yet. *Cercis* in bloom, also *Dentaria*, *Hepatica*, *Sanguinaria*, *Trillium* and wild cherry.

April 19th. A rainy day and chilly. Searched all the

patches of *Dentaria* in the neighborhood along the ridge and found six eggs of *genutia*. Came across a male and female *genutia* on a flowering raceme of *Dentaria*. They were resting on the flowers and below the cluster, close to each other, wings closed, fore wings drawn far within and overlapped by hind wings, and antennæ touching the fore costæ. I took them with the cyanide jar.

April 20th. Caught two male *genutia*.

April 22nd. Warm and bright; saw twenty-one and caught nineteen *genutia*, two females and seventeen males. I pursued one female, which flew up hill and took to the open fields; when close to her, she disappeared behind a tuft of small shrubs, nor could I start her again, though I stirred and beat the bushes thoroughly.

I took one male at rest and feeding upon *Dentaria* flowers, the wings were held open, nearly at right angles.

April 26th. Found eleven eggs.

April 27th. Caught two males and two female *genutia*; one of the latter when pursued flew up hill into the open, and was caught after a smart race. The males generally fly down hill when pursued, and I find a cautious approach while they are idly hovering is better than a headlong rush. They must be taken on the wing, however, as they seldom light.

April 28th. Took two female *genutia* and found four eggs.

April 29th. Caught five males and two female *genutia*.

May 1st. Found about sixty eggs of *genutia* and *Dentaria*; in some cases, three eggs on one plant; on a number of plants I found two eggs, though one egg to a plant was the rule. In one case the egg was on a sepal, in another, on the underside of a withered petal which dropped as the plant was touched; in a few cases the eggs was on the flower pedicel, but usually on the rachis at the base of the pedicel.

May 2nd. Took two male *genutia*. These were the last seen of the first brood; there was then a gap, as far as *genutia* was concerned, until —

May 26th. Saw two *genutia*, and caught one, a fresh female.

May 27th. Saw one ♂ *genutia*, in open woods on the opposite side of the College and about three miles from the ridge to

the east where the others were caught. There is a line of hills to the west and about three miles from the college, where they are also found, and this one had probably come from that side.

May 28th. Took a fresh male *genutia* in my garden, feeding on candy tuft blossoms. This is the only one seen by me in cultivated grounds.

June 1st. Saw eight *genutias*, five of which, all freshly emerged males, were caught.

My notes show that the majority of the flies are caught in open woods, along the top of rocky ravines; that occasionally they stray to the open sunny glades at the bottom of the narrow valleys where streams flow, and where there is a sprinkling of flowers. When pursued they sometimes take to the open hill-tops, but usually fly down hill through the rocky woods. I note only one capture in cultivated grounds.

The records of other years are substantially as above, with slight differences in dates.

The egg of *genutia* is about 90 mm. long and 33 broad, orange yellow, and under the glass shows prominent longitudinal ribs, with regular and closely parallel cross ribs. They are often laid on the flower pedicels, occasionally on sepals and petals, but most usually on the rachis at the base of the pedicel. I have never seen one on a leaf. Usually but one egg is found on a plant; often two, and rarely three; in the latter cases I believe these to be laid by different females or at different visits by the same female. Young larvæ in my cages refused to eat either *Capsella* or *Draba*, the only other wild *crucifera* I could at that time find, and I had to transplant *Dentaria*, bringing home in my vasculum the plants with balls of earth around the roots and setting in jars in my breeding cage. *Dentaria* will keep for several weeks if the rhizomes are left attached and placed in jars of water. Eggs laid on the 19th of April (collected by following the gravid female), hatched on the 24th and pupated on May 14th. When about full grown the larvæ are an inch in length, of a clear velvety apple green, slightly golden, with short scattered black spines and a white-yellowish lateral line. They eat only the seed-vessels (siliques)

of their food plant, occasionally biting on down from the top until the pedicel is partly consumed. Sometimes they start in on a seed-pod near the middle and eat it nearly through and then finish one side on down to the stalk. Only once did I find one cutting a leaf. At rest they often assume a sphinx-like attitude. In confinement, when one caterpillar has suspended itself and pupated, another will frequently select the same spot and spin its "button" over that of the first, attaching its "chest loop" to the back of the first pupa. I have observed this also with larvæ of *Papilio cresphontes* in confinement. The prolonged pointed beak of the pupa of *genutia* extends so far beyond the "chest loop" that the chrysalis has an uneasy appearance, as though about to fall out. The peculiar, jointless, double-pointed, yellowish brown pupa has been well described by Mr. Edwards, and after him by Mr. Scudder. In the works of both of these gentlemen the full stages of the larvæ are also given at length.

In May, 1898, I had nine larvæ of *genutia* in one breeding cage: all pupated and have remained apparently lifeless ever since. On March 28, 1900, I found a freshly emerged male hanging in the cage near an empty pupa skin, and two others have since emerged, and at the present writing others show signs of activity. This is quite a long period for so many pupæ to remain over. I have often had one or two out of a brood of *asterias* or *turnus* or *ajax* to remain over two seasons, but never quite so wholesale a delay.

Coleoptera of Central Illinois—No. III.

By A. B. WOLCOTT, Bloomington, Ill.

Since the two lists previously published in the ENT. NEWS, vol. vi, p. 309, vol. vii, p. 234, many species have been added, but it has been deemed advisable to await the result of thorough collecting before publishing another specific list.

Some notes pertaining to the more unusual species may not be amiss in the meantime, and with this fact in view the following are submitted:

Calosoma sayi appears to be a very voracious insect, having frequently taken this at the electric light and in every case found it attacking some soft-bodied caterpillar or cutworm. It is not nearly so common here as *C. scrutator*.

Pterostichus tataricus, a male specimen found here, exceeds 25mm. in length; have found but two, also at lights.

Nothopus zabroides, found but once, exact locality not noted, being a male and dated July 30. Mr. Wickham states that he found several at Independence, Ia., on a sandy stretch overgrown with sand burrs, chiefly in wagon ruts, about the last of August. He found this species at Albuquerque, N. M., also at Colorado Springs, Col., always on sandy stretches.

Brachyacantha 4-punctata has occurred but once, beaten from leaves of soft maple. G. R. Crotch, in his revision, gives Illinois, Massachusetts and Georgia as localities.

Triphyllus humeralis, taken abundantly in fungus on an old log, the specimens differing from the usual form in the almost complete absence of the reddish humeral spots.

Dermestes pulcher was found March 1st under loose bark on dead oak. The beetle had formed a cell of loose particles particles of decayed wood, which were cemented together, and I believe the cell was formed for the purpose of hibernation, the specimen being perfectly mature, and no larval or pupal remains being present. The cell was about 10 mm. in diameter inside, and the walls 3 or 4 mm. in thickness, the trunk forming the bottom and the bark the top, the thickness of cell being but little more than the height of the beetle. I kept the specimen alive several days, offering it dead coccinellids, which were, however, not eaten.

Zenoa picea. Have taken six or seven specimens at various times, usually in July, always under bark of old decayed logs such as one would invariably pass as a fit abode only for *Passalus cornutus*.

Silis percomis occurred quite abundantly in the open fields along a railroad track on bright, calm days.

Tryptherus latipennis was found in numbers beating trees and shrubbery along the Kickapoo River.

Cymatodera bicolor and *C. undulata* are both attracted to light, the former more commonly than the latter.

Priocera castanea, a beautiful and unique species which seems to be quite a rarity. All specimens were taken at Heyworth under bark on just such logs as cited for *Zenoa picea*. The *Priocera* are sluggish and easy to capture; found July 12th and 15th.

Clerus quadriguttatus, two specimens of limbs of fallen walnut, the trunk being badly infested with *Molarchus bimaculatus* and *Cryptorhynchus parochus*, upon the larvæ of which the *Clerus* may possibly feed.

Hydnocera longicollis was taken at light. This species has been bred by C. F. Baker from galls of the hymenopterous *Enura silicis-nodus* walsh, at Fort Collins, Col.

Cupes concolor was taken but once at lamplight indoors.

Aphodius concavus, a single specimen flying in open field in August. Mr. Wickham states that he finds two or three every year at Iowa City, Ia.; it occurs as far south as Albuquerque, N. M., where he found one several years ago. May not this differ in food habits from others of this genus?

Purpuricenus axillaris, one dead example found in hickory stump July 27th, whose legs had been attacked by a fungus growth.

Phyllotreta armoraciæ Koch, a male specimen taken May 5th on blossoms of horseradish growing in the garden. This introduced species has been previously reported from Guttenberg, Ia., Chicago, near the Columbian Exposition, and at Okauchee, Wisconsin.

Mycetochares fraterna was quite common at the lights near Heyworth.

Zonitis bilineata, taken but once on mullein. The species was described by Say from the plains of Missouri, and, according to Riley, *zonitis* is known to develop in the cells of *Osmia* and *Anthidium*, and to have a coarctate larvæ like that of *Sitaris*.

Gnathotrichus materiarius is said to infest pine, but have on two occasions taken it on walnut.

The New Peach Mite.

By W. G. JOHNSON, Maryland Agricultural College.

I was much interested in Mr. Fuller's account (ENT. NEWS Sept. 99) of the new peach mite, or a similar species, in Western Australia. The characteristic "silvering of the leaves," noted by Rolf and Fuller, has not been noticed by me in this State associated with the new mite. On the contrary, trees in the nursery row affected with this mite are easily distinguished by their dense green foliage and the bunching of the twigs. As a rule when the terminal is killed several lateral buds shoot and cause the bunching, while the foilage is very dark green. The amount of the bunching and the color of the foilage depend also upon the season. For instance this summer it is more marked in Maryland than last season, as we have had more rain, thus fostering growth.

The injury still continues about as previously reported, causing dwarfed, crooked, unalable trees. The extent of the damage, however, this year is not so great as last, as the mite did not appear until after the young trees had made from two to three feet growth, while last season the most injury was done when the trees were from ten inches to one foot in height. As a result a much larger proportion of trees this season are salable. The mites are still active and ruining terminals in many places. On the 9th inst. I found eggs of this species behind injured buds in the cavities excavated.

At the meeting of the Association of Economic Entomologists, in Columbus, August 18, 19, 1899, Webster and Mally reported injury to peach trees by the tarnished plant bug, *Lygus pratensis*, and were of the opinion that much of the injury in Ohio nurseries attributed to the mite was caused by this insect. Dr. J. B. Smith writes recently that he has found a species of thrips in the terminal buds of young trees, injuring them, in some New Jersey nurseries.

Any injury to the terminals of young growing stock would naturally cause "dog legged trees." The injury in Maryland is caused by the mite, which continues to be a serious economic species.

Catocala Titania n. sp.

By G. M. DODGE.

Primaries uniform, greenish gray, the green predominating; lines all indistinct, nearly obsolete. The t. a. line narrowly marked with brown, runs obliquely from costa to median vein, there losing itself in the ground color. Two dark dots on the costa mark the median shade, which appears as an undefined cloud, enclosing the reniform and reaching to the t. p. line. This line seems to have two discal teeth, rather widely diverging, the upper about twice as long as the lower. The reniform appears to be open. A toothed subterminal line can be distinguished. The fringes are concolorous with the primaries and faintly maculate. Secondaries bright yellow. The median band is narrow, squarely produced inwardly and then outwardly. Before reaching the inner margin it nearly meets a long black basal ray, and from this point continues as a mere line nearly or quite to inner margin. The marginal band is once excavated internally, abbreviated, and reappears as an oval patch at anal angle. The fringes are broad, yellow at base and tipped with white, and are crossed by fine black lines at ends of veins. Apical patch yellow. Abdo-yellow. Thorax and collar greenish gray. Below all the wings are pale yellow, the marginal bands gray outwardly. The basal ray of secondaries does not appear. Fringes white and distinctly spotted. Expanse 37 mm.; a little less than one and one-half inches.

Taken at Louisiana, Missouri, June, 1899.

This is, I think, our smallest known species. In nearly unmarked primaries remind one of *messalina* Guen. It is, however, allied to *præclara*; the secondaries of the two species being similar. The delicate, mossy green fore wings, contrasting with the golden yellow inferiors, make this insect a truly lovely object. In presenting herewith such a namesake, I believe I am doing no injustice to the "Fairy Queen."

ON page 412 of the March number of ENT. NEWS is a note of the occurrence of *Pyrameis caryæ* "as far east as Denver." It may be interesting to your correspondent and some others of your readers to hear that in Mr. Arthur Gibson's collection is a fine specimen of *caryæ*, which was taken at Toronto, Ont., about 1894, by Mr. C. H. Tyers. A few years previous to this three larvæ were sent to me from Victoria, B. C., which had been found feeding upon hollyhocks, in a garden, all of which produced *P. caryæ*. The species was also taken at Shushwap Lake, B. C., by Mr. James M. Macoun.—JAMES FLETCHER.

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, three 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, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—Ed.

PHILADELPHIA, PA., MAY, 1900.

Now that warm weather is approaching and insects awaken from a Winter's sleep, the newspaper paragrapher groweth restive, and we are beginning to see signs of the revival of last Summer's "hum-bug" stories.

Doubtless when Noah corraled the animals in the ark he picked up some insects with tongs—just as crabs are handled at the sea shore. Since that time it has been known that a few insects bite and that a few sting, but a person who did not know anything about entomological literature would think that all such knowledge was acquired last Summer. This applies particularly to certain Heteroptera, which have been called "kissing bugs." Of course there are no such things as "kissing bugs," the whole of this nonsense having originated with a Washington, D. C., newspaper. Insects attack the most convenient point of the human body, and each individual bitten or stung could logically call the insect hurting his feelings, from the part of his anatomy attacked. The small boy who inadvertently sits on a yellow jacket's nest would have equal rights with the mythical personage bitten on the lip by a bug. We also find that even entomologists use the terms bite and sting interchangeably, whereas insects bite with one end and sting with the other.

Now let us inquire what a kiss is. Webster says "to salute

with the lips, as a mark of affection, reverence, submission or forgiveness." Now, have we bugs, except, perhaps, *Phthirus inguinalis*, that seek a particular part or organ of the body for attack? Is it a fact that *Melanolestes picipes* or *Opsicertus personatus* salute with the lips (and on the lip), as a mark of affection, reverence, submission or forgiveness. Last Summer a gentlemen staying at a sea-shore hotel was bitten on the piazza, but unfortunately the insect escaped and could not be identified. Was this a piazza bug? We feel sure that there is no authentic case of a person having been bitten on the lip by either of the bugs mentioned, and if it were so it would only be by the merest accident that the insect happened to be on the lip. A characteristic of the Washington yarn was that no pain was felt from the bites. If anyone is inquisitive, let him handle one of these bugs, and he wont be apprised of the effect twelve hours later by finding his hand swollen. There never was any such thing as a "kissing bug," and we hope scientific entomologists will not countenance such arrant nonsense; the name should sink into oblivion.

"Residents of Evanston, Ill., are in terror of a Mexican nose bug, which has escaped. It is equipped with strong pincers and a beak. Its mode of procedure is to fasten itself to the nose of a victim and then to insert its beak for a copious draught of blood. It cannot be detached without tearing out a piece of the flesh. Death sometimes follows, as the pincers are poisonous."

The above clipping is from the Philadelphia *Public Ledger* of April 14th, and shows where we are drifting. It is the more dangerous kind of "hum-bug," as it is founded on a slight basis of fact. The story given is probably perverted from statements going the rounds of the newspapers in regard to the Texas or Mexican bed-bug, or, as the article stated, the "blood sucking cone-nose." "It is only a step from the sublime to the ridiculous." We have the "kissing bug," "the Mexican nose-bug," the "strangling bug," and may expect a goodly crop of other hum-bugs during the Summer.

CORRECTION--In the NEWS for February, 1900, page 376, and for March, 1900, page 407, in the fine type under the heading "Entomological Literature, line 7, insert "new" before "North American forms."

Entomological Literature.

COMPILED BY P. P. CALVERT.

Under the above head it is intended to mention papers received at the Academy of Natural Sciences of Philadelphia pertaining to the Entomology of the Americas (North and South). Articles irrelevant to American entomology will not be noted. Contributions to the anatomy, physiology and embryology of insects, however, 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; * denotes that the paper in question contains descriptions of new North American forms. Titles of all articles in foreign languages are translated into English; usually such articles are written in the same language as the title of the journal containing them, but when such articles are in other languages than English, French, German or Italian, this fact is indicated in brackets.

4. The Canadian Entomologist, London, Ontario, April, 1900.—**5.** Psyche, Cambridge, Mass., April, 1900.—**6.** Journal of the New York Entomological Society, March, 1900.—**7.** U. S. Department of Agriculture, Division of Entomology, year book for '98, Washington, '99.—**9.** The Entomologist, London, April, 1900.—**11.** The Annals and Magazine of Natural History, London, March, 1900.—**12.** Comptes Rendus. L'Academie des Sciences, Paris, March 12, 1900.—**13.** Comptes Rendus. Societe de Biologie, Paris, 1900.—**15.** Biologia Centrali-Americana, London, pt. cliii, Feb., 1900.—**21.** The Entomologist's Record, London, March 15, 1900.—**22.** Zoologischer Anzeiger, Leipsic, 1900.—**35.** Annales, Société Entomologique de Belgique, xlv, 2, Brussels, March 9, 1900.—**41.** Entomologische Nachrichten, xxvi, 5, Berlin, March, 1900.—**45.** Deutsche Entomologische Zeitschrift, '99, 2. Berlin and Dresden. Coleopterologisches Heft, Feb., 1900; Lepidopterologisches Heft, Mar. 25, 1900.—**46.** Tijdschrift voor Entomologie, xlii, 4. The Hague, Mar. 9, 1900.—**55.** Le Naturaliste. Paris, 1900.—**75.** 30th Annual Report, Entomological Society of Ontario for 1899, Toronto, 1900.—**79.** La Nature, Paris, 1900.—**82.** Centralblatt für Bakteriologie, Jena, 1900.—**84.** Insekten Börse, Leipsic, 1900.—**89.** Zoologische Jahrbücher, Abtheilung für Systematik, etc., xiii, Jena. Heft 1 Feb. 24, Heft 2 Mar. 22, 1900.—**98.** Travaux de la Société Imperiale des Naturalistes de St. Petersbourg, xxx, '99.—**120.** Consular Reports, U. S. Dept. of State, lxii, Washington, 1900.—**126.** Nuove Relazioni intorno ai Lavori d. R. Stazione di Entomologia Agraria di Firenze, Serie Prima No. 1. Florence, '99.

127. Occasional Memoirs of the Chicago Entomological Society, vol. i, No. 1. Chicago, published by the Society, 1900. Received Mar. 26th. This first number of a new entomological journal is a large octavo, handsomely printed, of 38 pages and one photogravure plate of new Tettigidae from Madagascar. It is edited by J. L. Hancock and O. S. Westcott, and its aim is stated to be "to present, from time to time, new discoveries in Entomology. The contents of each number will consist of original articles bearing on the Morphology, Distribution, Physiology and Etiology, or in brief, the Biology of Insects. In order to maintain a high plane of usefulness, the publication committee reserves the right to use

only such contributions as are of truly scientific value." The contents of the present number are furnished by Messrs. Hancock (on Madagascar Tettigidæ) and Tough, Needham and Snyder as noted below. We wish our new contemporary success and long life!

THE GENERAL SUBJECT.—**Anglas, J.** On the signification of the terms "phagocytosis" and "lyocytosis," **13**, March 3.—**Anon.** The entomological exhibition in Stuttgart, **84**, Apr. 5.—**Bataillon, E.** The problem of metamorphoses, **13**, Mar. 17.—**Bordage, E.** On the spiral growth of appendages in course of regeneration in Arthropods [transl.], **11**.—**Cholodkovsky, N.** On the structure of the insect testis [in Russian, brief abstract in German], **98**, Sept.—**Distant, W. L.** Biological suggestions, mimicry [with note by C. A. Witchell *post*], *The Zoologist*, London, Mar. 15, 1900.—**Fletcher, J.** [Some rare or interesting insects in Canada], **75**—**Harrington, W. H., Evans, J. D., Gibson, A., Moffat, J. A., Bethune, C. J. S., Fyles, T. W.** Notes on insects of the year, figs. [separate papers], **75**.—**Lochhead, W.** Nature-study lessons on the cabbage butterfly (*Pieris rapæ*), figs., **75**.—**Lovell, J. H.** The visitors of the Caprifoliaceæ, *American Naturalist*, Boston, Jan., 1900.—**Lyman, H. H.** The President's annual address, **75**.—**Moffat, J. A.** Remarks upon some Cuban insects, **75**.—**Needham, J. G.** Insect drift on the shore of Lake Michigan, **127**.—**Plateau, F.** A probable case of defensive mimicry, figs., **55**, Mar. 15.—**Rabaud, E.** What is an anomaly? *La Feuille des jeunes Naturalistes*, Paris, April 1, 1900.—**Rudow.** Further contribution to the size-relations of insects of different degrees of latitude, **84**, March 15.—**Saunders, E.** Mimetic resemblances between *Paragus bicolor* Fabr., a Dipteron, and *Prosopis variegata* Fab., an Aculeate Hymenopteron, *Entomologists' Monthly Magazine*, London, April, 1900.—**Schenckling, S.** Caspar Schwenckfeld's Entomology [1603], **84**, Apr. 5.—**Schultz, O.** Two cases of gynandromorphism in *Hadena ochroleuca* Esp., figs., **45**, Lep. Heft.—**Verrall, G. H.** The President's Address [on relative advantages and disadvantages attending the study of Entomology at the beginning and at the end of the 19th century], *Transactions, Entomological Society of London*, '99, pt v, Mar. 10, 1900.—**Verson, E.** On the function of the giant cell in the testicular follicles of insects, *Archives Italiennes de Biologie*, xxxii, 3, Turin, Feb 26, 1900.—**Vignoli, T.** Modern museums of natural history, *Rendiconti, R. Istituto Lombardo di Scienze e Lettere* (2) xxxiii, 5, Milan, 1900.—**Webster, F. M.** One hundred years of American entomology, **75**.

ECONOMIC ENTOMOLOGY.—**Anon.** Phylloxera before the Saxon Landtag, **84**, Mar. 8.—**Bethune, C. J. S.** Fatal bite of an insect: The use of Entomology, **75**.—**Bitting, A. W.** Sheep scab, figs. *Bulletin 80*, Purdue University. Indiana Agric. Exper. Station, La Fayette, Ind., Sept., '99.—**Celli, A.** Second annual report of the Italian Society for the Investigation of Malaria, **82**, Mar. 23.—**Celli, A., and Delpino, G.** Contribution to knowledge of malaria epidemics from

the newest etiological standpoint, **82**, Mar. 10.—**Chittenden, F. H.** Insects injurious to beans and peas, **7**.—**Dearness, J.**, et al., Conference on the San José scale, **75**.—**Del Guercio, D. G.** Some Tortrices of the Italian fauna specially injurious to cultivated plants, figs.; Contributions to the study of the forms and of the biology of *Trama radialis* Kaltenbach with a note on the position of the genus in the family Aphidæ, figs.; Contributions to the study of the forms and of the biology of the Phlæothrips of the olive (*P. oleæ* (Costa) Targioni) and on some soap-mixtures of carbon bisulphide and nicotine as insecticides, figs., **126**.—**Ewert.** Destructive effects of some species of *Tipula* on meadows, Zeitschrift für Pflanzen-Krankheiten, ix, 6, Stuttgart, Feb. 4, 1900.—**Fletcher, J.** Injurious insects in Ontario during 1899, **75**.—**Hanauer, S. W.** San José scale in Germany, **120**, No. 235, April.—**Howard, L. O.** The principal insects affecting the tobacco plant, **7**.—**Hutt, W. N.** Asparagus beetles, figs., **75**.—**Larbaletrier, A.** Chimney soot used as a fertilizer and as an insecticide, **79**, Mar. 10.—**Lochhead, W.** Notes on some insects of coniferous shade trees, figs.; injurious insects of the orchard, garden and farm for the season of 1899, figs., **75**.—**Lugger, O.** Fifth annual report of the Entomologist of the State Experiment Station of the University of Minnesota, to the Governor, for the year 1899. St. Paul, 1899. 248 pp., 249 text figs., 6 pls. "Contains an account of all beetles found in Minnesota, which, in their larval and adult stages, are destructive to our fruit-bearing trees, shrubs and canes, and which frequently cause considerable losses to our fruit growers."—**Marlatt, C. J.** The struggle against injurious insects [translation into French], Revue Scientifique, Paris, Mar. 3, 1900.—**Ridgely, B. H.** Phylloxera in Switzerland, **120**, No. 234, March.—**Smith, J. B.** Report of the Entomological Department of the New Jersey Agricultural College Experiment Station for the year 1899. Camden, N. J., 1900. [Pp. 421-512 of the Annual Report of the Station; figs.]. **Id.** The apple-plant louse, *Aphis mali* Koch., figs., 2 pls. Bulletin 143, New Jersey Agric. Exper. Stations, New Brunswick, N. J., Mar. 8, 1900.—**Targioni Tozzetti, A.** History of the Royal Station of Agrarian Entomology and Chronicle of its operations from 1886 to 1896, **126**.—**Webster, F. M.** The native home of the San José scale, **75**.—**Weed, C. M.** The spiny elm caterpillar [*Vanessa antiopa*], figs., Bulletin 67, New Hampshire College Agric. Exper. Station, Durham, N. H., Oct., '99.—**Wilcox, E. V.** Abstracts of recent literature, Experiment Station Record, xi, 6, 7, Washington, 1900.

ARACHNIDA.—**Banks, N.** Some new North American spiders,* **4**.—**Cambridge, F. O. P.** Arachnida Araneidea, vol. ii, pp. 89-104, pl. vii,* **15**.—**Escher-Kündig, J.** Impressions of an entomological collector in Malta [Parasitism of mites on Diptera], 2 pls., Vierteljahrsschrift der naturforschenden Gesellschaft in Zürich, 1899, 3 and 4, Jan. 15, 1900.—**Fyles, T. W.** Spiders, figs., **75**.—**van Hasselt, A. W. M.** A Lathrodictus nest [in Dutch], 1 pl., **46**.—**Loman, J. C. C.** On the

geographical distribution of the Opilionidæ, 2 pls., **89**, heft 1.—**Lönnberg, E.** On the scorpions obtained during the Swedish expedition to Tierra del Fuego, 1895. Wissenschaftliche Ergebnisse der schwedischen Expedition nach den Magellansländern, 1895-1897, Unter Leitung von Dr. Otto Nordenskjöld Bd. ii, Zoologie, erstes Heft, Stockholm, 1899.—**Id.** Some biological observations on *Galeodes* and *Buthus*, Ofversigt, Kongl. Vetenskaps-Akademiens Förhandlingar, lvi, 10, Stockholm, Dec. 13, '99.—**Pocock, R. I.** Some new or little-known Thelyphonidæ* and Solifugæ, **11**.

PROTOTRACHEATA.—**Bouvier, E. L.** On the origin and the relationships of the Arthropods of the class Onychophora (*Peripatus* and neighboring forms), **12**.

MYRIOPODA.—**Silvestri, F.** See Apterygota.—**Verhoeff, C.** Contributions to knowledge of palæarctic Myriopoda, x. On the comparative morphology, phylogeny and classification of the groups and of the species of the Lysiopetalidæ, figs., 3 pls., **89**, Heft 1.

APTERYGOTA.—**Silvestri, F.** *Projapyx stylifer* O. F. Cook, also in the Argentine Republic; A new genus of Polyxenidæ, **22**, Mar. 5.

ORTHOPTERA.—**Burr, M.** Exotic Forficulas of the Royal Museum of Natural History of Brussels, **35**.—**Hancock, J. L.** A new Tettigian genus and species from South America, figs., **5**.—**Krauss, H. A.** On a peculiar organ in the field grasshopper *Pæcilocerus socotranus* Burr, figs, **22**, Mar. 19.—**Moore, H.** How does the earwig fold its wings? How long does *Blatta orientalis* L., ♀ carry its ootheca before deposition? **21**.—**Perkins, R. C. L.** Orthoptera [and] Neuroptera, Fauna Hawaiiensis, vol. ii, pts. 1 and 2, Cambridge [England], Aug. 19, Sept. 25, '99.—**Scudder, S. H.** The species of the Orthopteran genus *Derotmema*,* Proceedings, American Academy of Arts and Sciences, xxxv, 19 [Boston], Mar., 1900.—**Id.** The species of the Cædipodine genus *Heliasius* Sauss. occurring in the United States,* **5**.—**Id.** Catalogue of the described Orthoptera of the United States and Canada.* See notice, *post*.

NEUROPTERA.—**Perkins, R. C. L.** See Orthoptera.—**Tough, J.** A new species of *Gomphus*,* figs., **127**.—**Wasmann, E.** See Hymenoptera.

HEMIPTERA.—**Bethune, C. J. S.** See Economic Entomology.—**Champion, G. C.** Rhynchota Heteroptera, vol. ii, pl. xviii, **15**.—**Cholodkovsky, N. A.** On the question of the sexual apparatus of *Chermes* [in Russian], **98**, Oct.—**Cockerell, T. D. A.** Table of North American *Kermes*, based on external characters, **5**.—**Del Guercio, D. G.** See Economic Entomology.—**Fowler, W. W.** Rhynchota Homoptera, vol. ii, pt. 1, pp. 257-264 [*Tettigonia**]. **15**.—**Hansen, H. J.** On the morphology and classification of the auchenorrhynchous Homoptera [transl. from Danish orig.], **9**.—**Paulmier, F. C.** The spermatogenesis of *Anasa tristis*, 2 pls., Journal of Morphology, xv, Supplement-Boston, Dec., 1899.—**Smith, J. B.** See Economic Entomology.

COLEOPTERA.—**Acloque, A.** Social inequalities among the scarabæids, figs., **79**, Feb. 24.—**Bartlett-Calvert, G.** Descriptions of the Chilian Scydmanidæ extracted from Dr. L. W. Schaufuss' monograph of the family of 1866, figs. [in Spanish and Latin], *Revista Chilena di Historia Natural*, Valparaiso, Feb., 1900.—**Bordas, L.** Anatomical study of the male generative organs of Coleoptera with compound and fasciculate testes, **12**.—**Candeze, E.** New Elateridæ, seventh part (posthumous work),* **35**.—**Dierckx, F.** Etude Comparée des Glandes Pygidiennes chez les Carabides et les Dytiscides avec quelques remarques sur le classement des Carabides. Extract from "La Cellule," xvi, 1, Liège et Louvain, 1899, pp. 63-176, pls. i-v.—**Kempers, K. J. W.** On the venation of the wings of beetles [in Dutch], 2 pls., **46**.—**Knaus, W.** The Cicindelidæ of Kansas, **4**.—**Lewis, G.** On new species of Histeridæ and notices of others,* **11**.—**Lugger, O.** See Economic Entomology.—**Pic, M.** Diagnoses of American and Asiatic Coleoptera, **55**, Mar. 1.—**Id.** Descriptions of Coleoptera, **55**, Mar. 15.—**Id.** Description of Circum-Mediterranean and exotic Coleoptera, *L'Echange Revue Linneenne*, Lyon, Mar., 1900.—**Roeschke, H.** Carabological notes, vi, **41**.—**Sharp, D.** Coleoptera, vol. ii, pt. 1, pp. 561-584 [*Silvanus*,* *Monotomidæ*,* *Cryptophagidæ**], **15**.—**Wasmann, E.** A new guest of *Eciton carolinense* [*Ecitonusa Foreli**]; a new *Melipona* guest (*Scotocryptus goeldii*) from Para, **45**, Col. Heft.—**Weise, J.** Coccinellidæ from South America; Remarks on the latest works on the Coccinellidæ; Synonymic Remarks, **45**, Col. Heft.

DIPTERA.—**Coquillett, D. W.** Notes and descriptions of Ortalidæ,* **6**.—**Doane, R. W.** Additional notes on Trypetidæ, **6**.—**Escher-Kündig, J.** See Arachnida.—**Imhof, O. E.** Ocelli in the Tipulidæ, **22**, Mar. 5.—**Kellogg, V. L.** A new Blepharocerid,* figs., **5**.—**Mik, J.** Dipterological miscellany, *Wiener Entomologische Zeitschrift*, xix, 2-3, Mar. 10, 1900.—**Supino, F.** Observations on phenomena occurring during the postembryonic development of *Calliphora erythrocephala*, *Rendiconti, R. Accademia dei Lincei*, Rome, March 4, 1900.—**Wandolleck, B.** On the anatomy of the cycloraphic Diptera larvæ; anatomy of the larva of *Platycephala planifrons* F., figs., 2 pls., *Abhandlungen und Berichte d. Königliche zoologischen und Anthropologisch-Ethographischen Museums von Dresden*, 1899, viii, *Festschrift für A. B. Meyer*.—**van der Wulp, F. M.** Diptera, vol. ii, pp. 417-428,* pl. xii, text figs., **15**.

LEPIDOPTERA.—**Butler, A. G.** The genera *Cupido* and *Lycæna*, **9**.—**Druce, H.** Lepidoptera Heterocera, vol. ii, pp. 593-622, **15**.—**Dyar, H. G.** Life history of *Margarodes flegia* Cr., **4**.—**Id.** A new Zygænid from Arizona;* Preliminary notes on the larvæ of the genus *Arctia*, **6**.—**Elwes, H. J.** *Cyaniris pseudargiolus* Boisduval and LeConte, **4**.—**Frohawk, F. W.** Remarkable appearance of *Vanessa io* during snow, **9**.—**Gibson, A.** The electric light as an attraction to moths, **75**.—**Grote, A. R.** Note on *Gortyna erepta*, **4**.—

Id. Diphyletism in the Lepidoptera, **9**.—**Heath, E. F.** Notes on captures of Lepidoptera, **4**.—**Hulst, G. D.** Some new species of Geometridæ,* **4**.—**Jänichen, R.** The slimy dampness of the larval body before going into the pupal condition, **84**, Mar. 8.—**Köhler, F.** The scent-scales of the genus *Lycæna* examined as regards their phylogeny, 3 pls., **89**, Heft 2.—**Lyman, H. H.** Notes on a few butterflies from the Yukon, **4**.—**McIntosh, W.** The butterflies of New Brunswick, The Noctuidæ of New Brunswick, Bulletin Natural History Society of New Brunswick, xviii, St. John, 1899. Rec'd April 9, 1900.—**Mercer, W. F.** The development of the wings in the Lepidoptera, 5 pls., **6**.—**Moffat, J. A.** The wing structure of a butterfly, 1 pl., **75**.—**Schultz, O.** See the General Subject.—**Snyder, A. J.** The Argynnis of North America, **127**—**Soper, G. A.** The capture of butterflies by birds, Nature, London, Mar. 22, 1900.—**Spengel, J. W.** *Papilio asterias* aberr. *Calverleyi*, a supplementary remark, **89**, Heft 2.—**Staudinger, O.** A new *Heliconius* form, **45**, Lep. Heft.—**Strecker, H.** Lepidoptera, Rhopaloceres and Heteroceres, Indigenous and Exotic. Supplement No. 3. Reading, Pa., U. S. A., 1900. Printed for the Author.* Pp. 15-37, containing a list of types in the author's collection.—**Swainson, E. M.** Notes on larvæ of [Jamaican] Lepidoptera, **6**.—**Tutt, J. W.** Migration and dispersal of insects: Lepidoptera, **21**.—**Webster, F. M.** Some notes on the larval habits of the gray hair-streak butterfly *Uranotes melinus* Hubn.), **75**.—**Weed, C. M.** See Economic Entomology.—**Wright, W. G.** *Anthocharis flora*, **4**.

HYMENOPTERA.—**Bethune, C. J. S.** Some observations on a bumble-bees' nest, **75**.—**Chapman, F.** The hexagonal structure formed in cooling beeswax in relation to the cells of bees, **11**.—**Coupin, H.** The Chalcidomas, fig., **79**, Mar. 10.—**Dyar, H. G.** On the larvæ of *Atomacera* and some other sawflies,* **6**.—**Friese, H.** New exotic parasitic bees, **41**—**Hervey, E. W.** Honey Guides, Gardeners' Chronicle, London, Mar. 31, 1900.—**Robertson, C.** Some Illinois bees.* Transactions, Academy of Science of St. Louis, x, 2, Feb. 21, 1900.—**Wasmann, E. J.** The guests of ants and termites [transl.], 1 pl., **21**; See also Coleoptera.

Scudder, S. H. Catalogue of the Described Orthoptera of the United States and Canada. Reprinted from Vol. viii, Proceedings of the Davenport Academy of Natural Sciences. 1900. 101 pp., 3 pls.

A very important and most useful, synonymic and bibliographical catalogue, followed by an appendix of descriptions of eleven new species belonging to genera new to the United States. These are illustrated in the plates. The catalogue "contains the names of 856 species, divided among the families as follows: Forficulidæ, 14; Blattidæ, 32; Mantidæ, 17; Phasmidæ, 11; Acrididæ, 524; Locustidæ, 194; Gryllidæ, 64." The first three and a half pages, from which this extract is taken, contain a

comparison of the Orthopterous faunæ of America North of Mexico and Europe, and in conclusion state that the present work is a companion to the same author's "Guide to the Genera and Classification of the North American Orthoptera found north of Mexico" (Cambridge, E. W. Wheeler, 1897). "By the aid of the two it should now be found possible for everyone having a fair access to the literature to study and arrange his own collections with comparative ease. This has not hitherto been the case, and I trust that these works may stimulate the study of our Orthoptera, which are as yet very imperfectly known."

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

I HAVE taken today (February 28th) a specimen of *Lycæna sonorensis*, which I think is worthy of mention. On the right side the wings are of a first-class ♂, a brighter blue, smaller orange spot, less black markings, and no sign of orange on hind wings. The left side is of an extra fine ♀, each side representing a different sex so perfectly that I cannot tell which is the better half. Under the glass the body looks more like a ♂. I watched the specimen some time before taking it, thinking it was depositing eggs, but think now I was mistaken in that. Expanse one inch.—C. W. HERR, Pasadena, Cal.

I WOULD like to record the capture, by Mr. A. Ronke, in this city, last July, of a beautiful aberration of *Papilio turnus* ♂. This specimen agrees in the main with the one recorded by Dr. James Fletcher, an illustration and description of upper side being given in Can. Ent., Vol. xxi, p. 204, 1889. The specimen is in fresh condition, but the right fore wing is damaged by not having fully expanded along inner margin. In comparison with Dr. Fletcher's record, some minor differences are apparent, as follows: On upper side of fore wings the yellow oblong patch inside end of cell is only about one-half as wide. Five faint, small patches of yellow scales along outer margin, from apex to space between second and third median nervles, is all that represents the distinct marginal rows of spots shown in Dr. Fletcher's illustration. Hind wings, above, lack the black patch inside end of cell, and the only indication of a red cloud or patch, is that of the eye-spot at anal angle, which is distinct and normal. Beneath, the black suffusion covers the same space as on upperside of both fore and hind wings. At outer margin of fore wings an indistinct yellowish suffused band, broadest at apex, replaces the usual spots of *P. turnus* ♂, but on hind wings the normal spots are present, except that the usual patches of reddish orange scales inward from the broad marginal band are placed by the black suffusion. The colors of this insect are bright and contrast strongly, and the markings are symmetrical. I have never seen the same bright velvety black in *P. glaucus* ♀, even in

freshly emerged specimens that I have bred. I think this extreme form of *P. turnus* ♂ should have a distinctive name, and Dr. Fletcher having, so far as I am able to ascertain, first brought it to the notice of the entomological world, I propose that it be known as *Papilio turnus* ab. *fletcheri*. In view of the different opinions of authorities recorded at various times, as to the advisability, or otherwise, of naming varieties and aberrations, it is more than probable that some will not be in accord with me. With due respect for the opinions of all others, I think that all will agree that it will be something new to science when all authorities, professors and others interested in Entomology become of one mind on this subject.—S. T. KEMP, Elizabeth, N. J., March 16, 1900.

Doings of Societies.

A meeting of the Entomological Section of the Academy of Natural Sciences of Philadelphia was held March 22nd, Mr. Philip Laurent, Director, in the chair, twelve persons being present. The Secretary announced the death of Mr. Andrew Bolter, a correspondent of the American Entomological Society, who was elected August 14, 1865, and died March 18. Dr. Calvert said the collection of Odonata gathered in Bolivia by Mr. W. G. Gerhard and purchased from Mr. A. S. Weeks, was particularly welcome and interesting. The genus Thore was well represented in species, many of them being new to the collection. Dr. Skinner exhibited examples of the three-color process of illustrating insects and explained the method of producing them. The same speaker exhibited the coleoptera he had collected in Colorado and Utah. Mr. Liebeck spoke of the species of interest in the collection, specially mentioning *Gaurotes cressoni*, *Corymbites morulus* and *breweri*, *Cincindela longilabris* var. *laurentii*. *Saxinis* (represented by *Saucia*) was said to be subtropical in distribution. Three species of *Acmocodera* were taken, *ornata*, *variegata* and *pulchella*. *Lep-tura aspera* is a Northwestern species. A tenebrionid, *Calocnemis dilaticollis*, was considerably out of its ordinary range, being a California species.

A specimen of *Homoptera edusa* var. *lunata* was exhibited by Mr. Laurent which had been accidentally denuded of most of its scales in a symmetrical manner. Mr. W. R. Reinick was elected a member. DR. HENRY SKINNER, *Recorder*.

A meeting of the American Entomological Society was held Feb. 22d. Dr. P. P. Calvert, president, in the chair, ten persons present. Dr. Calvert called attention to a publication, by Kruger, on "Insect Wanderings Into Germany and America." The preface was read and also extracts from the body of the work. Dr. Skinner exhibited specimens of *Argynnis nitocris cærulescers*, recently described by Dr. Holland. This is a variety of the female, the males being identical. Dr. Smith made an examination of the genitalia of *nitocris* from Arizona, and one of the specimens he had received from Dr. Holland, which came from Mexico, and pronounced them different. Dr. Skinner also stated that he had found considerable variation in the same species of *Nisoniades*. Mr. Laurent said he had found much variation in these characters in *Pamphila peckius*. Mr. Reinick stated that he had found much variation in *Lachnosterna*, and many specimens could not be placed at all. Dr. Calvert stated that organs that are much used are likely to vary, and that in the Odonata these characters were not considered as valuable for specific separations as formerly.

DR. HENRY SKINNER, *Secretary*.

At the March meeting of the Feldman Collecting Social, held at the residence of Mr. H. W. Wenzel, 1523 South Thirteenth street, thirteen members were present.

A letter from E. Lewis Reene, regarding collecting in Central America, was read.

Prof. J. B. Smith gave a *resume* of the genera and species in the former and coming editions of the *Insects of New Jersey*. In the *Hymenoptera* the greatest increase was shown, 645 species having been added to the number in the earlier list.

The value of structural differences in the definition of genera was discussed by Messrs. Smith and H. Wenzel.

Dr. H. Skinner stated that he is opposed to the wholesale making of genera which had been carried on of late. He referred to the careless way in which genera have been described and said a comparison with the fauna of the world should be made before launching forth so-called new genera.

Prof. Smith referred to the difficulties in the way of system-

artists in attempting to make a comparison with exotic forms. Collections of foreign insects are scarce and not very complete in America, which makes comparisons almost impossible. He did not agree with Dr. Skinner that a genus should have a certain number of species, as many valid genera are founded on single species.

Dr. Skinner believed that too many genera lessened the utility of classification, and the nearer we approach to specific names, which is done by division of species into genera, the nearer we come to doing away with the binomial system, as in the future specific names alone would be sufficient.

Mr. Johnson stated that as the work of classification in the various orders is carried on in different lines he did not believe the work done in the Diptera would have any bearing on that in other orders.

Dr. Skinner referred to the use of the costal fold as a generic distinction in the Hesperidæ, and stated that if this characteristic is used he believed all with it should go in one genus and those without it in another, instead of erecting many genera with and without this fold.

Prof. Smith said this characteristic is a sexual one, and that no genus should be founded without knowing the characters of both sexes.

The subject was further discussed by Messrs. Johnson and Smith.

Mr. H. W. Wenzel gave the results of collecting from a dead tree trunk at Merchantville, N. J. Specimens of *Batrisus globosus* and *Ischalia costata*, had been found.

WILLIAM J. FOX, *Secretary.*

OBITUARY.

It is with sorrow and regret that we announce the death of Mrs. Louise Fitz Randolph Gilbert, of Plainfield, N. J. Mrs. Gilbert was interested in the Lepidoptera, and had an excellent collection. Having congenial tastes, Mrs. Gilbert and Mrs. F. O. Herring worked together in natural history. The deceased was an intellectual and charming woman, and her loss is keenly felt by a large circle of friends.

484



ENT. NEWS, Vol. XI.

PROTOPARCE RUSTICA, IMAGO.

Pl. X.



ENT. NEWS, Vol. XI.

PL. XI.

PROTOPARCE RUSTICA, LARVA AND PUPA.



ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XI.

JUNE, 1900.

No. 6.

CONTENTS:

Smyth—Larval Stage of <i>Protoparce rustica</i> Fabr.....	485	Coquillet—New Scenopinidæ.....	500
Snow and Mills—Destructive Diplosis of the Monterey Pine.....	489	Osborn—A Neglected Platymetopius..	501
Oslar—Habits and Capture of <i>Ægiale</i>	495	Skinner & Satterthwait—Tineid Larva	502
Ehrman—Capture of <i>Platynus caudatus</i> Lec., and <i>Platynus larvalis</i> Lec	499	Editorial.....	504
		Entomological Literature.....	505
		Notes and News.....	509
		Doings of Societies.....	512

The Larval Stage of *Protoparce rustica* Fabr.

By ELLISON A. SMYTH, Jr., Blacksburg, Va.

Although *Protoparce rustica* is well known in the moth state, there has been, so far as I can ascertain, no figure or description of the larva, since the fairly good figure and meagre description given by Abbott in Vol. I, pl. 34 of "Abbott & Smith's Lep., Georgia." Prof. John B. Smith, in his monograph of the Sphingidæ, makes a similar statement, adding that Burmeister gives a brief original description from Brazilian specimens. Duncan's description and plate in Naturalists' Library, Vol. III, Clemen's description, and all others that I know of are copied from Abbott & Smith's plate.

This is my apology for presenting, through the kind medium of the "NEWS," the figures of three stages of the larva, with descriptions of the larva and egg. Several times in the farther South I have found the mature larva of *rustica*, but last Summer a number were obtained here, in Montgomery Co., Va., and from these the water-color sketches were made by the author, from which sketches the plate here given has been prepared, showing the larva in three stages, and the pupa. Fig.

A, larva half grown before last moult; fig. B, full grown after last moult; fig. C, full grown, two days before pupation; and fig. D, pupa.

The larva found last Summer, several of which were full grown and a number about half grown, were taken feeding on common sunflower (*Helianthus annuus*). The older specimens ate the coarse leaves down to the leaf stalk, leaving only short portions of the coarser veins. They seemed to feed at all hours of the day, when well grown their weight causes them to hang back downward from the leaves; the approximation of the ends of the oblique lateral stripes on the central dorsal line was very protective in pattern, and the first were found only by their excreta, tho' I must have passed daily so close under them as to almost brush them with my head, the sunflower on which they were feeding being just at the entrance of my garden gate. After careful search I found one egg, which failed to hatch. It was laid on the upper side of a sunflower leaf, was four millemetres in lateral diameter, vertical diameter a little less, being a flattened hemisphere in shape, somewhat rounded underneath, depressed slightly above in centre, and was of a clear transparent yellow-green.

The full grown larva, in the height of its development after last moult, is five and a half inches long when fully extended, depth, dorso-ventrally, five-eighths of an inch. Head rounded; dark clear green; two clear blue stripes from summit of centre of head in front diagonally down to basal outer corners of head. First three segments yellowish green, lighter above, with two dorso-lateral lines composed of whitish yellow tubercles tipped with brown; these extend to beginning of fourth segment. A dorsal greenish blue-white line along centre of first four segments. Remaining segment shade from light pea-green (after quite yellow) down to dark clear blue-green below. From the line marking the beginning of the fourth segment and from a point opposite the stigma of that segment, an oblique yellow-white band, sharply cut, runs to near the top and rear of fourth segment, continued on over fifth segment, and ending in center of top of sixth, where it becomes nearly parallel with its fellow from the other side; after entering fifth segment this

band changes to pinkish white, fainter on top of sixth; on its whole length it is sharply faced above with dark blue-purple (varying in some specimens to blue-brown) which fades into the light white-green of dorsum. The remaining six lateral oblique lines, are, *mutatis mutandis*, similarly arranged, only that the yellow band is brighter and wider and the dark facing above is more distinctly red-purple, than in the first line. The last of these lateral oblique bands, the seventh, ends at the base of the caudal horn, into the under portion of which the yellow band fades. Between and under each of these seven lateral bands, starting at beginning and near top of the last segment which each band covers, is a greenish parallel line converging with its fellow from the other side on the dorsum. Caudal horn clear yellow-green covered with yellow dark-tipped granulations. Anal lap edged with clear yellow-green. The oval stigmata whitish buff, thinly edged with black, with black central line. Rim of prolegs yellow, hooks black. True legs buff, black jointed. A central greenish blue interrupted dorsal line for whole length of body.

The half-grown larvæ are of a clearer yellow above the *rose*-colored oblique lateral bands and abruptly blue-green below the whitish yellow underfacing of same. These lines appear distinctly elevated, like ridges, up to the last moult.

Several days before pupation, the blue-green of the body becomes a yellow-green and all the colors and markings less distinct, the purple of the lateral stripes becoming a dirty green-blue, and fading into colors above it, not sharply cut as in earlier stage, and the larva becomes much stouter and somewhat shorter.

My larvæ descended to the bottom of an 8 inch layer of sifted earth in the cage, each making a compact broadly elliptical cell, about four by two and one-half inches; the earth in the cell-wall being so firmly pressed together that the cell retained nearly its whole shape when the earth was turned out of the jars.

The pupæ that I obtained varied from two and 7-10 inches to three inches in length, and from 7-10 to $\frac{3}{4}$ inches in greatest diameter (at far end of wing). The "tongue case" is very

stout, with a pear-shaped swelling at the free end, which presses against the median ventral line about $\frac{5}{8}$ of an inch from anterior extremity of pupæ, being much shorter and stouter actually and in proportion to that of either *carolina* or *celeus*. Along its sides, the "tongue case" is coarsely and deeply marked with alternate, sharp file-like elevations and depressions. The color is shining black-brown.

Abbott gives the food plants as chionanthus, privet, and lilac, all of the olive family. I have twice found the full-grown larva on heliotrope, one of the Borraginaceæ, and have good evidence that they feed also on the crape myrtle (*Lagerstræmia*, one of the Lythraceæ), and, as above stated, have taken in numbers, from the egg up to full-grown larva, on *Helianthus annuus*, thus giving it a wide range of food plants.

The moth is not uncommon here, and is often taken at dusk on honeysuckle; though it is by no means abundant. It comes also to light, and I have taken fine specimens in my hall-way, attracted by the electric light. In South Carolina I have taken it abundantly on blossoms of "jimson weed" (*Datura stramonium*). On the wing, it is readily distinguishable from *P. celeus* by its larger size and more stately movements, lacking the quick, restless, darting flight of *celeus*; while the readily discernible white spaces and maculations as well as its larger size, distinguished it easily from the more uniformly colored and smaller *P. carolina*, which resembles it more in manner of flight.

A \$40-DOLLAR BUTTERFLY.—Entomologists went to Convent Garden from all parts of the country, says the *London Globe*, when the celebrated collection of butterflies and moths made by the late Samuel Stevens, F. L. S., F. E. S., was sold by his nephew, the well-known auctioneer. Mr. Stevens had continued his work of collecting, breeding and buying for sixty years, and many specimens are already historic, having come from other noted collections. The prices established a record. The "large copper" butterfly, long since become extinct, always attracts bidders, but £8, given for an exceptionally fine male, creates a record, and even for one of the females £6 5s. was bid. A specimen of the common "painted lady" also fetched £8; while another of the same species cost its buyer £6 10s. A handsome "red admiral," which is perhaps nearly as often seen as the "small tortoiseshell," was sold for £5 10s., while a "peacock" with twenty eyes on its wings went for £5.

The Destructive *Diplosis* of the Monterey Pine.

By W. A. SNOW and HELEN MILLS,

Stanford University, California.

PREFATORY NOTE—While the late W. A. SNOW was engaged as assistant and instructor in entomology at Stanford University, he discovered and began the careful study of a new species of *Diplosis* which was vigorously attacking the Monterey Pines growing on the campus and in the neighborhood of the University. The Monterey Pine (*Pinus radiata* Don. and the Monterey Cypress (*Cupressus macrocarpa* Hartw.) are the conifers most abundantly used as ornamental trees in the grounds and parks of the residents of the San Francisco peninsula. The new *Diplosis* is the most formidable pest which the Monterey Pine has to struggle against, and it is still a question, despite the beneficial activity of certain parasites of the midge, whether the pest may not succeed in killing many of the splendid trees of the region. The pest is extremely abundant, thousands of trees being attacked, and most of the infested trees harboring myriads of the insects.

Mr. Snow began his observations in November, 1897, and continued them until March, 1899. Since that time Miss Helen Mills, student in the department, has continued the study of the pest. Mr. Snow's long-continued careful observation and study of the insect, resulted in the nearly complete working out of its extremely interesting life history. With characteristic thoroughness Mr. Snow extended his work to include a valuable compilation of facts regarding the already known pine midges of this country and Europe. He also interested a botanist, Mr. Cannon, assistant in the University, in the character of the deformation of the plant tissue, and a careful study was made by Mr. Cannon of the pathologic phenomena in the growing buds and needles due to the presence of the irritating and food taking pest (an account published elsewhere). Mr. Snow's sad death (by drowning in San Francisco Bay, Oct. 10, 1899) leaves unpublished any reference at all to this last undertaking in his career as a student of entomology. In fairness to his memory and in fair-

ness to entomologists there should be published some adequate account of this last investigation. But the editing of the mass of notes at hand is a task I am, at present, unable to undertake. The best I can do is to offer this briefest abstract of the life history of the new pest together with a description of it, revised by Dr. S. W. Williston. In making this abstract Miss Mill's notes have been also referred to, and the drawings were made by her.—VERNON L. KELLOGG.

In the fall of 1896 certain of the Monterey Pines (*Pinus radiata* Don.) on the campus at Stanford were noticed to have their needles shortened and swollen at the base. The injury appeared to be such as might have come about through a sudden retarding of the growth of the needles. In the Autumn of 1897 the injury to the pines was widespread and very noticeable. Examination of the stunted and swollen needles revealed Cecidomid larvæ lying at the bases of these needles, and the injury was definitely traced to them. The first adults were obtained in the laboratory Jan. 12, 1898, from affected branches brought to the laboratory a month before. The adults were found to be an undescribed species of *Diplosis* related to the already known half dozen species of *Diplosis* known to attack the pine trees of Europe and America.

The eggs (fig. 1, e) are smooth and elliptical, and light yellow in color changing to orange-yellow as the embryo develops within. The female moves about over a terminal bud attempting at intervals to thrust her long flexible ovipositor in between the scales. When successful she deposits from 2 to 24 eggs in mass. The ovipositor is sometimes bent like a bow by the efforts of the insect to force apart the scales of the buds. Not infrequently females would be found caught and held by the pressure of the scales on the ovipositor. The egg stage is about two weeks. The female dies soon after oviposition.

The larvæ (fig. 1, l) immediately after issuing from the eggs make their way into the basal part of the bud and remain in there. The body is broadly elliptical and reddish yellow in color and when full grown is from 1 mm. to 1.5 mm. long. The breastbone (fig. 1, b, b), well chitinized in the older

stages, is not visible in newly-hatched specimens. None of the abdominal segments bear nipple-like spiracles. The skin is covered with fine spinules. When ready to pupate the larva usually spins a thin oval cocoon. Sometimes it does not. The larvæ pupate within the deformed buds. The duration of the larval stage is ten or eleven months.

The pupæ (fig. 1, p) are of the same general color as the larvæ, the thoracic region of the body being darker. The body is covered with cuticular spinules as in the larva. The breathing-tubes are non-segmented and are slightly folded over at the top. The duration of the pupal stage is three or four weeks.

Adult.

***Diplosis pini-radiatæ* n. sp.**

Male (fig. 2).—Antennæ slender, a little shorter than the body, yellow or brownish yellow, the basal and terminal joint darker; basal joint large; second joint smaller, more globular, sessile; remainder of antennæ with twenty-four spheroidal dilatations, the terminal one more conical, and with a suture separating the minute terminal joint; petioles slender, about as long as the dilatations proximally, proportionally a little longer distally; the swellings decrease in size uniformly and gently, each with a verticil of black hair and a circle of shorter, yellowish looped filaments more distally. Head deep brown or black. Mesonotum dark reddish brown or blackish, somewhat whitish pruinose, and with three rows of dusky hairs. Pleuræ above, and the scutellum reddish. Abdomen obscurely reddish brown or black, with rather long, blackish hairs. Legs yellow or yellowish, with close-lying, for the most part, black hairs, and longer, chiefly white hairs, especially upon the tibiæ and tarsi; tip of tibiæ and tarsi usually brownish. Wings greyish hyaline, with blackish hairs along the costa, and a fringe of longer dark hairs along the posterior margin. The first vein terminates near the middle, the third at the extreme tip of the wing, the latter strongly convex; origin of third vein indistinct; wings rather slender.

Female (fig. 3).—Basal joints of antennæ as in the male, the twelve dilatations are more elongate cylindrical, the petioles much shorter; the dilatations are more slender distally and show here slight constrictions. Mesonotum usually less deeply colored, the upper part of the pleuræ and the scutellum yellow or yellowish. Abdomen red, the basal segments above obscurely marked with brown or black hair, loose, abundant and long; ovipositor usually protruding about as far as the length of the body.

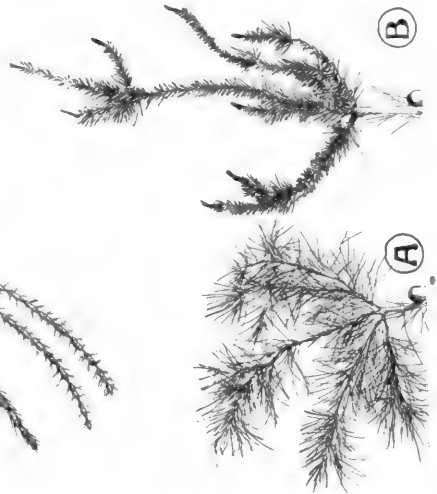
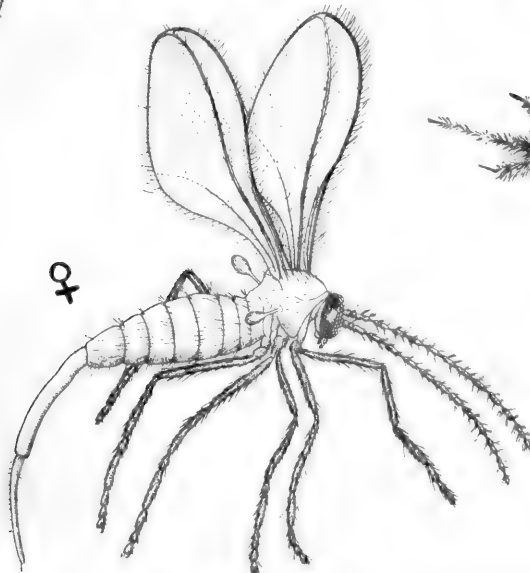
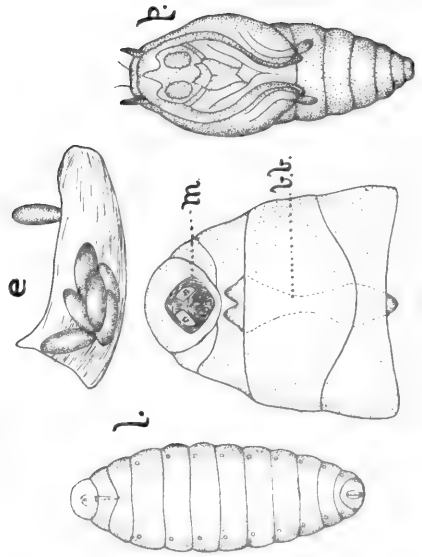
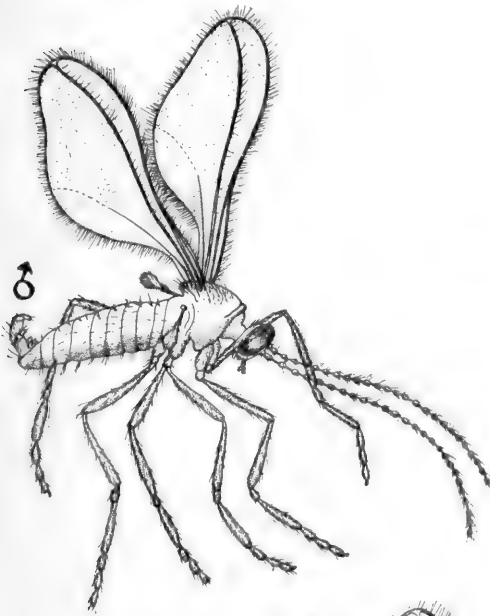
Five males and five females, No. 232, Leland Stanford University, June, 1899.

There seems to be but one generation a year. Adults begin to issue about the middle of January and continue to appear until the first of March. Egg-laying proceeds all through this time, and old larvæ and pupæ may also be found all through this period (no larvæ towards the end of the period). The eggs hatch in about two weeks and these larvæ lie in the bases of the fascicles of needles all through the Summer and Autumn and early Winter not pupating until December. The adults issue in a few weeks and the life cycle is rebegun.

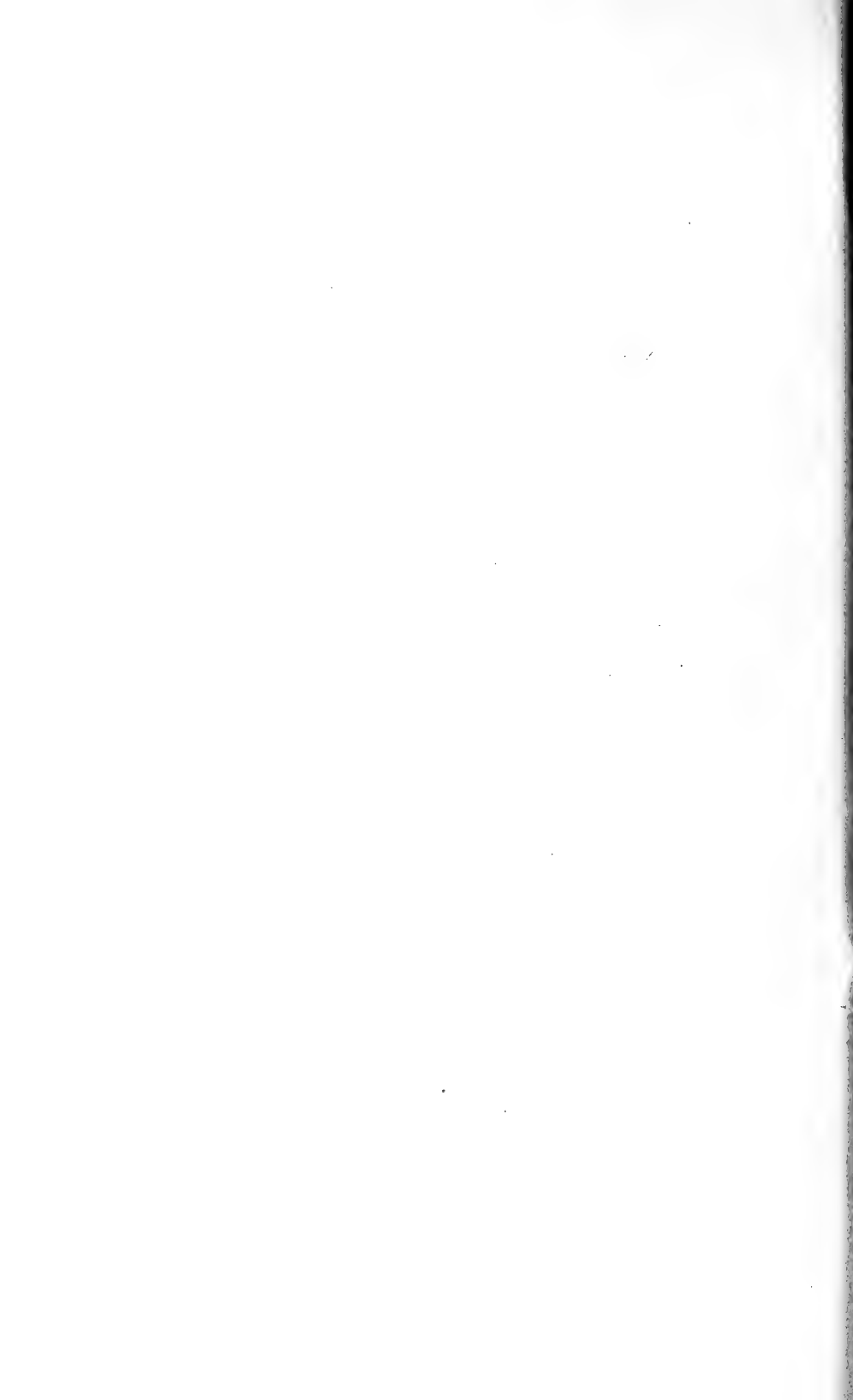
The character and extent of the injury caused by the insect make of it a serious pest. The number of larvæ lying in the bases of the fascicles is sufficient to completely stunt and deform all the needles of the fascicle. On a single tree three-fourths of the fascicles may be thus injured. This practical denudation of the tree may be repeated several times. It is simply a matter of how many such denudations the tree can withstand. Plate XII, made from a photograph of an unattacked branch and a seriously attacked branch, shows better than words can explain the effective character of the pest's injuries.

Fortunately several natural enemies of the pest are at work, and in many places have done much to dissipate the threatened danger. *Polygonotus diplosidis*, previously found as a parasite of *Diplosis pini-inopis* O. S. (scrub-pine in New Jersey), and a mite very like *Pediculoides ventricosus* (referred to by Marlatt as an efficient agent in the destruction of the eggs of *Cicada*), are both doing good work. The mite feeds on eggs, larvæ and pupæ indiscriminately. It attaches itself by its mouth-parts and forelegs to a larva and clings to it until the death of the larva. The usual predaceous insects, such as the larvæ of *Hemerobius* and *Chrysopa*, the larvæ and adults of several Coccinellids and the nymphs of certain Reduviidæ are all to be found on the pines and probably help in fighting the pest. The Ruby-crowned Kinglet has been observed to eat many of the midges. The birds pick off the females while they are on the buds ovipositing.

The pest is not confined to the Monterey Pine (*Pinus radiata*), but has been taken from the following species of *Pinus*: *tuber-*



D, FLORIS PINI RADIATÆ. E, EGGS. L, LARVA. BB, BREST-BONE. M, LARVAL MOUTH-PARTS.
 P, PUPA. A, MONTEREY PINE, NORMAL. B, MONTEREY PINE, INJURED.



culata, *muricata*, *sabiniana*, *coulteri* and *sylvestris*. *Pinus sylvestris* is an European species and is attacked in Europe by three species of *Diplosis*, viz., *D. Pini*, *brachyntera* and *signata*. But all of these pines are attacked but slightly compared with *radiata*. As regards the geographical distribution of the pest, it has been found abundantly at Stanford University, at Menlo Park (a village only two miles away), and in small numbers at a number of other places on the San Francisco peninsula and in the Santa Clara valley. But its center of distribution is evidently the extensive groves of Monterey Pine on the Stanford ranch (University campus) and neighboring extensive grounds of the residents of Menlo Park.

In the Golden Gate Park at San Francisco apparently the same species of *Diplosis* was found in February and March, 1897. Many specimens of eggs, larvæ, pupæ and adults were obtained and examined but, strangely, there was no shortening or swelling of the needles of the attacked fascicles, although the needles turned yellow. The larvæ were situated always near the base of the needles. The characteristic deformation of the needles on the affected trees at Stanford was always present whatever the species of pine. But here in Golden Gate Park, 35 miles distant from Stanford, the Monterey Pines, although attacked by apparently the same pest, do not show the deformation. [One of Mr. Snow's notes touching the identity of the flies from the two places is: "March 2; Golden Gate Park flies issuing in laboratory; they look for all the world like our *Diplosis* here. Don't understand this.]

There are several species of *Diplosis* which attack the needles of various species of pine in this country and Europe. These are *Diplosis brachyntera*, *D. signata* and *D. pini* on the European *Pinus sylvestris*; *D. pini-inopis* on the Jersey or scrub pine, *Pinus inopis*; *D. brachynteroides*, also on *P. inopis*, and *D. pini-rigida* on the American pitch pine, *P. rigida*.

Diplosis pini differs from our Monterey Pine species in that the larva bears upon its back two rows of setiferous fleshy processes or caruncles. They do not cause gall-like swellings at the bases of the needles. The joints of the male antennæ are double and the ovipositor of the female is short. This Euro-

pean species and another, *Diplosis pini-maritimæ*, and the American *Diplosis pini-inopis* Osten Sacken (which that author says may be the same as *D. pini*), pupate out upon the needles in a resinous cocoon. The Monterey Pine fly never pupates out upon the needles and its cocoon is made of the fibres and is spun by the insect.

Diplosis brachyntera of Europe has upon the back of its larva "Dornwarzchen" or thorn papillæ. The larva live between the needles which are stunted but not swollen at their base, and pupation takes place in the ground. In these points it differs from the present insect.

Diplosis brachynteroides O. S. is described only from the deformations produced by the larvæ which, though on the eastern scrub pine, are similar to those on the Monterey Pine, except that the needles strongly diverge, which they are not caused to do in the present case. To his rather inadequate description Osten Sacken adds the supposition that the larvæ pupate in the ground, since he saw some individuals caught in a spiders' web apparently as they journeyed toward the ground.

The European *Diplosis signata* is distinctly different from our species, and it will be sufficient to say that the antennæ of the male are composed of alternate single and double joints.

Dr. Packard's description of his *Diplosi pini-rigidæ* from the pitch pine of the Northeastern States is drawn very vaguely, but it undoubtedly strongly resembles the present species. The chief differences are apparently as follows: In Packard's species the larvæ lie between the two inner needles of the whirl while the third or outer needle is frequently not swollen. The larvæ ascend to the terminal buds before pupation and there construct a cocoon of the pitch which exudes from these buds. "His statement that there are two broods may be disputed, I believe. In his description he has mistaken the origin of the third vein for the cross vein."—(SNOW.)

MR. H. K. BURRISON will go to the Yellowstone Park this Summer to collect. He states that he was compelled to pay duty recently on some butterflies and the New York Custom House classified them as "a non-enumerated manufactured article" and asked twenty per cent duty but finally accepted ten per cent.

Some Notes on the Habits and Capture of *Aegiale streckeri* Skinner.*

By ERNEST J. OSLAR, Denver, Colorado.

Owing to very little being known of the habits of this interesting and beautiful species of *Aegiale* and of its rarity in collections, I thought it would be of interest to readers of ENTOMOLOGICAL NEWS to give a few facts in regard to its characteristics and environments, which the writer had the pleasure of observing in the past season during a three months collecting tour in the southwest corner of Colorado.

I found it extremely difficult of approach and capture, in fact, it was without exception the most difficult of all diurnals that it has ever been my lot to tackle. I found it an utter impossibility to capture it in the hot mid-day sunshine, owing to its continuous very swift flight, circling around a large area, which it seemed to delight in keeping up for hours, pausing for a few seconds once in a great while to rest on a rock, and before one could get within striking distance it would shoot up again like a sky-rocket, emitting a peculiar snapping-like sound similar to a large species of black underwing grasshopper that is found throughout the the Rocky Mountain region. Another difficulty attending its capture was the rough nature of the locality in which it made its haunts, being on the slope of a steep foothill, covered with small rocks and boulders, cacti, yuccæ and sage brush, that led up to the top of what is called the Florida Mesa, situated twenty miles east of Durango, Colorado. By exercising a little patience and keeping myself out of sight in the shade of a large sage brush, from which I could observe their movements, I was rewarded by the discovery of two important facts, which materially aided me in making their capture. The first thing that attracted my attention was, that only the males were on the wing during the hot sunshine, and the females remained concealed in the shade, settled with closed wings on the main stem of the sage brush during the day, and only flew when disturbed, and then only to a short distance to alight on another sage brush.

* See ENT. NEWS, Vol. xi, pl. 2, Fig. 27.

To capture them in that position was an impossibility, for not only did you run the risk of ripping your net all to pieces, but loosing your quarry in the bargain.

I had been told by a celebrated collector, who has made annual trips to this State for a number of years, that he had once taken *A. yuccæ*, var. *coloradensis*, without any trouble, by getting up in the early morning before sunrise, when he found them clinging to the stem of the yuccæ asleep; all he had to do was to pick them off with his finger and thumb and put them in his killing bottle.

Profiting by such information, I undertook to try it myself, so taking blankets and supplies along I camped on the spot for three days and nights, where I had previously located *streckeri*. I may add, right here, the scheme did not work at all in this instance, but I was rewarded for my trouble in another unexpected way.

What I did discover, however, proved conclusively that *A. streckeri* in habits is as much a moth as a butterfly.

While sitting quietly by my camp-fire waiting for water to boil to make coffee, the sun having not long gone over the La Plata range in the dim distance, my attention was drawn by a loud humming sound that seemed to come from all around me. Upon investigation, to my great astonishment, I saw numbers of ♀ *streckeri* flitting in and out and among the sage brush and yuccæ, each bent upon seeking a suitable yuccæ plant to deposit her eggs on. Even at this late hour of the day I found them very alert and wary, and they seemed readily able to detect my presence and avoid me whenever I attempted a move to make a capture.

I found the most successful *modus operandi* to adopt to effect their capture was to follow one cautiously as it flitted from one yuccæ plant to another and get up to it as near as possible so as to be within striking distance the moment it paused on the spine of a yuccæ to deposit its egg. During the process of egg laying its wings still continued to be in motion similar to a hawk moth, and it took but a few seconds to deposit its single egg. It would then detach itself suddenly from the yuccæ with a snapping sound and continue its search for another suitable

yuccæ and which it seemed to be very particular and fastidious in choosing. I noticed it always selected a small and young plant that grew apart by itself from the larger groups or clumps of yuccæ.

I may add, I continued to hunt and capture specimens until it became too dark to see them, but long after I had returned to camp I could hear them humming around me, proving, beyond doubt, they are as much nocturnal as diurnal in their habits.

I first discovered *streckeri* on May 27, 1899, but it was evident they had been out some time prior to that date, the first lot taken being all more or less battered and worn, but the second time I visited the spot, which was a week later, a fresh crop of perfect specimens was then just out. I continued the visits weekly till first week in July; by that time all had disappeared. I found it difficult to secure perfect specimens after netting them, as once in the net they made a tremendous fight for liberty. In bottling them in the ordinary way while in the net, the method applied to all the Hesperidæ, I found useless, as by the time the cyanide had taken effect the specimen was worthless. After experimenting with a number of things for quick killing, I found the most effectual and the method giving the best results, was to have in readiness a small glass syringe charged with sulphuric ether. By cornering the specimen as quickly as possible the syringe could be used, which instantly gave the specimen its quietus; a strongly charged cyanide bottle did the rest.

It was by accident I came across *A. streckeri*, the first specimen I secured had been run over by a buggy and was a ♀, it had evidently strayed away from its haunts, for it was five miles away from where I afterwards found them in quantities, and only at the one spot. After sending it on to Dr. Skinner for identification, he wrote me, "I had struck a mighty good thing, and that very few collectors had *streckeri* in their collections, and only one ♀ was in any collection."

Such a statement practically proves that *A. streckeri* is nocturnal, at least the females are. I never took or saw a male in the evening, and no one I presume ever thought of looking for the species in the evening, hence this accounts for the fact that

only one female had been taken. In my case, the greater number of specimens I took and saw were females. This is another illustration and proof that clinches the saying, "that nothing is rare when you know when and where to find it."

The species of the genus *Ægiale* are, without doubt, extremely local, which certainly cannot be accounted for by lack of food plant, as the soap weed or yuccæ is to be seen in quantities throughout this State, yet it is only in widely separated spots that the genus *Ægiale* occurs.



WE have recently had a pleasant visit from Mr. August Busch of The U. S. Dept. Agric. who was studying specimens in the Coll. of the American Entomological Society.

PROF. W. G. JOHNSON, of College Park, Md., states that his article in the May NEWS on certain mites did not appear in print coincidentally with the mites. The mites are expected to reappear about June 9, 1900. Those wishing specimens of the mites will please take notice.

BUGS CALLED OUT FIREMEN.—A cloud of bugs was responsible for the calling out of the Trenton, N. J., Fire Department last night (May 1st). The bugs were gathered around the steeple of the Fourth Presbyterian Church in such numbers and at such a distance from the ground that a passer-by mistook them for smoke and sent in an alarm. When the Fire Department arrived on the scene, Chief Allen, with the aid of a field glass, discovered the mistake, and the fire companies returned to their houses.—*Philadelphia Record*, May 3, 1900.

IDENTITY OF *Hemaris tenuis* and *Hemaris diffinis*. As soon as my *Hemaris tenuis* emerge, I shall be ready with my notes on the identity of *tenuis* and *diffinis*. I am sure that *tenuis*, *diffinis*, *uniformis*, *thysbe*, are the same, in other words, that the Winter pupæ, from mid-Summer larvæ give the even-margined, whitish yellow *tenuis* and eggs of *tenuis*, give the late Spring and early Summer larvæ, which produce in July, *diffinis* in all gradations from whitish, even-margined *tenuis* to reddish yellow serrate *diffinis*, and also Strecker's forms, *æthra*. These are my observations for three years, which I confidently expect to see verified finally by my concluding test of last Summer's brood from eggs of typical *diffinis* in numbers (seventy odd), which should produce *tenuis* this Spring. This last test is simply to verify and check the same observations of two former seasons, only it has been made with scrupulous care. The Spring and late Summer larvæ show no differences in any particular, and the food plant is, of course, the same. *Triosteum perfoliatum*, one of the *Caprifoliaceæ*.—ELLISON A. SMYTH, JR., Blacksburg, Va.

The Capture of *Platynus caudatus* Lec., and *Platynus larvalis* Lec., in Western Pennsylvania.

By GEORGE A. EHRMAN, Pittsburg, Pa.

Dr. LeConte, in his Descriptions of New Species of North American Coleoptera, Pt. 1, published by the Smithsonian Institute, 1866, on page 7, describes *Platynus caudatus*, and he gives Western States as the habitat of this odd and rare beetle.

Now what I would understand by this record would be that large expanse west of the Mississippi River. Or, if the student of geography wishes to restrict the area, those States west of the Rocky Mountains or great divide; but, be it what it will, I will leave it for the reader to decide, and if Dr. Leconte is correct in the habitat of this species it certainly has a wide area of distribution.

In referring to the late Dr. John Hamilton's catalogue of the Coleoptera of Southwestern Pennsylvania, page 350, the Doctor says: "One example, Jeannette, Pa.;" and again on page 379 of the same work he gives it in these words: "One fine example of this rare species, etc., taken by Mr. H. Klages near Pittsburg." In these two passages the Doctor is mistaken, as I captured this specimen in one of my favorite collecting grounds—Bird's Hollow, near Pittsburg. In referring to my note book of 1891 I find the following entry:

"*Platynus* sp? Taken in a moist stony depression on the east side of Bird's Hollow. The specimen seems to be immature, as it is very pale in color and the least touch dents the elytra. The species is very active, more so than any other species that I have met with in life."

Furthermore, I brought the specimen home alive and kept it in captivity for four days, thinking that by age it would become darker and harder. In this supposition I was mistaken. I then put it in my cyanide jar, after which it was properly mounted with locality and date affixed. Not long after, I had an occasion to go to Allegheny and called to see Dr. Hamilton. I brought my doubtful *Platynus* with me and asked the Doctor for an explanation about the peculiarity of my odd *Platynus*. In looking it up the Doctor found that the species was lack-

ing in his collection. I then donated this rare insect to the Doctor's collection, as I knew he was working on a catalogue of the Coleoptera of Southwestern Pennsylvania. Before I left the Doctor's home that evening I knew the name of the odd as well as rare *Platynus* and promised the gentleman that I would keep a look out for more. So far I have found no other, nor do I know of any other person taking it here, and it still remains the only specimen in the Hamilton collection, which is now in the Carnegie Museum.

Platynus larvalis Leconte. During my collecting in Brown's wood on July 31, 1899, I captured a fine specimen of this strange as well as rare beetle, and as far as the writer's knowledge is concerned it is the first specimen taken in this part of Pennsylvania. This species in life is far less active than *P. caudatus*, and though bearing a superficial resemblance to it, is entirely distinct. The specimen was found in a dryer situation where the soil was composed of dry leaves and leaf mould.

New Scenopinidae from the United States.

By D. W. COQUILLET, Washington, D. C.

Our three genera separate as follows :

1. First posterior cell closed and petiolate, second submarginal cell at least three times as long as distance between apices of third vein and of its anterior branch 2
 First posterior cell open, second submarginal cell less than twice as long as distance, etc. *Scenopinus* Latr.
2. Body short and robust, bearing numerous scales (type *Scenopinus bulbosus* O. S.) *Metatrichia* n. gen.
 Body elongate and slender, destitute of scales *Pseudatrichia* O. S.

Pseudatrichia unicolor n. sp. Black ; apices of knobs of halteres white, legs yellow ; apices of tarsi, of hind femora and both ends of hind tibiae brownish ; front polished ; mesonotum opaque, with rather coarse reticulations ; abdomen opaque, the first, fifth and following segments polished ; wings hyaline ; veins brown, last two sections of third vein subequal in length ; costal and subcostal cells brown, an elongate yellowish spot between apices of auxiliary and of first veins ; length 6 mm.

Las Vegas, N. Mex. (T. D. A. Cockerell, July 19), and Colorado. Two male specimens. Type No. 4711, U. S. National Museum.

Pseudotrichia griseola n. sp. Head yellow, opaque, gray, pruinose; upper part of occiput and the antennæ black; proboscis and palpi yellow; thorax black, opaque, densely gray pruinose; the humeri and spots on the pleura yellow; scutellum yellow, marked with a median brown vitta; abdomen yellowish, subopaque; knobs of halteres and the legs yellowish; wings hyaline; veins yellow; last section of third vein less than one-half as long as the preceding section; length 3 to 4 mm.

Mesilla, N. Mex. (T. D. A. Cockerell, May 25, 1897), and Los Angeles Co., Cal. A pair from the latter locality, captured by the writer, were resting on the bare ground like a *Thereva*. Two males and one female. Type No. 4712, U. S. National Museum.

A Neglected Platymetopius.

By HERBERT OSBORN, Ohio State Univer., Columbus, O.

Platymetopius hyalinus n. sp.

Elytra hyaline with dark points and fuscous bands arranged, one sub-basal, one median and one sub-apical. Face bright sulphur yellow, vertex, pronotum, and scutellum yellow with some infuscation or greenish washes. Length ♀ 5.5 mm.; ♂ 4.25 mm.

Vertex acute, nearly twice as long as width at base, slightly less acute and produced in male, anteriorly depressed and with a conspicuous median impressed line running from base to tip. Front narrow, clypeus widening to apex, loræ almost a half-circle, genæ evenly rounded. Prothorax of usual form, sides short, posterior edge very slightly emarginate at center. Elytra hyaline, without veinlets or narrow lines, the nerves conspicuous, but one transverse vein between second and third sector.

Color: vertex yellow, more or less infuscated, the females showing a yellow wedge anteriorly, the males with deeper infuscation but having a marginal and anterior median stripe lighter. Face clear yellow with a marginal fuscous line just beneath margin of vertex, the margin of cheeks becoming somewhat greenish. Prothorax greenish yellow with slight trace of fuscous anteriorly in ♀ and faint milky irrorations in ♂. Elytral nervures fulvous in ♀, paler in ♂. Three fairly distinct transverse bands of fuscous spots, one, midway on clavus and including first transverse vein consists of transverse fuscous spots behind which to tip of cell is a smoky patch. The middle band includes a distinct black point at tip of clavus and on the nodal vein. The subapical band includes the ante-apical transverse veins, the inner and outer of which are black, the fuscous points appearing in outer and middle anteapical cells in proximal part of three apical cells, those in the outer and middle apical cells forming a broken circle. Pectus black with yellow borders on coxal and pleural pieces. Abdomen above black on disk in female, with yellow border and

apex, in male black with marginal yellow spots. Beneath light yellow in female, black in male. Legs yellow with black points at base of spines.

Genitalia: Female, last ventral segment very much produced, reaching nearly half the length of the pygofer, tapering to a rounded point. Pygofer broad with a black spot near apex and a few short yellow bristles. Ovipositor equalling pygofer, black, with pale tip.

Male, valve triangular with an acute median tooth. Plates narrow elongate with the tips curving dorsad in two large hooks, which in normal position would be included between the edges of the pygofer. In all specimens in hand, however, the plates are bent backward on venter, exposing their inner face, and one specimen still in the position of complete coitus shows the plates caught upon the point of the greatly elongated female ventral segment and pushed over against the abdomen. In all specimens in hand it would appear that the position given the plates during copulation had been retained when the specimens were killed.

Described from five females and four males collected in Washington, D. C., June, 1897, by Mr. J. S. Hine, who states that they were very abundant upon an introduced species of maple. It seems strange that the species should have been so long overlooked if a native form; and, as suggested by Mr. Hine, it may be an introduced species brought with some of the exotic plants. If so it would still seem to have escaped the vigilance of the descriptive entomologist, as it can not be referred to any described species.

How a little Tineid Larva lives on what is left of a big Cecropia Caterpillar.

By HENRY SKINNER and ALFRED F. SATTERTHWAIT.

Mr. H. W. Wenzel, while looking for Pselaphidæ and Scydmenidæ, can't go by other natural history objects, as his is a case of atavism. His father and grandfather were naturalists, and he has two sons enthusiastically following in their father's footsteps. While collecting these minute Coleoptera, he also collected for us a goodly number of *cecropia* cocoons. These cocoons were sorted over and divided into the heavy ones and light weight ones. The heavy ones contained living *cecropia* chrysalids and *Ophion macrurum* cocoons, and the light ones larva killed by fungi, dipterous and hymenopterous parasites or by other causes. We were surprised to find in the inner

cocoon of one of these light weight ones about ten cocoons of a Tineid. The *cecropia* cocoon was a fresh one and evidently spun last fall along with the other cocoons, which have since disclosed imagos of *cecropia*. It contained a dead *cecropia* larva on which the Tineid caterpillars had fed. It was covered with silk and frass from the little micros.

The little female Tineid was evidently able to tell that the big cocoon contained a dead giant on which her progeny could live and flourish, so she deposited her eggs at the small end of the *cecropia* cocoon and the little caterpillars on hatching either worked their way through the loose strands of silk at this place or else actually ate their way to the dead *cecropia* larva. After becoming full grown some of the Tineid larvæ ate their way through the inner cocoon and spun up between the inner and outer cocoons of the *cecropia*. Several also perforated the outer cocoon evidently for the purpose of making an exit for the imagos of the Tineid. We reared a number of the little moth and sent one to Dr. W. G. Dietz who pronounced it to be *Tinea fuscipunctella* Haw. We also found another *cecropia* cocoon that had several of the micro cocoons in the dead pupa.

SYNCHLOE LACINIA.—The larvæ of this species are very common in the Mesilla Valley, New Mexico, on *Helianthus annuus*. For a long time I thought they would live on no other plant, but on Aug. 15, 1897, I found them on *Helianthus ciliaris*, and also a few on *Xanthium canadense*. On Aug. 23 of the same year, at Mesilla, I found a few larvæ on *Polypteris hookeriana*. The species, therefore, has four known food-plants, all compositæ. The imago is preyed upon by the bug *Phymata fasciata*.

Another sunflower insect, the beetle *Copturodes cockerelli* Casey, was found to occur also on *Xanthium canadense* at Mesilla.—T. D. A. COCKERELL.

THE UNIVERSITY OF ILLINOIS has fallen heir to the Bolter collection of insects, numbering approximately fifteen thousand species, represented by about seventy thousand specimens, besides thirty thousand duplicates not in the systematic collection. This collection, accumulated during the last fifty years by the late Andreas Bolter, a business man of Chicago, is remarkable for the excellence of the material and for the excellent care with which it has been prepared and arranged. It represents all orders of insects and North America in general, and contains also a considerable amount of exotic material. The gift was made by the executors of Mr. Bolter, in accordance with the terms of his will, conditional upon its maintenance as a unit, under the name of the "Bolter Collection of Insects," in a fire-proof building.

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, three 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, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., JUNE, 1900.

The collecting season is now well inaugurated and a few words on the proper methods of work may not be amiss. Instead of collecting for the pleasure of seeing your captures neatly arranged in rows in the cabinet, take up some problem in entomology and study it to a conclusion. There are many of our common species about which we know nothing of their earlier stages, and those persons living in the country could do excellent scientific work by studying and describing them. If each person would take up a season's work of this kind the aggregate at the end of the Summer months would be surprising. The study of seasonal variation is also most interesting, and to do this intelligently all specimens should have accurate data on the pins. Another field of work is the study of geographical variation; therefore collect large series and exchange with your friends and correspondents. Even common species may be forced to tell interesting stories in this respect. For instance, is not the *Colias philodice* of the East the same as the sulphur butterfly of the West, which goes under another name? Let each entomologist this Summer take up a season's work and publish the result in the NEWS.

CORRECTION.—In the NEWS for May, 1900, page 455, under *E. Calverti*, third long primer line, read "bright blue *females*," instead of "males." Page 458, under *S. madidum* add "a single teneral male."

Entomological Literature.

COMPILED BY P. P. CALVERT.

Under the above head it is intended to mention papers received at the Academy of Natural Sciences of Philadelphia pertaining to the Entomology of the Americas (North and South). Articles irrelevant to American entomology will not be noted. Contributions to the anatomy, physiology and embryology of insects, however, 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: * denotes that the paper in question contains descriptions of new North American forms. Titles of all articles in foreign languages are translated into English; usually such articles are written in the same language as the title of the journal containing them, but when such articles are in other languages than English, French, German or Italian, this fact is indicated in brackets.

3. The American Naturalist, Boston, May, 1900.—**4.** The Canadian Entomologist, London, Ont., May, 1900.—**5.** Psyche, Cambridge, Mass., May, 1900.—**11.** The Annals and Magazine of Natural History, London, April, 1900.—**15.** Biologia Centrali-Americana, London, pt. cliv, Mar., 1900, rec'd. May 8.—**22.** Zoologischer Anzeiger, Leipsic, Apr. 9, 1900.—**35.** Annales, Société Entomologique de Belgique, xliv, 3, Brussels, Mar. 29, 1900.—**36.** Transactions, Entomological Society of London, 1900, pt. 1, April 26.—**40.** Societas Entomologica, Zürich-Hottingen, April 15, 1900.—**44.** Verhandlungen, zoologisch-botanischen Gesellschaft in Wien, 1, 2-3, April 6, 1900.—**78.** The Gardeners' Chronicle, London, 1900.—**81.** Biologisches Centralblatt, Erlangen, 1900.—**128.** Proceedings, Linnean Society of New South Wales, 1899, pt. iv, Sydney, April 7, 1900.

THE GENERAL SUBJECT.—**Absolon, K.** Some remarks on the Moravian cave-fauna, **22.**—**B.** The odor of flowers and insects, Wiener Illustrierte Garten Zeitung, April, 1900.—**Cholodkovsky, N.** On the life cycle of the species of *Chermes* and the general questions connected therewith, **81**, April 15.—**Cockerell, T. D. A.** The lower and middle Sonoran zones in Arizona and New Mexico, **3.**—**Duncker, G.** Methods of Variation-statistics, **81**, April 1.—**Handlirsch, A.** The use of superfluous spermatozoa in the female insect, a notice of the latest work of A. Berlese, figs., **44.**—**Plateau, F.** New researches on the relations between insects and flowers: 2. The choice of colors by insects. Memoires, Société Zoologique de France, xii, Paris, 1899.—**Schiller-Tietz.** The supposed parthenogenesis in the honey bee, Naturwissenschaftliche Wochenschrift, Berlin, April 8, 1900.—**Smith, J. B.** See review, *post.*—**Walton, L. B.** The basal segments of the hexapod leg, figs., **3.**—**Wood, J. H.** On the larvæ, habits, and structure of *Lithocolletes concomitella* Bankes, and its nearest allies (cont.): Biological aspects, Entomologists' Monthly Magazine, London, May, 1900.

ECONOMIC ENTOMOLOGY.—**Alwood, W. B.** Spraying the orchard, figs., Bulletin No. 100, Virginia Agric. Exper. Station, Blacksburg, Va., May, 1899, rec'd. May, 1900.—**Anon.** Report of the Malaria Expedition to Sierra Leone, Nature, London, April 26, 1900.—

Anon. The study of ticks and the diseases caused by them, *New York Medical Journal*, May 12, 1900.—**Beach, S. A. Lowe, V. H.**, and **Stewart, F. C.** Common diseases and insects injurious to fruits, figs. Bulletin 170, New York Agric. Exper. Station, Geneva, N. Y., Dec., '99.—**Chittenden, F. H.** Some insects injurious to garden crops, figs. Bulletin 23, new series, U. S. Depart. Agric. Division of Entomology, Washington, 1900.—**Cockerell, T. D. A.** Some insect pests of Salt River valley [Arizona] and the remedies for them, Bulletin 32, Arizona Agric. Exper. Station, Tucson, Arizona, Dec., 1899.—**Felt, E. P.** Insects injurious to forest trees. Extract from Fourth Annual Report of the Commissioners of Fisheries, Game and Forests of the State of New York, 1898. 4to., 23 pp., figs., 3 col. pls. Rec'd. April 30, 1900.—**Fernald, C. H.** Report of the Entomologist, Twelfth Annual Report of the Hatch Experiment Station of the Massachusetts Agricultural College, Boston, Jan., 1900.—**Forbes, A. C.** The elm-bark beetle [*Scolytus destructor*], 78, March 17.—**Laurent, E.** The employment of nicotine as an insecticide in agriculture, *Bulletins, Société Nationale d'Agriculture de France*, lx, 3, Paris, Mar., 1900.—**Ménégaux, A.** On the "grasserie" [or "yellowing"] of the silk worm, 2 figs.; On a curious parasite of the silk worm (*Uginia sericariae* Rondani), 1 pl. *Bulletin Scientifique de la France et de la Belgique*, xxxii, Paris, 1899. Rec'd. April 28, 1900.—**Ronsisvalle, M.** On the morbid effects of Ixodidae on man, *Atti della Accademia Gioenia di Scienze Naturali in Catania*, lxxvi, 1899.—**Smith, R. G.** The tick fever parasite, 128.—**Webster, F. M.** The clover root borer, *Hylastes obscurus* Marsham, fig., 1 pl.; Bulletin No. 112, Ohio Agric. Exper. Station, Wooster, Ohio, Dec., 1899.—**Wesché, W.** The earwig, 78, April 28.

ARACHNIDA.—**Cambridge, F. O. P.** *Arachnida Araneidea*, vol. ii, pp. 105-120* [Ctenidae Selenopidae, Heteropodidae], 15.

MYRIOPODA.—**Brölemann, H. W.** Myriopodological notes, figs., 22.

ORTHOPTERA.—**Blatchley, W. S.** On the species of *Nemobius* known to occur in Indiana*, 5.—**Brunner von Wattenwyl.** Orthoptera collected by the Belgian Antarctic Expedition, 35.

NEUROPTERA.—**Calvert, P. P.** Odonata of New Jersey, see Smith, J. B., review, *post*.

HEMIPTERA.—**Baker, C. F.** American species of *Macropsis* (Jassidae)*, 5.—**Champion, G. C.** Rhynchota Heteroptera, vol. ii, pp. 305-312* [Anthocoridae], 15.—**Chittenden, F. H.** [*Gargaphia angulata*, *Nectarophora destructor*]. See Economic Entomology.—**Chodkowsky, N.** See the General Subject.—**Cockerell, T. D. A.** Note on the pigments of the Coccid *Chionaspis furfura* Fitch, *Science*, New York, April 27, 1900.—**Id.** Four new Coccidae from Arizona, 4.—**Distant, W. L.** Rhynchotal notes, iv. Heteroptera: Pentatomine (part.), 11.—**Id.** Undescribed genera and species belonging to the Rhynchotal family Pentatomidae, 1 pl., 36.—**Fowler, W. W.** Rhyn-

chota Homoptera, vol. ii, pl. xvii, **15**.—**Morse, E. S.** A bubble-blowing insect [*Aphrophora*], figs., Appletons' Popular Science Monthly, New York, May, 1900.—**Osborn, H.** Homoptera of New Jersey, see Smith, J. B., review, *post*.—**Pergande, T.** Thysanoptera of New Jersey, see Smith, J. B., review, *post*.

COLEOPTERA.—**Arrow, G. J.** On pleurostict Lamellicorns from Grenada and St. Vincent (West Indies), **36**.—**Bourgeois, J.** Dascillidæ collected by the Belgian Antarctic Expedition, **35**.—**Brenske, E.** Scarabæidæ collected by the Belgian Antarctic Expedition, **35**.—**Carpentier, L.** Hibernation of Coleoptera, Bulletin, Société Linnéenne du Nord de la France, 317, Amiens, May, 1899.—**Chittenden, F. H.** [*Systema blanda*, *Cerotoma trifurcata*, *Epicærus imbricatus*, *Spermophagus pectoralis*, *Ceutorhynchus* spp., *Lixus concavus*, *Haltica ignita*, *Xylocrius Agassizii*]. see Economic Entomology.—**Cobelli, R.** Contributions to the biology of *Lophyrus pini* L., **44**.—**Fairmaire, L.** Heteromera collected by the Belgian Antarctic Expedition, **35**.—**Lameere, A.** Cerambycidæ collected by the Belgian Antarctic Expedition, **35**.—**Lea, A. M.** Revision of the Australian Curculionidæ belonging to the subfamily Cryptorhynchides, pt. iv, **128**.—**Manger, K.** Coleoptera in paraffin [for transportation, not recommended], **40**.—**Pic, M.** New Pedilidæ and Anthicidæ, **44**.—**Rousseau, E.** Carabidæ collected by the Belgian Antarctic Expedition, **35**.—**Sharp, D.** Coleoptera, vol. ii, pt. 1, pp. 585-608, pl. xviii* [Cryptophagidæ], **15**.—**Wasmann, E.** New Paussidæ, with a biological supplement, 2 pls. Notes from the Leyden Museum, xxi, 1-3, Dec., 1899.—**Wenzel, H. W.** Scydmanidæ and Pselaphidæ of New Jersey, see Smith, J. B., review, *post*.

DIPTERA.—**Cockerell, T. D. A.** *Scriptotricha* or *Paracantha*? **11**.—**Coquillett, D. W.** Report on a collection of dipterous insects from Puerto Rico*; Proceedings, U. S. National Museum, No. 1198, Washington, 1900.—**Jacobs.** Diptera collected by the Belgian Antarctic Expedition, **35**.—**Johnson, C. W.** Diptera of New Jersey, see Smith, J. B., review, *post*.—**Melander, A. L.** A decade of Dolichopodidæ*, figs., **4**.—**Pantel, J.** *Thrixion halidayanum* Rond. Monographic essay on the external characters, the biology and the anatomy of a parasitic larva of the group of the Tachinairia, 6 pls. La Cellule, xv, 1. Lierre et Louvain, 1898. A great monograph of 290 quarto pages, dealing with the external morphology of egg, larva, pupa and adult (42 pp.). biology and etiology (34 pp.), and anatomy (240 pp.).

LEPIDOPTERA.—**Caspari, W.** On *Acronycta* [eggs, larvæ], **40**.—**Chittenden, F. H.** [*Monoptilota nubilella*, *Elasmopalpus lignosellus*, *Hellula undalis*, *Laphygma frugiperda*, *Sesia rutilans*.] See Economic Entomology.—**Dietz, W. G.** Tineoidea of New Jersey, see Smith, J. B., review, *post*.—**Druce, H.** Lepidoptera Heterocera, vol. i, pp. i-xxxii, vols. ii and iii title-pages and contents, **5**.—**Dyar, H. G.** The larva of *Eustixia pupula* Hübn., **4**; Larvæ from Hawaii, a correc-

tion, **4**; Life histories of North American Geometridæ, xi, **5**.—**Fauvel, A. A.** Walking cocoons, figs., *La Nature*, Paris, April 21, 1900.—**Gibson, A.** Some interesting moths taken at Ottawa, *Ottawa Naturalist*, April-May, 1900.—**Grote, A. R.** The descent of the Pierids, 4 pls., *Proceedings, American Philosophical Society*, No. 161, Philadelphia, January-March, 1900.—**Lyman, H. H.** An entomological muddle: a review [*Hyphantria cunea, congrua, antigone, textor*], **4**.—**Moffat, J. A.** *Hydroccia stramentosa*, **4**.—**Montgomery, T. H., Jr.** On nucleolar structures of the hypodermal cells of the larva of *Carpocapsa*, 1 pl., *Zoologische Jahrbücher, Abth. für Anatomie u. Ontogenie der Thiere*, xiii, 3, Jena, April 10, 1900.

HYMENOPTERA.—**André, E.** Thynnidæ collected by the Belgian Antarctic Expedition, **35**.—**Ashmead, W. H.** Classification of the fossorial, predaceous and parasitic wasps, or the super-family Vespoidea, **4**.—**Id.** Hymenoptera (in part) of New Jersey, see Smith, J. B., review, *post.*—**Branner, J. C.** Ants as geologic agents in the tropics, figs., *Journal of Geology*, viii, 2, Chicago, Feb.-March, 1900.—**Konow, F. W.** New contribution to synonymy of the Tenthredinidæ, *Wiener Entomologische Zeitung*, xix, 4-5, May 1, 1900.—**Schiller-Tietz.** See the General Subject.—**Tosquinet, J.** Hymenoptera collected by the Belgian Antarctic Expedition, **35**.

Smith, J. B. *Insects of New Jersey, a list of the species occurring in New Jersey, with notes on those of economic importance*, 328 figs., 2 maps, 755 pp. 27th Ann. Rep. State Board of Agric., 1899 (Supplement). Trenton, N. J., 1900. A valuable list of this part of the fauna, preceded by 34 pp. on "Insects and their control," including a brief interesting chapter on development and a genealogical tree of the twenty-two orders recognized. Alphabetical indexes of the localities and individuals quoted, and of the families and genera represented, add to the accuracy and usefulness of the volume. No figures are new; they chiefly illustrate species of economic importance. Much aid in the preparation of the book was furnished by various specialists, as indicated under the various orders (*ante*). Statistics of the species listed are given on p. 701, according to which the total number is 8537, of which 1193 are Diptera, 1718 Hymenoptera, 1570 Lepidoptera, 2845 Coleoptera, 399 Homoptera, 340 Hemiptera, 144 Orthoptera, the other orders less than 100 each. The total exceeds, by 2439 species, Prof. Smith's similar list of 1890, and he predicts an equally great percentage of increase in the next decade.

Dr. H. F. WICKHAM will take a collecting trip this Summer to the Pacific States.

Dr. F. E. BLAISDELL, of Mokelumne Hill, Cal., started for Alaska on May 10th and will not return until October. He expects to find some fine insects in the North.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS
OF THE GLOBE.

PROF. A. J. SNYDER expects to pass the Summer in Colorado collecting.

MR. LANCASTER THOMAS will go to Cranberry, N. C., and keep his eyes open for species new to the locality.

DR. A. FENYES, of Pasadena, California, will start on a collecting trip to the Atlantic coast on the first of June and will return to Pasadena in October.

NOTES ON A FEW NORTH AMERICAN SPECIES LISTED AS NOCTUIDÆ. — In two letters, dated respectively, August 12, 1899, and April 7, 1900, Sir George F. Hampson sends the following notes on some species which stand in our present lists as Noctuidæ.

Hexeris Enhydria Grote=*Ottolenguia reticulata* Beutenm., belongs to the Thyrididæ.

Gyros Muirii, H. Edw., which I see you include in the Noctuidæ is (teste specimens in Grote collection which agree with description) a Pyrale=*Monocona rubralis* Warr.; v. my revision of *Pyraustinae* in Proc. Zool. Soc., 1899, p. 232.

Lepidomys Irrenosa Guen., Noct. ii, p. 201 (1852); Smith, Cat. Noct., p. 315, is a Pyrale of the subfamily Chrysauginæ and is the male of *Chalinitis olealis* Rag., Ann. Soc. Ent. Fr., 1890, p. 529; Hmps., Proc. Zool. Soc., 1897, p. 684.

The forewing of the male has no costal tympanic vesicle as in the other species of the genus, but has an antemedial tuft of scales on median nervure, with a smaller tuft below it in the submedian fold. It differs from the female described by Ragonot in the forewing having the portions of the ante and postmedian lines, which are bent inwards to the costa, white; the outer part of the tuft of scales on median nervure and the tuft in submedian fold white.

Type New York in Mus. Brit.

Pseudocraspedia melanosticta Hmps., Trans. Ent. Soc., 1898, p. 256, pl. xvii, f. 6, from St. Vincent—*Acidalia basipunctaria* Wlk., from Florida, is a Noctuid.

It is a matter for congratulation that the British Museum material is undergoing critical study by so competent a worker as Sir George F. Hampson and we may now hope to eliminate the few remaining doubtful names that remain in our lists.—J. B. SMITH.

Stenomimus Pallidus BOH.—On a flat-topped hill overlooking the beautiful Miami Valley in full view of the Little Miami River, winding its serpentine course through fertile bottom lands, is situated one of the prehistoric burial places from which so many relics of a vanished race have been exhumed. On this spot nature has lavished her choicest treasures. Hugh oak and other trees, with a rank growth of smaller

vegetation, covers the spot so completely that few persons know of its existence. Here the "Kentucky Warbler" (*O. formosa*) and the "White-browed Warbler" (*D. dominica albilora*) find an unmolested nesting place. I have taken many rare insects of all orders here, particularly Coleoptera. May 11, 1900, while searching for minute beetles I lifted the loose bark from a freshly fallen oak log and found a colony of *Stenomimus pallidus* that contained hundreds of this beetle. I picked out 120 in a few minutes. I have never before taken this curious little weevil, which is one of the smallest North American species. It is very slender in form and of pale brown color and might easily be mistaken for *Bactridium*, which was associated with it. Its larvæ had eaten galleries through the decaying fibres of the inner bark—CHARLES DURY, Cincinnati, Ohio.

NEW LIGHT ON THE BEE-GENERA MEGACILISSA AND MACROTERA.—I have just received the following important information from Mr. W. F. Kirby of the British Museum: "*Megacilissa superba* Smith is a Chilian species, and = *Caupolicana fulvicollis* Spin. Mr. Waterhouse and I have carefully examined *Perdita halictoides* and *Macrotera bicolor* Smith, and find that Smith's drawings of the dissections are quite accurate; and that although Smith says the palpi of *Perdita* are wanting, and there is no trace of them in the specimen, yet they are included in his own figures, which is very odd. I find that *Macrotera* was obtained from Mr. E. P. Coffin in 1843, but I do not know from what part of Mexico. Perhaps this might be discovered by hunting through Westwood's publications."

This shows that *Megacilissa* is a pure synonym of *Caupolicana*, as was suggested in Ann. Mag. Nat. Hist., Dec., 1899, p. 412.* It also confines the distinctness of *Macrotera* from *Macroteropsis* and *Hypomacrotera*. As for *Perdita*, Smith's figures of the palpi are drawn with dotted lines, and are undoubtedly hypothetical. Under the circumstances set forth in Ann. Mag. Nat. Hist., Dec., 1899, p. 315, it is evident that we shall for the present have to remain wholly uncertain as to what is genuine *Perdita*.—T. D. A. COCKERELL, Mesilla Park, N. M., Feb. 2, 1900.

A BEE-FLY FOUR YEARS IN THE LARVAL STATE. IS THIS A RECORD?—In Volume I, Part 3, of the Proceedings of the Southern California Academy of Sciences may be found a short descriptive article on the habits and parasites of one of the most interesting bees of California, *Anthophora montana* Cress. Its interesting habit of tower building is there illustrated and need not be further commented upon. *Anthophora montana*, like many other species of mining bees, live in colonies, and may be found year after year occupying the same spot of ground. Each season the old shafts are cleaned out or new ones are sunk till the earth when turned over seems to be but a mass of clay cells of all ages.

On the 15th day of July, 1895, I unearthed a number of cells of *A. mon-*

* *Megacilissa yarrowi* Cresson, 1875, will become *Caupolicana yarrowi*; but *M. thoracica* Fox, and allied species, may have to be separated generically.

tana, many of which were evidently affected by parasites of various kinds. In the article above referred to, I have stated that nearly half of them are affected by parasites, and subsequent observations but confirm the truth of my first conclusions. Ten of the parasitized cells, which I presumed were occupied by bee-flies, I preserved and put in a box to hatch out.

That same season one *Sphaerophthalmia* and one bee-fly hatched out. In 1897, two years after, one bee-fly pupated but soon afterwards died. The next season, thinking that the lack of the moisture naturally supplied them in their normal habitat was the cause of their continued quiescence, I kept moist blotting paper in the box; but though the larvæ were quite active and wriggled about the box none of them transformed. In the Autumn of that year I removed from Los Angeles to Clifton, Arizona, and brought the larvæ with me. During the winter a few of them withered up and died, but in July, 1899, the remaining four, after a short period of pupation, safely emerged.

These larvæ were in my possession for full four years before hatching out. How long they had lain in the ground prior to my visit it is, of course, impossible to say, but one, at least, of these was found in a cell that was surrounded by the rootlets of grass of the preceding season.

Probably the unnatural conditions under which these larvæ were kept may have conduced to their long survival, but in any event the time appears to me a record one.

In a paper already published in the ENTOMOLOGICAL NEWS on the habits of *Anthidium consimile* Ashm., and its long continuance in the larva state, I have suggested that this is probably a provision for ensuring the perpetuation of a race in a climate prone to continuous droughts. This may be another exemplification of the truth of this supposition.

Two of the species hatched were sent to the U. S. Dept. of Agriculture at Washington and were examined by Mr. Coquillett, who found them to be *Anthrax edititia* Say, a common species in Southern California.—ANSTRUTHER DAVIDSON, M. D., Clifton, Arizona.

NOTES ON ANTHICIDÆ.—What seems to be a new species of *Stereopalpus*, nearly allied to *guttatus* Lec., occurs in Colorado. I have many specimens from various parts of the mountains; it is very sparingly pubescent, and it is possibly *guttatus* with the spots shaded; but it occurs in so many specimens that it is at least indicative of an undescribed species intermediate between *guttatus* Lec. and *pruinus* Lec. In the genus *Anthicus* the distinctions between *formicarius* Laf. and *cinctus* Say seem rather dubious, depending largely upon the granulation of the thorax and punctuation of the elytra. I note two fine specimens of *Anthicus leconte* Cham. from Gunnison, Col. Among Mr. Wickham's specimens from Brownsville, Texas, I note (11) *Anthicus occidentalis* Cham.; (10) *Anthicus dromedarius* Laf.; (72) *Anthicus spinicollis* Laf. My specimens of the latter from Vera Cruz, Mex., are identical with the Texas examples; provisionally I unite with it (60) and (236) varying somewhat, but not sufficiently to definitely establish a new species with-

out further research; (131) I refer to *Anthicus asphaltinns* Cham.; (145) from Laredo, Texas, is *Anthicus horridus* Lec.; the whole, excepting the last, forming quite an interesting little group of additions. *Anthicus biguttatus* Lec., I note one example from the mountains of British Columbia, and another from the Williams River Valley, Col., as well as from Utah and California. Examples of a species, at present referred by me to *Anthicus melancholicus* Laf., occur here (Brookline, Mass.), not rarely in the nests of the large red and black ants. *Anthicus* is one of the many genera where large series of specimens from a wide range of territory are an absolute prerequisite to any rational understanding of the group.—FRED. C. BOWDITCH.

SOME notes about the weather and some butterflies in South Mississippi, from March, 1900:—March brought us some very fine weather; from the 5th to the 8th the temperature ranged from 60 to 68, dropping down to 46 by the 11th, gradually getting warmer again; by the 15th the mercury registered 66 again, when a sudden change set in on the 16th plunging down to 36; but it moved the day following, and by the 19th the thermometer registered 64 again. The degrees of thermometer given is the morning temperature; at noon the highest was 76, the lowest 48 degrees. The first warm spell in the beginning of the month, numerous *Graptas* sp. ? were observed. Never before have I seen so many *Graptas*, they all went westward without stopping, though on the 11th I observed some on dewberry blossoms in my garden. I left them unmolested; however, I was not inclined for a catch. At the same time a good many *Papilio ajax* were seen; these seemed to be inclined to the contrary, they all seemed to go eastward. This seems to be very remarkable that one kind be inclined one way and the other some other way. Some *Danais* and also *Callidryas* seem to be always present. From the skippers (*Hesperidæ*) the soot-wing "*Pholisora cutullus*" shows up first. *Phyciodes tharos* and wood nymphs can now be seen. In my garden the phlox, verbenas and several other flowers are now in full bloom (roses are scarce yet). I noticed one *Papilio palamedes* yesterday amongst the phlox. On the 25th I saw a beautiful *Anæa*, the brightest I ever observed. I should say that if *Vanessa atlanta* is entitled to be called Admiral, *Anæa portia* is entitled to be called Cardinal. I succeeded in taking a specimen each of *portia* and *andria* in April, '99.—C. FØRKET, Ocean Springs, Miss.

Doings of Societies.

At the February meeting of the Newark Entomological Society the regular routine of business was enacted. Mr. Ronke was proposed for membership and that is about all, except that each member brought specimens of *Sesia*, which were compared by the members.

A meeting was held in Turn Hall, Sunday, April 8, with eight members present. But little business of importance was transacted. President Kemp reported the capture of *Acontia delecta* at Elizabeth on July 7, 1899. It was decided to hold a field meeting at Hemlock Falls on the second Sunday in May. There being no further business the meeting adjourned.

WILLIAM H. BROADWELL, *Secretary*.

A special meeting of the Harris Club was held at 35 Court Street, Boston, on Saturday evening, March 3, 1900. Mr. A. H. Kirkland was unanimously elected to membership. Mr. Newcomb exhibited specimens of some of the rarer North American *Catocala*, and also made some interesting remarks on the life-history of *Thyridopteryx ephemeraformis*. Mr. Weeks showed a large number of butterflies secured by his collector in Bolivia, and invited the members of the Club to visit him at his house on March 11th.

The fifth regular meeting was held on the evening of Friday, March 23d. Mr. H. K. Burrison was unanimously elected to membership. Mr. Newcomb made some entertaining remarks on the subject of newspaper Entomology. Mr. Field spoke at some length on the colors of insects, and the physical principles underlying the effects observed. The same speaker afterward outlined some interesting problems in the distribution of *Anthocharis genutia*. A general discussion of methods employed in collecting about electric lights followed.

W. L. W. FIELD, *Secretary*.

The sixth regular meeting of the Harris Club was held at 35 Court St., Boston, on Friday evening, April 20, 1900.

With reference to the abnormally large cocoons of *Attacus cecropia*, which were discussed at the meeting held on February 16, Mr. Newcomb called attention to Dr. Skinner's investigation of the correlation between the aspect of the cocoon and the sex of the inmate. (ENT. NEWS, 1-19). Mr. Field remarked that the cocoons in question were not of the ordinary female type, which is well known to collectors, but were much larger and more globular in shape. He quoted a letter recently

received from Mr. J. Alston Moffat, of London, Ontario, who is well acquainted with these "inflated cocoons," and has suggested that they may be spun only by parasitized larvæ, since he had never known an imago to emerge from one. Several persons dissented from this view, stating that they had hatched female moths from "inflated" cocoons. All who took part in the discussion were agreed on these points: (1) That the "inflated" cocoons belong to a distinct and rare type, always found in bushes near the ground, and never disclosing male imagos; (2) That the cocoons of the female type described by Dr. Skinner also occur near the ground but are smaller and more uniform in shape; (3) That cocoons of the "male type," found among the upper branches of trees and shrubs, occasionally shelter female pupæ.

Early insects already seen on the wing were reported by various members. *Brepfos infans* seems unusually common this year. Mr. A. P. Hall caught a female *Gastropacha americana* at the electric light on April 10. Mr. Newcomb mentioned the fact that all the hibernated specimens of *Vanessa antiopa* he had taken this spring were females.

A general discussion of the different forms of lamps used in collecting at sugar brought out the fact that bicycle lamps possess many advantages over ordinary bull's-eye lanterns. Portable electric lamps, so arranged in front of the collector as to leave both hands free, are very useful.

Mr. W. D. Denton spoke of seeing an albino male *Colias philodice* in the collection of Mrs. Richardson, of Brooklyn, N. Y.

W. L. W. FIELD, *Secretary*.

A meeting of the American Entomological Society was held April 26th, with Dr. P. P. Calvert, president, in the chair. Fifteen persons were present. Mr. Laurent presented eight specimens of Coleoptera and stated that his neighbor, Mr. Rod, had taken in his wine cellar *Orthoperus atomarius*, which, according to Mr. H. C. Fall, is an introduced species. Mr. Henry Wenzel exhibited a large collection of Pselaphidæ, made at Anglesea, New Jersey, representing the saline fauna.

The haunts and habits of these had previously been unknown to the speaker and a number of the species were new to the New Jersey fauna. The smallest Scydmenid and the smallest Pselpahid were also shown. The saline fauna was said to differ very greatly from the near-by fresh-water ponds. The same speaker also exhibited a fine specimen of *Panagæus crucigerus* and stated that another specimen had been taken at Anglesea by his son. The dates were April 16th and May 20th, on loose sand. Mr. Lieback stated that the specimens previously taken by the late Dr. John Hamilton at Brigantine Beach were found under pieces of caked sand. Mr. Laurent read an interesting paper, giving the itinerary of his last Summer's collecting trip to Colorado and Utah in company with Henry Skinner and A. J. Snyder. Mr. Wenzel presented an interesting and valuable letter to the society. It was an invitation to his grandfather, Henry Feldman, to attend the organization meeting of the Entomological Society of Philadelphia in 1859. On motion of Mr. Fox a vote of thanks was tendered to Mr. Wenzel for his gift to the society.

DR. HENRY SKINNER, *Secretary.*

At the last meeting of the Feldman Collecting Social, held April 18, 1900, at the residence of H. W. Wenzel, 1523 S. 13th Street, ten persons were present.

Dr. Skinner referred to some *Cecropia* cocoons recently collected by Mr. H. W. Wenzel. One specimen had inside of the inner cocoon specimens of the chrysalis of a moth. He believed it likely that the female moth had oviposited on the outside of the cocoon and the young penetrated after birth.

He referred to a recent discussion as to the cause of the size of certain *Cecropia* cocoons and pointed out that the thick cocoons are those of females and the thinner ones males. This he had proven by segregation of the robust and slender cocoons.

Dr. Strecker corroborated Dr. Skinner on this point, as he had had similar experience with these cocoons.

The question was further discussed by Messrs. Smith, Strecker and Skinner.

In reply to Mr. Johnson, Prof. Smith stated that it is quite possible to distinguish the sex in the larvæ of certain insects.

Mr. Johnson referred to the presence of apparently perfect testes in young crickets.

Prof. Smith said that while the testes may appear perfect yet they contain no spermatozoa. The testes may be full grown after the second moult.

Dr. Skinner referred to a dead specimen of a Gallinule received which was covered with ear-wigs. He believed they infested the bird before death.

Prof. Smith referred to Dr. Skinner's remarks on the presence of Tineid pupa in the cocoon of Cecropia. He did not believe it a case of parasitism and the facts did not warrant a conclusion in the matter.

In reply to Prof. Smith, Dr. Skinner said that the pupa of the Cecropia was destroyed.

Dr. Strecker referred to a case where foreign bodies had been spun up accidentally in a cocoon of Columba.

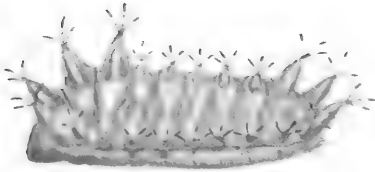
Mr. Johnson exhibited *Therioptes astutus* from Delaware Water Gap, a species not recorded from New Jersey.

Dr. Skinner referred to the belief that malaria is caused only by mosquitos and by species belonging to one genus, and remarked on the experiments to be carried on by the British Government with mosquitos in malârial districts.

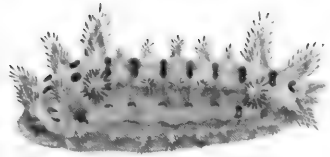
In reply to Prof. Smith, Mr. Johnson stated that *Anopheles* is scarce in this locality, though he had found *Anopheles quadrimaculata* commonly in Florida on one occasion. He had been subjected to a severe attack of malaria shortly after being bitten by this species of mosquito.

Prof. Smith stated that some years ago, near Brooklyn, the ground having been torn up for certain purposes, almost every one in the neighborhood had acquired malaria, which was attributed of course to the turning up of the soil. Moreover, mosquitos were not abundant at that time, and he had never found *Anopheles* there. He did not bring this forward to show his disbelief in the theory that the mosquito is responsible for the disease, but to show that it also comes from other causes.

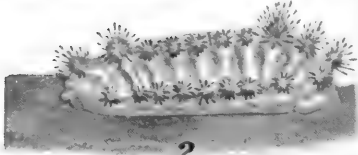
WILLIAM J. FOX, *Secretary.*



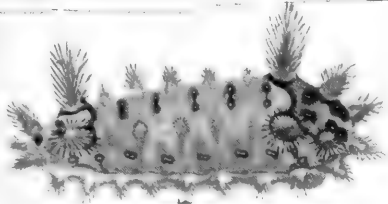
1



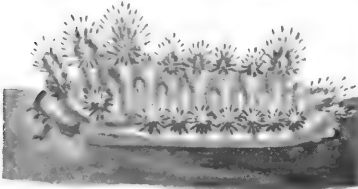
6



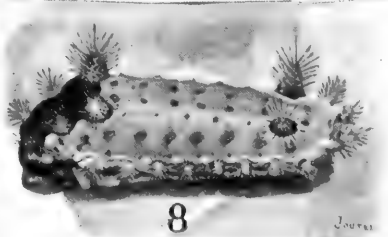
2



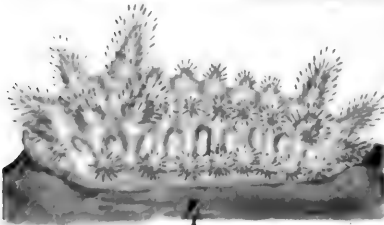
7



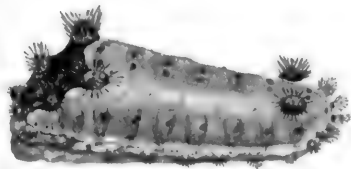
3



8



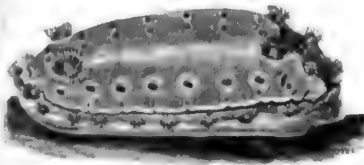
4



9



5



10

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XI.

SEPTEMBER, 1900.

No. 7.

CONTENTS:

Dyar—Life History of a South American Slug-Caterpillar.....	517	Synonymy.....	533
Hulst—Notes on Some N. A. Geometrina and Pyralidina.....	527	Editorial	536
Aldrich—Goniops and other Synonyms	531	Entomological Literature.....	537
Skinner—A Headlong Plunge into the		Economic Entomology.....	546
		Notes and News.....	547
		Doings of Societies.....	548

Life History of a South American Slug-Caterpillar *Sibine Fusca* Stoll.

By HARRISON G. DYAR, A.M., Ph.D.,
United States National Museum, Washington, D. C.

See Plate XIII.

SIBINE FUSCA Stoll.

- 1781 *Bombyx fusca* Stoll, Pap. exot., pl. 307, fig. G.
1848 *Phalæna trimacula* Sepp, Surin. Vlind., i, pl. 45.
1855 *Nyssia trimacula* Walker, Cat. Brit. Mus., v, 1133.
1855 *Nyssia rufescens* Walker, Cat. Brit. Mus., v, 1138.
1878 *Streblota bonaërens* Berg, Ann. Soc. Cient. Argent., v, 180.
1878 *Streblota bonaërens* Burmeister, Desc. Rep. Argent., v, 151.
1883 *Sibine fusca* Möschler, Verh. z.-b. Ges., Wien, xxvii, 671.
1887 *Eupalia trimacula* Druce, Biol. Cent. Am. Lep. Het., i, 218.
1892 *Sibine nesea* Kirby, Cat. Lep. Het., 539 (nec Cramer).
1897 *Sibine fusca* Dyar, Can. Ent., xxix, 77.
1900 *Sibine fusca* Dyar, Proc. Ent. Soc. Wash.

LARVA.

- 1791 Stoll, Pap. exot., suppl., pl., xxi, fig. 2 (as *cælestina*).
1848 Sepp, Surin. Vlind., i, pl. 45.
1878 Berg, Ann. Soc. Cient., Argent., v, 181.
1894 Dyar, Ann. N. Y. Acad. Sci., viii, 217.
1897 Dyar, Can. Ent., xxix, 77.

SPECIAL STRUCTURAL CHARACTERS.

Somewhat flattened, rounded at the ends, the sides parallel; dorsal and lateral spaces broad, subventral space narrow. Ridges very slight, the subdorsal indicated by the change in direction of slope of the body, lateral and subventral ridges more distinct, approximate. Warts converted into fleshy, horn-like processes, unequally elongated, at first long and distinct, later reduced, non-functional, almost rudimentary. In stage I, the horns bear each three slender setæ; after the first molt, numerous urticating spines. The horns at the extremities are long, the central ones short; subventral row represented by two setæ. Arrangement of horns exactly as in *Sibine stimulea* (Journ. N. Y. Ent. Soc., iv, 2). Depressed spaces feebly developed, only their glandular centers distinguishable in the rather well-marked intersegmental incisures; but the largest ones conspicuous as they are marked with black pigment. Dorsal row (1) paired, distinct; (2) slight; (4) distinct; (6) slight. Skin at first smooth, next reticularly shagreened, then granular, finally spinulose. The change in color to that of the mature larva occurs before the last molt and the horns begin to be shortened at this time (stage VI.), indicating that the pattern of marking is comparatively old and fixed. The detachable spines and caltropes are present as in *S. stimulea*.

The larva does not show any ancestral characters during ontogeny. The horns are long at first, showing derivation from a long-horned ancestor. In the earlier stages some heavy black spots appear, which, in the mature larva, are represented only by the dark depressed spaces; this is the only ancestral character in the larvæ that indicates a former different color development, now early suppressed. I do not know its significance. The changes in skin sculpturing rather neatly show the probable evolution of this character in the phylum of the "tropic spined *Euclids*." Thus the reticular lining is primitive, now retained in *Sisyrosea* and the early stages of *Natada*; next come the granules, shown in the late stages of *Natada* and in *Euclia* and *Adoneta*; finally the spinules of *Parasa* and *Sibine* (separately derived in these two genera).

AFFINITIES, HABITS, ETC.

S. fusca belongs to a genus of closely-allied species, which are not always to be distinguished except by the male genitalia. Nevertheless, the larvæ are very different. I have elsewhere given a table separating four species of larvæ (Can. Ent., 1897) and the remarks under *S. stimulea* will also apply here. This larva is more distinctly gregarious than *stimulea*. Sepp remarks: "La femelle dispose ses oeufs par paquets. Les chenilles qui en sortent, vivent quelques temps en société et se tiennent en mangeant rangées sur une ligne, les unes à côté des autres à la surface inférieure des feuilles." Later they separate. My larvæ exhibited these habits. The cocoon is spun on a branch or twig, as Sepp remarks. Berg also says: "La transformacion en crisálida tiene lugar en los troncos y ramas de los arboles." My cocoons were received evidently hastily broken from twigs by the collector, and in two instances a bunch of Mantis eggs was included in the sending and counted as a cocoon. Evidently, therefore, the cocoons are projecting and not inconspicuous objects on the trees. The species is single brooded, the moths appearing in November, the larvæ maturing probably about February or later. The males fly at dark, just after the twilight is gone and again in the early morning, the flight not lasting over an hour. My living specimens are all from the temperate climate of Argentina, so I do not know whether the species is more than single brooded in the tropics. It ranges from Argentina through Brazil, where Mr. Koebele encountered it (though he failed to rear the moths), to Surinam, as given by Sepp and Stoll. Mr. Druce records it from Mexico also and this may be so, though in the *Biologia* apparently all the forms of Sibine found in the region treated of are called by the name *trimacula* (= *fusca*).

The eggs are laid in large patches as in *S. stimulea*. The larvæ possess the usual urticating property. Mr. Koebele has labelled some cocoons from Caxanga near Recife, Brazil (Dec. 29, 1882), "Limacodes with stinging spines found on bark of casu tree; got badly stung." The larva is probably a rather general feeder, like *S. stimulea*. Sepp gives orange and citron as food plants. Berg gives "Membrillo" (*Cidonia vulgaris*), "Peral" (*Pyrus communis*) and "Viña" (*Vitis vinifera*) and

Mr. Ruscheweyh sent me the names "Olmo, Saibo and Damaña." My bred larvæ were not particular, taking anything from rose to Carex. The cocoons from which this life-history was worked out were sent me by Mr. G. Ruscheweyh, of Buenos Aires, Argentina. Mr. Ruscheweyh patiently collected and made sendings for three years, until finally success was achieved.

CRITICISM OF PREVIOUS DESCRIPTIONS.

Cramer's figure is rather better than Sepp's; both are recognizable. I have remarked on the larva and given most of the structural points of the last stage. Berg gives a lengthy account of the mature larva in which the coloration is fully described. He states that it (*bonærensis*) differs from that figured by Cramer and Sepp (*fusca*) in having black dots on the depressed spaces. This is true; but I do not regard it as of specific value. The Brazilian form differs from the Argentine one in a few other minor characters. I have before me a colored figure and an alcoholic larva from São Paulo, Brazil, kindly sent by Dr. H. von Ihering, the larva collected there on *Eugenia jaboticaba*. This agrees with Sepp's figure, and differs from the form *bonærensis* in lacking the black dots entirely, in having larger, more nearly circular patches of detachable spines and in lacking all purple color on the anterior dorsum. This area is entirely blue green like the subventral region. The black line separating the two shades of green shows very strongly in the alcoholic specimen.

These differences are not greater, I think, than might be expected in a species ranging over so wide an extent of territory.

DESCRIPTION OF THE SEVERAL STAGES IN DETAIL.

Egg.—Elliptical, flat, finely reticulated with raised lines, angularly and irregularly hexagonal; $2.2 \times 1.2 \times .1$ mm. Laid in rather large masses, overlapping like shingles, the whole mass shining dark ocher yellow, rather opaque; the narrow margins of the eggs transparent, colorless. The eggs greatly resemble those of *Sibine stimulea* which are also dark yellow. Duration of the stage ten days.

Stage I.—Elongate, rounded rectangular sides parallel; ends rounded; dorsal and lateral spaces equal, moderate, concave,

subventral space contracted. Skin smooth, shining. Subdorsal horns on joints 3 to 13, those of 3, 4, 5, 11 and 12, not much larger than the others, but stouter and thicker, perhaps half again as long; that of joint 13 more remote, directed backward; lateral horns on joints 3, 4, 6 to 12, subequal, those of 3 and 4 slightly stouter. All horns thick, conic, blunt, rather short, each with three fine, stiff setæ radiating from the apex. The horns are separated from each other by a space equal to their own diameter. Color ocher yellow, the horns a little whitish; segmental incisures marked by grooves that appear somewhat more transparent than the rest of the larva. Length 1.4 mm. The horns and setæ are distinctly seen before the larva is out of the shell. No sign of eversion as in the larvæ with primitive first stage. Head small, round, eye black, mouth brown, labrum and labium prominent. The larvæ congregated in a mass and molted without feeding. Duration of stage three days.

Stage II.—Somewhat shorter and squarer, elongate elliptical, sides parallel, dorsal and lateral spaces even, broad, the dorsal flat, or like the lateral, a little concave. Horns large and thick, but not very long, not much over as long as thick. Subdorsals of joints 3 to 5, 11, 12 large, 6 and 10 small, 7 to 9 equal, small, but larger than those of 6 to 10; 13 small, about like those of 6 and 10. Laterals all moderate, 3 and 4 scarcely larger than the others. All densely covered with black-tipped yellow spines. Cervical shield large with many setæ anteriorly, contracted. Subventral space small. Segmental incisures well marked; a groove in the center of each transversely in the dorsal space, divided on the dorsal line, apparently representing depressed spaces (1). Whitish yellow, the horns clear yellow; no marks. Skin extremely finely shagreened, reticulate with light lines under a high power like that in the early stages of *Natada nasoni*. The larvæ fed gregariously, eating the parenchyma. Length 1.4 to 2.2 mm.

Stage III.—Somewhat flattened, like *Euclea delphinii*. Rounded, distinctly elliptical, the sides no longer parallel, but convex, ends rounded; dorsal and lateral spaces broad subequal, flat, dorsum arched a little, sides narrowing at the ends; subventral space small, contracted. Subdorsal horns of joints 3 to 5, 11 and 12 stout, conic, rather long, fully twice the

length of the short ones ; that of joint 6 very small, but 7 to 10, 13 and the lateral horns about alike, short, conic or tapering, as long as the basal width, all densely spined. Body yellow, a narrow blackish dorsal line on joints 6 to 11 or 6 to 9, crossed by five faint blackish bars in the dorsal incisures ; a rather distinct black blotch in the lateral space enclosing the depressed space (4) in its upper portion, situated in the incisure of joints 7-8 ; it is furcate on the lower side. Skin finely shagreened, lumpy, the reticulations taking the light distinctly as fine, low, almost flat granules. A large black patch on the cervical shield, ordinarily hidden under joint 3 when the hood is retracted. Later the dorsal markings wholly or partly disappear, but the lateral spot remains. Length 2.2 to 3.1 mm.

Stage IV.—Distinctly flattened and elliptical. Dorsal space broad, narrowing only at the ends ; lateral space more elliptical, subventral very small. Ridges scarcely prominent, but the horns distinct, the subdorsal row leaning out a little and that of joint 5 sometimes backward. Subdorsals of joints 3, 4, and 5 successively longer, 5 twice as long as 3 ; 6 to 10, especially 6 and 10 very small ; 11 and 13 successively smaller, matching the anterior horns. Lateral row all small, a little longer posteriorly, 3 and 4 even smaller than the rest. Horns all thick, rather blunt, densely spined, even the little ones, the spines long, sharp, with black tips. Color greenish yellow, a broken, blackish green, narrow dorsal line, cut by broken transverse black bars which form large blotches around depressed spaces (1) ; (2) represented by tiny black dots, somewhat diffuse and scatteringly punctate on joints 3 and 4. On the sides a faint greenish line in the middle of the lateral area, a large black patch about depressed space (4) of joints 7-8 and smaller ones on joints 4-5 and 10-11. That of 7-8 is quadrate, extending forward on joint 7 and all are composed of very black pigment. Spaces (4), (5) and (6) very minutely marked by black dots. There is a trace of a pinkish color in the large subdorsal horns. Skin very finely granular, but the peculiar shagreen wrinkles (like *Sisyrosea textula*, only less marked) persist around the bases of the horns. The granules are distinct in the exposed parts of the surface. Cervical shield large, black.

The black marks are pulverulent and irregular in shape, differing in different larvæ. Length 3 to 4.3 mm.

Stage V.—Shape as before and in all no essential change. Greenish yellow, depressed spaces (1) and (4) whitish, broadly surrounded with black, the other spaces not, or but faintly indicated. (1) paired except on joints 12-13, doubly paired on 3-4 and indistinctly so on 4-5. On the sides the spots are rather irregular, but there are no conspicuously large ones as before, (4) being surrounded by black on all the segments, most so toward the extremities; (6) also defined on some segments. Subdorsal horns of joints 3 to 5, 11 to 12 long, all the rest short, 6 and 10 especially so, all fully spined. The large horns have a purplish tint, due partly to the color of the spines, the short ones are yellowish, clearer, less opaque and less greenish than the body. Skin granular, the granules rather sparse and finely shagreened between, conic, even spinulose pointed, especially dorsally on the thorax, where each has black pigment in the base, elsewhere clear. The smallest horn is the subdorsal of joint 6, which has not over half a dozen spines. Cervical shield large, black, the rim smooth, with setæ. The pigment is more yellowish and opaque in the centers of the segments dorsally and laterally. The long horns are about as long as the diameter of the body, prominent. At the end of the stage the dorsal space and the lateral one above the lateral horns are filled in with bars of light green pigment except in the segmental incisures; but dorsally on joints 3 and 4 the bars are narrower. Long horns faintly purplish. Length of larva 4.3 to 6 mm.

Stage VI.—Somewhat flattened; dorsal space broad, flat, a little concave at first, curving over at the ends. Lateral space nearly perpendicular; lateral ridge projecting; subventral space small, retracted. Subdorsal horns on joints 5 and 11 moderately long, about half the height of the body, shorter than before both relatively and absolutely. Those of joints 3, 4 and 12 shorter than 5 and 11. Laterals moderate, about as long as wide, subequal. The subdorsals of 6 and 10 are very small, as before, 6 the smallest, 7 to 9 a little longer, all inconspicuous. Horns all densely spined. Horns, except the subdorsals of joints 6 to 10, faintly purplish. Color, two shades of green as in the

mature larva. Cold bluish green except in an area which is opaque yellowish green, covering the dorsal space from joint 5 posteriorly to joint 12, and laterally from 3 posteriorly to 12, continuous, except for the horns and depressed spaces. Segmental incisures well marked; depressed spaces (1) and (4) pale, strongly bordered with black. Joint 2 smooth, slightly purplish; cervical shield black. Skin rather densely covered with fine spinules, mostly sharp pointed. On the yellow green all are colorless, but on the blue green they are black, especially dorsally on joints 3 to 5. Only a few black spinules on the subventral blue green and these are above the bases of the lateral horns. A distinct ring of black spinules around the base of the subdorsal horn of joint 11 and less on joints 4 and 5. The horns lengthen during the stage, are distinctly purple (except the subdorsals of 6 to 10) and a purple shade appears centrally on the dorsum of joints 3-4, in the blue green. Length 6 to 8.8 mm.

Stage VII.—No essential change except the presence of a yellow border to the dorsal green and the caltropes. Shape as before, the horns all a little shorter and thicker at first. Subdorsals of joints 6 to 10 present as before, all several spined. Joint 2 pinkish, setose in front, spinulose on the sides; cervical shield deep black. Dorsal yellow green obscurely yellow on the edge all around, including a ring about the subdorsal horn of joint 11; without this a fine line of black spinules. Horns pinkish except the subdorsals of joints 5 and 11 which are cold blue green and those of joints 6 to 10, which are nearly colorless. That of joint 6 has only two or three spines and is sessile. Spines salmon-colored with black tips. Depressed space (1) and (4) pale, narrowly black edged; (6) indicated by a black dot. Patches of caltropes on the tips of the lateral horns of joints 6 to 12 and also on the lateral horn of joint 4 and even a few on top of the subdorsal horns of 5, 11 and 12; a distinct patch on the subdorsal of 13. Skin spinules black in the blue-green parts as before. Dorsum of joints 3-4 shaded with purplish as before. Length 8.8 to 11 mm.

Stage VIII.—As before, but the subdorsal horns of joints 4 and 12 as well as those of 5 and 11 are blue green, the others still pinkish; there is a narrow dark green edge to the blanket patch outside of the yellow and small imperfect patches of de-

tachable spines above the subdorsal horn of joint 13 and the lateral of 12. The subdorsal horns of joint 6 are obsolete, represented by only one seta; those of 7 to 9 still distinct, that of 10 small, about as 6 was in the stage before. The yellow green blanket patch reaches the middle of joint 5 exactly; it then runs forward on the sides, three-fourths encircling the subdorsal horn of 5, nearly half encircling that of 4, just touching the base of that of 3; its lower edge passes backward nearly straightly, just covering depressed spaces (6) to above the lateral horn of joint 12; then it proceeds slightly upward over the subdorsal horn of 12 and dorsally includes the single depressed space (1) of joints 12-13. It completely surrounds the subdorsal horn of joint 11, but does not appear to do so to the rudimentary subdorsals of 6 to 10, as they are concolorous or transparent. The yellow border about the subdorsal of 11 joins that about the edge of the blanket posteriorly. A white line along the subventral edge. General shape as in the mature larva; horns short, conic, the longest about as long as wide at the base; spines salmon-colored with black tips. Dorsum of joints 3 to 5 purple, shading to green on the edges; subventral area clear blue green; blanket opaque light yellow green, shading to yellow about the edges. Glandular dots (1), (4) and (6) ringed with rows of black spinules. Caltrop patches large, on the laterals 4 to 12 and subdorsal of 13; detachable spines brown. Skin spinules black on the dorsum of 3 to 5 and about edge of blanket; elsewhere colorless. A few caltropes on the ends of the long horns. Length 11 to 13 mm.

Stage IX.—No essential change. The detachable spine patches are still narrow and transverse. Head 2.0 mm. wide; caltropes in distinct patches on same horns as before. Length 13 to 17.5 mm.

Stage X.—The bars of detachable spines are a little larger, the subdorsal horns of joints 6 to 10 smaller, nearly rudimentary, some with none, others with 1 to 8 spines. Head 2.4 mm. wide. Some caltropes also on the lateral horn of joint 3 as on 4 to 13 and on subdorsal of 13, the patches becoming larger posteriorly, the largest on joint 13. All the horns are short, none higher than wide. Length 17 to 24 mm.

Stage XI.—Essentially as before. Detachable spines in large thick bands. Shape as described. Coloration as in the last

stages; dorsal yellow green blanket edged broadly with yellow, then narrowly with black-green; depressed dots (1), (4) and (6) black; dorsum of 3 to 5 purple. Horns all more or less blue, the spines salmon-colored; sides of the lateral horns dark green, subventral ridge lighter with a white line. Joint 2 in front pinkish, the cervical shield bisected into narrow, black brown divergent bars. Head 3.5 mm. wide. The dorsum of joints 2 to 5 is obliquely flattened, 11 to 13 sloping down; subventral space small and contracted. Horns short, sessile, all moderate and well spined except the subdorsals of 6 to 10 which are absent or represented by a few short spines. Head well retracted in the hood of joint 2. Spiracles round, reddish, that of 5 in the place of the lateral horn. Skin spines very dense, enlarged at the bases, becoming granules subventrally. Apices of the subdorsal horns bare or with a few large caltropes. Horns all distinctly shorter than before. Length 24 to 32 mm.

Cocoon with the characters of the group, spun with a veil as in *S. stimulea*. The location, exposed on a branch, is foreign to the habit of most Cochliidiidæ inhabiting temperate countries, but is often seen in tropical forms.

PARASITES.

Berg records the Dipteron *Systrophus nitidus* Wied as bred frequently from the cocoons. Two specimens of this fly (determined by Mr. Coquillett) emerged from my material. The fly comes out by the lid of the cocoon and its hard pupa case projects in the same way that that of the moth would have done. The fly appears later than the moths, about the time that the larvæ are in stage II, so that the egg is doubtless deposited at this early period.

EXPLANATION OF PLATE.

Ten figures showing the successive stages of the larva of *Sibine fusca*. The figures do not show the growth of the larva, being all drawn the same size, the relative magnification of each stage being less than the preceding. Stage I is magnified about 35 diameters and stage X about 2 diameters. The larvæ are not all drawn at the same period of the stage, some (as fig. 9) being only slightly grown in the stage and consequently flat, others (as fig. 10) being well filled out.

Notes on Some N. A. Geometrina and Pyralidina.

BY GEO. D. HULST.

GEOMETRINA.

Dr. Dyar writes me that Mr. Hampson made use of the term Epiplemidæ to express the family or subfamily called by Mr. Meyrick Strophidiadæ and by myself Strophidiinæ. Mr. Hampson's name has priority.

I think I am warranted in removing *Deptalia insularia* Guen. from the Sterrhidæ and placing it in a subfamily by itself to be called Deptaliinæ. In the hind wings it has the peculiar venation of the Sterrhidæ, but the fore wings are very decidedly different. The cell is very short, shorter than of any other Geometer I know of, and it is entirely anomalous in having veins 7, 8, 9, 10 and 11 on one stem.

Nycterosea Hulst, a genus of *Hydriomeniæ* (Tr. Am. Ent. Soc. xxiii, 263, 1896), is a synonym of *Tephroclystis* Hubn. In my classification *Tephroclystis* is said to have two accessory cells. It has one only.

Rhaphidodemas Hulst, described as a genus of the Ennominae (Tr. Am. Ent. Soc. xxiii, 362, 1896), I find cannot be definitely separated from *Phigalia* Hubn.

The specimen I regarded as *deplanaria* Guen., upon which I made *Paraphia* Guen. distinct from *Amilapis* Guen., was not *deplanaria* at all. My determination was, therefore, incorrect, and the genus *Amilapis* must be a synonym of *Paraphia*.

In my classification I made *Emplocia* Guen. a synonym of *Melanoptilon* H. Sch. I made a mistake in this, and I do not know that *Melanoptilon* is represented in our Fauna. Our species will be catalogued under *Emplocia*.

I find upon further examination I cannot find a satisfactory distinction between the genera *Hyperitis* Guen. and *Xanthrotype* Warr. The type of the first is *amicaria* H. Sch. and of the second *crocataria* Fabr. In *crocataria* the wings are less angulate and the male scarcely at all angulate, but no line can be drawn between the species. *Hypocharia* H. Sch., has bipectinate antennæ in the ♀ and must be in the same genus, and gives in form a connecting link between the two other species.

From a ♂ in the collection of Dr. Barnes, I am able to give the structure of that sex in *Stergammataea* Hulst, which was described from the ♀ only (Tr. Am. Ent. Soc. xxiii, 368, 1896).

Stergammataea ♂: Antennæ ciliate, filiform; thorax and abdomen not tufted; hind tibiæ with all spurs, swollen, and with hair pencil; fore wings without fovea below, slightly angulate; hind wings without fovea, outer edge wavy.

From a ♂ in the collection of Mrs. Slosson I am able to give the structure of that sex in *Spodolepis* Hulst, described from the only ♀ (Tr. Am. Ent. Soc. xxiii, 347, 1896).

Spodolepis ♂: Antennæ slender, slightly flattened, subdentate, very shortly pubescent; thorax and abdomen as in ♀; hind tibiæ somewhat swollen, without hair pencil, with all spurs; fore wings with fovea below; hind wings without fovea.

At the present time it seems to be acknowledged that whatever our personal opinions upon the subject of the names of the Tentamen of Hubner, it will save trouble and give uniformity if they are adopted. So in spite of my personal conviction, I yield to the opinions of others, and intend hereafter to use them. I find the date is uncertain, but there seems to be a fair agreement that it be written 1806. Having formerly regarded the date as 1810, one of the names, *Cyclophora*, could not be used for the genus known later as *Ephyra* or *Zonosoma*, as it was preoccupied. But with the date 1806, *Cyclophora* Hubn. has priority.

I find after an examination of British Entomology by Curtis, he gave the types of all the genera under which he described species. I very unfortunately did not note this fact, and so the species I gave as types of a number of these are incorrect. The type of *Speranza* Curt. is *sylvaria* Curt.; that of *Boarmia* is *consonaria* Ha., by which Curtis probably meant *crepuscularia* Hubn.; that of *Acidalia* as a Geometer is *aversata* L.; that of *Electra* is *ruptata* Hubn.; that of *Melanippe* Dup. is *alchemilliata* L.; that of *Aspilates* is *gilvaria* L.; that of *Ephyra* is *punctaria* L.; that of *Thera* Steph. is *variata* Schif.; that of *Hyria* is *auroria* Bork.; that of *Phibalapteryx* Steph. is *lincolata* Hubn.; that of *Siona* is *dealbata* L.; that of *Eubolia* is

chenopodiata L. All these genera remain synonyms, but in a few cases are synonyms of genera not those under which I placed them.

Sometime since, at my request, Sir George F. Hampson very kindly looked up some types in the British Museum, and has sent me the following determinations :

Thamnonoma gracilior Butl. is a synonym of *Emiltis* (*Acidalia*) *sentinaria* Hubn.

Pseudosiona Taylori Butl. is a synonym of *Dyscia* (*Aspilates*) *orciferata* Walk.

The type of *Stegania quadrinotata* Walk. is in the Oxford Museum, and is the same as *Heterophleps triguttata* H. Sch.

Acidalia albifera Walk. is the same as *Asthena albogilvaria* Morr., and antedates it.

Mr. Hampson sent me a colored figure of *Aspilates abbreviata* Walk., and it is the same as *Diastictis floridata* Hulst, and has priority.

The types of the following are not in the British Museum : *Acidalia arcticaria* Walk., *A. suppressaria* Walk., *A. inclusaria* Walk., *Aspilates donataria* Walk., *Tephronia pervelata* Walk., and *Phibalapteryx floridata* Walk. The types are either lost, or, what is more probable, have been placed with the species of which they were synonyms, and the type labels (which Mr. Walker did not place on the pin with the types but by their side) were not moved with them. There is scarcely a possibility these species will ever be recognized. They are, however, I believe, the only remaining species of Mr. Walker from our fauna, which are not known to us.

Mr. Schaus tells me, that, from an examination of the type, he has learned that *Micronia sitellata* Guen., *Gypsochroa* (*Philereme*) *albosignata* Pack., *impauperata* Walk., and *hæsitata* Guen., are the same, *sitellata* being the oldest name.

I have lately seen a ♂ of *Xanthorhœ multilineata* Pack. It has flattened, naked antennæ, and so falls under *Hydriomena*, not *Xanthorhœ*.

A specimen was sent me from the National Museum with type label on it *Coremia demifasciata* Lintner. I do not know that it was ever described, but is the same as *latirupta* Walk.

Rheumaptera immediata Grt. was described from specimens

in the collection of Mr. Hill, of Albany, N. Y. The representatives of Mr. Hill say there is no such specimen now in the collection. It is not in the British Museum, where Mr. Grote's collection went. It is, therefore, lost, if it has not been accidentally overlooked in the collection of Mr. Hill.

On the authority of Mr. Hampson *Larentia frigidaria* Guen. is a synonym of *Psychophora sabinii* Curt.

Dr. Dyar writes me, *Eudule unicolor* Robs. is a synonym of *Eudule conformis* Walk. He also states that *Eudule texana* French is not a Geometer, but a Lithosian and a synonym of *Pogara simplex* Walk.

Mr. Hampson writes me that *Acidalia basipunctaria* Walk. is a Noctuid. He also thinks that *A. violacearia* Walk. is the same as *A. temnaria* Guen. My own study of the types led me to regard *temnaria* as a large *ossularia* Hubn., but I considered *violacearia* as a good species. Mr. Hampson has, I believe, determined *Melanomma auricinctaria* Grt. to be a Noctuid, and that *Meskea dyspteraria* is not a Geometer.

Antepione depontanata Grt. is a synonym of *Hypererytha arcasaria* Walk. A misunderstanding of my British Museum notes led me to make another, but an erroneous reference.

Another erroneous statement of my notes led me to say *Tephрина monicaria* Guen. was nearly identical with *fantaria* Hulst. It should have been *celataria* Hulst.

I have seen a ♂ of *Apæcasia (Lozogamma) bifilata* Hulst, and the species must in view of structure be removed to *Deilinia*. My impression is that *perpallidaria* Grt. is the same species, though I do not as yet feel certain enough to make the reference.

I have now a ♂ of *Emiltis floridata* Hulst, and it falls under *Eois* Hubn. The species is one with *Eois nimbicolor* Hulst. As there was an insect *Eois floridata* Pack., the name of *Eois floridata* Hulst will be *E. nimbicolor* Hulst.

Mr. Bruce writes me that *Tetracis trianguliferaria* Pack. var. *notataria* Hulst is the constant form of the species in Colorado. He says he has taken about 50 specimens, all of the *notataria* form, none like Packard's *trianguliferaria*. In view of this we have good reason to regard *notataria* as a good species.

I have heretofore put *Glena (Tephrosia) texanaria* Hulst as

a synonym of *minimaria* Guen., for the reason that I saw in Guenée's collection a specimen with a type label upon it in Guenée's handwriting. I am unable to find any description of the species by Guenée, and unless it was described, the name does not hold. It is very remarkable how many type labels have been put on specimens which have never been described, or have been described under other names. Certainly, of American species, when I was at the British Museum in 1894, there were not less than I should say 40 to 50 species thus labelled.

(To be continued.)

Goniops and other Synonyms.

BY J. M. ALDRICH.

I am greatly obliged to Mr. James S. Hine for pointing out the identity of my *Goniops hippoboscoides* with *Pangonia chrysocoma* O. S. I see on comparison that there is no doubt of the synonymy. Osten Sacken refers to the species as being rather different from the rest of those included in *Pangonia*, and I consider the genus *Goniops* a good one. The species will therefore be known as *Goniops chrysocoma* O. S.

I must confess to a feeling of sadness that this first-born of my entomological activity should be so early cut down. I have frequently consoled myself, when other work proved unsatisfactory, by reflecting on the brilliant discovery that I brought forward in that first paper!

In the few papers that I have published on the Dolichopodidæ, I have made several synonyms that I subsequently discovered for myself; these I believe should be recorded for the benefit of other workers in Diptera.

1. **Aptorthus** Aldrich, Kans. Univ. Quart., ii, 48, 1893.

This I recently found is identical with *Mesorhaga* Schiner, Novara, 217, 1868, described from South America. The species I described are all valid.

2. **Dactylomyia** Aldrich, l. c., 151.

The type, *gracilipes*, had been previously described by Loew as *Saucropus superbiens*. Later writers have rejected the genus *Saucropus*, placing the species under *Neurigona*. Since I have

become acquainted with several of the long-legged species of this genus, I do not think that there is any justification for *Dactylomyia*.

The synonymy in this case was made out independently by Professor Wheeler, and has been referred to by him in his recent extensive paper on the Dolichopodidæ (Proc. Cal. Acad. Sci., 1899).

3. **Metapelastoneurus** Aldrich, l. c., 152.

This genus was based on the peculiar development of the hypopygium in a species of *Pelastoneurus*. Since the time of establishing it, I have often doubted the advisability of using such characters, unless of very remarkable form, and accompanied with some other tangible marks of distinction. Recently I have been engaged in working up the Dolichopodidæ for the *Biologia*, and I find so many forms of hypopygium in the genus *Pelastoneurus* as to leave no doubt of the untenability of my genus. I discard the name the more willingly, from the fact that it is the most villainously compounded (with three or four exceptions) that I ever inflicted on a long-suffering public.

4. **Xanthotricha** Aldrich, Trans. Ent. Soc., London, 1896, 339.

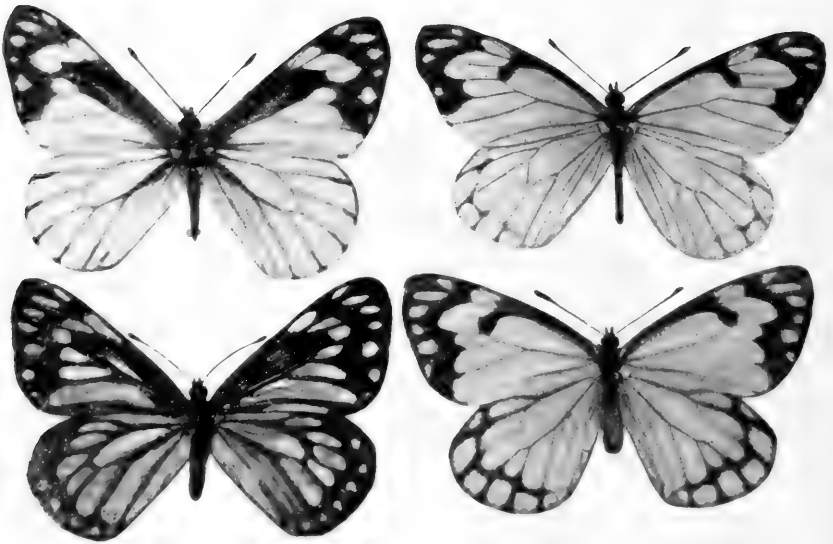
This is identical with *Thrypticus* Gerstaecker, Stett. Ent. Zeit., 1866, 43. It has also been described by Wheeler under the name of *Aphantotimus*, which would have been prior to my name. Wheeler has referred with a doubt to this synonymy in his paper, p. 30. By the way, I may take occasion to remark that my *Th. minor* differs from his *willistoni* in having antennæ which are yellow, except the tip of third joint.

The flat or concave space before the scutellum cannot be a character of importance in this genus, as it does not occur in most of my specimens. As the species are minute and very soft, shriveling or drying, it is usually impossible to speak with certainty on this point. When I described the genus, there seemed to be a difference from *Aphantotimus* in this part of the structure; but I am now convinced that it is evanescent.

5. **Chrysotus apicalis** Aldrich, loc. cit., 330.

This species has had such a checkered history that I can best express it by putting it in the form it might assume in a catalogue as follows:

532



NEOPHASIA TERLOOTII BEHR, ♂
NEOPHASIA TERLOOTII BEHR, ♀

NEOPHASIA MENAPIA FELDER, ♂
NEOPHASIA MENAPIA FELDER, ♀

Chrysotus barbatus

Loew, Neue Beitr., viii, 48; Mon. N. A. Dipt., ii, 38 (both male only, as *Synarthrus barbatus*); Neue Beitr., viii, 63; Mon. N. A. Dipt., ii, 175 (both female, as *Chrysotus validus*).

Wheeler, Ent. News, vii, 154 (*Xiphandrium americanum*).

Aldrich, Trans. Ent. Soc. Lond., 1896, 330 (*Chrysotus apicalis*).

The synonymy of *Xiphandrium* is on Wheeler's authority.

6. **Diaphorus approximatus** Aldrich, Trans. Ent. Soc. Lond., 1896, 321.

This is the same as our old friend *D. spectabilis* Loew.

A Headlong Plunge into the Synonymy.

HENRY SKINNER, M.D.

See Plate XIV.

In the April, 1900, NEWS, p. 415, I mentioned a Pierid under the name *Archonias lyceas*, from the Huachuca Mountains, Cochise Co., Arizona. This was a female, and was figured on Pl. II as No. 28. I first received a specimen for identification from Mr. O. C. Poling of Quincy, Illinois, and a little later another specimen from Dr. William Barnes. Godman and Salvin, in the *Biologia Centrali-Americana*, described *Archonias lyceas* in a brief comparative description, comparing *lyceas* with the figured species *dismorphites*. The Arizona specimen seemed to fit this description fairly well, although as there was some doubt in my mind in regard to my identification, I referred it to *lyceas* provisionally. Dr. Barnes, coming to the conclusion that my reference was incorrect, having received from Dr. W. J. Holland a drawing of *dismorphites* and a description of *lyceas*, sent me manuscript describing the Pierid as a new species under the name of *Archonias princetonia*, on account of its orange and black colors being the same as those of Princeton College. This was to have appeared in the NEWS for last May. In the meantime Dr. Strecker succeeded in obtaining a specimen of the insect from Mr. Poling. At a meeting of the Feldman Collecting Social, held in Philadelphia, April 18th, I, in a moment of thoughtless entomological enthusiasm, mentioned to Dr. Strecker the fact that Dr. Barnes had sent me a description of the species for publication in the NEWS, and that my reference was incorrect. I thought no harm could come from this as Mr. Poling had absolutely refused to exchange

his specimen, at least so far as I was concerned, and I knew the May NEWS was the first entomological journal to appear.

When I arrived at the Academy on the afternoon of April 19th, I learned that Dr. Strecker had visited the same institution, shortly after the janitor had arisen from his night's repose, and consulted the Biologia. In a couple of days I received by mail a single printed sheet, bearing the following :

"DESCRIPTION OF NEOPHASIA EPYAXA,

A NEW AND CURIOUS PIERID FROM ARIZONA.

By DR. HERMAN STRECKER, Reading, Pa., April 21st, 1900."

The paper begins : " A remarkable insect was figured in the last issue (April) of the ENTOMOLOGICAL NEWS." Further on the paper says,— "and serves to illustrate what a wonderland is Arizona." Now here was "a pretty kettle of fish." The editor of the NEWS had "let the cat out of the bag," and what was he to say to Dr. Barnes? Whether Dr. Strecker hired a special train to take him to Reading or whether he paid the printer a bonus for the sheet, red hot off the press, is not known. Doubtless the special sheet cost him quite a number of his good dollars.

Some time prior to the year 1868 the Baron Terloot de Popelaire, for reasons unknown to the writer, crossed the Sierra Madre Mountains in Mexico, on a line drawn between Mazatlan and Durango. At that time it was a wild and dangerous ride through an inhospitable country, and the region was infested by fierce Apache Indians. While on his journey, he came to the cold pine forest region and saw a butterfly fluttering at a considerable height between the fronds of the coniferous trees ; it finally alighted on a *Loranthus*, the only plant in flower in the vicinity. For reasons known to himself he captured the butterfly and put it in his pocketbook. If you will turn to page 304 of the Trans. Am. Ent. Soc. for 1868-69, you will find the following : "*N. terlooii* nov. spec. *Ala antica longitudinaliter dimidiata, dimidium superius nigrum, fascia maculari repanda alba intersectum, dimidium inferius cum alis posticis album.*"

Dr. Barnes recently sent me a male of the wonderful Arizona Pierid, and, strange to say, it was *black* and *white*. More wonderful still, it agreed perfectly with the above Latin description. But we should not plunge into these matters,—be sure before

you leap. I made a photographic negative of a male and female of the wonderful Arizona butterfly and printed it on platino-type paper and sent it to Dr. Herman H. Behr of the California Academy of Sciences. The male specimen I marked No. 1 and the female No. 2. The following is part of Dr. Behr's reply: "No. 1 of your drawing (photo) tallies perfectly with my type (captured by the Baron Terloot de Popelaire) which I still possess, but in a rather shattered condition. I have to communicate to you something else. I have heard about a caterpillar living in societies on a species of *Arbutus* (*Madrona*). These societies inhabit sacs of a paper-like substance almost impervious to water. I had several of these sacs sent me, but most of them contained only the exuviae of the former inhabitants; only in three of them were found dead chrysalids and several butterflies crippled by the want of room for their development. These butterflies were my *N. terlootii*, and the ♀ answers to your No. 2. I do not know whether the fact is generally known that the larva of *N. menapia* feeds on conifers; therefore we need not be surprised to find another member of the genus feeding on rather unusual food for a Pierid—the *Arbutus*. In Java I found larva of *Delias coronis* on a species of *Capparis*, analogously related to Cruciferae, like *Delias* to *Pieris*. In Australia I found the larvæ of two species of *Delias* on *Loxanthus preissii*, a parasitic shrub on which I never would have looked for Pierid larvæ."

As far as I am aware this butterfly has been unknown since 1869 until the present year. If Dr. Strecker had looked on page 74 (No. 25) of his Synonymic Catalogue, published in 1878, he would have saved about ten dollars, kept out of the synonymic consommé and given Dr. Barnes the pleasure of seeing his name *princetonia* in line number two. The synonymy stands thus,—

*Neophasia terlootii** Behr, Trans. Am. Ent. Soc., ii, p. 304, 1868-69.

Archonias lyceas Skinner (not Godman and Salvin), Ent. News, xi, 415, 1900.

Neophasia epyaxa Strecker.

* The name as given in the original description (*terlootii*) was probably a typographical error.

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, three 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, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—Ed.

PHILADELPHIA, PA., SEPTEMBER, 1900.

The annual meeting of the Association of Economic Entomologists was held at Columbia University, New York, on June 22d and 23d. Among those present were C. P. Gillette, L. O. Howard, F. M. Webster, James Fletcher, H. T. Fernald, A. D. Hopkins, W. G. Johnson, R. S. Clifton, A. F. Burgess, C. P. Lounsbury, E. B. Southwick, C. M. Weed, Trevor Kincaid, E. P. Felt, A. H. Kirkland, W. M. Scott and A. L. Quaintance. The papers read were interesting and valuable, and the meeting was characterized by scientific enthusiasm and zeal for the work. The atmosphere that pervaded the meeting was for progress, and each man seemed anxious to further the science of economic entomology. The different States represented get a valuable return for the services of these men, who appeared to be interested in their studies for the science and for the benefit of their respective communities. How different is it here in Philadelphia and in the great State of Pennsylvania where all is politics and jobbery. The city and State expend considerable sums of money and get practically no return. The official entomologists of the other States mentioned injury by insects which represented hundreds of thousands of dollars in money value. We never hear anything of injurious insects in this State, and the only natural inference is that there are no injurious insects here. The citizens of the State of Pennsylvania do, however, get some information in regard to injurious insects, but in a beggarly way, as the State pays nothing for this service. These sources of information are the American Entomological Society and the State entomologists of Ohio and New Jersey respectively. Pennsylvania is in the slough of political darkness; will she ever awaken?

Entomological Literature.

COMPILED BY P. P. CALVERT.

Under the above head it is intended to mention papers received at the Academy of Natural Sciences of Philadelphia pertaining to the Entomology of the Americas (North and South). Articles irrelevant to American entomology will not be noted. Contributions to the anatomy, physiology and embryology of insects, however, 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; * denotes that the paper in question contains descriptions of new North American forms. Titles of all articles in foreign languages are translated into English; usually such articles are written in the same language as the title of the journal containing them, but when such articles are in other languages than English, French, German or Italian, this fact is indicated in brackets.

3. The American Naturalist, Boston, '00.—**4.** The Canadian Entomologist, London, Ont., '00.—**5.** Psyche, Cambridge, Mass., '00.—**7.** U. S. Department of Agriculture, Division of Entomology, Washington; Bulletin, technical series No. 8, '00.—**9.** The Entomologist, London, '00.—**11.** The Annals and Magazine of Natural History, London, '00.—**15.** Biologia Centrali-Americana, London; pt. clv, April, '00; rec'd. July 9.—**21.** The Entomologist's Record, London, '00.—**22.** Zoologischer Anzeiger, Leipsic, '00.—**30m.** Memoires de la Société Zoologique de France, xii, Paris, 1899.—**30b.** Bulletin of the same, xxiv, 1899.—**32.** Bulletin du Muséum d'Histoire Naturelle, Paris.—**35.** Annales, Société Entomologique de Belgique, xlv, Brussels, '00.—**40.** Societas Entomologica, Zürich-Hottingen, '00.—**41.** Entomologische Nachrichten, xxvi, Berlin, '00.—**49.** Termeszetrzaji Füzetek, xxiii, 1-2, Budapest, May 1, '00.—**55.** Le Naturaliste, Paris, '00.—**56.** Mittheilungen, schweizerischen entomologischen Gesellschaft, x, 6, Schaffhausen, March, '00.—**58.** Revista chilena de Historia Natural, Valparaiso, '00.—**81.** Biologisches Centralblatt, Erlangen, '00.—**84.** Insekten-Börse, Leipsic, '00.—**87.** Revue Scientifique, Paris, '00.—**97.** Zeitschrift für wissenschaftliche Zoologie, lxxvii, 3, Leipsic, May 22, '00.—**98.** Travaux, Société Imperiale des Naturalistes de St. Petersburg, Jan.-Feb., '00.—**101.** Rovartani Lapok, vii, 3, Budapest, March, '00.—**108.** The Agricultural Journal; published by the Department of Agriculture, Cape of Good Hope, Cape Town, '00.—**109.** Proceedings, Royal Society of Queensland, xv, Brisbane, '00.—**116.** Biological Bulletin, i, 3, Boston, May, '00.—**123.** Bulletin, Wisconsin Natural History Society (n. s.); i, 2, Milwaukee, April, '00.—**130.** Proceedings, Manchester [New Hampshire] Institute of Arts and Sciences, i, '00.—**131.** Proceedings, South London Entomological and Natural History Society, '99.—**132.** Popular Science, New York, '00.—**133.** Bulletin, Société des Sciences de Nancy (3), i, 3, March, '00.—**134.** Arbeiten aus der biologischen Abtheilung für Land und Forstwirtschaft am kaiserlichen Gesundheitsamte, i, 1, Berlin, '00.

THE GENERAL SUBJECT.—Adams, C. C. Insects that live in

running water, Nature and Art, Chicago, June, 1900.—**Anon.** On the odor of blossoms as a means of attracting insects, **84**, July 5.—**Bachmetjew, P.** The variation of the critical point in different individuals of one and the same species of insect, **40**, April 1; The vital minimum temperature in insects dependent upon the time [of exposure], **40**, June 15, July 1.—**[Bastian].** On the psychic life of insects, **84**, July 5.—**Bordage, E.** On the special protection of appendages, in process of regeneration, after artificial mutilation among insects [transl. from French orig.], **11**, June.—**Cockerell, T. D. A.** and others. [On the relative stability of tropical and temperate species], **131**.—**Faussek, V.** Autotomy and sensibility to pain in the animal kingdom, Naturwissenschaftliche Wochenschrift, Berlin, June 10, 17, 1900.—**Field, H. H.** Condemnable practices in generic revisions, **4**, June.—**Florentin, R.** Studies on the fauna of the salt marshes of Lorraine, Annales des Sciences Naturelles, Zoologie, (8) x, 4-6, Paris, April, '00.—**Grœnicier, S.** The fertilization and insect visitors of our earliest entomophilous flowers, **123**.—**Krick, E.** Entomology and the school [in Magyar], **101**.—**Lucas, R.** (General) and **Seidlitz, G.** (Coleoptera). Report on the scientific results in the field of entomology during the year 1897. Archiv für Naturgesch. lxiv, ii, 2, 1 Hälfte. Berlin, April, 1900.—**Pic, M.** Some words on variation, **55**, May 15.—**Plateau, F.** New researches on the relations between insects and flowers, 2nd part: the choice of colors by insects, **30m**; Experiments on the attraction of insects by colored stuffs and shining objects, figs., **35**, 4, May 14.—**Prenant, A.** The cell notion and tracheal cells, figs., **133**.—**Prowazek, S.** On the physiology of the nerves of insects, Der Zoologische Garten, xli, 5, Frankfurt a. M., May, 1900.—**Rudow.** Further contribution to the size-relations of insects, **84**, June 14.—**Thaxter, R.** Preliminary diagnoses of new species of Laboulbeniaceæ, ii, [fungi parasitic on insects]. Proceedings, American Academy of Arts and Sciences, xxxv, 21, Boston, April, 1900.—**Trouessart, E.** The Acarines and insects of the shafts of feathers, syringobial parthenogenesis, Volume Jubilaire Cinquantenaire, Société de Biologie de Paris, '99.—**Tutt, J. W.** The nature of metamorphosis, **131**.—**Ule, E.** Miscellany on the influence of animals on plant life, Berichte, deutschen botanischen Gesellschaft, xviii, 3, Berlin, Apr. 25, '00.—**Verson, E.** On the function of the giant cells in the testicular follicles of insects, Atti. R. Istituto Veneto di Scienze, Lettere ed Arti, lvii. Venice, Mar. 26, '99.

ECONOMIC ENTOMOLOGY.—**Adams, M. F.** Superintendent's report [on insects attacking trees and shrubs], figs. Annual Report, Buffalo [New York] Forestry Association, April 1, 1900.—**Anon.** The dangers of importation of insects with fresh fruits, **87**, June 23.—**Britton, W. E.** Insect notes, 23rd Annual Report, Connecticut Agric. Exper. Station for 1899, part iii, New Haven, 1900.—**Cockerell, T. D. A.** Some Coccidæ quarantined at San Francisco, **5**, June; A new genus of Coccidæ injuring the roots of the grape vine in South Africa, **9**, June.—**Cousins, H. H.** Fumigation of currant budmite with hydrocyanic acid,

Gardener's Chronicle, London, June 9, '00.—[Editor]. Locust fungus, **108**, Apr. 12.—**Fernald, H. T.** and **Hinds, W. E.** The grass thrips *Anaphothrips striata* Osb.; Treatment for thrips in greenhouses, 1 pl. Bulletin 67, Hatch Experiment Station of the Massachusetts Agricultural College, Amherst, Mass., May, 1900.—**Fletcher, J.** Recent additions to the list of injurious insects of Canada, figs. Transactions, Royal Society of Canada, v, 4, Ottawa, 1900.—**Frank.** The peabeetle [*Bruchus pisi* L.] its agricultural significance and the combatting of it, 1 pl., **134**.—**Fuller, C.** Locust destruction in Natal, **108**, May 10.—**Gillette, C. P.** Apiary experiments, 6 pls., Bulletin 54, Agric. Exper. Station, Agric. College of Colorado, Fort Collins, Colo., May, 1900.—**Harrison, A.** President's address [summary of the relation of mosquitoes to malaria, etc.], **131**.—**Hart, J. H.** The locust disease fungus [on the parasol ant], Bulletin, Botanical Department, Trinidad, No. 23. Port-of-Spain, April, 1900.—**Hlidge, R.** Miscellanea entomologica, or odd notes on the history and transformation of various insects [chiefly attacking figs.], **109**.—**Jennings, A. H.** Locust extermination in Mqanduli district [S. Africa, by fungus paste], **108**, March 29.—**King, G. B.** The Coccidæ of the ivy, **4**, July.—**Kuhlgatz, T.** [Notice of] Frank u. Friedr. Krüger: "Schildlausbuch. Beschreibung und Bekämpfung der für den deutschen Obst- und Weinbau wichtigsten Schildläuse. Bearbeitet für die Praxis. Berlin, Paul Pasey, 1900, **81**, May 1.—**Kumm.** Communications on the San José scale, Schriften der naturforschenden Gesellschaft in Danzig, (N. F.) x, 1, 1899.—**Lea, A. M.** Visiting entomologist and useful insects, **108**, May 10.—**Lounsbury, C. P.** Tickheartwater experiment, **108**, May 24.—**Lüstner, G.** On a new gallfly of the grapevine, *Clinodiplosis vitis* nov. sp. 1 pl., **41**, 6. Mar., '00.—**Manson, P.** Malaria and the malarial parasite, Popular Science Monthly, New York, July, '00.—**Martin, G. W.** Locust extermination [by fungus] in America, **108**, Apr. 26.—**Rörig, G.** Researches on the stomachs of birds important to agriculture and forestry, **134**.—**Ross, R.** Malaria and mosquitoes [French transl.] **87**, June 23.—**Santini de Riols, E.** The silks of *Bombyx mori*, of bivalves and of the spider, **55**, June 1.—**Sch., S.** The kissing bug, **84**, July 12.—**Serre, P.** Notes on American zoology [kissing bug], **30b**.—**Shirley, J.** Mosquitoes and malaria, **109**.—**F. S.** Notice of C. Schwalbe's "Beiträge zur Malaria-Frage." Heft. i. "Die Malaria und die Mosquito." Berlin, 1900, Naturwissenschaftliche Rundschau, Braunschweig, May 26, '00.—**Weed, C. M.** Insect record for 1899, figs., Bulletin 72, New Hampshire College Agric. Exper. Station, Durham, N. H., Feb., '00; The forest tent caterpillar, 2nd report, figs., Bulletin 75 of the same, May.—**Wilcox, E. V.** Abstract of recent publications, Experiment Station Record, U. S. Dep't of Agriculture, Washington, xi, 9, 10, 1900.

ARACHNIDA.—**Banks, N.** Synopses of North American Invertebrates, ix. The Scorpions, Solpugids and Pedipalpi, **3**, May; The red spiders of the United States (*Tetranychus* and *Stigmaeus*)*, figs., **7**.—

Borelli, A. Some scorpions of Chile, **58**, May.—**Cambridge, F. O. P.** Arachnida Araneidea, ii, pp. 121-128, pl. viii [*Sparassus*, etc.]*, **15**.—**Kräpelin, K.** Catalogue of the Solifugæ (?) of the Museum, **32**, '99, No. 7; On some new Arachnids*, figs., Abhandlungen, Naturwissenschaftlichen Verein in Hamburg, xvi, 1, 1900; Rec'd July 12.—**Neumann, G.** Revision of the family Ixodidæ, 3rd mem, figs.*. **30m**.—**Pocock, R. I.** Some new or little-known neotropical scorpions in the British Museum*, **11**, May.—**Santini de Riols, E.** See Economic Entomology.—**Schinkewitsch, W.** On the influence of wounds on the eggs of spiders, due to the bites of ichneumonid larvæ, figs. [in Russian, abstract in German], **98**.—**Simon, E.** List of the Arachnida collected by M. Charles Porter in 1898-9 and descriptions [in Latin] of new species, **58**, April.—**Theresa, Princess of Bavaria.** Myriapods and Arachnoids collected in South America, figs. [with descriptions by **G. Attems** and **Penther**], **22**, May 14.—**Wolcott, R. H.** New genera and species of North American Hydrachnidæ*, 4 pls., Transactions, American Microscopical Society, xxi, Lincoln, Neb., 1900.

PROTOTRACHEATA.—**Bouvier, E. L.** Some observations on the Onychophora (*Peripatus*) of the collection of the British Museum, figs., Quarterly Journal of Microscopical Science, London, April, '00

MYRIOPODA.—**Brölemann, H.** Two notable myriapods of Brazil [in Portugese] figs., Boletim do Museu Paraense de Historia Natural e Ethnographia, iii, 1, Para, 1900.—**Theresa, Princess.** See Arachnida.

COLLEMBOLA.—**Prowazek, S.** Structure and development of the Collembola, 2 pls., Arbeiten aus den zoologischen Instituten der Universität Wien und der Zoologischen Station in Triest, xii, 3, 1900 — **Wahlgren, E.** Collembola collected in Jan Mayen and East Greenland during the Swedish Greenland Expedition of 1899,* Ofversigt af Kongl. Vetenskaps-Akademiens Förhandlingar lvii, 3, Stockholm, Mar. 14, 1900.

ORTHOPTERA.—**Berg, C.** On some Chileno-Argentine Anisomorphidæ [in Spanish], Comunicaciones, Museo Nacional de Buenos Aires, i, 5, Dec. 30, '99. [Incorrectly placed under Coleoptera in the NEWS, vol. xi, p. 443].—**Bordas, L.** Study on the digestive apparatus of *Brachytrupes achatinus*, Stoll., Comptes Rendus, L'Academie des Sciences, Paris, July 2, '00.—**Burr, M.** Note on the geographical distribution of the Eumastacidæ, **21**, June 1; Notes on the Forficularia, v. Descriptions of new species and a new genus*, **11**, July.—**Cockerell, T. D. A.** Note on some red and blue pigments [of Acrididæ], Nature, London, May 10, '00.—**Donisthorpe, H. St. J. K.** Myrmecophilous Orthoptera, **21**, June 1.—**Fogg, S. C.** Preliminary notes on the Orthoptera in the vicinity of Manchester, **130**.—**Giardina, A.** On the biology of the Mantidae, 2 pls., Giornale di Scienze Naturali ed Economiche pubblicato per cura della Societa di Scienze Naturali ed Economiche di Palermo xxii, 1899. Rec'd June 13, 1900.—**Hunter, S. J.**, and **Sutton, W. S.** The Melanopli of Kansas, **5**, June, July, Aug.—**M'Clung,**

C. E. The spermatocyte divisions of the Acrididæ, 3 pls., Bulletin University of Kansas, i, 2 (Kansas University Quarterly, ix, 1) Lawrence, Kans., Jan., 1900.—**Rodzianko, V. N.** On the method of appearance of the egg cocoons of some locusts (Acrididæ) [in Russian] Bulletin, Société Imperiale des Naturalistes de Moscou, '98, No. 4, '99.—**de Saussure, H.** Orthoptera, pp. i-x, title page, **15**.—**Scudder, S. H.** The species of *Hadrotettix*, a genus of Cædipodinæ*, **5**, June; Note on the Orthopteran genus *Leprus* Saussure, **5**, July.

NEUROPTERA.—**Burnham, E. J.** See notice, *post.*—**Campos, F.** Entomological observations, *Lepthemis vesiculosa* Fabr. attacking Lepidoptera Rhopalocera [in Spanish], **58**, April.—**de la Croix, E.** Observations on *Termes carbonarius* Haviland, fig., **32**, 1900, No. 1.—**Förster, F.** See notice, *post.*—**Kellogg, V. L., and Kuwana, S. I.** Mallophaga from Alaskan birds,* 1 pl., Proceedings, Academy of Natural Sciences of Philadelphia, 1900, pt. i, May 29, 1900.—**Mansion, A.** Frogs and dragonflies, **87**, June 30.—**Schenkling, S.** Termites as fungus cultivators, **84**, May 17.—**Wasmann, E.** The guests of ants and termites [translated from orig.], **21**, May 15 to Aug. 1.—**Williamson, E. B.** See notice, *post.*

HEMIPTERA.—**Baker, C. F.** Notes on *Idiocerus* (Jassidæ), **4**, July.—**Ball, F. D.** Some new Jassidæ from the southwest,* **4**, July.—**Bogue, E. E.** A new species of *Kermes**, **4**, July.—**Champion, G. C.** Rhynchota Heteroptera, vol. ii, pp. 313-336 [Anthocoridæ]*, **15**.—**Cholodkovsky, N. A.** On the digestive apparatus of *Laphria* [In Russian, brief abstract in German], **98**.—**Cockerell, T. D. A.** The name of the cochineal, Science, New York, June 22, '00; *Macrocephalus arizonicus*=*uhleri* [and] Eggs of *Ceroplastes irregularis*, **9**, July; see also Economic Entomology.—**Distant, W. L.** Rhynchotal notes, iv, Heteroptera, Pentatominae (part.) (concl.), **11**, May; v, Heteroptera: Asopinae and Tessaratominae, **11**, July.—**King, G. B.** The genus *Kermes* in North America*, figs., **5**, July; see also Economic Entomology.—**Kirkaldy, G. W.** Recent notes on *Hydrometra martini* Kirk. *lineata* Say, **9**, June.—**Osborn, H.** The genus *Scaphoideus*, 2 pls.* Journal, Cincinnati Society of Natural History, xix, 6, June 26, '00; Description of a new species of *Hæmatopinus**, **4**, July.—**Quaintance, A. L.** Contributions towards a monograph of the American Aleurodidæ*, 8 pls., **7**.—**Uhler, P. R.** Aids to recognition of some North American genera and species of the old family Fulgoridæ.* Transactions, Maryland Academy of Sciences, 1900, Baltimore, May 25.

COLEOPTERA.—**Belon, M. J.** Descriptive catalogue of the Coleoptera of South Africa, family Lathridiidae. Transactions, South African Philosophical Society, xi, 1, Cape Town, Mar., '00.—**Boas, J. E. V.** On a case of care of the brood in a Goat-beetle [*Saperda populnea*], figs., 1 pl. Zoologische Jahrbücher, Abtheil. für Systematik, xiii, 3, Jena, May 30, 1900.—**Bordas, L.** Study of male generative glands of the Chrysomelidæ, **32**, '99, No. 6.—**Branesik, K.** Monstrous beetles,

figs. [in Magyar], **101**.—**Escherich, K.** On the regular occurrence of budding fungi in the intestinal epithelium of a beetle [*Anobium panicum*], figs., **81**, May 15, '00.—**Fall, H. C.** Revision of the Lathridiidae of boreal America, 3 pls. Transactions, American Entomological Society, xxvi, 2, Philadelphia, Dec., '99.—**Fleutiaux, E.** Description of a new *Protelater* from Chili, **30b**.—**Hopkins, A. D.** American fossil Coleoptera referred to the Scolytidae, fig. **5**, June.—**Horn, W.** On some Cicindelæ of the United States,* **41**, 7, 8, April.—**Olivier, E.** The Lampyrid types of the Museum, **32**, '99, No. 7; Revision of the Lampyrid Coleoptera of the Antilles and descriptions of new species, **30b**.—**Pic, M.** Contribution to the study of the Ptinidae of Central and South America, **35**, 6, June 29.—**Planet, L.** Monographic essay on the Coleoptera of the genera *Pseudolucanus* and *Lucanus*, figs., **55**, May 1.—**Rabes, O.** To knowledge of egg formation in *Rhizotrogus solstitialis* L., fig., 1 pl., **97**.—**Schenkling, C.** Strangers among the Central European beetles, **84**, May 17.—**Seurat, L. G.** Observations on the external genital organs of Coleoptera, **32**, '99, Nos. 7, 8.—**Sharp, D.** Coleoptera, vol. ii, pt. 1, pp. 609-624 [Cryptophagidae]*, **15**.—**Tornier, G.** The origin of malformations in beetles, especially hyperantennism and hypermely, figs., 1 pl., Archiv für Entwicklungsmechanik der Organism, ix, 4, Leipsic, May 22, '00.—**Waterhouse, C. O.** New species of the Coleopterous genus *Prionocalus* from Ecuador and Peru, figs., **11**, June.

DIPTERA.—**Bezzi, C. M.** On the occurrence of the genus *Chionea* Dalman in Italy, and the reduction of the wings in the Diptera, Rendiconti R. Istituto Lombardo di Scienze e Lettere (2) xxxiii, 9, Milan, 1900.—**Brues, C. T.** Peculiar tracheal dilatations in *Bittacomorpha clavipes* Fabr., **116**.—**Cockerell, T. D. A.** *Diplosis parthenicola*, n. sp.*, **9**, July.—**Colledge, W. R.** Observations on the life history of the common Mosquito, 2 pls., **109**.—**Howard, L. O.** The differences between malarial and non-malarial mosquitoes, figs., Scientific American, New York, July 7, 1900.—**Kertes, C.** Catalogue of the Tabanidae of the entire world. Budapest, 1900. Pp. 1-79. [In Latin. Bound in with **49**].—**Lécaillon, A.** On the relations between the larva and the nymph of the mosquito (*Culex pipiens*) and the surrounding medium, figs., Bulletin, Société Philomathique de Paris (n. s.) i, 4, '99.—**Melander, A. L.**, and **Brues, C. T.** New species of *Hygroceleuthus* and *Dolichopus*, with remarks on *Hygroceleuthus*, figs.,* **116**.—**Pratt, H. S.** The embryonic history of imaginal discs in *Melophagus ovinus* L., together with an account of the earlier stages in the development of the insect, 7 pls., Proceedings, Boston Society of Natural History, xxix, 13, June, '00.—**Prenant, A.** The tracheal cells of the larva of the *Æstrus* of the horse, **133**.—**Stein, P.** The Tachinidae and Anthomyiidae of Meigen's collection in Paris, **41**, 9, 10, May.—**Webster, F. M.** Some species of Diptera inhabiting or frequenting the wheat fields of the middle West, **4**, July.—See also Economic Entomology, various authors.

LEPIDOPTERA.—**Agassiz, G.** Catalogue of the variations and aberrations in my collection, Macrolepidoptera of the palæarctic zone, **56**.—**Beutenmüller, W.** A new *Sesia* from Alaska*, **4**, July.—**v. Bönnighausen, V.** The Uranidæ of the Old and the New Worlds, Verhandlungen, Vereins für naturwissenschaftliche Unterhaltung zu Hamburg, x, '99.—**Butler, A. G.** A list of the species of *Cyaniris*, a well-known group of the family Lycaenidæ, **11**, May; On a small collection of insects, chiefly Lepidoptera from Nicaragua, **9**, July.—**Chapman, T. A.** Some points in the evolution of the Lepidopterous antenna, 1 pl., **131**; The relationship between the larval and imaginal legs of Lepidoptera, 1 pl., **21**, June 1, July 1.—**Delahaye, F.** Polymorphism of Lepidoptera in Maine-et-Loire, Memoires, Société Nationale d'Agriculture, Sciences et Arts d'Angers, (5), ii, 1900.—**Dognin, P.** New Heterocera from South America, **35**, 5, June 8.—**Druce, H.** Descriptions of some new genera and species of Heterocera from tropical South America*, **11**, June, July.—**Dyar, H. G.** Life histories of North American Geometridæ, xii, **5**, June.—**French, G. H.** The genus *Catocala**, **4**, June.—**Frings, C.** Experiments with lowered temperature in the year 1899, **40**, May 15, June 1.—**Fyles, T. W.** The "entomological muddle," a rejoinder, 1 pl., **4**, July.—**Gauckler, H.** Melanism among Macrolepidoptera, **84**, July 12.—**Grose-Smith, H.** Rhopalocera Exotica, being Illustrations of New, Rare, or Unfigured Species of Butterflies. London, Gurney and Jackson. Part 51, Jan. 1900. Part 52, April, 1900.—**Grote, A. R.** A new *Catocala* from Texas*, **4**, June; Types of Noctuid genera, **4**, July.—**Hoffman, H.** Do the hairs of young caterpillars serve as a means of transportation [by wind-carriage]? **84**, July 5.—**Hulst, G. D.** Some new genera and species of Phycitinae*, **4**, June.—**Kathariner, L.** On the relations between the markings of the front and the hind wings of Lepidoptera. fig., **84**, May 24.—**Moore, F.** Lepidoptera Indica, parts xlii, xliii, London, Lovell Reeve and Co., 1899. Rec'd. June 4, 1900. [Vol. iv, pp. 113-136, pls. 325-332, pp. 137-160, pls. 333-340. Nymphalinae, group Nymphalina continued].—**Quail, A.** A fragmentary paper on the larval structure, etc., of *Hepialus? virescens* (D'bl'd) of New Zealand. 1 pl., **109**.—**Rauterberg, F.** List of Lepidoptera of the County of Milwaukee (cont.), **123**.—**Santini de Riols, E.** See Economic Entomology.—**Soule, C. G.** Some mating notes, **5**, June.—**Standfuss, M.** Synopsis of experiments in hybridization and temperature made with Lepidoptera up to the end of 1898, 1 pl. [Transl. from German orig.], **9**, June.—**Tutt, J. W.** Migration and dispersal of insects: Lepidoptera, **21**, May 15-Aug. 1.—**Vayssière, A. and Bordas, L.** Study of the case of a species of Psychid from the neighborhood of Tombouctou, 1 pl., Annales de la Faculté des Sciences de Marseille. x, 5. Rec'd July 9, 1900.—**Weeks, A. G.** See notice, *post*.

HYMENOPTERA.—**Aaron, S. F.** Case of double parasitism [*Osmia* on *Trypoxylon* in *Pelopæus* cells], figs., **132**, June.—**Ash-**

mead, W. H. Classification of the fossorial, predaceous and parasitic wasps, or the superfamily Vespoidea, paper No. 2, **4**, June; On the genera of the Chalcid flies belonging to the sub-family Encyrtinae, Proceedings, United States National Museum, No. 1202, Washington, 1900.—**Buscalioni, L.** and **Huber, J.** A new theory of the "ant plants," Beihefte zum Botanischen Centralblatt, ix, 2, Cassel, 1900.—**v. Butteler-Keepen, H.** Are bees reflex machines? Experimental contributions to the biology of the honeybee (concl.), **81**, May 1.—**Cockerell, T. D. A.** Observations on bees collected at Las Vegas, New Mexico, and in the adjacent mountains*, **11**, May; The cactus bees, genus *Lithurgus* **3**, June; The New Mexico bees of the genus *Megachile* and a new *Andrena**, **11**, July.—**Ferton, C.** Observations on the instinct of *Bembex* Fabr., Actes, Société Linnéenne de Bordeaux, liv, '99.—**Forel, A.** Hymenoptera, vol. iii, pp. 161-169 and title page, **15**.—**Frey-Gessner, E.** Hymenoptera Helvetiæ [cont., pp. 85-116], **56**.—**Friese, H.** New species of the bee-genera *Epicharis* Klug and *Centris* Fabr.* [two papers], **49**; Remarks on the bee genus *Euglossa* Latr., **49**—**Howard, L. O.** A new genus of Aphelininae from Chile, **4**, June.—**Janet, C.** On the balls of dirt cleaned out by ants, **30b**; On the presence of naked nymphs in the nests of *Lasius flavus*, **30b**; On the cephalic nerves, the corpora allata and the tentorium of the ant, 4 pls., **30m**.—**Kieffer, J. J.** Cynipidæ, forming vol. vii of Species des Hyménoptères d' Europe et d' Algerie fondé par Edmond André et continué sous la direction de Ernest André. 69e fascicule, Paris, Jan. 1, 1900. Rec'd May 23. Ph. 433-512, pls. xix, xx.—**Koschevnikov, G. A.** On the fat-bodies and the œnocytes of the Honeybee (*Apis mellifica* L.) (preliminary communication), **22**, June 25.—**Küster, E.** Contributions to knowledge of the anatomy of galls, figs., Flora, lxxxvi, 2, Marburg, Apr. 12, '00.—**Macgillivray, A. D.** *Tenthredo*, new species*, **4**, June.—**Michaëlis, G.** Structure and development of the male copulatory apparatus in the honeybee, 1 pl., **97**.—**Mitchell, A. B.** The tarantula wasp, **132**, May.—**Murtfeldt, M. E.** New Tineidæ with life histories*, **4**, June.—**Oudemans, J. T.** *Trichisoma lucorum*, L., a biological study [in Dutch], 1 pl., Tijdschrift voor Entomologie, xlii, 4, The Hague, March 9, '00.—**Peckham, G. W.**, and **E. G.** Additional observations on the instincts and habits of the solitary wasps, **123**.—**Plateau, F.** Vision in *Anthidium manicatum*, L., Volume Jubilaire Cinquantenaire, Société de Biologie de Paris, '99.—**Robertson, C.** Some Illinois bees*, Transactions, Academy of Science, St. Louis, x, 2, Feb. 21, '00.—**Wasmann, E.** See Neuroptera.—**Zander, E.** Contributions to the morphology of the male sexual appendages of the Hymenoptera, figs., 1 pl., **97**.

Illustrations of Hitherto Unfigured Lepidoptera. By **A. G. Weeks, Jr.** Published by the author. "Believing that, when circumstances permit, colored illustrations should accompany the descriptions of new species of Lepidoptera, I take pleasure in submitting the first of a series of papers

in which I intend to publish illustrations, with descriptive text, of previously unfigured species from my collection." *Hypolycæna festata*, *Lemonias Maximæ*, *Pyrgus pelagica*, *Myscelia Streckeri*, *Colias hecate* and *Prola pandora* ♀ are figured in a most beautiful manner, both sides of the insects being shown. Mr. Weeks is to be congratulated on the appearance of this excellent contribution to the literature of the Lepidoptera. We shall look forward with pleasure to the appearance of further contributions of a like character.—H. SKINNER.

Our knowledge of the geographical distribution of the North American Odonata grows steadily. A considerable addition to the data furnished by Dr. Scudder and Mrs. Slosson for New Hampshire is Mr. **Edward J. Burnham's** "Preliminary Catalogue of the Anisoptera in the vicinity of Manchester, N. H.," published in **130**, enumerating 28 species of this suborder, with notes on their habits, etc. It appears that *Macromia illinoensis*, which occurs in hundreds in a particular station near Manchester, is preyed upon by birds to such an extent that, after the slaughter, the "careful observer will discover wings in vast numbers scattered beneath the trees." One male each of *Neurocordulia obsoleta* and of *Pantala flarescens* are recorded; this is the most northern locality in the eastern United States now known for this latter, cosmopolitan species.

A more extensive work is Mr. **E. B. Williamson's** "The Dragonflies of Indiana." (24th Annual Report of the Department of Geology and Natural Resources of Indiana, pp. 229-333, 1003-1011, 7 plates, Indianapolis, 1900.) This fills the same place for Indiana that Prof. Kellicott and Mr. Hine's "Odonata of Ohio" does for that State. Descriptions of 84 species, positively known to have been found, and of others likely to occur, are given, with many data on habits, place and time of appearance of the imagos. A key to all the known genera, pp. 247-251, and keys to the species under each genus facilitate identification. Pp. 223-244 contain a general account of these insects. A feature of the present work, not often met with, is the addition of the etymology of the generic and specific names. A good glossary and index occupy pp. 1003-1010. Mr. Williamson has collected much in the vicinity of Bluffton and elsewhere, while the other chief sources of the material have been Mr. R. J. Weith of Elkhart, Mr. C. C. Deam and Mr. W. S. Blatchley, Orthopterist and State Geologist. As regards the species represented we may note a new *Enallagma, piscinarium*, allied to *geninatum* Kell.; the identification of the long lost *Agrion antennata* Say as *Enal. Fischeri* Kell., the species being now consequently known as *E. antennatum*, while in the genus *Gomphus* we may take this opportunity of making a correction affecting both the present work and Kellicott's "Odonata of Ohio." Specimens kindly loaned for the purpose by Messrs. Adams, Hine and Williamson have enabled me to ascertain that the *G. externus* Kell. and *G. externus* Wilmsn. are in reality *G. crassus* Hagen, as Mr. Williamson suspects in this very paper. The true *externus*, although in-

habiting Illinois, does not appear to have yet been found in Indiana or Ohio. (I hope to shortly publish a brief paper on this question, giving the specific distinctions of *fraternus*, *crassus* and *externus*.) Four of the plates of the work under notice illustrate structure and the use of terms; the other three figure specific characters of *Enallagma*, *Gomphus*, *Lestes*, *Argia*, *Æschna* and *Sympetrum*. Altogether, Mr. Williamson's work is *very good*.

One would not ordinarily look in a paper on "Odonaten aus New-Guinea" (49) for the description of a new genus from North America. Herr **F. Forster** has doubtless included it, however, for the sake of comparison with a certain Papuan form. The new genus in question is *Nasieschna*,† erected for *Æschna pentacantha* Rambur. The diagnosis is in French, from the pen of Baron de Selys-Longchamps. The name refers to the character of the nasus, which is greatly excavated. The relationship is stated to be with *Epiæschna*, *Brachytron* and *Acanthæschna*.—P. P. CALVERT.

DEPARTMENT OF ECONOMIC ENTOMOLOGY.

Edited by Prof. JOHN B. SMITH, Sc. D., New Brunswick, N. J.

Papers for this department are solicited. They should be sent to the editor Prof. John B. Smith, Sc. D., New Brunswick, N. J.

FISH OIL SOAP FOR THE ROSE BUG.

Macroductylus subspinosus Fab.

In ENT. NEWS, Vol. XI, p. 373, Prof. J. B. Smith records his suspicion that a solution of one-half pound of fish oil soap in a gallon of water will not kill the rose bug, *Macroductylus subspinosus*, as reported on p. 70 of Bull. 20, N. S., Div. Ent., U. S. Dept. of Agric.

It was my privilege to make the test under Prof. Webster's direction, and hence I am quite familiar with details.

The destruction of the females was a surprise. I "examined closely" and found that the females greatly distended with eggs were the most susceptible—they were *not* "worn-out specimens." The males and newly emerged females were the most important. If you observe closely, you will find that in the distended females the spiracles are exposed. In the males and newly emerged females the spiracles are covered by the elytra. But as they struggle about to escape, the solution reaches the spiracles and they die in a short time. As pointed out in the discussion at Columbus, this fact is quite significant and makes further explanation unnecessary. The spray was not "an impalpable mist." As the beetles cluster preferably on the blossoms and the fruit, the spray was turned directly upon them, thus giving them a more thorough wetting than in ordinary spraying a tree.—C. W. MALLY, Cape Town, So. Africa.

† Ought not this to be *Rhinaeschna*? P. P. C.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

ON page 498, June, 1900, ENT. NEWS, is a note by Prof. Ellison A. Smyth, Jr. He is made to say the following: "I am sure that *tenuis*, *diffinis*, *uniformis*, *thysbe*, are the same." His copy read as follows: "*tenuis* : *diffinis* : *uniformis* : *thysbe*. The "printer's devil," not understanding algebraic equations, got the thing into a snarl. Had the learned Professor eschewed algebra and used English as follows: *tenuis* is to *diffinis* as *uniformis* is to *thysbe*, the "devil" would have had no excuse to play tricks. Prof. Smyth will have a very interesting article on this subject in a future number of the NEWS.

EVERY Entomologist should have a copy of the "Entomologist's Directory," which contains names and addresses and lines of study of 1200 American Entomologists. Published by the American Entomological Society.

THE "Revision of the North American species of the genus *Cænonympha*," by Henry Skinner, just published by the American Entomological Society, gives the original descriptions of all the species, and contains a three-color process plate representing eighteen figures and all the known American species.

THE "Kissing Bug" is again epidemic in Philadelphia, and there is great danger from overcrowding in the wards of the hospitals. According to the daily press Dr. ———, of the Jefferson Hospital staff, knows more about the far-famed osculatory "*beetle*" and its habits than any other person. He has treated more than one hundred cases, and has a large collection of the "*bugs*." He found that in nearly every case the insect was a long black beetle, with a sting like that of the honey-bee. The victims never have any pain, but awaken in the morning with their lips inflated. Another Philadelphia scientist explains that there is no such thing as a "kissing-bug," and that the damage is all done by a spider that perforates the lips of victims with its antennæ. The famous kisser is often illustrated, and sometimes looks like a cross between *Thalassa lunator* and *Gryllotalpa borealis*. The "kissing bug," however, is likely to sink into insignificance when the "locomobile bug" appears in August. This insect has a long snout and bores into the kerosene tank of the horseless wagon, and the result is a terrific explosion. Now this is really serious and often causes death, whereas the "kissing-bug" seldom does, and the "bicycle-tire bug" is only most aggravating and often lets the wind out of a tire when the victim is on a "century run." ! ! ! !

BUG PUNCTURES BICYCLE TIRES.—Evanston is now presenting to science the latest freak in bugs—the "bicycle" bug. This hornet-like insect looks like a caricature of a New Jersey mosquito. On a body little more than an inch long it supports a pair of tentacles four inches long, with which it works havoc with the rubber tires of the wheels. The bug bores into the rubber until the escaping air frightens it away.

The first wheelman to suffer was Peter Arndt. He found one of the tires flat, while on the other one was the first "bicycle" bug that has yet been captured. He took his prize to Witt Bros.' repair-shop, where it soon drew a crowd of curious spectators. Before the afternoon had passed a number of Chicago wheelmen told the same story of the strange bug.

Professor William A. Locy, of the Northwestern University biological laboratories, called the bug an *ichneumon*. It is not common in this country. Its usual place of burying its tentacles is in the bark of a tree, laying its eggs through them. Professor Locy said that perhaps the bug mistook the soft rubber for the pulp on the trees.—*Newspaper*.

Doings of Societies.

The May meeting of the Feldman Collecting Social, was held at the residence of Mr. H. W. Wenzel, 1523 South 13th St.; eleven persons were present.

Mr. Harbeck reported the capture of *Calosoma Willcoxi*, a rare beetle in this locality.

Mr. H. Wenzel stated that he had on one occasion observed members of this species devouring caterpillars in Cape May Co., New Jersey.

Mr. Børner reported the capture of a specimen of this species on May 16th.

The occasional occurrence in abundance of several rare species of coleoptera was discussed by Messrs. H. W. Wenzel, Børner, Harbeck and Fox.

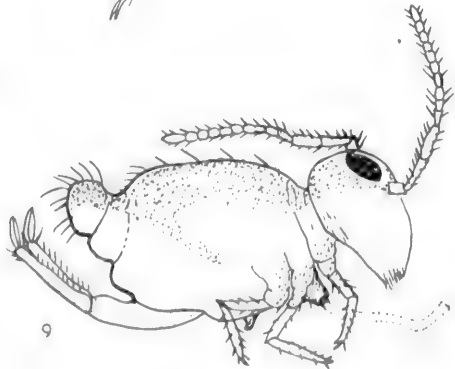
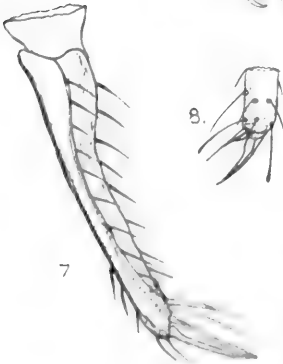
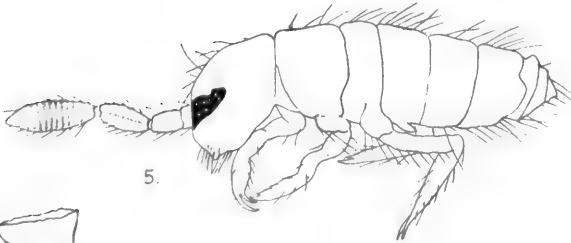
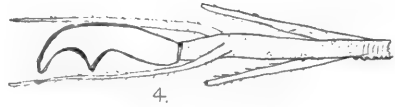
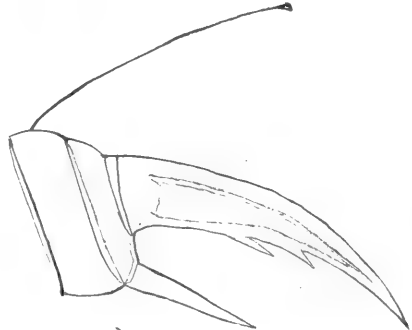
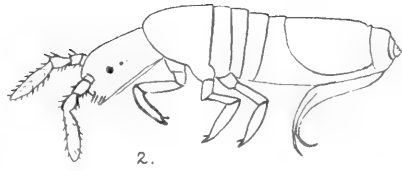
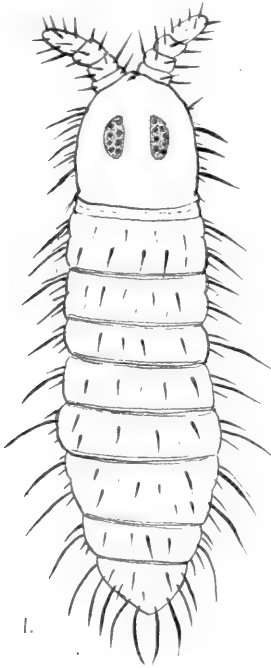
Mr. Børner gave the results of sifting for Pselaphidæ along the Neshaminy Creek, Pennsylvania. The collection included *Rhexidius canaliculatus*, *Rhexius globosus*, an unidentified species of *Batrisus*, and one of *Tychus*.

Dr. Castle stated that while he had found *Megalonycha fuscula* last year in great abundance at Angora, Pa., this year only a single specimen had been taken.

Mr. H. Wenzel exhibited specimens of *Bryaxus abdominalis* showing peculiar sexual characteristics. Of the specimens recently taken, the average was three males, against twenty-five females.

Specimens of *Anthocharis genutia*, *Nisoniades martialis*, *Thecla similacis* *Thecla augustus*, were reported as having been taken on April 29th, at Laurel Springs, New Jersey, by Mr. F. Hoyer.

WILLIAM J. FOX, *Secretary*.



NEW MAINE COLLEMBOLA.

1. ACHORUTES TIGRINA.
 5. GENUS? SP.?

2-4. ENTOMOBRYA AGLIS.
 6-9. SMYNTHURUS BRUNNEUS.

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XI.

OCTOBER, 1900.

No. 8.

CONTENTS:

Harvey—New Maine Collembola.....	549	nix, Arizona.....	561
Hulst—Notes on Some N. A. Geometrina and Pyralidina (concluded)..	554	Editorial	571
Banks—Two New Species of Troctes.	559	Entomological Literature.....	572
Griffith—Coleopterous Fauna of Phoenix, Arizona.....		Notes and News.....	577
		Doings of Societies.....	578

New Maine Collembola.

By the late F. L. HARVEY, Orono, Me.

· Plate XV.

Entomobrya (Sinella) agilis. n. sp. (Pl. xv, figs. 2-4).

White, excepting the eye patches which are brown; clothed with plumose hairs, those about the head and neck, and scattered ones on the body, bowed and clubbed. Antennæ about as long as the head, thick set, joints in one specimen in the ratio 4 : 6 : 5 : 13, in another 8 : 15 : 12 : 27; the terminal joint nearly as long as the other three joints together, two and three broad at the distal and narrow at the proximal end, clothed with hairs, those on the terminal joint verticillate. Eye patches two on each side of the head, small; the anterior larger and bearing two ocelli close together and transversely arranged; the posterior elongated, with a single ocellus, at the anterior end. Legs rather stout and hairy; superior claw with two teeth on the inner edge, one tooth near the middle and the other half way between it and the distal end, sides of the claw depressed; inferior claw plain, half as long as the superior, apparently round and gradually sloping to the apex; a single tenent hair bulbous at the end.

Furculum more than half as long as the body and head together, manubrium and dentes nearly equal in length, dentes corrugated transversely on the under surface, two stout plumose hairs extend beyond the end of the mucrones. Mucrones with two teeth in side view, the first forming a hook at the end, the other at right angles to the mucrone.

A small, active, rather thick set species. Found in the cellar under boards and barrels at Orono. Size about 1 mm. Four specimens examined November, 1898, and other specimens taken in April, 1899, by F. L. Harvey.

Remarks.—The eye patches are somewhat variable in outline, usually separated, but sometimes connected by pale threads of color. The bowed hairs on the body, and the stout hairs projecting beyond the dentes, are easily rubbed off and may not show in alcoholic specimens, but are easily found in fresh material.

This species in the structure of the superior claw and in the mucrones is related to *S. myrmecophila* Reut.

The eye patches are small, like those of *S. curviseta* Brook., but the ocelli are six; the antennæ are also much shorter and the joints different. The claws are very different from those of *S. Hofi* Schäffer.

It may be distinguished from the described species by the white color, small size, nature of the eye patches, the six ocelli, the stout, short, hairy antennæ. Only two American species of *Sinella* have been described; *S. curviseta* Brook., and *S. sexoculata* Schött, from California and Mexico. The above is the first species from eastern North America. Schött, Reuter, Schäffer and Folsom think the genus *Sinella* should be merged into *Entomobrya*, an opinion also entertained by the writer.

Smyathurus brunneus n. sp. (Pl. xv, figs. 6-9).

Pale yellow with a pale brown band on the back reaching one-third down the sides and extending on to the head including the black eye patches. Starting from the penult segment and extending obliquely along the side toward the base of the legs, is a narrow extension of the brown dorsal band.

Antennæ longer than the head, pale purple, the terminal joints much darker; the terminal joint composed of about ten sub-joints. Eye patches black, conspicuous; ocelli eight on each side of the head.

The terminal segment armed with stout curved hairs. A few prominent hairs on the back. Legs pale, superior claw long and without teeth, inferior claw nearly as long as the superior, swollen at the base, abruptly narrowing at one-third from the base and ending in a long slender point.

The sucker prominent, when extended, reaching beyond the head, the catch conspicuous and of the form shown in fig. 6. Elater stout, when

extended reaching beyond the body, the dentes furrowed below and bearing about ten, stout, long hairs on each margin. On the under surface of the dentes, near the base of the mucrones, is a stout bristle which is swollen in the basal half and extends to about three-fourths the length of the mucrone. On the dorsal side near the base of the mucrones are a few stout curved hairs. Mucrones oblong in outline with a median and dorsal ridge, the under edge thin and without teeth.

Total length about 1 mm.

Found in May under boards where it had hibernated. Orono, May, 1898, F. L. Harvey.

Remarks.—This species is related to *S. arvalis* Fitch and *S. fitchii* Folsom, but differs in the antennal subjoints as well as in the claws. It has been called *S. brunneus* on account of the broad brown band on the back. The figures are camera lucida drawings made by the writer.

Genus? sp.? (Pl. xv, fig. 5).

Description.—White, washed with pale blue. Eye patches prominent, black, connected by a narrow band. Eight ocelli on each side of the head. Antennæ apparently four jointed, pale blue throughout, darker than the body, nearly twice as long as the head, very stout, ratio of the joints, 2 : 3 : 6 : 11. The terminal joint broad, about as long as the other three together, annulated by about twelve rings, armed with short hairs.

Claws large and stout for the size, without teeth, a single tenent hair bulbous at the end. Elater and mucrones much as in *Templetonia*. Length .6 mm.

A small, stout, active species found in celery stored in the cellar, Orono, Maine, January, 1890, F. L. Harvey.

Remarks.—We have seen only two specimens of this remarkable form. They were examined alive and finally one specimen was preserved in balsam. We had hoped to find more, but have not, and so record our notes, thinking they will be interesting, and wait for more specimens before placing the species definitely.

The ringed terminal joint of the antennæ would suggest *Templetonia*, but as species of *Templetonia* are now known without annulated antennæ, there is no reason why a species of some other genus, ordinarily with plain antennæ, may not have them ringed. The four joints to the antennæ we think would exclude this form from *Templetonia*. The prominent eye patches, eight ocelli and their arrangement, and the presence of scales would suggest *Lepidocyrtus*, but the mesonotum does not project over the head,

which would suggest *Scira*. There are scales and also long hairs covering the body ; this would exclude it from *Entomobrya*.

The fourth segment of the body, however, is not much longer than the third and is more like an *Isotoma*.

We present a drawing, fig. 5, made by L. H. Homer, of the Junior Class, University of Maine, which shows the form. We will loan the slide to anyone who may care to see the specimen.

Achorutes tigrina n. sp.

The ground color straw yellow mottled with patches of deep brown ; the sutures show the ground color and give a transversely banded appearance ; the dark markings on the dorsum arranged in three interrupted longitudinal bands, one median and the others lateral, alternating with the ground color ; these longitudinal stripes show more plainly on the middle of the body, where each segment bears about three blotches in each band. Body quite slender for the genus, covered with minute tubercles ; armed with stout curved hairs ; there are from one to two very long hairs on the lateral prominences of each segment and also several short ones. The terminal segment without anal spines but armed with several very long curved hairs. Antennæ stout, clothed with hairs, gradually tapering, terminal joint about as long as the two preceeding ones, obtuse at the end. Eye patches prominent, situated directly behind the antennæ in the middle of each lateral half of the head, ocelli eight on each side of the head. Legs stout ; upper claw large and broad at the base for the length ; a single small tooth on the inner margin about one-third from the end. Inferior claw very slender, about two-thirds as long as the superior, ending in a slender point ; tenent hair single, stout, fully twice as long as the superior claw and slightly bulbous at the end ; furcula short and stout.

Described from eight specimens found on bark in the woods at Poronal, Me., May, 1899, by O. O. Stover, of the Senior Class of the University of Maine.

Characterized by the slender form, absence of anal spines, peculiar color pattern, tubercled body, long hairs on the body, structure of the claws and the furcula.

Remarks.—So far as we know an *Achorutes* without anal spines has not been described from the United States. The figure shows the form too broad for the length, because of flattening in mounting. The outlines were made with a camera lucida. No attempt is made to show the peculiar mottled and striped appearance, but only the location of the long hairs.

Isotoma — n. sp. ?

White throughout, clothed with long, straight, pointed hairs ; apparently *blind*, at least no eye patches ; body elongated, giving one the impression

of *Lipura*; thorax particularly long; antennæ about as long as the head, the three proximal joints about equal, the terminal nearly as long as the others together; legs short; the claws without teeth, the inferior claw not dilated at the base; elater not reaching the vertical tube, the dentes twice as long as the manubrium and very slender, the manubrium reaching a little beyond the abdomen; mucrones with two teeth, the terminal hooked, the second longer and vertical.

Found in moss in the woods, Orono, Me., April, 1899, by F. L. Harvey-

Remarks.—This species reminds one of *I. nivalis* and *albella* Packard, but it cannot be either.

It differs from *I. nivalis* in having the first tooth of the mucrone curved, dentes twice as long as manubrium instead of slightly longer, and the manubrium extending beyond the body; there is no tooth on the inner margin of the superior claw.

It differs from *I. albella* Pack. in not having eye patches, the lower claw is lanceolate and not dilated at the base and the mucrones have only two teeth.

If our diagnosis is correct, this species would, following Mac Gillivray, be related to *I. parva* Mac G., from which it differs in color and in having the claw not dilated in the middle. (The second and third antennal segments are dilated at the apex as in this species.)

EXPLANATION OF PLATE XV.

Fig. 1. *Achorutes tigrina* n. sp., dorsal view.

Figs. 2-4. *Entomobrya aglis* n. sp. 2, side view of the insect; 3, the foot enlarged showing structure of the claws and the tenent hair; 4, side view of a mucrone, showing also the coarse hairs at the tip of the dens.

Fig. 5. Genus? sp.? side view of the insect.

Figs. 6-9. *Smynthurus brunneus* n. sp. 6, the catch; 7, dentes and mucrones; 8, foot and claws; 9, side view of the insect.

COELIOXYYS 8-DENTATA AND ITS HOST.—Although it has been long known that the bee-genus *Coelioxys* is parasitic on bees of the genus *Megachile*, yet none of the many American species have been hitherto bred from the cells of the latter, our knowledge of the parasites having come from observations on European species. During the past Summer I received from Dr. Henry C. McCook several cells of the leaf-cutting bee, *Megachile mendica* Cresson, from which there emerged in due time four female host-bees, and one female specimen of *Coelioxys octodentata* Say.—WILLIAM J. FOX.

Notes on Some N. A. Geometrina and Pyralidina.

BY GEO. D. HULST.

GEOMETRINA.

(Continued from p. 531, Vol xi, No. 7.)

It is a matter of interest that Mr. Aurivilius, of Sweden, has, from a study of the type of Fabricius, ascertained that *Phalana ærata* Fabr. is the same as *Synchlora glaucata* Guen. (*rubivora* Riley). Fabricius described another N. A. species as *Phalana bicolorata*, which is not yet determined, but may be *Cymatophora distriburaria* Hubn. But as Fabricius had already described a *Phalana bicolorata* from South America, his name in any event falls for the American insect.

Mr. Cross wrote me that, at my request, he had made an examination of certain types of Dr. Packard. He considers *Asthena brunneifasciata* Pack., as at best, a variety of *Asthena albifera* Walk. (*albogilevaria* Morr.). He also does not consider *Boarmia polygrammaria* Pack. a good species, and is also of the opinion that *Endropia apiciaria* Pack. and *Endropia pilosaria* are variations of the same species.

I would like just here to give my testimony to the character and worth of Mr. Edward Winslow Cross, who, a few months since, came to an untimely end. He was a young man of great refinement and culture, and did his work thoroughly and patiently. He had in him, by education and tendency, the making of one of the best of entomologists, as by nature he had in him the making of one of the noblest. The science met with a very great loss in his passing away from us.

Prof. Forbes' Rept. State Ent., Ills., xiv, 95, 1885, describes an insect as *Biston upsilon*. Not long since my attention was called to this description, and Prof. Forbes very kindly sent me material for study. I find it is the insect afterwards described by me as *Naophora carlotta*. Whether there are any more descriptions of Geometers buried in the myriads of State, personal and Experiment Station Reports, I do not know. If original descriptions are made in such reports it would seem some note of the fact ought to be made in some regularly issued scientific journal, or better, a duplicate description be given there. This insect does not seem to be uncommon in

Illinois, and Prof. Lugger reports it as fairly common in Minnesota. My own types came from Charlotte Harbor, Fla.

From an examination of a number of specimens I am now of the opinion that *Eustroma cunigeratum* Walk. and *E. explanatum* Walk. are distinct species.

Having received specimens of *Hypsipetes albifasciata* Pack., which Dr. Packard puts as a variety of *Hydriomena sordidata* Fabr., I consider it not only specifically but generically distinct. It belongs to *Enchoria* Hulst.

In Staudinger's Catalogue, No. 2686, p. 189, 1871, we have a species catalogued without description as *Cidaria lugubrata* Staud. It is the same as the *luctuata* of authors, but that is not the *luctuata* of Hubner. But Moeschler had previous to this, named a variety from Labrador as *Cidaria obductata*. This last name was, therefore, the first name given to the species. It seems the species ought, therefore, to be catalogued *Cidaria obducta* Moesch., with Staudinger's form as the variety.

In Rho. Het. N. A., Suppl. II, Dr. Strecker publishes quite a number of new species of Geometers. How many of these are good species I am unable to say. *Geometra bellonaria* is, I am certain, a synonym of *Aplodes obliqua* Hulst. *Sicya faustianaria* is a variation of *S. macularia* Harr. Whether it is exactly covered by any of the variations described by Guenee I cannot say. *Marmopteryx topazata* is a good species, but belongs not to *Marmopteryx* but *Cænocalpe* Hubn.

I have elsewhere suggested that *Acidalia frigidaria* Moesch. was a variation of *A. inductata* Guen., but, as I have since learned, without sufficient reason. Having now males of both species, I find, though very like each other in form and color, the males distinctly differ in structure.

Having received a ♂ of *Racheospila xysteraria* Hulst, I find it is a *Synchlora*.

I have also a ♂ *Selidosema correllatum* Hulst, which shows it should be catalogued under *Cleora* Curt.

I have received from the National Museum a specimen of *Endropia bilineata* Pack., with a label in, I believe, Prof. Fitch's handwriting upon it, marked, *Endropia johnsonaria* Fitch. So it may be considered settled that the two species are the same, Fitch's name having priority.

I have come to the conclusion that *Bronchelia hortaria* Fab. must be placed as a synonym of *Phalena virginiana* Cram. ; that *Ephyra pendulinaria* Guen. is the same as *Arrhrostia lumenaria* Hubn. ; that *Eumacaria brunneata* Pack. is one with *Hypargyris pustularia* Hubn. ; and that *Acidalia reconditaria* Walk. (known commonly as *A. enucleata* Guen., which it is not), is the same as *Eulepidotis alabastaria* Hubn.

While there is some difference between the types, I have concluded that *Diastictis subacuta* Hulst and *Macaria respersata* Hulst are the same ; that *Thamnonoma pervolata* Hulst and *Phasiane hebitata* are the same, that *Phasiane mellistrigata* Grt. and *Phasiane trifasciata* Pack. are the same. There will almost surely be a uniting of more species, as more abundant material is obtained.

Mr. Hanham, of Winnipeg, writes me that *Eois inductata* Guen. is double brooded in that locality.

Mr. Bruce says of *Eucrostis viridipennata* Hulst, "it is common on a boggy tract of land in Park Co., Col., at about 9000 feet altitude. It apparently feeds on *Potentilla*, as I always beat it from that plant. The green is dark, but so fugitive, that it always turns yellow in dampening. They must be spread before they are stiff or the color is gone."

Mr. Bruce says of *Melamæa magdalena* Hulst, that it flies around the tops of pines at high elevation (10,000 feet), and is extremely difficult to get, as it seldom flies low enough for the net. It flies by day.

Mr. Cockereil, writing from southern New Mexico, tells me "the larva of *Eucphyra serrulata* Pack. was found on heads of *Bigelovia gracilens* var., at the beginning of October. It emerged in the early part of November. The larva was uncertain, as two or three kinds were mixed, but I think the larva which was of this species was entirely orange yellow, the color of the flowers."

Dr. Kunze writes me of *Emplocia cephisaria* Grt. "My specimens were all taken in the San Francisco Mountains, Ariz., in bright sunshine, rifling the flowers of *Hyethia* sp. and *Rudbeckia lanceolata*, the most at an elevation of 8600 feet, some as high as 9500 feet. I saw them on no other flowers. They were taken between July 19th and August 2d. Both this and

Gnophela hopferi feed on *Wyethia*. This (the *Emplocia*) is a shy insect and keeps a weather eye open for pursuers."

Dr. Prime tells me that *Sicya macularia* Harr. has not been found by him, except very rarely, and then only one year, at Franconia, N. H., where his summer home is. But at his "Cabin," as he calls it, some 1500 or 2000 feet higher on the mountain, near the notch, the insect appears suddenly about the middle of August, and in about a week disappears just as suddenly. It comes in myriads, so that, as it is attracted by the light, it is impossible to read or write owing to the multitudes fluttering about, and the walls and ceiling of the room are covered and literally made yellow by the moths at rest upon them.

PYRALIDINA.

Sir George F. Hampson has published a classification of the *Pyralidina* of the world, which is of great interest to all who have to do with these insects. It is difficult, however, to make much of a comparison, as his genera are rarely or never founded upon what is peculiar to one sex only. His subgenera, therefore, correspond pretty fairly to our genera. He brings out one new point in the synonymy that *Toripalpus* Grt. is the same as *Jocara* Walk.

From Mr. Hampson I have had a number of determinations of species. He is of the opinion that *Moodna pelviculella* Hulst equals *Manhatta lugubrella* Rag. The genus is a good one. Ragonot had the female only.

Unadilla nasutella Hulst is a synonym of *Unadilla erronella* Zell.

Mr. Hampson thinks *Atascosa bicolorella* Hulst is a synonym of *Saluria glareosella* Zell. But if Ragonot's description of his genus *Saluria* is correct, the species are not only not the same but are in different genera. *Atascosa* has 11 veins in the forewings, while *Saluria* has 10 only. In his new classification, which will be published in Volume II of the Phycitidæ of the World, Ragonot will place *glareocella* under *Poujadia* Rag. But in *Atascosa* the antennæ of ♂ are hardly crenulate, are bent above base, and have scale tuft. In *Poujadia* they are strongly crenulate, sometimes pectinate, bent above base, with

a tuft of scales in the bend. In *Atascosa* the maxillary palpi are prominent, but not hair tufted; in *Poujadia* they are hair tufted. In *Atascosa*, in hind wings, vein 2 is at the angle; in *Poujadia*, vein 2 is distant from angle. The two genera seem thus to be well separated, and it is hardly possible the species can be the same, unless Ragonot has incorrectly diagnosed *glareosella*; if the species are the same *Atascosa* ought to stand.

Mr. Hampson also says *Wekiva nodosella* Hulst and *Hypsotropa luteicostella* Rag. are the same, but here is another difficulty. *Wekiva* has palpi erect, *Hypsotropa* has them ascending; *Wekiva* has antennæ slightly bent, with tuft of scales in bend, *Hypsotropa* has antennæ bent, but without tuft of scales; *Wekiva* has ocelli, *Hypsotropa* has none; *Wekiva* has, in hind wings, 7 and 8 stemmed, in *Hypsotropa* they are not stemmed in the type. As to the species *nodosella* has costal streak reaching apex, *luteicostella* has not, though this may not be a specific distinction. But I would surely not yet join the species as yet.

I have a ♂ of *Myelois fructetella* Hulst, and find it to be an *Acrobasis*.

Acrobasis gulosella Hulst is a synonym of *Pinipestis albovitella* Hulst.

Diorycetria brucei Hulst is a synonym of *Ambesa lallatalis* Hulst.

I have from the National Museum a specimen of *Manhatta obtusangulella* Rag. without locality, bred by Prof. Riley, which has on it a label stating it was bred from a larva found in seed heads of *Rhus copallina*. In the Proc. Acad. Nat. Sci., Phil., 206, 1860, Dr Clemens described *Ephestia ostrinella*. In connection with the description he says, "the larva lives in the fruit heads of Sumach passing the winter in the larval state." As far as it goes, Dr. Clemens' description of imago applies well enough to *Manhatta obtusangulella* Rag. His type is lost, but taking description and larval history together, I think we are warranted in considering that *Ephestia ostrinella* Clem. and *Manhatta obtusangulella* Rag. are the same.

Myelois immundella Hulst is the same as *M. bilineatella* Rag.

Two New Species of *Troctes*.

By NATHAN BANKS.

Our common *Troctes divinatorius* (Atropos) for years remained the sole representative of this genus in this country. In 1883, however, Mr. Aaron, in the Trans. Am. Ent. Soc., described another form, *T. purpurea*, found running over papers in Philadelphia. This species has the middle femora much larger than the fore femora and almost as large as the hind femora, while in *T. divinatorius*, as in the two following species, the fore and middle femora are subequal and much smaller than the hind femora. I have not seen Aaron's species, and it may not be congeneric with *T. divinatorius*. Both of these forms are associated with houses, but the two new species described below are out-of-door forms. Doubtless there are many other species in the country, but it will be a long while before collectors gather them.

The four known species may be tabulated as follow :

- | | | |
|----|--|----------------------|
| 1. | Middle femora much longer than fore femora, body reddish. | purpurea. |
| | Middle and fore femora subequal | 2. |
| 2. | Head and abdomen dark, thorax yellow, tooth on hind femur scarcely developed | bicolor. |
| | Nearly unicolorus, a tooth near base of hind femur | 3. |
| 3. | Color blackish, tooth blunt | niger. |
| | Color pale, tooth quite sharp | divinatorius. |

***Troctes bicolor* n. sp.**

Head shining brown to almost black ; abdomen the same, although a little paler ; thorax clear yellow ; antennæ brown on bases, paler toward tips ; legs brown or nearly black ; tarsi and most of tibiæ pale ; sternum and under side of head yellow ; venter dull yellowish, darker at tip.

Head rather quadrate, slightly emarginate on the vertex ; clypeus (nasus) very prominent ; eyes small, situate just above bases of antennæ. Antennæ nearly as long as the body, two large basal joints, then six long slender subequal joints, each about five times as long as broad, then five joints much shorter and subequal, each about two and one-half or three times as long as broad, then an apical joint rather longer than any of the last five. Prothorax transverse, trilobed in front ; meso- and metanotum united in a flat plate, which is only slightly broader than long, broader behind than in front, and with a median suture on the anterior part.

Abdomen about two and one-half times as long as broad, depressed, truncate at base, slightly broader in the middle, and broadly rounded behind. Each segment shows a rather darker transverse mark on the

base. Body with scattered short white hairs, some longer and finer ones near tip of abdomen. Femora 1 and 2 about as long as width of the prothorax, slightly enlarged; hind femora as long as abdomen is broad at base, much swollen, shining, with a few hairs, and scarcely a trace of the tooth near base.

Length 1 mm.

This handsome species is described from many specimens found running over dry boards at Falls Church, Virginia, June, 1899. They hide in the cracks and walk out leisurely enough, but if disturbed run with amazing swiftness so that they are difficult of capture. They did not jump.

Troctes niger n. sp.

Whole body dull blackish; antennæ paler at tips; tarsi and part of tibia also pale; sternum dark; venter pale brown; head rather darker than abdomen, which is darkest on the margins; legs brown.

Head broad, slightly rounded on the sides; nasus not very prominent; head with scattered short pale hairs; eyes small. Antennæ like the preceding species. Prothorax transverse, trilobate in front; meso- and metathorax in one shield, faintly rugose, broader than long and narrower in front, with an oblique impression each side and a median suture on the fore part. Abdomen truncate at base, plainly broader in middle, and broadly rounded behind, with many short erect scattered white hairs, a few larger ones behind. Legs as in *T. bicolor*; hind femur with an obtuse tooth on outside above at greatest part of swelling.

Length .9 mm.

Several specimens found on the under side of dead and decaying logs in woods near Falls Church, Virginia, June. They did not run very rapidly when disturbed and did not jump.

THE University of the State of Missouri has sent an entomological expedition into Southern Mexico this past Summer. It was in charge of Prof. J. M. Stedman, head of the Entomological Department, and had for its object the making of a biological, largely entomological, survey of the region from Vera Cruz on the Gulf, which is in perpetual tropics, to the top of the volcano Popocatepetl, which is far above the perpetual snow line, and down to Acapulco on the Pacific. This will give all the temperature variations from perpetual tropics to perpetual snow, and will allow of the study of life zones under conditions not to be found elsewhere in North America. The collection will become the property of the University, which is to furnish half the expenses, the other half to be borne by Prof. Stedman.

Coleopterous Fauna of Phoenix, Arizona, and Surrounding Regions.

H. G. GRIFFITH, M.D., Philadelphia.

The Salt River Valley of Arizona, that part of it in which we were interested, is about 60 miles in length, with an average width of 15 miles.

The elevation is about 1200 feet above sea-level, surface even, with an inclination of about 10 feet to the mile.

It is surrounded by mountains, some of which are lofty and quite picturesque.

In the valley proper the soil is a rich alluvium of varying depths, and by irrigation produces a variety of crops in great abundance.

Like all the arid regions of the west, there is a variety of climates; the summer heat sets in early, is intense and long lasting, but not accompanied with any of the pernicious effects noticed in localities nearer the seaboard. The winters are usually mild. The dryness of the atmosphere is perpetual, and all animal and vegetable matters rapidly desiccate.

The soils of the desert are of decomposed granitic and lava rock mixed with sand and markedly alkaline, while the mesas or table lands are composed of rocks and boulders covered with a veneer of soil.

Central and southern Arizona has a flora peculiar to itself. The cacti, yuccas and agavas are the most prominent. The plains are thickly covered with a great variety of shrubs and bushes; the grease-wood growing on the driest of the deserts, is the most conspicuous shrub.

Along the water-courses are a variety of trees, the mesquite, cottonwood, willow, sycamore and ash. At first sight there seems to be much of a sameness in the flora of the plains; the uniform sage-green character of the foliage, with a preponderance of red and yellow flowers would suggest a limited flora.

Close examination gives a number and variety of genera and species that is almost a wonder; what to-day is a boundless barren sand waste, when irrigated by a passing shower soon bursts into full floral beauty and we wonder at the productiveness of the soil.

The timber is confined to the ranges and water-courses, while scattered growths of mesquite and palo-verde cover the foothills and isolated places on the plains.

Leaving the cultivated portion of the valley, we see the true character of the country; long level stretches covered with grease-wood under whose shelter many rare and delicate forms of plant life grow.

As the country becomes more broken we reach the cacti zone where we find ourselves in a veritable forest of these curiosities of plant life.

Yuccas, an occasional pine and stunted oaks appear, but all about you denotes the absence of the one great factor for the welfare of this wonderful country—water.

The rains come at last, the desert blossoms, and with the flowers come the insects, showing us a wealth of life that is truly wonderful.

Thus in brief we have an idea of the physical condition of the country.

The principal town of the region is Phoenix; in making our collecting excursions it was our headquarters. Being a dry season, with about one-tenth of an inch of rain in ten months, and most of the collecting done from October to May, the conditions were not favorable to represent the fauna, but the series gives an idea of its extent.

As will be seen by the subjoined list, there is commingling of the fauna of the North with the Sonoran fauna of Mexico.

As civilization advances, and larger areas of desert lands are reclaimed by irrigation, climatic changes will take place, forcing the desert fauna to recede southward or become extinct, so that collections made in future years will show marked changes from those recorded by LeConte, Horn, Hubbard, Schwarz, Wickham and others.

Of the immediate habits of the insects little is known except of such forms as occur elsewhere. *Cyllene antennatus* and *Trogosita virescens* inhabit the mesquite and prove very destructive.

In the most barren part of the desert we find *Edrotes ventricosus*, which are always in a hurry, though only to be found in the early hours, hiding in their burrows during the heat of mid-day.

Eleodes armata, *longicollis* and some others move with a slow, majestic stride; when touched, they elevate the abdomen, walking off, apparently, on their heads; the name "kangaroo bugs" has been applied to them by the ranchmen.

Asidas are retiring and found, as a rule, under some protecting material.

Hololepta yucateca was found abundantly in decomposing *Cereus giganteus*, while *H. cacti* seemed to be a strange to the region.

Chilcorus cacti always found on old mesquite trees which are badly infested with various scale insects.

Many forms of Tenebrionidæ are nocturnal in their habits; the intense heat of day often kills them when almost in their burrows. This we saw in many instances in the sandy bottoms along the Rio Verde.

Curious tracks left in the sand by beetles at once attract the eye; *Eusattus muricatus* will leave their marks of characteristic appearance. The larger *Eleodes* making similar ones but longer, and by following these we were able to locate their burrows.

Those of *Dinocleus* differ somewhat, the tarsal joints bending inward to help them along, and they are always to be found about the roots of plants.

Cicindela guttifera found on wet sand along the Rio Verde, very wild and unassociated with any other species.

Allorhina mutabilis proves a great menace to the horticulturist, the fruit trees seeming alive with them.

Cotalpa consobrina is another pest, some seasons appearing in vast numbers.

The young willow shoots gave us *Chalcolepidius webbia*, *behrensii* and *tartarus*, without any of the unpleasant experiences of Wickham and others.

Hippomelas sphenicus we found in November, and so closely does it resemble the branches of the mesquite that it requires close searching to find them.

Flushing the banks of streams with water furnished many species of riparian beetles, but the larger number were taken at the electric light, as were the majority of Staphylinidæ.

One of the best captures at lights was a specimen of *Achryson surinamum*, which is found more commonly in South America.

The decomposing tissues of the giant cactus forms a veritable mine of insects, in such numbers that one is astonished.

There does not appear to be any limit to the collecting season, each month furnishing additional species. The acme of collecting is from May to August, when, however, the intense heat renders field work very trying.

The requisites for collecting in this country are a good team to take you from point to point, a strong canvas net capable of resisting the thorns and spikes with which all vegetation is covered, a very long pair of metal forceps to reach specimens concealed between the spines of cacti; and the always imperative canteen of water.

I have refrained from using the terms rare or scarce as from personal observation; if one collects at the right time our rarities would become common. To illustrate: on May 10th, on the desert northeast of Mesa, just at dusk, with a storm threatening, the air seemed suddenly alive with a whirring mass of insects, flying about the grease-wood, which was in full bloom. In the short time allowed before the storm broke we collected as many as possible, and found to our delight the hitherto rare Tenebrionid—*Cnemodus testaceus*.

I may safely say thousands could have been taken at the time, but the most careful search afterwards under similar conditions failed to discover any; such was our observation of many other forms, and it is a safe rule to take advantage of these opportunities, as others infrequently occur.

For the localities mentioned in the appended list, Phoenix being the center, the Salt River, up and down for several miles, is from one to two miles south. Tempe Desert, northeast from Tempe for many miles. Mesa, east of Tempe eight miles and the surrounding country. Rio Verde, northeast from Phoenix fifty miles, all collecting done on east side of river from Mr. Latterett's ranch.

For a long time to come collectors may visit this region with profit to themselves, and be delighted with acquiring material under new and strange conditions. Had my health permitted

more active collecting, the series would have been much extended and been a truer exponent of the fauna.

In preparing the list I am indebted to Chas. Liebeck for the bulk of the assorting and determinations, and also to H. C. Fall, of Pasadena, Cal., for much assistance.

LIST OF SPECIES.*

- CICINDELIDÆ.
Tetracha carolina Linn., Ph.
Cicindela guttifer Lec., R. V.
 micans Fab., Ph.
 lemniscata Lec., Ph.
 prætextata Lec., Ph.
- CARABIDÆ.
Omophron gilæ Lec., Ph.
Calosoma prominens Lec., Ph.
 triste Lec., Ph., T. D.
Scarites subterraneus Fab., Ph.
Dyschirius truncatus Lec. Ph.
 sp. S. R.
Clivina ferrea Lec., S. R.
 bipustulata Fab. var. R. V.,
 S. R.
Schizogenius crenulatus Lec., S. R.
 depressus Lec., Ph., R. V.,
 S. R.
 n. sp., S. R.
Bembidium transversale Dej., Ph.,
 S. R.
 lugubre Lec., Ph.
 striola Lec., Ph.
 nubiculosum Chaud., Ph.
 timidum Lec., Ph, S. R.
 versicolor Lec., Ph., S. R.
 scintillans Bates, Ph.
Tachys rapax Lec., S. R.
 audax Lec., R. V.
 trechiformis Hayw., R. V.
Pericompsum sellatus Lec., Ph.
Pterostichus subcordatus Lec., Ph.,
 R. V.
Amara jacobinæ Lec., Ph.
- Amara californica* Dej., Ph.
 gibba Lec., Ph., R. V.
Platynus nutans Say., Ph.
 punctiformis Say., Ph., R. V.
 sp., Ph., R. V.
Lachnophorus elegantulus Mann.,
 Ph.
Thalpius Horni Chd., Ph.
Ega lætula Lec., S. R.
Tetragonoderus fasciatus Hld., Ph.
 pallidus Horn, R. V.
Lebia guttula Lec., S. R.
 bivittata Fab, Ph.
Apristus subsulcatus Dej., Ph., R. V.
Blechrus nigrinus Mann., S. R.
Axinopalpus fusciceps Lec., S. R.
Callida platynoides Horn, R. V.
Cymindis laticollis Say, Ph.
 n. sp., Ph.
Apenes nebulosa Lec., Ph.
Helluomorpha ferruginea Lec., Ph.
Brachynus Tchernikhii Mann., ? R.
 V., S. A.
 carinulatus Mots., ? Ph., R. V.
Chlænium sericeus Forst. var. R. V.
 leucoscelis Chev., R. V., S. R.
Oodes elegans Lec., S. R.
Pisoma setosum Lec., Ph.
Agonoderus lineola Fab., R. V.
 pallipes Fab., Ph.
Discoderus impotens Lec., Ph., R. V.
 robustus Horn., Ph., R. V.
 amoenus Lec., ? Ph., R. V.
 sp., R. V.
 cordicollis Horn, Ph., R. V.

* Abbreviations for localities :—Ph., Phoenix ; S. R., Salt River ; R. V., Rio Verde ; T. D., Tempe Desert.

Stenomorphus rufipès *Léc.*, Ph.
 Harpalus caliginosus *Fab.*, Ph.
 pennsylvanicus *Dej.*, Ph.
 Selenophorus palliatus *Lec.*, Ph.,
 S. R.
 pedicularius *Dej.*, Ph., R. V.,
 S. R.
 Stenolophus cincticollis *Lec.*, Ph.,
 R. V.
 ochropezus *Say.*, Ph.
 Bradycellus rivalis *Lec.*, ? Ph.
 Anisotarsus flebilis *Lec.*, Ph.
 sp., Ph., R. V.
 Pseudomorpha angustata *Horn.*,
 R. V.

HALIPLIDÆ.

Cnemidotus callosus *Lec.*, Ph.

DYTISCIDÆ.

Laccophilus decipiens *Lec.*, Ph.
 mexicanus *Aube.*, Ph.
 Bidessus cinctellus *Lec.*, Ph.
 Hydroporus sp., Ph.
 sp., Ph.
 Copelatus chevrolatii *Aube.*, Ph.
 Agabus lugens *Lec.*, Ph.
 semivittatus *Lec.*, R. V.
 Eretes sticticus *Linn.*, Ph.
 Thermonectes latecincta *Lec.*, Ph.
 Cybister explanatus *Lec.*, Ph.

HYDROPHILIDÆ.

Helophorus lineatus *Say.*, Ph.
 Hydrophilus triangularis *Say.*, Ph.
 limbalis *Lec.*, Ph.
 ellipticus *Lec.*, Ph.
 Berosus exilis *Lec.*, Ph.
 infuscatus *Lec.*, Ph.
 Chætarthria pallida *Lec.*, Ph.
 Laccobius agilis *Rand.*, Ph.
 Philydrus pectoralis *Lec.*, Ph.
 Cercyon capillatum *Lec.*, T. D.
 Dactylosternum cacti *Lec.*, T. D.

SILPHIDÆ.

Necrophorus Melsheimeri *Kby.*, Ph.

STAPHYLINIDÆ.

Homalota semiopaca *Fvl.*, R. V.,
 S. R.
 sp., R. V.
 Aleochara bimaculata *Grav.*, Ph.
 nitida *Grav.*, R. V.
 sp., Ph.
 Maseochara semivelutina *Sol.*, T. D.
 opacella *Sharp.*, R. V., T. D.
 Heterothops occidentis *Cas.*, Ph.
 Quedius desertus *Horn.*, Ph.
 Creophilus villosus *Grav.*, R. V.
 Xanthopygus cacti *Horn.*, T. D.
 Staphylinus sp., Ph.
 Belonuchus ephippiatus *Say.*, T. D.
 Philonthus semiruber *Horn.*, Ph.,
 R. V.
 hepaticus *Er.*, Ph.
 flavolimbatus *Er.*, S. R.
 grandicollis *Horn.*, Ph.
 longicornis *Steph.*, S. R.
 alumnus *Er.* var. Ph., R. V.
 lomatus *Er.* var. R. V., S. R.
 quadrulus *Horn.*, R. V.
 Actobius gratus *Lec.*, R. V., S. R.
 pæderoides *Lec.*, R. V.
 elegantulus *Horn.*, R. V.
 Xantholinus dimidiatus *Lec.*, Ph.,
 R. V.
 sp., Ph.
 Cryptobium pimerianum *Lec.*, Ph.,
 R. V.
 arizonense *Horn.*, Ph.
 prospiciens *Lec.*, Ph.
 Lathrobium lituarium *Lec.*, Ph.
 Lithocharis tabacina *Cas.*, R. V.,
 T. D.
 Pæderus femoralis *Lec.*, S. R.
 Pinophilus densus *Lec.*, Ph., S. R.
 Physetoporus grossulus *Lec.*, T.
 D., R. V.
 Erchomus punctipennis *Lec.*, Ph.
 Bledius flavipennis *Lec.*, R. V.
 sp., Ph.
 Platystethus americanus *Er.*, R. V.
 Oxytelus sp., R. V.
 Apocellus sp., S. R., R. V.

COCCINELLIDÆ.

- Megilla maculata* DeG., Ph.
Hippodamia convergens Guer., Ph.
Coccinella abdominalis Say., Ph.
Chilocorus cacti Linn., Ph., T. D.
Exochomus marginipennis Lec., Ph.
Hyperaspis lugubris Rand., Ph.
Scymnus ardelis Horn., Ph.

ENDOMYCHIDÆ.

- Epipocus unicolor* Horn, Ph.

COLYDIIDÆ.

- Ditoma ornata* Lec., Ph.
sulcata Lec., Ph.
Phloeonemus catenulatus Horn.,
 Ph.

CUCUJIDÆ.

- Silvanus nitidulus* Lec., Ph.
advena Wallh., Ph.
 sp., Ph.

CRYPTOPHAGIDÆ.

- Cryptophagus* sp., Ph.

MYCETOPHAGIDÆ.

- Litargus balteatus* Lec., Ph.
Typhoea fumata Linn., Ph.

DERMESTIDÆ.

- Dermestes marmoratus* Say, T. D.
Mannerheimi Lec., T. D.
caninus Germ., Mesa.
vulpinus Fab., Ph., R. V.
Attagenus Horni Jayne, Ph.
varicolor Jayne, Ph.
Trogoderme sternale Jayne, Ph.
Cryptorhopalum balteatum Lec.,
 Ph.
apicale Mann., Ph.
triste Lec., ? Ph.

HISTERIDÆ.

- Hololepta yucateca* Mars., T. D.
populnea Lec., Ph.
Hister servus Er., Ph.

- Epiurus regularis* Beauv., Ph.
planulus Er., Ph.
nasutus Horn, Ph.
Paromalus gilensis Lec., Ph.
Saprinus obscurus Lec., Ph.
lugens Er., Ph.
pennsylvanicus Payk., Ph.
vitiosus Lec., Ph., Mesa.
 sp., Mesa.
cærulescens Lec., Mesa.

NITIDULIDÆ.

- Carpophilus hemipterus* Linn., Ph.
pallipennis Say, Ph., T. D.
floralis ? Ph., Mesa.
discoideus Lec., Ph.

TROGOSITIDÆ.

- Trogosita virescens* Fab., Ph.
Alindria teres Melsh, Ph.
Tenebrioides sp., Ph.

BYRRHIDÆ.

- Limnichus analis* Lec., Ph.

HETEROCERIDÆ.

- Heterocerus collaris* Kies., Ph.
pallidus Say, Ph.
pusillus Say, Ph.

DASYLLIDÆ.

- Anorus parvicollis* Horn, Ph.

ELATERIDÆ.

- Anelastes Latreillei* Lec., Ph.
Chalcolepidius Webbiai Lec., Ph.
tartarus Fall, Ph.
Behrensii Cand., Ph.
Horistonotus simplex Lec., Ph.
Esthesopus dispersus Horn, Ph.
 sp., Ph.
Anchastus bicolor Lec., Ph.
Monocepidius robustus Horn, Ph.
Discrepidius corvinus Cand., Ph.
Drasterius livens Lec., Ph.
Ludius texanus Lec., Ph.
Melanotus fissilis Say, Ph.

BUPRESTIDÆ.

- Hippomelas sphenicus *Lec.*, Ph.
 Chrysobothris octocola *Lec.*, Ph.
 debilis Lec., Ph.
 lixia Horn, Ph.
 Acmaeodera ornata *Fab.*, T. D.
 cuneata Fall, T. D., R. V.
 acuta Lec., T. D.
 Griffithii Fall, T. D.
 Agrilus felix *Horn*, Ph.
 palmacollis Horn, Ph.

LAMPYRIDÆ.

- Lycus cruentatus *Lec.*, T. D.
 Lycaina marginatus *Gorkh.*, Ph.
 Pyropyga fenestralis *Melsh.*, Ph.
 Mastinocerus opaculus *Horn*, Ph.
 Chauliognathus scutellaris *Lec.*, Ph.

MALACHIDÆ.

- Collops 4-maculatus *Fab.*, Ph.
 pulchellus Horn, Ph.
 vittatus Say, Ph.
 Attalus oregonensis *Horn*, ? T. D.
 rufiventris Horn, T. D.
 circumscriptus Say, T. D.
 cinctus Lec., T. D.
 lobulatus Lec., T. D.
 sp., T. D.
 Pristocelis umbratus *Lec.*, T. D.
 propinquus Cas., T. D.
 four species indet., T. D.
 Listrus impressus *Chev.*, T. D.
 ferrugineus Chev., T. D.
 Pseudallonyx plumbeus *Lec.*, T. D.
 sp., T. D.
 Allonyx *sp.*, T. D.
 Rhadalus testaceus *Lec.*, Ph.

CLERIDÆ.

- Cymatodera puncticollis *Bland.*, Ph.
 californica Horn, Ph.
 Belfragei Horn, Ph.
 oblita Horn, Ph.
 Trichodes ornatus *Say*, Mesa.
 Hydnocera discoidea *Lec.*, Ph.
 pallipennis Say, var. Ph.
 Necrobia rufipes *Fab.*, T. D., R. V.,
 Ph.

PTINIDÆ.

- Catorama *sp.*, Ph.
 Hemiptychus punctatus *Lec.*, Ph.
 pusillus Lec., Ph.
 Sinoxylon sericans *Lec.*, Ph.
 sextuberculatum Lec., Ph.
 quadriscopinosum Lec., Ph.
 Amphicerus fortis *Lec.*, Ph.
 punctipennis Lec., Ph.

SCARABÆIDÆ.

- Canthon puncticollis *Lec.*, R. V.
 simplex Lec., Ph.
 corvinus Horn, Ph.
 Psammodius nanus *Horn*, Ph.
 Atænius desertus *Horn*, Ph.
 gracilis Melsh., Ph.
 Haroldi Steinh., Ph.
 læviventris Horn, Ph.
 Aphodius granarius *Linn.*, Ph.
 vittatus Say, Ph., R. V.
 lividus Oliv., Ph.
 rubiginosus Horn, Ph.
 rubidus Lec., Ph.
 larræa Horn, Ph.
 Ochodæus sparsus *Lec.*, Ph.
 Pachyplectrus lævis *Lec.*, R. V.
 Bradycinetus serratus *Lec.*, Ph.
 Trox suberosus *Fab.*, Ph.
 sonoræ Lec., Ph.
 atrox Lec., Ph.
 Glaresis *sp.*, Ph., T. D.
 Acoma brunnea *Cas.*, Ph.
 Diplotaxis puberula *Lec.*, Ph.
 mœrens Lec., Ph.
 atratala Lec., ? Ph.
 three species indet., Ph.
 Listrochelus scoparius *Lec.*, Ph.
 mucoreus Lec., T. D.
 timidus Horn, Ph.
 Polyphylla Hammondi *Lec.*, Ph.
 Pelidnota lugubris *Lec.*, Ph.
 Cotalpa consobrina *Horn*, Ph.
 flavida Horn, Ph.
 Cyclocephala immaculata *Oliv.*, Ph.
 longula Lec., Ph.
 dimidiata Burm., Ph.

Ligyris gibbosus DeG., Ph.
ruginasus Lec., Ph.
Aphonides Dunniana Rivers, Ph.
Strategus julianus Burm., ? Ph.
Dynastes Grantii Horn, Ph.
Phileurus illatus Lec., Ph.
Allorhina mutabilis Gory, Ph.

CERAMBYCIDÆ.

Malodon manibularis Harold, Ph.
Derobrachus geminatus Lec., Ph.
Achryson surinamum Lec., Ph.
Eburia n. sp., Ph.
Eustroma validum Lec., Ph.
Æthecerus latecinctus Horn, T. D.
Crossidius intermedius Ulke, Ph.
Sphænothecus suturalis Lec., T. D.
Ischnocnemis bivittatus Dup., Ph.
Cyllene antennatus White, Ph.
Ataxia crypta Say, Ph.

CHRYSOMELIDÆ.

Euryscopa Lecontei Cr., T. D.
Pachybrachys abdominalis Say, Ph.
 sp., Ph.
Monachus Guerini Perb., Ph.
Myochrous longulus Lec., Ph.
Metachroma californica Cr., Ph.
interrupta Say, Ph.
longulum Horn, Ph.
Colaspis brunnea Fab., Ph.
Gastroidea cyanea Melsh., R. V.
Malacosoma brevicorne Jac., Ph.
Diabrotica 12-punctata Oliv., Ph.
balteata Lec., Ph., R. V.
trivittata Mann., Ph.
Monoxia sordida Lec., Ph.
Disonycha quinquevittata Say, Ph.
arizonæ Cas., Ph.
Phyllotreta pusilla Horn, Ph.

BRUCHIDÆ.

Bruchus Ulkei Horn, Ph.
 n. sp. Ph.
prosopis Lec., Ph.
 n. sp., Ph.
uniformis Lec., Ph.
amicus Horn, Ph.

TENEBRIONIDÆ.

Edrotes ventricosus Lec., T. D.
Triorophus lævis Lec., T. D.
Eurymetopon rufipes Esch., Ph.
dubium Cas., Ph., T. D.
cylindricum Cas., Ph.
serratum Lec., Ph.
Emmenastus longulus Lec., Ph.
punctatus Lec., Ph.
subopacus Horn, T. D.
Cnemodus testaceus Horn, Mesa.
Chilometopon ? sp., R. V.
Zopherus tristis Lec., T. D., Mesa.
Dacoderus striaticeps Lec., Ph.
Aræoschizus decipiens Horn, Ph.
Cryptoglossa verrucosa Lec., T. D.
Centrioptera muricata Lec., R. V.,
 T. D.
variolosa Horn, T. D., Ph.
Asida actuosus Horn, T. D.
semilævis Horn, T. D.
confluens Lec., Ph.
parallela Lec., Ph.
Wickhami Horn, T. D., Ph.
hispidula Lec., T. D.
convexa Lec., T. D.
blapsoides Sol., ? T. D.
marginata Lec., T. D.
 n. sp., T. D.
Eusattus reticulatus Say, T. D.
dubius Lec., Ph.
muricatus Lec., R. V.
Eleodes obscura Say, R. V.
carbonaria var. *soror* Lec.,
 T. D.
obsoleta Say, Ph.
armata Lec., T. D., R. V.
longicollis Lec., R. V.
hispidulabris Say, R. V.
Argoporis costipennis Lec., T. D.
bicolor Lec., T. D.
Amphidora caudata Horn, Ph.
Nyctobates subnitens Horn, Ph.
Iphthimus sublævis Bland, R. V.
Cælocnemis magna Lec., R. V.
Adelina Lecontei Horn, Ph.
Alæphus pallidus Horn, Ph.

- Eupsophus castaneus Lec.*, Ph.
Mecysmus angustus Lec., Ph.
Blapstinus sordidus Lec., Ph.
 auripilus Horn, Ph.
 dilatatus Lec., Ph.
 Lecontei Muls., Ph.
 two species indet, Ph.
Notibius gagates Horn, R. V.
 granulatus Lec., R. V., T. D.
Ulus crassus Lec., Ph.
 sp., Ph.
Tribolium ferrugineum Fab., Ph.
Mycotrogus ? sp., Ph.
Aphanotus brevicornis Lec., ? Ph.
Alphitobius diaperinus Panz., Ph.
 piceus Oliv., Ph.
Helops arizonensis Horn, Ph.
Platydemia janus Fab., Ph.
 CISTELIDÆ.
Hymenorus occidentalis Cas., Ph.
 punctatissimus Lec., Ph.
 sp. near *occidentalis Cas.*, Ph.
 MONOMMIDÆ.
Hyporhagus gilensis Horn, R. V.
 MELANDRYIIDÆ.
Eustrophus arizonensis Horn, Ph.
 bicolor Say, Ph.
 PYTHIDÆ.
Trimitomerus Riversii Horn, Ph.
 CEDEMERIDÆ.
Oxaxis lucana Lec., Ph.
 MORDELLIDÆ.
Anaspis sp., Ph.
Mordella scutellaris Fab. var., Ph.
Mordellistena comata Lec., Ph.
 ambusta Lec., Ph.
 unicolor Lec., Ph.
 ANTHICIDÆ.
Stereopalpus sp., Ph.
Xylophilus brunnipennis Lec., Ph.
Notoxus calcaratus Horn, Ph.
Mecynotarsus delicatulus Horn, Ph.
Anthicus confinis Lec., Ph.
 horridus Lec., Ph.
 quadrilunulatus Laf., Ph.
 two species indet, Ph.
 MELOIDÆ.
Nemognatha lurida Lec., Ph.
 lutea Lec., Ph.
 bicolor Lec., Ph.
 dichroa Lec. ? Ph.
 vittigera Lec., Ph.
 sp., Ph.
Gnathium minimum Say, Ph.
 nitidum Horn, Ph.
Macrobasis longicollis Lec., Ph.
 virgulata Lec., Ph.
 tenuilineata Horn, Ph.
 lauta Horn, Ph.
 tenella Lec., Ph.
Epicauta caviceps Horn, Ph.
 maculata Say, Ph.
 Wheeleri Ulke, Ph.
 cupreola Duges, Ph.
 two new species, Ph.
Pyrota mylabrina Chev., Ph.
 Akhurstiana Horn, Ph.
Calospasta elegans Lec., R. V.
 nemognathoides Horn, Ph.
 OTIORHYNCHIDÆ.
Eupagoderes decipiens Lec., Ph.
 n. sp. Ph.
Eucyllus vagans Horn, Ph.
Cyphus lautus Lec., Ph.
 lautus Lec. var. ? Ph.
 CURCULIONIDÆ.
Apion occidentale Fall, Ph.
Dinocleus saginatus Cas., Ph.
Dorytomus inæqualis Cas., Ph.
Desmoris constrictus Say, Ph.
 sp., Ph.
Synertha imbricata Cas., Ph.
Tychius setosus Lec., R. V., Mesa.
Conotrachelus seniculus Lec., Ph.
Baris strenua Lec., Ph.
 transversa Say, T. D., Ph.
Onychobaris mystica Cas., Ph.
Balaninus sp., Ph.
 CALANDRIDÆ.
Sphenophorus sp., near *placidus*
 Say, Ph.
 ANTHRIBIDÆ.
Brachytarsus sp., Ph.

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, three 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 will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., OCTOBER, 1900.

DURING the last ten years great progress has been made in entomological illustrative work by the aid of photography. The advantage of photographic methods is cheapness and mechanical accuracy of definition. The possibilities for improvement are still great, and the future is therefore most promising. As competition increases, the cost of the new three-color process will undoubtedly be materially lessened, and increased familiarity with this kind of work will increase its value and effectiveness. When three-color work is made from color drawings the originals should be prepared in such a manner as to produce the best results. We have lately seen some truly superb half-tone results in the illustration of moths,* and we are pleased to see that these insects are likely to be well figured in the future.† We are sorry to have seen a most miserable half-tone of moths in a recent number of an American journal of entomology. The copy was excellent, and the half-tones should have been made and printed in this city. The cost would have been the same and the result entirely different. Those who have access to the "Iris" should look at the magnificent plate mentioned.

* See "Iris," Dresden, Bd. xiii, Taf. iv.

† See Smith on *Xylina*, Trans. Am. Ent. Soc., Vol. xxvii, No 1.

Entomological Literature.

COMPILED BY P. P. CALVERT.

Under the above head it is intended to mention papers received at the Academy of Natural Sciences of Philadelphia pertaining to the Entomology of the Americas (North and South). Articles irrelevant to American entomology will not be noted. Contributions to the anatomy, physiology and embryology of insects, however, 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; * denotes that the paper in question contains descriptions of new North American forms. Titles of all articles in foreign languages are translated into English; usually such articles are written in the same language as the title of the journal containing them, but when such articles are in other languages than English, French, German or Italian, this fact is indicated in brackets.

3. The American Naturalist, Boston, '00.—**4.** The Canadian Entomologist, London, Ont., '00.—**5.** Psyche, Cambridge, Mass., '00.—**8.** The Entomologist's Monthly Magazine, London, Sept., '00.—**9.** The Entomologist, London, Sept., '00.—**15.** Biologia Centrali-Americana, London; pt clvi, June, '00; rec'd. Sept. 3.—**19.** Horæ Societatis Entomologicæ Rossicæ, xxxiv, 1-2, St. Petersburg, '00.—**22.** Zoologischer Anzeiger, Leipsic, '00.—**40.** Societas Entomologica, Zürich-Hottingen, '00.—**45.** Deutsche Entomologische Zeitschrift, 1900, Heft 1, Berlin, July.—**54.** Journal, Royal Horticultural Society, xxxiii, 3, London, Aug., '00.—**58.** Revista Chilena de Historia Natural, Valparaiso, '00.—**60c.** Comunicaciones, Museo Nacional de Buenos Aires, i, 6, May 23, '00.—**81.** Biologisches Centralblatt, Erlangen, '00.—**97.** Zeitschrift für wissenschaftliche Zoologie, Leipsic, '00.—**116.** Biological Bulletin, Boston, '00.—**135.** Verhandlungen, Gesellschaft deutscher Naturforscher und Ärzte, 71 Versammlung zu München, 17-23 Sept., 1899. Zweiter Theil, 1 Hälfte, Leipsic, '00.—**136.** Stettiner Entomologische Zeitung, 58. Jahrgang, 1897; 59. Jahrgang, 1898; 60. Jahrgang, 1899. For reasons unknown to us, these volumes have been withheld, so far at least as we in Philadelphia are concerned, until Sept., 1900.

THE GENERAL SUBJECT.—**Bachmetjew, P.** The dependence of the critical point in insects on their rapidity of cooling, figs., **97**, lxxvii, 4, Aug. 7.—**Berg, C.** See Neuroptera.—**Berlese, A.** Considerations on phagocytosis in the metabolic insects, **22**, Aug. 20.—**Dollfuss, A.** Summary list of the collections of natural history at the Universal Exposition [Paris] (cont.), La Feuille des jeunes Naturalistes, Paris, Aug 1, '00.—**Imhof, O. E.** Multiocellate winged insect, **81**, Aug. 1.—**Kochi, C.** The origin of the middle ocellus of the adult insect (preliminary communication), fig., **3**, Aug.—**Porter, C. E.** Memorandum de Zoologia conforme a los últimos adelantos de la Ciencia. Entrega 1 i 2. Valparaiso, Imp. Gillet, 1899. The active and zealous Director of the Chilian National Museum at Valparaiso, and Editor of the Revista Chilena de Historia Natural, has prepared this work, as "a sort of program or synoptic compendium" of his Elementary Course in Zoology now in press. It is

intended chiefly for the needs of secondary education in Chili especially, and with that end in view the examples of the various groups are selected from the S. American and Chilian faunas. Fourteen parts of the work are promised, of which eight are to be devoted to zoological classification, six to morphology and physiology. The two before us, pp. 1-40, treat of the Protozoa, Mesozoa, Sponges and Cœlenterata, and hence fall outside of the field of the NEWS. But we expect this work to increase the interest in Entomology, as in Zoology generally, in South America, and thus lead to greatly increased knowledge of that rich fauna.—**Radl, E.** On the curvature of the compound eyes of Arthropods (preliminary communication). **22**, July 9; Researches on the structure of the optic tract of *Squilla mantis* and of other Arthropods, 1 pl., **97**, lxvii, 4, Aug. 7.—**Roedel, H.** The protective defenses of insects against cold with especial reference to Prof. Bachmetjew's researches on the temperature of insects, *Helios*, xvii, Berlin, 1900.—**Wandolleck, B.** (Diptera), **Stadelman, H.** (Hymenoptera, Orthoptera), **Lucas, R.** (other Insects except Coleoptera, Arachnoidea). Report of the scientific results in the field of entomology during the year 1896, *Archiv für Naturgeschichte*, lxiii, ii, **2** Heft, 2. Hälfte, Berlin, June, 1900.

ECONOMIC ENTOMOLOGY.—**Beyer, R.** History of the distribution of the Grape Phylloxera in Germany, map. *Naturwissenschaftliche Wochenschrift*, Berlin, Aug. 5, 12, '00.—**Felt, E. P.** Fifteenth Report of the State Entomologist on injurious and other insects of the State of New York, 1899. *Bulletin*, N. Y. State Museum vi, No. 31, Albany, June, '00.—**Fernald, H. T.** Some insects injurious in Pennsylvania, figs. Fourth Annual Report of the Pennsylvania Dep't of Agriculture, part i. [Harrisburg] 1899.—**Fletcher, J.** Evidence of before the Select Standing Committee on Agriculture and Colonization, 1900. Printed by order of Parliament. Ottawa, 1900. (Insect pests, grasses and weeds. 45 pp.)—**Id.** Report of the Entomologist and Botanist, 1899, figs. Annual Report on Experimental Farms for the year 1899, pp. 159-204. Canada Department of Agriculture. Ottawa, 1900.—**Grassi, G. B.** The communication of malaria by mosquitoes of the genus *Anopheles*, **135**.—**Harrison, F. C.** The foul brood of bees, *Bacillus alvei* (Cheshire and W. Cheyne), figs., *Centralblatt für Bakteriologie*, Jena, July 12, '00.—**Haywood, J. K.** The adulteration and analysis of the arsenical insecticides, *Journal*, American Chemical Society, xxii, 9, Easton, Pa., Sept., '00.—**Howard, L. O.** See notice, *post*.—**Mally, C. W.** The fruit moth, *Ophiuza lienardi*, *Agricultural Journal*, Cape Town, July 5, '00.—**Marshall, G. A. K.** Fruit damaged by moths in South Africa, **8**.—**[Mingaud, G.]** The bean weevil, figs., *Gardeners' Chronicle*, London, July 28, '00.—**Newstead, R.** The injurious scale insects and mealy bugs of the British Isles, **54**.—**Sintenis, F.** The forest insects of the Baltic provinces, *Sitzungsberichte*, Naturforscher Gesellschaft bei der Universität Jurjeff (Dorpat) xii, 2, '99.—**Vidal, E.** Agricultural artillery against hail and grasshoppers, figs.,

Revue Scientifique, Paris, July 21, '00.—**Webster, F. M.** See Coleoptera.—**Wilson, J. H.** Disease of the black currant caused by the gall mite *Phytoptus ribis*, **54**.—Importation restrictions against danger of introduction of the San José scale [into Germany], Gartenflora, Berlin, Sept. 1, '00.

ARACHNIDA.—**Altamirano, F.** Some physiological observations on the effects of the venom of the scorpion of Jojutla [in Spanish], Memorias y Revista, Sociedad Científica "Antonio Alzate" xiv, 7-8, Mexico, 1900.—**Cambridge, F. O. P.** Arachnida Araneidea, vol. ii, pp. 129-160,* pl. ix, **15**.—**Hamlyn-Harris, R. H.** *Chelifer cancrivorus*: is it a bee-parasite? British Bee Journal, London, Aug. 2, '00.

PROTOTRACHEATA.—**Rucker, A.** A description of the male of *Peripatus eisenii* Wheeler, **116**, August.

MYRIOPODA.—**Hemenway, J.** The structure of the eye of *Scutigera (Cermatia) forceps*, figs., **116**, July.

APTERYGOTA.—**Skorikow, A.** Essay on the geographical distribution of the Apterygota of Europe [in Russian], Travaux, Société des Naturalistes à l'Université de Kharkow, xxxiv, '00.

ORTHOPTERA.—**Bruner, L.** and **Morse, A. P.** Orthoptera, vol. ii, pp. 1-8, figs. [Tettiginæ*], **15**.—**Scudder, S. H.** The clear-winged species of the Oedipodine genus *Mestobregma**; **5**, Aug.; Localities for western Tryxalinæ, **5**, Aug.; A list of the Orthoptera of New England, **5**, Sept.

NEUROPTERA.—**Berg, K.** Termitariophily, **60c**.—**Knower, H. McE.** The embryology of a termite *Eutermes (Rippertii?)*, first paper, 4 pls., Journal of Morphology xvi, 3, Boston, Aug., '00.—**Martin, R.** New or little known Odonata,* Bulletin, Museum d'Histoire Naturelle, 1900, No. 3, Paris. Rec'd. Aug. 27.

HEMIPTERA.—**Berg, C.** Three new Argentine Reduviidæ [in Latin], **60c**.—**Breddin, G.** Mimicry among the Hemiptera [French transl], Bulletin, Société Linnéenne du Nord de la France, xv, 327, 328, Amiens, May, June, '00.—**Champion, G. C.** Rhynchota Heteroptera, vol. ii, pl. xix, **15**.—**Distant, W. L.** Rhynchota Homoptera, vol. i, pp. 41-43, pl. vi [Fulgoridæ*], **15**.—**Fowler, W. W.** Rhynchota Homoptera, vol. i, pp. 44-48, vol. ii, pp. 265-272, pl. xvii [Fulgoridæ,* Flatidæ*], **15**.—**Hueber, T.** Synopsis of the German "Blindwanzen" (Hemiptera heteroptera, Fam. Capsidæ), part v, Jahreshäfte des Vereins für vaterländische Naturkunde in Württemberg, lvi, Stuttgart, '00.—**Kirkaldy, G. W.** Bibliographical and nomenclatorial notes on the Rhynchota, No. 1, **9**.—**Nüsslin, O.** On the biology of the Schizoneurid genus *Mindarus* Koch, figs., **81**, July 15. **Osborn, H.** Two new species of Jassidæ,* **4**, Sept.

Reed, E. C. Synopsis of the Hemiptera of Chile (cont.), **58**, July.

Voskoboinikov, M. M. On the classification of the Pediculina (in Russian). Dnevnik zoologicheskago Otdeleniya Obshtchestva i zoologicheskago Muzeya, ii, 7, Moscow, 1898.

COLEOPTERA.—**Brèthes, F. J.** *Parisianopus*, a new genus of

Staphylinidæ (Quediaria), **60c**.—**Casey, T. L.** Review of the American Corylophidæ, Cryptophagidæ, Tritomidæ and Dermestidæ, with other studies,* Journal, New York Entomological Society, viii, 2, June, 1900.—**Clavareau, H.** Catalogue of the Sagridæ. Annales, Société Entomologique de Belgique, xlv, 7, Brussels, Aug. 7, '00.—**Deegener, P.** Development of the mouth-parts and of the alimentary canal of *Hydrophilus*, 3 pls., **97**, lxxviii, 1, Aug. 14.—**Horn, W.** Some new species of Cicindelidæ [in Latin],* **45**.—**Jakowleff, B. E.** Description of two new species of the family Lucanidæ, figs., **19**.—**Kraatz, G.** *Amblyopinus Brandesi*, n. sp., **45**.—**Needham, J. G.** Some general features of the metamorphosis of the flag weevil *Mononychus vulpeculus* Fabr., figs., **116**, July.—**Ohaus, F.** Contributions to knowledge of the Rutelidæ: ii. Anomalidæ of Central and South America,* **136**, 58 Jahrg.; Rutelidæ of the new world, **136**, 59 Jahrg.; Account of an entomological journey to central Brazil, **136**, 60 Jahrg.—**Sanderson, E. D.** The larvæ of *Donacia piscatrix* Lac. and *crassipes* Fab., 29 figs., **4**, Sept.—**v. Seidlitz, G.** On scent organs in beetles, **135**.—**Sharp, D.**, and **Perkins, R. C. L.** Fauna Hawaiiensis, vol. ii, pt. iii, Coleoptera i (pp. 91-270, pls. vi-x). Cambridge, University Press, Feb. 8, 1900. Recd. Aug. 1.—**Tschitscherine, T.** Notes on the Platysmatini of the Museum of Natural History of Paris (five papers), **19**.—**Webster, F. M.** *Harpalus caliginosus* as a strawberry pest, with notes on other phytophagous Carabidæ, figs., **4**, Sept.—**Weise, J.** A new *Alurnus* form, **45**.

DIPTERA.—**French, G. H.** A parasite the supposed cause of some cases of epilepsy [*Gastrophilus epilepsialis* larva],* fig., **4**, Sept.—**Hine, J. S.** Description of two new species of Tabanidæ,* **4**, Aug.—**Howard, L. O.** See notice, *post.*—**Johnson, C. W.** New North American Ortalidæ,* **4**, Aug.—**Mik, J.** Dipterological miscellany (3) 1. Wiener Entomologische Zeitung, xix, 6-7, July 15, '00.—**Stephens, J. W. W.**, and **Christopher, S. R.** Note on certain bodies found in the glands of two species of *Culex*, 1 pl., Further Reports to the Malaria Committee, Royal Society, London, Aug. 15, 1900.—**Wasmann, E.** *Termitoxenia*, a new wingless, physogastric Dipterous genus from Termites' nest: Part i. External morphology and biology, 1 pl., **97**, lxxvii, 4, Aug. 7.

LEPIDOPTERA.—**Bachmetjew, P.** A remark on the propagation of butterfly aberrations, **40**, Aug. 1.—**Barrett, O. W.** Some notes on "The Cambridge Natural History," vol. vi, **4**, Aug.—**Berg, C.** On some larvæ of Argentine Lepidoptera [in Spanish], **60c**.—**Bird, H.** New histories in *Hydræcia*, **4**, Aug., Sept.—**Breit, J.** On the gradual darkening of some species of Lepidoptera in the vicinity of Düsseldorf, **40**, Aug. 15.—**Durand, N. N.** Notes on two Canadian butterflies, **5**, Aug.—**Dyar, H. G.** Life-histories of North American Geometridæ, xiii, xiv, **5**, Aug., Sept.; Partial life-history of *Dichogama Redtenbacheri* Led. **4**, Sept.; Note on the genus *Dyaria* Neum., **4**, Sept.—**Fernald, C. H.** North American species of *Choreutis* and its allies,* **4**, Aug.—

Fletcher, J. Description of the full-grown larva of *Grapta j-album*, 4, Sept.—**Frings, C.** Destruction of butterflies by birds, 40, Aug. 15.—**Godman, F. D.** Lepidoptera Rhopalocera, vol. ii, pp. 461-484, pl. xcii [Pamphilinæ*], 15.—**Grant, C. E.** [*Erebus odora* in Ontario], 4, Sept.—**Grote, A. R.** Systema Lepidopterorum Hildesiae (second series); Phylogeny and delimitation of the families of butterflies with genealogical tree, pl., Mitteilungen aus dem Rœmer Museum, Hildesheim, No. 11, April 19, '00; Relationships among the butterflies, Insekten Börse. Leipsic, Aug. 2, '00; Historical sketch of *Gortyna* and allied genera, Proceedings, American Philosophical Society, xxxix, No. 162, Philadelphia, April to June, 1900.—**Hampson, G. F.** On some tetra-tological specimens of Lepidoptera, 8.—**Hofman, O.** On the natural history of the Eriocephalidæ and Micropterygidæ, 135.—**Moore, F.** Lepidoptera Indica. Parts xlv, xlv, London: Lovell Reeve & Co., 1900. Rec'd. Sept. 3. (Vol. iv, pp. 161-176, pls. 341-348; pp. 177-192, pls. 349-356. Nymphaliniæ, groups Nymphalina and Argynnina).—**Skinner, H.** Revision of the American species of the genus *Cænonympha*, 1 pl., Transactions, American Entomological Society, xxvi, Philadelphia, July, '00.—**Smith, J. B.** New Noctuids from British North America, with notes on some others,* 1 pl., 4, Aug.; A hundred new moths of the family Noctuidæ,* Proceedings, United States National Museum, No. 1203, Washington, 1900. Rec'd. Aug.—**Snellen, P. C. T.** Some remarks on the subdivision of the genus *Agrotis* Led., 136, 58 Jahrg.—**Tutt, J. W.** The connection between primary and secondary sexual characters in Lepidoptera; Is the separation of the Papilionides from other butterflies warranted? Entomologists' Record, London, Aug. 1, '00.—**Warren, W.** New genera and species of American Drepanulidæ, Thyrididæ, Epiplemidæ and Geometridæ,* Novitates Zoologicæ, vii, 2, Tring, Aug., '00.

HYMENOPTERA.—**Ashmead, W. H.** Report upon the Aculeate Hymenoptera of the Islands of St. Vincent and Grenada, with additions to the Parasitic Hymenoptera, and a list of the described Hymenoptera of the West Indies,* Transactions, Entomological Society, London, 1900, pt. ii, July 14.—**Cockerell, T. D. A.** Some bees visiting the flowers of mesquite,* 9.—**Emery, C.** On ant larvæ, 135.—**Forel, A.** On North American ants, 135.—**Friese, H.** Die Bienen Europa's (Apidæ Europææ) nach ihren Gattungen, Arten und Varietäten auf vergleichend morphologischer-biologischer Grundlage bearbeitet. Mit Unterstützung der kaisl. Akademie der Wissenschaften in Wien. Druck u. Verlag von C. Lampe, Innsbruck u. Imst. Theil IV. Solitäre Apiden: Genera *Eriades*, *Trachusa*, *Anthidium*, 1898. 303 pp., 55 text-figs., 1 pl. Theil V. Solitäre Apiden: Genera *Lithurgus*, *Megachile* (*Chalicodoma*), 1899. 228 pp., 9 text-figs.—**Hamlyn-Harris, R. H.** See Arachnida.—**Klein, E. J.** The rose-leaf bee (*Megachile centuncularis*), figs., Fauna, ix, Luxembourg, '99.—**Mackenzie, V. St. C.** The ant-hills at the Paris Exhibition, 9. **F. M. G.** Lagerheim's "On *Lasius fuliginosus* Latr. and its fungus cultivation," Naturwissenschaftliche Rundschau,

Braunschweig, July 28, '00.—**Newberry, M.** and **Cockerell, T. D. A.** Notes on the nesting of *Anthidium paroselæ* Ckll. **5**, Aug.—**Reed, E. C.** Four species of Hymenoptera new to the fauna of Chili [in Spanish], **58**, June.—**Wheeler, W. M.** The female of *Eciton Sumichrasti* Norton, with some notes on the habits of Texan Ecitons, figs., **3**, July.—**Yung, E.** How many ants are there in one nest? Archives des Sciences Physiques et Naturelles, x, 7, Geneva, '00.

Howard, L. O. Notes on the mosquitoes of the United States: giving some account of their structure and biology, with remarks on Remedies. Bulletin No. 25, new series, U. S. Dep't of Agriculture, Division of Entomology, Washington, 1900. 70 pp., 22 figs. "The demand for the publications of this Division on mosquito subjects has been so great that it has been deemed desirable to bring together the published and unpublished articles and notes in convenient reference form from the standpoint of the United States only, and this has been done in the present Bulletin." The contents are made up of such topics as the abundance of mosquitoes, length of life and the food of the adult, their power of flight, their distribution by railroad trains, ability of the larvæ to live out of water, synoptic tables of the North American species (genera *Culex*, *Anopheles*, *Psorophora*, *Megarhinus*, *Aedes*.), the biology of *Culex*, and of *Anopheles*, natural enemies of mosquitoes and remedies against them.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

LARVÆ of *Papilio asterias* are feeding on *Cosmos* in my flower garden. Is this not a new food plant? It is a long way from celery or parsnips in the matter of relationship of food plants as well as in garden.—**F. M. WEBSTER**, Wooster, Ohio.

A FORTUNE IN MOTHS.—The death has occurred at Eastbourne of one of the foremost entomologists of the day, in the person of William Watkins, whose success had earned for him the name of "The Butterfly King." Of Welch extraction, he began collecting butterflies when he was a school-boy at nine. At that time, says *The London Express*, there were fields in the vicinity of Peckham, and the first butterfly Mr. Watkins ever caught was "The Peacock." From thenceforth he became an ardent entomologist; he gradually went on collecting moths, and eventually he made this the business of his life.

He was articulated to some ship and insurance brokers, and spent his leisure time collecting, often staying out until midnight in pursuit of treasures he coveted. In his desire to "see life" he went to India, where he had plenty of scope for his love of entomology. After a sojourn of six years in India, he returned to England, and was able to sell a large collection to Mr. Horniman, the well-known tea merchant.

He then commenced business as a professional entomologist, and opened establishments in Piccadilly and in the Strand. In 1881 he formed the Insect House in the Zoological Gardens.

During the past ten or eleven years he resided at Eastbourne, where he carried on the breeding of butterflies of the most diverse specimens; they were in all stages of development—the larva, or caterpillar, the chrysalis and the butterfly.

THE LARVA OF *THECLA MELINUS* HUBN.—On April 17, 1900, Prof. E. O. Wootton brought me a lycænid larva found living on the flowers of a *Echinocactus intertextus* Engelm., in the Mesilla Valley, N. M. The larva burrows into and eats the flowers, which are white, not purplish as described in the books. The imago was bred May 8th, and proves to be *Thecla melinus* Hubn. I have formerly observed this butterfly to be preyed upon by the bug *Phymata fasciata*.

Larva.—Slug like; 14 mm. long, 6 broad; entirely apple green, a very faint darker dorsal stripe enclosing an interrupted light stripe. Whole surface thickly covered with short brownish bristles. Under side, including legs, light green. Head small, shining dull white; eyes on black patches; mandibles reddish brown. When the larva is at rest the head is not visible from above. The other larva was whitish, with faint pinkish markings; two dorsal lines; oblique stripes, two on each side of each segment; and the lateral keel, which is whitish, edged with pale pinkish. The excrement, owing to the nature of the food, is light lemon yellow.—T. D. A. COCKERELL, N. M. Agr. Exp. Station.

Doings of Societies.

At the June meeting of the Feldman Collecting Social, held at the residence of Mr. H. W. Wenzel, 1523 S. 13th street, twelve members were present.

Mr. C. W. Johnson exhibited a larva found in a spring at Riverton, N. J., which he had tried unsuccessfully to keep alive. It seems to be the early stage of a large Tipulid, agreeing well with the description by Hart of Tipulid larvæ from the Illinois River. From its great size it may be *Tipula abdominalis*.

Mr. P. Laurent remarked on the lack of knowledge regarding the early stages of many of the Hesperidæ, notwithstanding that these larvæ are perhaps the easiest cared for of any Lepidoptera. He believed almost all species of this family would live on any of the grasses.

Mr. H. W. Wenzel described collecting in an old barn situated in the Philadelphia "Neck." About 30 species of Coleoptera

had been taken, most of which were entirely new to the speaker's collection, and many had never been recorded from this region. The same speaker showed *Cedius Ziegleri*, taken from the nest of *Formica exsectoides*.

Dr. Skinner referred to Mr. Laurent's remarks on rearing Hesperidæ, and said that while a number of species may feed on grass, yet many live on grasses which are peculiar to certain regions and are not obtainable for rearing. He cited *Pamphila panoquin* as one that will not thrive on grasses of the vicinity of Philadelphia. Other species do not feed on grass.

The subject was further discussed by Messrs. Laurent, Skinner and Wenzel. Mr. Laurent maintained that he had raised numerous sea-shore species of *Pamphila* on the common grasses from near Philadelphia.

The feeding of *Cecropia* larvæ on rose bushes was discussed by several members.

Mr. Harbeck reported the capture of *Batrissus frontalis* and *riparius* in Fairmount Park, Philadelphia, the former being new to this region.

WILLIAM J. FOX, *Secretary*.

The seventh regular meeting of the Harris Club was held at 35 Court Street, Boston, on the evening of May 18, 1900. Messrs. W. D. Denton, R. W. Denton and J. H. Rogers, Jr., were elected members. Mr. W. D. Denton described a trap-lantern used by Mr. Morse, consisting essentially of an arrangement of board partitions to form four funnels, with the smaller ends in the centre of the group and the larger ends opening in four directions. The lamp is placed at the common centre of the funnels, in a glass box, each side of which forms the inner end of one of the funnels. The inner surfaces are painted white, and a trough filled with kerosene receives the moths which fly against the glass. On removal the specimens are cleaned by immersion in benzine. Mr. Newcomb showed a killing device which is conveniently made of any tin box, and contains a long strip of soft paper folded in accordeon plaits, with the ends of the plaits uppermost. The insects can be dropped between the folds of paper, thus preventing motion of the wings. Mr. Low advocated the use of chloroform for kill-

ing, on account of its rapid action. He employs a common jelly tumbler with a tin cover; a ring on the inside of the cover holds a sponge designed to receive the chloroform. Mr. Rogers reported an examination of the pupa contained in one of the inflated cocoons of *Attacus cecropia*, which were discussed at the April meeting; the pupa in this case was alive, and not parasitized. Mr. Newcomb showed a specimen and nest of *Cteniza californica*.

The eighth regular meeting was held June 15, 1900. Messrs. C. E. Preston, Frank Sherriff and John S. Rogers were elected to membership. It was voted to hold a field meeting in July. Mr. Newcomb told of great success in collecting about electric lights. A screen of white netting, attached to strings thrown across the wires overhead, secured many specimens which would otherwise have alighted on buildings out of reach. Messrs. Bolster and Smalley reported the capture, in Mattapan and Dorchester respectively, of two fine females of the rare *Sphinx luscitiosa*. Mr. Field mentioned a specimen of the same moth, now in his collection, which was secured in Milton, Mass., by Mr. T. T. Whitney, Jr., in 1896. Mr. W. D. Denton announced the reappearance of *Papilio philenor* in Wellesley.

W. L. W. FIELD, *Secretary*.

OBITUARY.

George Ruscheweyh, lepidopterist, died at Buenos Aires, Argentina, August 2, 1899. He was born July 20, 1826, in Mecklenburg Schwerin, Germany. From early youth he possessed a great love for natural history; his first collection of butterflies was made as a boy. He went to South America in 1846, landing in Chili, in which country he lived for some time, doing business as an importing merchant and devoting his leisure to his studies in natural history. In 1854 he went to the Argentine Republic, where he was for many years a leading merchant. In his declining years he retired partly from active pursuits. His collection of Lepidoptera was the result of the work of twenty-five years of collecting and exchanging, and is cited in the works of Burmeister and of Berg. It is deposited in the Argentine National Museum, and will probably be purchased by the government. Mr. Ruscheweyh had many correspondents in the United States, who will greatly miss his assistance.—HARRISON G. DYAR.



SPHINX DRUPIFERARUM S. & A.

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XI.

NOVEMBER, 1900.

No. 9.

CONTENTS:

Browning—A Tiger Hunt in the West	581	Banks—A New Species of Myrmeleon	596
Caudell—Description of Larvæ of <i>Azelina Peplaria</i> Hubn.....	583	Wickham—Recollections of Old Collecting Grounds.....	597
Smyth—Identity of <i>Hemaris tenuis</i> Grt. and <i>Hemaris diffinis</i> Bdv....	584	Barrett—Some Strange Habits.....	600
Marlatt—The European Pear Scale....	590	Editorial	602
Cockerell—A New <i>Eriococcus</i> , etc....	594	Entomological Literature.....	603
		Doings of Societies.....	608

Our Illustration.

Some time ago Mr. H. W. Nash, of Pueblo, Colorado, sent us a fine photograph of *Sphinx drupiferarum* from life. It is shown feeding on plum. We have reproduced it for the benefit of our readers.

“The full grown larva is about $3\frac{1}{2}$ inches long, and of a bright apple-green color. The head has a vertical dark brown or black stripe on each side, and there are seven oblique white stripes on each side of the body, which are bordered on the upper side with bright purple or mauve. The spiracles are of a bright orange color. The caudal horn is dark brown, with yellow at the base of the sides.”—(FERNALD.)

A Tiger Hunt in the Far West.

BY G. WESLEY BROWNING.

Salt Lake City, Utah.

Present indications (March 18th) seem to promise that 1900 will be a Cicindela year in Salt Lake Valley. The beginning of the collector's season dawns with a solid month of weather too uniformly delightful by far to be characteristic of early

spring. I survey the phenomenon from my door-step. There are robins caroling in the trees, and there are butterflies in the air: *Vanessa antiopa* and *V. milbertii* are flitting about, together with a few *Grapta zephyrus* and fewer *Pieris rapæ*. These are too common to be tempting, but at this time of the year they are germs that awaken the collecting fever from its winter lethargy. Collecting net is unfolded and examined,—there are a few slight souvenirs of last year's thorns and twigs, not large enough, however, to form an "open door policy." Cyanide bottle is uncorked,—the fumes are still potent enough to disconcert most anything of a hexapodal nature.

'Tis but a half hour's walk to the river Jordan. *Cicindela vulgaris* is there, running everywhere over the moist sand. About twenty of them are captured. They show considerable variation in size, coloration and markings. But we get tired of taking nothing but *vulgaris*, and move on.

Across the river is plenty of open field of dry clayey soil, covered here and there with last year's growth of crisped salt grass, and dotted here and there with an occasional stagnant pond. Here we find a few *Calosoma zimmermanni* and *Eleodes hispilabris*. As we near one of the ponds a sudden buzz and a streak of bright metallic green marks the transit of *Cicindela graminea*. We note the termination of the green streak and creep forward. It is easy to discern a shining emerald against a dull background of clay and yellowed grass, and we soon place seven of these emeralds to our credit.

But the streak that vanishes before us is not always a green one: occasionally it is dark indigo, and leads to the capture of *C. audubonii*. At this point we remove all other specimens from our cyanide bottle, for *audubonii* is large and powerful,—much larger here, I am told, than the same species farther east,—and if placed in the bottle along with other specimens he usually divests some of them of their antennæ and legs, if not worse, before yielding to the opiate.

An interesting fact is here noted: we find in two instances the ♂ of *C. graminea* mating with the ♀ of *C. audubonii*, and in both cases both insects are netted while paired. I have not before known of intermarriages among separate species of

Cicindela, but would not be surprised to find them recorded by others.*

A fly by the name of *Gonia frontosa* is buzzing over nearly every square yard of the ground about us, and this is what the tigers are looking for. We find several of these flies just emerging from the cracks in the dry ground,—soft, palid and with wings yet folded. Little chance do these semi-pupal semi-imaginal things stand against Cicindelian rapacity, save in the quick transition to a more shifty and more atmospheric existence.

We now look longingly over the twelve miles of level barren plain between us and the shores of Great Salt Lake, where the handsome *Cicindela senilis* is said to disport itself about this time of the year, but with a beetle at twelve miles and a dinner at two the choice is with the latter.

The same afternoon a number of these specimens were packed in cotton and mailed to a friend in the East. A few days later a letter was received saying that one of the *Cicindela audubonii*, while in Uncle Sam's mail bags, had behaved in a manner most unbecoming to a supposedly dead beetle, for he had chewed his companion specimen to pieces, and had broken off his own legs in the attempt to escape confinement. I am now at work recharging my cyanide bottle.

Description of Larvae of *Azelina Peplaria* Hubn.

By A. N. CAUDELL, Washington, D. C.

—Length 35 mm. Head 2.5 mm. wide, strongly bilobed, the lobes light ash-colored above and obtusely angled. Inner anterior borders of the lobes darker, almost fuscous. Face lighter, especially the lower, half of the triangular clypeus. General color of the body brownishr mottled with longitudinal splashes of a lighter shade. Tubercles black, minute. Hairs microscopic, black. Thoracic legs on outer side concolorous with the body; on the inner surface lighter. Abdominal legs colored same as the body on the outer surface, but black on the inner sides, and the venter between the anal pair is also black, bordered posteriorly with white. There is an irregular, not prominent, transverse ridge on the twelfth segment.

This larva was fed on wild cherry. It entered the soil on July 10 and the moth issued in August.

* *Graminea* and *audubonii* are not species but color varieties of *purpurea*.—Eds.

Identity of *Hemaris tenuis* Grt. and *Hemaris diffinis* Bdv.

By ELLISON A. SMYTH, JR., A. M.,
Virginia Polytechnic Institute, Blacksburg, Va.*

The existence of seasonal dimorphism in many species of butterflies and moths has been so well established that it will excite no great comment to announce the completion of experiments in breeding, whereby the fact has been established by me that *Hemaris tenuis* Grt. and *Hemaris diffinis* Bdv. are seasonal forms of one species, their relation being the same as that already proven in the allied and distinct species *Hemaris ruficaudis* and *thysbe*.

Tenuis is the spring form from wintering pupæ and *diffinis* the mid-summer form from eggs of *tenuis*.

On September 9th, 1896, I obtained two sphingid larvæ from *Triosteum perfoliatum*, one of the Caprifoliaceæ. One of these died in the pupa during the winter; the other disclosed, on March 19th, 1897, an *Hemaris* with white-yellow patagiæ, light greenish-yellow thorax, black upper abdomen, last abdominal segments and center of anal tuft white-yellow, sides of anal tuft black and an even inner border to outer margin of fore wings; vitreous spaces covered with scales which mostly fell off on handling the moth. This was identified as *Hemaris tenuis* Grt. Later in the spring I obtained from the *Triosteum* a number of larvæ similar to those found in the fall. They pupated, and in July a number of imagines were disclosed which were identical with specimens of *Hemaris diffinis* Bdv. in my collection from the North. I paid no attention to the matter, and in late August, 1898, again obtained from the same patch of *Triosteum* a number of larvæ exactly like the others. These pupated and wintered, and in the following April and May they all disclosed the whitish-yellow, even-margined *tenuis*. This time I could not help seeing the fact so clearly indicated that *tenuis* and *diffinis* were seasonal forms of one thing, as was the case with *Ruficaudis (uniformis)* and *thysbe*. In June, 1899, I therefore gathered all of the

* The plate has been omitted by consent of the author. It was found that a half-tone plate would not sufficiently show the minute differences to which the author alludes.—ED.

larvæ and eggs that I could find on *Triosteum* and transplanted to my garden a lot of the plant. Some of these larvæ pupated by the 17th of June, attaching together leaves and debris on the surface of the ground, the pupa being enclosed in a loose cocoon of purplish brown silk; the others all spun up by the 24th, and between July 5th and 18th. All emerged; most of them were the typical serrate-inner-marginal *Hemaris diffinis*, two or three had the whitish-yellow coloring of *tenuis*, but the wings of *diffinis*, and one was the form *æthra*. I had taken these pupæ South with me, and so was forced to kill the imagines, as I had no chance to tie out a female, but on my return to Virginia I visited a patch of *Triosteum*, and after some search found a female *H. diffinis* flying in and among the plants, ovipositing. I gathered what eggs I saw her lay and then captured her, getting altogether about forty eggs. This was on August 1st, '99. This female is in every way a typical *H. diffinis*, and is Fig. 1 in the accompanying plate.

I kept these eggs carefully to themselves. The larvæ differed in no particular from any of the other larvæ I had before obtained from the *Triosteum*. By August 27th all had pupated. I kept these pupæ in the same breeding cage, all to themselves, marking the case "Pupæ from Eggs of *diffinis*," so as to avoid any mistake. On May 17th, 1900, the imagines commenced to emerge, and most of them I succeeded in killing before they had a chance to flutter, thus preserving the smoky appearance due to the covering of scales on the vitreous spaces. All were typical *H. tenuis*, those that were scale-covered being Strecker's *fumosa*. It was interesting to notice how quickly the wings became clear if the moth fluttered. One buzz, and presto! *H. fumosa* became *tenuis*, with the clear vitreous spaces. In the plate Figs. 2 to 8 inclusive are specimens selected from this brood, from eggs of *diffinis*.

I selected two females, each being as true *tenuis* as I could find in the brood, and tied them out. From one I had no results, but from the other I obtained sixty odd eggs from which I obtained fifty-nine larvæ. Descriptions of eggs and larval change are appended to this article. These eggs were laid on June 1st and commenced hatching on the 6th; the moults were

on June 9th, 13th, 16th and 20th, and by the 25th pupation was well under way. On July 12th three imagines appeared, and by the 20th over thirty had emerged. All were *diffinis* save a few *æthra* and Figs. 9 to 18 inclusive, in the plate, are from this brood, from eggs of *tenuis*. A number died in pupa and the balance at this writing (September 13th) seem inclined to winter. Whether they will emerge in the spring as *tenuis* or *diffinis* remains to be seen.

It is impossible for a photograph to present the gradations in color which are shown by the specimens represented in the plate. A few words of description will therefore be necessary.

Fig. 1 is the original *diffinis*, ♀, caught August 1, 1899. From her eggs were obtained which in May following produced *tenuis*, Figs. 2 to 8 inclusive being selected from this brood.

Figs. 2 and 3.—*Tenuis*, killed before wings were fluttered; these are Strecker's *fumosa*; they show the even inner margin of fore wings, and the colors are light lemon-yellow and black; the sides of abdomen show blue spots.

Figs. 4 and 5.—*Tenuis*; wings clear through loss of scales by fluttering.

No. 4 shows thick outer border and No. 5 a very narrow one; both even on inner edge of outer border of fore wings and colors white-yellow and black.

Figs. 6 and 7.—*Tenuis*; body colored, as in *tenuis*, but inner margin of fore wings beginning to show indentations.

Fig. 8.—Body colors deeper yellow and inner margin serrate; an approach to *diffinis*.

All of the above of same brood, from eggs of *diffinis*, laid Aug. 1, '99; flies emerged May 15th to 30th, 1900.

Figs. 9, through 18, all from eggs from a *tenuis* ♀ of the above brood.

Fig. 9. *Diffinis*; thorax and patagiæ and end of abdomen deep buff yellow and greenish; upper part of abdomen rust brown; inner edge of outer border of fore wings distinctly serrate.

Fig. 10.—*Diffinis*. Outer border broad.

Fig. 11.—*Æthra*. Abdomen lacking dark color on upper portion, being colored like thorax; apical spot of fore wings very red, veins of wings red, especially beneath; inner margin hind wings carmine. Killed before fluttering; hence smoky wings.

Fig. 12. *Æthra*, as above; wings clear; killed after wings were shaken.

Fig. 13.—*Diffinis*; very dark; scarcely any yellow on the brown red abdomen; opposite extreme to *æthra*; wings barely indented.

Fig. 14.—*Diffinis* as to color of body, *æthra* as to red veins and wing borders.

Fig. 15.—*Æthra* as to yellow abdomen, veins and wings dark, as in *diffinis*.

Figs. 16 and 17.—Serrations of inner edge of outer border of fore wings approaching *axillaris* in depth. Apex of forewings of No. 17 a little worn by fluttering in cage.

Fig. 18.—*Diffinis* or *tenuis*? Wings barely indented, body colors, as in *tenuis*.

These last 9, all from same brood, eggs laid by *tenuis* ♀ on June 1, 1900, the mother herself being from an egg laid by *diffinis* on Aug. 1, 1899.

Thus, eggs laid in captivity by a *diffinis* ♀ in August disclosed *tenuis* the following May, and from eggs laid by a *tenuis* ♀ of this brood, in June, *diffinis* in various varietal forms, as well as typical, were disclosed the same summer in July. Although my former experiments gave the same results, they were made with eggs and larvæ taken at liberty, and therefore of uncertain parentage, but these last two broods were from eggs laid in captivity by *diffinis* and *tenuis* respectively. I therefore feel justified in asserting that the proof is unquestionable that *Hemaris tenuis* and *diffinis* are the same species, *tenuis* being the early spring form and *diffinis* the later summer form, as is the case with *ruficaudis* and *thysbe*. I have no doubt that *axillaris* is also only a form of *diffinis*, as Figs. 16 and 17 show an approach to the deep indentations of that species. As to the identity of *tenuis* and *diffinis*, Dr. Harrison Dyar writes me: "Should you find it convenient to state in your article that I had arrived at the same conclusions as yourself, from an independent study of the mature insects, you are at liberty to do so."

The species will now, therefore, stand:

Hemaris diffinis Bdv. Summer form.

 aber. *æthra* Stkr.

 a. *tenuis* Grt. Spring form from wintering pupæ.

 b. *axillaris* G. and R.

And very likely others, as *brucci*, *gracilis*, *thetis*, etc., will fall in as only forms of *diffinis*.

EGG AND LARVAL STAGES OF HEMARIS DIFFINIS VAR.
TENUIS.

Eggs laid in captivity by *Hemaris tenuis* June 1st, 1900: egg $1\frac{1}{4}$ millimeters long by $\frac{4}{5}$ mm. wide, slightly flattened

on top, rounded beneath; color emerald green; in many, golden green, translucent. Commenced hatching June 6th after 7 P. M. Freshly hatched larvæ $\frac{1}{8}$ inch long, caudal horn fully 1-16 inch. Color pale yellowish white, no markings of any kind, sparingly clothed with tufts of hair, about two hairs to a tuft, radiating from small tubercles. Caudal horn black, nearly erect, with a slight backward curve at tip; jaws faint brown; all legs colored like body. Stigmata evident under pocket lens, but uncolored; ventral surface concolorous with sides.

1st moult.—Evening of June 9th; color a clear pea green, more glaucous above. Under surface pale purplish brown. First segment with a collar of raised yellow tubercles behind head dorsally. Stigmata dark purplish brown; caudal horn black. Depth and extent of ventral dark color, very variable. About 3-10 inches long, caudal horn 1-15 inch; two black spots on face and jaws; true legs black; head yellow green, body smooth.

2nd moult.—June 13th, 7 A. M. Length 9-20 inch; by 4 P. M. length increased to 11-20. A central dorsal line; half way between this and stigmata on each side a lateral longitudinal line, the two latter lines separating the glaucous dorsal region from the yellow-green lateral and lower parts. Purple brown of under parts deep and sharply separated from green of sides, not extending above prolegs. Stigmata black, faintly outlined with glaucous; yellow punctuated collar behind head very prominent. Head yellow-green, finely punctuated, as are also first three segments. Caudal horn yellow at base on sides, rest black, spiny; occasionally recurved forward, usually straight and pointing acutely to rear.

3d moult.—June 16th, morning. Length $\frac{4}{5}$ inch. Caudal horn $\frac{3}{20}$ inch. Colors much as before, more decided. Dorsal and lateral lines more pronounced, the latter, as before, separating the light glaucous dorsum from the yellow-green sides; whole body granulated with whitish-green punctulations; caudal horn recurved at tip. Just before 4th moult $1\frac{1}{5}$ inches long; glaucous of back more restricted and yellow-green of sides extending up higher, the two sharply separated on each side by a lateral dark blue line bordered below by light yellow, coming

together on dorsum at base of caudal horn. Granulations of whole body very distinct. Stigmata bordered by glaucus: under lense each stigma, save first, shows a central whitish space.

4th moult.—June 20th, noon. Length $1\frac{9}{10}$ inches long; head bluish green. Viewed dorsally glaucus whitish above; a central and two lateral bluish lines; below each of latter a yellowish white line separating glaucus of dorsum from green-yellow of sides; dorsum with fine white-green granulations; under surface wine color from rear to beginning of 5th segment, rest of central surface brown-purple. Dorsal horn black, yellow at base of sides, covered with shining black spinules. A yellow granulated dorsal collar on first segment behind head. Stigmata encircled with greenish white; black, deepest in center (opening).

June 24th.—Discoloration prior to pupation beginning to show; larvæ now $1\frac{9}{10}$ inches long. Colors as last described. The pupal discoloration, starting at 3 P. M., began by a gradual dimming of the colors and a widening of the dorsal stripe, which becomes a dirty olive; this color gradually spreads over the whole dorsal field; by 9 P. M. the discoloration was complete and the dorsal space was wine-colored; this larvæ then began to hunt for a place to pupate. By June 25th, 7 P. M., each in this cage had spun a loose brown-purple web enclosing the larva and attached to leaves, gravel, etc., in the bottom of the cage; a few spun among the leaves of the food plant; none entered the earth. June 29th, pupation complete.

The above descriptions apply to eight larvæ, separated from the rest and kept on my study table in a glass-covered box; the rest were in a regulation breeding cage out on the piazza, subject to the cool nights, and were a week behind in pupation. This seemed to make no difference in the imagines, the eight indoor ones giving seven *diffinis* and one *athra*, and those outside being various in their forms, mostly true *diffinis* and one or two *athra*. These commenced to emerge on July 12, continuing up to the 20th, and I have about fifteen pupa, yet alive and healthy, and which will probably winter. I have never found them on any plant but *Triosteum perfoliatum*.

The European Pear Scale.

DIASPIS PIRICOLA (Del Guercio) Saccardo, 1895.

By C. L. MARLATT, Washington, D. C.

Under the title *Chermes pyri*, Linnæus in his *Systema Naturæ* (1758) named an insect which now falls in the Psyllidæ.

More than a hundred years later Boisduval (Ent. Hort., 1867, p. 315), under the supposition that he was dealing with the Linnæan insect mentioned, described as *Chermes pyri* a true coccid belonging to the genus *Diaspis*. It was a case of misidentification on the part of Boisduval, but, nevertheless, a valid characterization was given to a species not before described.

The next reference to this insect is another misidentification exactly similar to the last. Signoret (Essai, 1869, p. 439) described and figured this *Diaspis* from specimens found in France, referring it, however, to *Aspidiotus ostreaformis* described a long time before by Curtis (Gard. Chron., 1843, p. 805). Curtis' insect is an entirely distinct species and a true *Aspidiotus*, and Signoret's belief that this *Diaspis* was the same as the *Aspidiotus* of Curtis was based largely on the fact of the identity in food plant, certainly most unsafe ground, and resulting in the same error which similar action on the part of Boisduval had caused a century before.

On the same faulty reasoning, namely, identity of food plant, Signoret also assigns (l. c., p. 441) the *Aspidiotus furfurus* Fitch (1856) to the same insect.

Later also in the same monograph (1876, p. 664) Signoret makes a similar error when he designates *Aspidiotus circularis* Fitch (1856) as another synonym of *ostreaformis* Curtis as he denominates his *Diaspis*. Neither *Aspidiotus ostreaformis* Curtis, a European scale insect recently introduced into America, nor *Chionaspis furfurus* (Fitch), the common scurfy bark-louse, nor *Aspidiotus circularis* Fitch, which with little doubt is an early name for *Aspidiotus ancyclus* Putnam, have any connection with Signoret's *Diaspis*, which he himself points out is the same as Boisduval's *pyri* (see Essai, 1869, p. 438).

The confusion started by Signoret between those various

species of scale insects continued for some time. Comstock in his Department Report (1880, p. 311) confuses the two species *Aspidiotus* described respectively by Curtis and Fitch with this *Diaspis*, which, however, he correctly describes and figures from authentic specimens received from Signoret. Riley in 1881 (Index to Missouri Reports, p. 69) confounds *Aspidiotus harrisi* (Walsh) (= *furfurus* Fitch) with this *Diaspis*, which he credits, following Signoret, to Curtis; and Lichtenstein in the same year (Bull. Ent. Soc. Fr., p. 52) makes the same confusion of Curtis' and Signoret's (or rather Boisduval's) insects, and redescribes the former as *Aspidiotus pyri*.

Again in his Cornell Report (1883, p. 94) Comstock repeats the error indicated in his earlier work, but adds the very interesting fact of the discovery by Matthew Cook of this *Diaspis* on pear trees at Sacramento, making the first record of its appearance in America.

Gœthe writing in 1884 (Jahrbuch Nass. Ver., etc., p. 114, figs. 1-5), gives an illustrated account of this insect, probably mixing it up, however, with Curtis' *Aspidiotus*, which he may have found associated with it.

The first indication of the fact of the distinctness of Curtis' insect from Signoret's or Boisduval's is given by Douglas (Ent. Mo. Mag., 1887, p. 239), who shows that the two species belong to different genera, and quotes a letter from Comstock confirming this fact. The status of these two species as indicated by Douglas was later further confirmed by Morgan (*op. cit.* 1889, p. 350).

Neither of these last, however, in the articles cited, seemed to have recalled the earlier name given by Boisduval, and mentioned by Signoret, although they removed the confusion hitherto existing between the *Diaspis* and the *Aspidiotus*. The question of nomenclature was solved by designating the former as *Diaspis ostreaformis* Signoret, and the latter as *Aspidiotus ostreaformis* Curtis.

Later Morgan (Ent. Mo. Mag., 1890, p. 42) discusses the bibliography of this species and concludes from Signoret's language rather than from Walsh's description, which he had not seen, that *Coccus harrisi* Walsh is identical with this *Di-*

aspis. He also, following Signoret and Comstock, thinks that *Aspidiotus circularis* Fitch may be this same insect. Concluding, he says that while *circularis* having priority might rightly hold, if the species be the same, and if not then *harrisi*, "yet as there is uncertainty about the former and the latter is inappropriate * * * it will be most convenient to maintain the name *Diaspis ostreaformis*." Relative to this, it is enough to say that Walsh's description and figure of "*Coccus (?) harrisi*" afterwards called *Aspidiotus harrisi*, exactly applies to *Chionaspis furfurus*, and, as already indicated, the *circularis* of Fitch, is with little doubt *Aspidiotus ancylus*, or at least could not be referred to this *Diaspis*.

We find this *Diaspis* newly described by Del Guercio in 1894 (Il Naturalista Ciciliano, p. 142) as *Aspidiotus pyricola*, sp. nov., from specimens found on pear at Florence, Italy. The status of *pyricola* was first indicated by Saccardo* and has been confirmed by a careful examination made by the writer.

The old confusions, however, did not entirely disappear, as indicated by articles by Saccardo,* and Berlese and Leonardi,† and an anonymous author,‡ in which the various errors made by Signoret are adhered to relative to the species described by Curtis and Fitch.

Cockerell in his discussion of this species (Bull. 6, Tech. Ser., Div. Ent., U. S. D. A., 1897, p. 4, fig. 1) adopts Del Guercio's name *pyricola* for this *Diaspis* on the ground that both Signoret's and Boisduval's names are based on misidentifications with older descriptions.

The extended and voluminous literature of this *Diaspis* is concluded with an assignment of a new name for it by Dr. Horvath,|| who suggests for it the name *Diaspis fallax*, on the ground that Signoret in describing it believed it to be identical with the *Aspidiotus* described by Curtis.

It will be noted (1) that this *Diaspis* has been twice referred to in connection with descriptions and figures to older species with which it has no connection; (2) that several species with

* Rivista Pat. Veg. iv, p. 53, 1895.

† Rivista Pat. Veg. vii, p. 261, 1898.

‡ Anon. (Z. f. Pflanzl.), p. 80, 1893.

|| Revue d'Entomologie, vol. 16, p. 95, 1897.

which it bears no relationship have been assigned to it as synonyms; (3) that though many times described and several times figured in literature, it was first characterized as a new species in 1894 in entire ignorance of the older literature; and (4) that it was later again renamed in an effort to straighten out the difficulties of nomenclature which surrounded it in ignorance of the new name just referred to.

So far as the status of the names assigned at various times to this insect are concerned, *pyri* of Boisduval, and *ostreaeformis* of Signoret, are on exactly the same basis except in point of priority; in other words, both are based on misidentifications. In about the same category are the names *circularis* and *fur-furus* of Fitch, and *harrisi* of Walsh, all being erroneous references. Of the new names assigned to it, *pyricola* of Del Guercio has priority over *fallax* of Horvath. It therefore merely becomes a question between *pyri*, Boisduval, and *pyricola*, Del Guercio. Either we must accept Boisduval's species as valid on the ground that he was the first to name and describe the insect, or throw it out for the technical reason that the name was based on an error, and substitute Del Guercio's name. The writer's preference would be to accept the name given by Boisduval, which, while based on a misidentification, is new to the genus *Diaspis*, unfortunately for this view, however, it conflicts with the rule of zoological nomenclature which rejects any "specific name which undoubtedly rests upon an error of identification." If this rule be followed, this insect must be known as *Diaspis pyricola* (Del Guercio) Saccardo, 1895.

As to the occurrence of this *Diaspis* in the United States, the records so far show it only from California, although it very likely occurs elsewhere on the Pacific slope and possibly east of the Rocky Mountains. As noted above, it was reported from California by Comstock in 1883 from specimens on pear sent by Matthew Cook from Sacramento. Cockerell has also reported receiving it on *Prunus* from California, and we have had it within the last year on dried California prunes sent to us by Dr. L. Reh, Hamburg, Germany.

A leaflet entitled "The Pacific Tree and Vine," printed at San José, Cal., January 13, 1900, reports the occurrence about

San José of *Diaspis pyricola*, styled the "Italian pear scale," which proves from specimens on French prune sent at our request by Mr. E. M. Ehrhorn, January 24, 1900, and exhibited herewith, to be the species under discussion.

When in California last Fall (1899) Dr. Howard noted infestation by what proves to be this scale insect on a pear tree in the city of San José. Writing under date of January 24, 1900, Mr. Ehrhorn says this scale insect has been in San José since 1889, and is spreading a little though being vigorously fought. He says it has a habit of getting under moss on the trees, which makes it more difficult to control.

This *Diaspis* is still another illustration of a mischievous scale insect which has come to us from Europe on imported stock. The published records show it to occur very commonly on pear in Germany, France, Italy and Portugal; and in Italy also on "apple, peach, etc." In the Department collection, it is represented from Germany and France on pear, and from Italy on apple.

A New *Eriococcus*, With Remarks on Other Species.

By T. D. A. COCKERELL, N. M. Agr. Exp. Sta.

Eriococcus quercus toumeyl, subsp. nov.

♀.—Sac quite ordinary, closely felted, white, about 4 mm. long. Eggs pale green; the insect hibernates in the egg stage. ♀. On boiling in liquor potassæ, turns the liquid pale pink. Antennæ 7-jointed, joints measuring in micromillimeters: (1.) ? (2.) 33, (3.) 51, (4.) 36, (5.) 24, (6.) 18, (7.) 30. Formula 342756 agreeing with that of *E. quercus* and *dubius*. Femur with trochanter 228, tibia 150, tarsus 120, claw, 33, width of femur 69 u. Dermal spines very large, the largest 65 u long.

Hab.—On twigs of *Prosopis velutina*, close to the University of Tucson, Arizona, collected by Prof. Toumey and the present writer, Nov. 1899. It is quite scarce, being greatly reduced by a dipterous parasite, doubtless *Leucopis*.

The North American species of *Eriococcus* (if we include an unpublished one found by Mr. Parrott on grass in Kansas) are 14 in number, two of them (*aravariæ* and *coccineus*) being introductions from abroad. Of these *E. neglectus* is known by its waxy sac; *E. arenosus* by its sandy sac, although individu-

als may yet be found without this peculiarity; and *E. azaleæ* by the sac being covered with protruding filaments, and also by the reddish-purple eggs, the usual color of the eggs in the genus being pale yellow. The remaining species have closely-felted sacs, very much alike, so that they can hardly be determined from external characters.

On microscopical examination *E. quercus* stands out prominently from all the others by reason of its very long tibia, which is conspicuously longer than the tarsus. The insect named *toumey*i agrees herein with *quercus*, but differs in its longer tarsus, and the generally smaller antennæ. The measurements of the antennal and segments of *toumey*i fall completely within the range of variation of *tinsley*i, but the legs and spines are not at all as in that species.

The normal number of antennal joints in North American *Eriococcus* is seven, though *neglectus* and *palmeri* have only six, while *borealis* varies from 7 to 8. In *E. aravcaricæ*, *adenostomæ* and *dubius* the tibia and tarsus are subequal in length; but in *gillettei*, *tinsleyi*, *azaleæ*, *coccineus* and *borealis* the tarsus is distinctly longer than the tibia. These characters of the legs and antennæ are useful but not always conclusive, owing sometimes to their variability and sometimes to the fact that they are virtually identical in really different species, as *tinsleyi* and *larreæ*, which differ greatly in the spines.

From South America only one *Eriococcus* has been received, viz. *E. brasiliensis*, Ckll. ined., found by Messrs. Hempel and Von Ihering at Yprianga, Brazil, on *Baccharis*. It has 7-jointed antennæ; formula 37 (24) 56 to 3 (72) (45) 6; ♀ sacs cream color, 2½-3 mm. long, closely felted.

Kuhlgatz, in the *Monatsschrift für Kakteenkunde*, Jahrg., viii, p. 166 (1808), has described a *Rhizococcus multispinosus*, found on *Opuntia vestita*, a South American species of cactus. This creature is manifestly an *Eriococcus*, and its name is unfortunately similar to that of *E. multispinus*, Maskell. However, by its reddish color, 7-jointed antennæ and proportion of joints, and habitat on cacti, it resembles *E. coccineus*, of which it is quite possibly a synonym.

NOTE.—I will take this opportunity to raise the question

whether *Pulvinaria phaia*, Lull, ENT. NEWS, Oct., 1899, p. 237, is not identical with *P. brassia*, Ckll., *Can. Ent.*, 1895, p. 135, found in the orchid *Brassia*. The slight difference apparent in the antennæ is hardly likely to be of specific value. It is further possible, to say the least, that both insects may be identical with *P. floccifera*, Westwood, as interpreted by Green in *Ent. Mo. Mag.*, 1897, p. 73.

A New Species of Myrmeleon from Texas.

By NATHAN BANKS.

Recently Mr. McClendon sent me for determination some Myrmeleonidæ from Texas, among which is a new species of the genus *Myrmeleon*, as restricted. Doubtless there are several species in this genus yet to be separated out from the common *M. rusticum* Hag. This form, however, is very distinct by several points of coloration, so that there is no chance of its being confused with *M. rusticum*, which is in the same region.

Myrmeleon texanum n. sp.

Head yellowish, with a large, shining black spot in front, reaching from the antennæ to the clypeus, vertex more reddish, unspotted; pronotum pale yellowish, with a broad central brown stripe, broadest behind, and in front of the furrow much narrowed and divided by a pale line; meso and metathorax dull yellow-brown, not distinctly marked, but with a broad yellow stripe each side through the bases of the wings; thorax clothed with white hair; abdomen dark brown; legs pale, somewhat reddish, without dark stripes, with black bristles and reddish spurs. Wings hyaline, the extreme bases somewhat flavescent; venation yellowish, without dark interruptions; above eight cross-veins before the origin of the radial sector, two cross-veins connecting the cubital fork to the anal vein; pterostigma rather whitish, not distinct; tips of wings acute, and the hind margin near tip is slightly sinuate.

Length 30 mm.; expanse 54 mm.

Galveston, Texas, June, 1900. Readily known from the other species by its wholly pale legs, pale pronotum, markings of head, and pale, uninterrupted venation of wings.

Muggins—"Animal training has gotten down to a pretty fine point when we hear of educated fleas." Buggins—"Why, years ago, when I was a boy, we used to have spelling bees."

Recollections of Old Collecting Grounds.

By H. F. WICKHAM, Iowa City, Iowa.

X.—Breckenridge and Peak Eight.

From Leadville we started back to Denver, over the South Park Line, which climbs out of the Upper Arkansas Valley through Fremont Pass, at an altitude of above 11,000 feet, after which the descent towards Breckenridge. The ride was wonderfully beautiful. As the train started in the morning the view was unobscured by clouds, and we enjoyed to the full the sight of the great mountain ranges towering on either side. All along the line are little mining towns, some of them seemingly prosperous, others desolate and almost abandoned, with groups of tenantless houses about great empty mills, representing thousands of dollars of wasted capital. The course of Ten Mile River is paralleled quite closely until the Valley of the Palne is entered and followed to Breckenridge, a rather small but thriving town in the midst of a famous gold-producing district.

It is impossible to see out of the Blue River Valley at this point, surrounded as it is by colossal mountain ranges. On one side of the town lies the Ten Mile range, the peaks of which are designated by number instead of by name. Another side is guarded by Mount Hamilton, or "Baldy," as it is locally called, while farther up the stream looms the vast body of Silver Heels. The elevation of the station is about 9500 feet, but the trails are good in the adjacent ranges, and it is not difficult to reach, on foot and without undue exertion, heights of 14,000 feet or more. The pine forests come quite down to the railroad tracks, and, though largely burnt by more or less recent fires, add much to the appearance of the scene. Afternoon rains were of daily occurrence during our stay, in the middle of July.

The Coleoptera indicate essentially a forest fauna. There is not that element of plains species which is so strong at Buena Vista, and which makes itself evident even at Leadville. Thus we found *Eleodes* abundantly at the former place, and less commonly at the latter, while at Breckenridge none were seen. This is probably due in great part to the configuration of the country,

and perhaps, in a measure, to its forest-clad condition, for, generally speaking, the species of *Eleodes* are not fond of the woods.

In the neighborhood of town we got *Cicindela laurenti*, but only rarely. *Carabus oregonensis* was not uncommon under logs with *Pterostichus protractus*, *longulus* and *luczotii*. *Notiophilus hardyi* was found under stones in rather dry situations. *Trachypachys inermis* we detected under sticks which were lying on beds of moss. *Bembidium* was represented by *bimaculatum*, *fusicrum*, *grapii*, *versicolor* and *dyschirinum*. Of these *grapii* and *dyschirinum* were found on the margins of cold mountain brooks, while the others were running about the banks of a small pond. *Trechus chalybæus* was very abundant under boards which were well soaked through from lying in damp places; the little beetle has quite a strong, disagreeable odor, which it exhales when disturbed, agreeing in this respect with many other Carabidæ. *Calathus ingratus*, *Cymindis unicolor*, *Harpalus fallax*, *H. innocuus* and *H. oblitus* were more or less common in the valley.

Peltis ferruginea and *Calitys scabra* were taken occasionally from the under sides of logs, especially when these were infested by woody fungi. *Elater apicatus* was met with once and *Athous simplex* was also taken rarely. *Melanophila longipes* was seen on a lumber pile in town, with an occasional *Pachyta liturata*. *Podabrus lateralis* was not uncommon. It is curious what a deceptive resemblance this insect, when at rest, bears to the Elaterid *Campylus denticornis*, for which I have two or three times mistaken it at first sight, though I never took the latter species in the Rocky Mountains. *Dasytes hudsonicus* occurred, as usual, in beatings from the evergreens.

Flowers were by no means unproductive. One *Acmeops atra* was taken on blossoms, while *A. pratensis* was quite plentiful and *A. proteus* less so. *Leptura nigrolineata* and *L. chrysocoma* were also captured in this way, the latter extending its range nearly up to timber-line on the mountains.

Chrysomelidæ were not obtrusive. *Zeugophora abnormis* again occurred on leaves of aspen and *Adoxus obscurus* was met with on various plants. *Entomoscelis adonidis* was seen only occasionally. *Editionychis lugens* was found under logs in the

lower woods, *Adimonia externa* sometimes accompanying it. A batch of *Plagioderma oviformis* was noted feeding on low herbs on the bank of a small pond.

Of weevils we saw very few. *Rhynchites bicolor* was present on wild roses. The genus *Trichalophus* was represented by two species, *didymus* (one specimen) and *alternatus* (more common). These fine weevils are almost exclusively found under logs which lie in patches of a small woody trailing plant, having small, smooth, rather light green leaves. I do not recollect having found any living specimen of these species in mountain regions unassociated with this plant. They ranged from the valley almost to the timber-line.

Exploration of the higher elevations was greatly hindered by the ruins. Nevertheless I made the ascent of Peak Eight (in the Ten Mile Range) once, and attempted it again, but, being caught in a heavy fog, had to give it up through fear of losing the way. Just above timber-line *Acmæops pratensis* was very abundant on flowers. Higher up, near the summit of the mountain, probably between 13,000 and 14,000 feet, I took *Trechus chalybens*, *Amara brunnipennis* (which gives off a vile odor when handled), a very few *Bembidium grapii*, one *Harmonia picta*, one *Podabnes lateralis*, a few *Aphodius vittatus* and an *Ægialia*, which seems to be a small form of *lacustris*. A number of elytra of *Carabus oregonensis* were picked up, but whether these remains indicate a natural habitation of the species or were simply scraps left by birds I dare not say. The peak is much more difficult of ascent than Moose Mountain because of the greater width of the fringing zone of flat-topped, shrub-like evergreens that lie just above the timber-line proper. It is not a pleasant task forcing one's way through such a thicket when everything is dripping wet, and so far my explorations on mountain peaks had not been productive of any goods results entomologically.

We found Breckenridge the least productive of any locality which we had visited on this trip, owing, no doubt, to the fact that very little variety of landscape could be visited, and then, too, the season was approaching the "resting stage" that seems so noticeable every summer. The scenery, however,

was pleasing indeed, and, given good weather, this ought to make a favorable point from which to attempt a more careful examination of the high mountain summits—a piece of entomological investigation much to be desired.

Some Strange Habits.

By O. W. BARRETT, Tacubaya, D. F., Mexico.

Museum of the Geographical Exploration Commission.

I believe it is true that every species of insect has, at some stage in its life, some habit or instinct which would astonish us if we could only appreciate it.

Arachnis dilecta Bdv., as imago, protects itself with a strong odor, as penetrating and more lasting, though not so disagreeable as that of the worst-smelling Coreidæ. Having noticed that the odor clung to my fingers for a remarkably long time, I concluded that some liquid excretion was the cause, but was surprised to finally see and feel a jet which issued, apparently, from the top of the prothorax. This "liquid odor" [sic] is clear, thin, almost tasteless, and very volatile. The effluvium may be detected, however, a week or more after the death of the specimen. Both sexes are endowed alike.

Pericopsis salvini Feld. when "at bay" expels from the sides of the thorax a bright green liquid of peculiar smell; the expulsion of the liquid is accompanied by a froth-producing crepitation or quasi stridulation, after the manner of *Taniopoda* spp.

When captured the sluggish *Phægoptera ochraceator* Walk. defends itself with an acrid, odorless, limpid liquid, which is exuded in small drops apparently from several points on the thorax.

Bungalotis (Thymele) midas Cr., the royal Hesperid with the purple patch, seems to prefer the shade. The living specimens I have seen were in the virgin forest and showed no compunction in breaking the family by-laws by darting into the darkest thickets when alarmed.

The flocking habit of *Hymenitis olo* Hew. and *H. nero* Hew. is undoubtedly for the purpose of selecting mates.

Usually from ten to twenty individuals gather in some secluded nook, most of them resting on or near the ground; some of the members (presumably ♀♀) remain motionless, while others make flights of a few feet in view of the assembly or display their skill at hovering. Pairs *in copula* are generally to be found near by. The assemblage lasts several hours and is reformed if broken up. Have noted a tendency to this habit in *Ithomia leila* Hew., but never in any other Ithomiina. *Leptalis (Dismorphia) fortunata* Luc. is frequently a hanger-on [sacerdotal functionary?] at these *Hymenitis* gatherings.

I understand the early stages of *Mecistogaster* and *Megaloprepus* are still unknown. Have taken fresh specimens of species belonging to these genera several miles away from any stream and in the heart of the forest. Their flight is necessarily very slow and sustained for only a few yards at most. They spend their time clinging to some vine or branch near the ground, the long abdomen hanging vertically. Now, is it possible that the early stages are passed in the large water-retaining leaf-bases of Bromeliads? Surely the young aristocrat would find plenty of food (mosquitoes) in such a home, but *the Bromeliads roost high*. And I would hesitate to impute that merely damp mold might be the habitat of such a magnificent member of the Odonata as *Megaloprepus coerulescens*.

ERRATUM.—ENT. NEWS, October, p. 556—line 10 from bottom, for *Bigelovia gracilens* read *Bigelovia graveolens*.

DORYTOMUS BREVISETOSUS.—Last spring Prof. E. O. Wootton brought me some beetle larvæ which he found at Mesilla Park, N. M., on the flowers of *Populus wislizenii* (Wats.) Sarg. The larvæ were quite variable; dorsally red, or with two red bands, or wholly pale yellowish. For the identification of the species I am indebted to Mr. Schwarz. The breeding habits of these species of *Dorytomus* (*mucidus*, *lacticollis* and *brevicollis*) have already been recorded (Jn. N. Y. Ent. Soc., Vol. I, p. 41), and all feed on *Populus* or *Salix*.—T. D. A. COCKERELL.

PSOCIDS AT LIGHT.—There appears to be no reference to Psocidæ taken at light. Most Psocidæ do not fly readily in the daytime, even when disturbed. However, their wings must be of some use, and doubtless it will be found that nearly all of our forms fly at night or early evening. The past summer I have taken four species at light, as follows:

Psocus virginianus, several.

Psocus purus, two.

Psocus sparsus, several.

Pterodela pedicularia, several.—NATHAN BANKS.

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, three 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, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—Ed.

PHILADELPHIA, PA., NOVEMBER, 1900.

"It seems to be utterly forgotten that the species is in some degree a natural entity, whilst the genus is much more a matter of opinion and convenience, not to say caprice. It is a label of classification, whilst the specific name distinguishes an actual separate thing."—T. A. Chapman, M. D.

Are genera labels of classification, matters of opinion, matters of caprice, or emanations of the "*mihi itch*"? We fear that their utility is being lost sight of, and that caprice, or the "*mihi itch*," is having much to do with their formation. It looks as though we are rapidly approaching the time when we will have a genus for every species, and then we may conveniently abolish the binomial nomenclature. If this comes to pass what will the "*mihi itch*" fellows do? Oh! horror of horrors! perhaps entomologists will lose their heads, like some of the bird and mammal men, and give us infinite divisions of species and varieties. Just imagine an entomologist sitting on a high stool in the Department of Agriculture and trying to compete with the mammalogists in grinding out binomials and quadrimomials and describing individuals from some one's fence corner. An experience of many years has shown that a multiplicity of genera is only confusing to the student and beginner, and they fight shy of works thus burdened. The condition of affairs in regard to genera was tersely put in a recent publica-

tion, and reads as follows: "For in this (use of genera) almost everyone has his own various, original, adopted, or modified views; generic division being merely artificial, only a matter of convenience for grouping, not abiding, continually liable to be changed, and continually being changed, consequently not only of minor importance, but, when carried to extremes, a great evil, a hindrance to the student, an actual bar to the beginner. It is only by the specific name that we know the insect; with this knowledge the rest is attainable."—Herman Strecker.

There are no fixed lines as to genera, but there is reason and common sense and utility, and these should not be lost in the abyss of caprice or conceit.

Entomological Literature.

COMPILED BY P. P. CALVERT.

Under the above head it is intended to mention papers received at the Academy of Natural Sciences of Philadelphia pertaining to the Entomology of the Americas (North and South). Articles irrelevant to American entomology will not be noted. Contributions to the anatomy, physiology and embryology of insects, however, 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; * denotes that the paper in question contains descriptions of new North American forms. Titles of all articles in foreign languages are translated into English; usually such articles are written in the same language as the title of the journal containing them, but when such articles are in other languages than English, French, German or Italian, this fact is indicated in brackets.

1. Proceedings of the Academy of Natural Sciences of Philadelphia, 1900, pt. ii, Oct.—**4.** The Canadian Entomologist, London, Ont., Oct., '00.—**5.** Psyche, Cambridge, Mass., Oct., '00.—**6.** Journal of the New York Entomological Society, Sept., '00.—**8.** The Entomologist's Monthly Magazine, London, '00.—**9.** The Entomologist, London, '00.—**11.** The Annals and Magazine of Natural History, London, Sept., '00.—**21.** The Entomologist's Record, London, Sept. 15, '00.—**22.** Zoologischer Anzeiger, Leipsic, '00.—**35.** Annales, Société Entomologique de Belgique, xlv, Brussels, '00.—**46.** Tijdschrift voor Entomologie, xliii, 1-2, The Hague, Sept. 5, '00.—**55.** Le Naturaliste, Paris, '00.—**68.** Science, New York, '00.—**87.** Revue Scientifique, Paris, '00.—**100.** Verhandlungen, Deutschen Zoologischen Gesellschaft, 1900, Leipsic.—**101.** Rovartani Lapok, Budapest, '00.—**107.** Revista do Museu Paulista, iv, San Paulo, Brazil, '00.—**119.** Archiv für Naturgeschichte, lxvi, 1, 3, Berlin, July, '00.—**134.** Arbeiten aus der Biologischen Abtheilung für Land-und Forstwirtschaft am Kaiserlichen Gesundheitsamte, i, 2, Berlin, '00.—**136.**

Stettiner Entomologische Zeitung, lxi, 1-6, '00.—**137**. Untersuchungen zur Naturlehre des Menschen und der Thiere (Moleschott's) xvii, 1-2, Giessen, '00.—**138**. Rendiconto, R. Accademia delle Scienze dell'Istituto di Bologna, n. s. Rec'd Oct. 12, '00.

THE GENERAL SUBJECT.—**Andrews, C. W.** A Monograph of Christmas Island (Indian Ocean): Physical Features and Geology. With descriptions of the Fauna and Flora by numerous contributors. Printed by order of the Trustees of the British Museum (Natural History). London. 1900. 337 pp., 9 text figs., 22 pls., 1 map.—**Banks, N.** A list of works on North American Entomology, Bulletin 24, new series, U. S. Dep't. of Agriculture, Division of Entomology, Washington, '00.—**v. Chernel, S.** Insects and birds [in Magyar], **101**, April, May.—**Laloy, L.** Natural history and ethnography at the Universal Exposition, **55**, Sept 1.—**Mayer, P.** [Summary of researches on Arthropoda exclusive of Crustacea in 1899] Zoologischer Jahresbericht für 1899. Herausgegeben von der Zoologischen Station zu Neapel, Berlin, 1900.—**Snellen, P. C. T.** In remembrance of F. M. Van der Wulp [in Dutch], **46**.—**Wiesner, J.** Die Rohstoffe des Pflanzenreiches. Versuch einer technischen Rohstofflehre des Pflanzenreiches. Zweite gänzlich umgearbeitete und erweiterte Auflage. 5. Lieferung. Leipzig, Engelmann, 1900. [Abschnitt xv, pp. 674-699 on galls].—**v. Zittel, K. A.,** and **Scudder, S. H.** Arachnida, Myriopoda and Insecta in: Text-book of Paleontology by Karl A. von Zittel, translated and edited by Charles R. Eastman. Vol. i, pt. ii. London and New York, Macmillan & Co., 1900.

ECONOMIC ENTOMOLOGY.—**d' Ajutolo, G.** New cases of *Argas reflexus* parasitic on man, **138**, ii, No. 4, 1898.—**Anon.** Insect and fungous foes of the farmer and gardener [The small Ermine Moths—*Hyponomeuta*], Gardener's Chronicle, London, Sept. 15, '00.—**Anon.** A new black scale destroyer; A new [grasshopper] parasite for California, Agricultural Journal, Cape Town, Aug. 16, '00.—**Bancroft, T. L.** On the metamorphosis of the young form of *Filaria Bancrofti* Cobb [*F. sanguinis hominis* Lewis, *F. nocturna* Manson], in the body of *Culex ciliaris* L. the "house mosquito" of Australia, figs. Journal and Proceedings, Royal Society of New South Wales, xxxiii, Sydney, 1900.—**Bastianelli, G.,** and **Bignami, A.** On the development of the parasites of tertiana in *Anopheles claviger*, 1 pl., **137**—**Cockerell, T. D. A.** The Kieffer pear and the San José scale, **68**, Sep. 28.—**Dionisi, A.** On the biology of the malaria parasites, **137**.—**Dohrn, H.** On injurious insects and an expert judgment, **136**.—**Fermi, C.,** and **Lumbao, S.** Freeing a city from mosquitos; Contribution to the prophylaxis of malaria: attempts to protect mankind by chemical means against mosquitos, Centralblatt für Bakteriologie, Jena, Aug. 22, '00.—**Frank.** Damage to winter wheat by the wheat-blossom-fly (*Hylemyia coarctata* Fall.) **134**.—**Grassi, B., Bignami, A.,** and **Bastianelli, G.** Researches on malaria during the month of January, 1899, **137**; On the developmental cycle of the crescents ("Halbmonde") in *Anopheles claviger* and other studies on

malaria during the months October to May, 1899, 2 pls., **137**.—**Grassi, B.**, and **Noè, G.** Propagation of filaria of the blood exclusively by means of the puncture of special mosquitos, Rendiconti, Accademia del Lincei, Classe di scienze fisiche, matematiche e naturali, Roma, Sept. 2, '00.—**Hopkins, A. D.** The Hessian fly in West Virginia and how to prevent losses from its ravages, figs., Bulletin 67, West Virginia University Agric. Exper. Station, Morgantown, W. Va., Aug., '00.—**Maiocchi, D.** *Demodex folliculorum* in some rare cutaneous affections and especially the finding of the same in the follicles of the eyebrows and whiskers, **138**, iii, 3, '99.—**Marshall, G. A. K.** Mosquitos and malaria, **9**, Aug.—**Pommerol, F.** A small Hemipter [*Reduvius malinellus*] destroyer of the larvæ of the *Yponomeuta* of the apple tree, **87**, Sept. 15.—**Rogers, L.** The relationship of drinking water, water-logging and the distribution of Anopheles mosquitos respectively to the prevalence of Malaria north of Calcutta. Proceedings, Asiatic Society of Bengal, July, 1900. Calcutta, Aug. 2.—**Rörig.** A new experiment in combating the schwamm spinner [*Ocneria dispar*], figs., **134**.—**Wilcox, E. V.** Abstracts of recent papers, Experiment Station Record xi, 11, xii, 1, 2. U. S. Dep't. Agriculture, Washington, '00

ARACHNIDA.—**Banks, N.** New genera and species of American Phalangida*, **6**.—**Laurie, M.** On a Silurian Scorpion and some additional Eurypterid remains from the Pentland Hills, 5 pls., Transactions, Royal Society of Edinburgh, xxxix, pt. iii, 1900. Published separately Feb. 1, 1899.—**Oudemans, A. C.** Remarks on the denomination of the genera and higher groups in "Das Thierreich, Oribatidæ," **46**.—**Sargent, A. B.** Preliminary notes on the rate of growth and on the development of instincts in spiders, 2 pls., **1**.—**Thon, P. C. K.** On the copulatory organs of the Hydrachnid genus *Arrhenurus* Dugès, figs., **100**.

PROTOTRACHEATA.—**Bouvier, E. L.** New observations on the Peripatus of the collection of the British Museum. Quarterly Journal of Microscopical Science (n. s.), xliii, 4. London, Sept., '00.—**Dendy, A.** Preliminary note on a proposed new genus of Onychophora, **22**, Sept. 17.

MYRIOPODA.—**Attems, C.** On the coloration of *Glomeris* and description of new or little known palæarctic Myriopods, 2 pls., **119**.—**Cook, O. F.** Camphor secreted by an animal (*Polyzonium*), **68**, Oct. 5.—**Verhoeff, C. W.** Contributions to knowledge of palæarctic Myriopods: xiii. On the comparative morphology, phylogeny and classification of the groups and species of the Ascopermophora, 4 pls. xiv. On the Glomeridæ, **119**; Wandering diplopods checking railroad trains, **22**, Sept. 3; On *Schendyla* and *Pectiunguis*, **22**, Sept. 17.

ORTHOPTERA.—**Seudder, S. H.** The distribution of *Leptysmamarginicollis* Serv., **5**; [Additions to the list of] New England Orthoptera, **5**; *Mantis religiosa* in America, **5**.—**Wheeler, W. M.** The habits of *Myrmecophila nebrascensis* Bruner, fig., **5**.

NEUROPTERA.—**East, A.** Notes on the respiration of the dragon-fly nymph, **9**, Aug.; Some additional notes on *Æschna cyanea* [physiolo-

gical]. **9**, Oct.—**Lancaster, A.**, and **McLachlan, R.** On migrations of *Libellula quadrimaculata* in Belgium in June, 1900, **8**, Oct.—**McLachlan, R.** The habitat of *Thaumatoneura inopinata*, [Panama], **8** Aug.

HEMIPTERA.—**Cholodkovsky, N.** On the male sexual apparatus of *Chermes*, fig., Biologisches Centralblatt, Erlangen, Sept. 15, '00.—**Cockerell, T. D. A.** Notes on Brazilian Coccidæ [in Portuguese], **107**.—**Ehrhorn, E. M.** New Coccidæ from California*, figs., **4**.—**Green, E. E.** Note on the attractive properties of certain larval Hemiptera, fig., **8**, Aug.—**Hempel, A.** The Brazilian Coccidæ [in Portuguese], 8 pls., **107**.—**Hunter, S. J.** Coccidæ of Kansas, iii*, 7 pls. Kansas University Quarterly, ix, 2, Lawrence, Kans., April, '00. West'd. Sept. 17.—**King, G. B.** Miscellaneous notes on Coccidæ from western Massachusetts, **5**.—**Kirkaldy, G. W.** On the nomenclature of the genera of the Rhynchota, Heteroptera and Auchenorrhynchous Homoptera, **9**, Oct.—**Reh, L.** On the formation of the shield and the moulting of *Aspidiotus perniciosus* Comst. (preliminary communication), **22**, Sept. 17.

COLEOPTERA.—**Aurivillius, C.** List of the Cerambycidæ collected by Dr. F. Meinert in Venezuela in 1891. Öfversigt af Kongl. Vetenskaps-Akademiens Förhandlingar, lvii, 4, Stockholm, April 11, '00.—**Bordas, L.** Researches on the male reproductive organs of Coleoptera (comparative anatomy, histology, fertilizing material), 11 pls. Annales des Sciences Naturelles, Zoologie (8), xi, 2-6. Paris, Aug., '00.—**Champion, G. C.** Supplementary note on the distribution of *Anchomenus quadripunctatus*, **8**, Oct.—**Fenyés, B.** From the diary of a Californian Coleopterologist, i [in Magyar], **101**, April.—**Kempers, K. J. W.** The venation-system of the Coleopterous wing (cont.) [in Dutch], 3 pls., **46**.—**Kerremans, C.** New Buprestidæ and synonymic remarks*, **35**, 8, Sept. 15.—**Lameere, A.** Notes for the classification of Coleoptera, **35**.—**Lewis, G.** On new species of Histeridæ and notices of others, 1 pl., figs., **11**.—**Lohde, R.** Catalogue of the Cleridæ [of the world], **136**.—**Ohaus, F.** Report on an entomological journey to Central Brazil (cont.), **136**.—**Pic, M.** Description of Coleoptera: two new *Plinus* from Brazil, **55**, Sept. 15.—**Tower, W. L.** The Colorado potato beetle, **68**, Sept. 21.

DIPTERA.—**Aldrich, J. M.** A question of nomenclature [*Gastrophilus epilepsalis*], **4**.—**Doane, R. W.** New North American Tipulidæ*, 2 pls., **6**.—**Escherich, K.** On the formation of germ layers in the Muscidæ, **100**.—**Hendel, F.** Researches on the European species of the genus *Telanocera* in Schiner's sense. Verhandlungen, Zoologisch-botanischen Gesellschaft in Wien, I, 7, Aug. 24, '00.—**Ricardo, G.** Description of five new species of Pangoninæ from South America, **11**.

LEPIDOPTERA.—**Beutenmüller, W.** Synopsis of the food-habits of the larvæ of the Sesiidæ, **4**.—**Chapman, T. A.** A special structure in the larva of *Eriocampa limacina*, **8**, Oct.—**Dyar, H. G.** Notes on some North American species of Tineidæ*, **4**; Life-histories of

North American Geometridæ, xv, **5**; Notes on the larval-cases of Lacosomidæ (Perophoridæ) and life-history of *Lacosoma chiridota* Grt. 1 pl, **6**.—**Grote, A. R.** The principle which underlies the changes in the neuuration, **4**; Types of Noctuid genera, **4**.—**Hampson, G. F.** Catalogue of the Arctiadae (Nolinæ, Lithosianæ) in the collection of the British Museum. London. Printed by order of the Trustees. 1900. 589 pp., 411 text figs. and (separately bound) 18 col. pls. numbered xviii-xxxv. This is Vol. ii of the Catalogue of Lepidoptera Phalænæ and includes 1217 species.*—**Kunze, R. E.** Notes on ova and larva of *Hyperchiria panina*, **6**.—**Merrifield, F.** Experiments on the color susceptibility of the pupating larva of *Aporia crataegi* and on the edibility of its pupa by birds, **8**, Aug.—**Peterson, W.** Contributions to the morphology of the Lepidoptera, 144 pp., figs., 4 pls. [Venation, nervous system, mouth-parts, digestive and tracheal systems, reproductive organs]. Memoires, Academie Imperiale des Sciences (8), ix, 6. St. Petersburg, 1900.—**Piepers, M. C.** and **Snellen, P. C. T.** Enumeration of the Lepidoptera Heterocera collected in Java, 4 col. pls., **46**.—**Prout, L. B.** The types of the genera *Gortyna* and *Ochria*, **21**.—**Quail, A.** Diphyletism in the Lepidoptera, **9**, Aug.—**Reutti, C.** Review of the Lepidopterous fauna of the Grand-duchy of Baden and the adjoining countries. Revised and published after the author's death by A. Spuler. Verhandlungen, Naturwissenschaftlichen Vereins in Karlsruhe, xii, Berlin, 1898. Rec'd Sept. 26, '00.—**Sharpe, E. M.** On a collection of butterflies from the Bahamas,* 1 col. pl., Proceedings, Zoological Society of London, 1900, ii, Aug. 1, '00.—**Smith, J. B.** New species of Floridian Noctuidæ,* **6**.—**Tutt, J. W.** Migration and dispersal of insects: Lepidoptera, **21**.—**Walsingham, Lord,** and **Durrant, J. H.** *Blasitobasis segnella* Z., a European species wrongly included in the American lists, etc., **8**, Aug.—**Weeks, A. C.** Ovipositing of *Vanessa antiopa*, **6**.

HYMENOPTERA.—**André, E.** Mutillidæ (Vol. viii, pp. 65-144, pls. iv-vi), in: Species des Hymenopteres d'Europe et d'Algerie....fondé par Edmond André...continué sous...Ernest André. Paris, Vve. Dubosclard, 70^e fascicule Apr. 1, 00.—**Ashmead, W. H.** Classification of the fossorial, predeaceous and parasitic wasps, or the superfamily Vespoidea, 3, **4**.—**Cockerell, T. D. A.** On a small collection of bees from Juarez, Mexico, **9**, Aug.; The New Mexico bees of the genus *Cælixoxys*,* **4**; Descriptions of new bees collected by Mr. H. H. Smith in Brazil, i, **1**.—**Emery, C.** Additions and corrections to the essay toward a systematic catalogue of the genera *Camponotus*, *Polyrachis* and allies, **138**, ii, 4, 1898; Concerning the larvæ of some ants, **138**, iii, 4, '99.—**Hariot, P.** The myrmecophilous plants, fig. **55**, Sept. 15.—**Robertson, C.** *Nomada Sayi* and two related species,* **4**—**Tirus, E. S. G.** Notes on Colorado bees,* **4**.—**Webster, F. M.** Sudden disappearance of the purslane sawfly *Schizocerus Zabriskei*, **4**.—**Yung, E.** How many ants are there in a nest?, **87**, Sept. 1.

Doings of Societies.

A meeting of the Entomological Section of the Academy of Natural Sciences of Philadelphia was held May 24th with nine persons present. Dr. D. M. Castle reported lack of success in collecting *Dichelonycha fusca* at Angora, Pa., this spring. Last year he found them in plenty, but this year took but one. Dr. Calvert stated that he was at Sea Isle City, N. J., last week and saw but few insects around the fresh-water ponds and no *Odonata*. Mr. Carl Ilg was duly elected an Associate of the Section.

HENRY SKINNER, *Recorder*.

The October meeting of the Newark Entomological Society was called to order by President Kemp, eight members being present. Having had no meeting since April, on account of the members being busily engaged in collecting, there was considerable business transacted.

Mr. Stortz reported the capture of *Erebus odora* in Newark on September 26th, and Mr. Schleckson the same on September 4th.

President Kemp left in May for a collecting trip through Tennessee and Kentucky. He returned in August and shortly after went to South Jersey on another trip. He has a large number of *Catocala* on hand.

After a sociable chat about his trip and other things of interest to the members the meeting adjourned.

WM. H. BROADWELL, *Secretary*.

A meeting of the Entomological Section of the Academy of Natural Sciences of Philadelphia was held September 27th. Mr. Laurent, Director, presiding. Fourteen persons were present. Mr. Laurent donated a handsome specimen of the net of *l'esper maculata*, found at Mt. Holly, N. J. He stated that he had visited Da Costa, N. J., during July in search of *Neonympha arcolatus*, but the swamp in which he had previously taken them in some abundance was dried up and none were seen. Mr. Laurent said *Ceratonia catalpa* was spreading. He reported them from a number of places near the city, notably

Germantown. Mr. Hornig had found the larvæ at Washington Park, Camden Co., N. J. Mr. Laurent suggested that the species may winter as egg as well as larva. D. Skinner exhibited some Coleopterous larvæ, sent to him by Mr. Edward Potts. They have the peculiar habit of crawling quite rapidly on their backs. They were identified by Prof. Smith as *Allo-rhina nitida*. Mr. C. W. Johnson exhibited some flies he had found on the decayed berries of a vine at the grounds of the Biological School of the University of Pennsylvania. He also found one on decayed grapes at Riverton, N. J. Mr. Coquillette determined it to be *Chrysomya demandata* Fabr., a European species. Mr. Johnson did not know of any previous record for American specimens. Dr. Calvert gave an account of the classification of some of the *Odonata*.

HENRY SKINNER, *Secretary*.

The ninth regular meeting of the Harris Club was held at 35 Court St., Boston, on Friday evening, September 21, 1900. Mr. W. L. W. Field gave a brief talk on the quantitative study of variation in insects. Mr. A. P. Hall exhibited a specimen of the occasional red suffused form of *Attacus cecropia*, and also a specimen of *Actias luna*, whose wings bore fast-fading shadowy transverse lines, similar to the lines upon the wings of *A. selene*. A photograph taken when the specimen was fresh showed that the lines had been much more distinct at that time. A like specimen, taken in Guilford, Conn., in 1894, by Mr. Field, has altogether lost the transverse lines in the space of six years, and now has the aspect of a perfectly normal *luna*.

Mr. Field reported the existence of what appears to be a thriving colony of *Enodia portlandia* in the Cold River Valley of southwestern New Hampshire. This butterfly is rare in most parts of New England.

Mr. Newcomb brought forward several exhibits, comprising a series of *Chrysophanus hypophlæas* showing variation through a wide range of patterns; an albino *Phyciodes tharos*, in which the ground color is white instead of tawny; a deep gray female of *Leucarctia acraea*, resembling the aberrant male form of the same species quoted by Harris; and lastly some cocoons, pupæ

and imagines of the interesting Mexican Hesperid *Doberes mexicanus*, whose cocoon is known as "campanita" (little bell), because of its pendulous nature and the remarkable vibratory activity of the pupa. An account of this species was given by Mr. O. W. Barrett in the Canadian Entomologist for August, 1900.

Mr. H. K. Burrison told an entertaining story of a vacation trip to the Yellowstone, in the course of which some collecting was done.

Mr. W. F. Low reported the capture of two specimens of *Erebus odora* in Jamaica Plain, July 16th and 30th last; both were males. Mr. Newcomb mentioned the finding of *Hepialus argenteomaculatus*, female, at Old Orchard, Maine; the specimen is unusually large, expanding 4.5 inches. Mr. R. W. Denton showed a living larva of *Attacus atlas*.

W. L. W. FIELD, *Secretary*.

A meeting of the American Entomological Society was held June 28th. Dr. P. P. Calvert, President, in the chair. Thirteen persons were present. Mr. Charles Drury, through Mr. Charles Liebeck, presented four specimens of *Stenomimus pallidus*. Mr. C. W. Johnson exhibited specimens of the species of *Pyrgota* and said there were five valid species to which he had added a new species from Canada, for which he proposed the name *chagnoni*. Mr. Liebeck said Mr. Chagnon has found an interesting member of the family Dascyllidæ—*Microcara explanata*. He had also received *Stenocolus scutellaris*. These were not represented in Dr. Horn's collection. He also reported taking *Geopinus incrassatus* at the electric lights in the lower part of the city. It is an unusual species here. He had previously taken a few while gunning as they flew over a ditch where he was concealed. Dr. Calvert stated that Miss H. T. Higgins, a senior student of the four years' course in Biology at the University of Pennsylvania, had recently studied the gizzards of some 90 species of dragon-flies of the subfamily Calopteryginae and Agrioninae, from quite diverse parts of the world. The objects of the investigation were to ascertain what information on the classification and relationships of these in-

sects could be gleaned from the study of this organ, and also to learn the changes which it undergoes during the course of individual development. Some details of the results were given. A paper has been completed which, it is hoped, will be shortly published. Mr. W. R. Reinick was elected a member of the Society.

HENRY SKINNER, *Secretary*.

At the September meeting of the Feldman Collecting Social, held at the residence of Mr. H. W. Wenzel, 1523 South 13th Street, fourteen persons were present.

Dr. Castle exhibited a specimen of *Cychnus viduus* taken at Hope, N. Y.

Mr. H. W. Wenzel referred to a forthcoming list by Mr. Leng on the Cicindelidæ of the Upper Pine Barrens of New Jersey, in which several rare species will be recorded, including *Cicindela rufiventris*, a species new to the State.

The occurrence of *Cicindela lepida* in Ocean County was dwelt on by Prof. Smith; and the habits and occurrence of *Cicindela unipuncta* were discussed by Messrs. Skinner, Wenzel and Boerner.

Prof. Smith exhibited a red katy-did, and remarked on the value of formalin for preserving the color of such specimens. He also showed specimens of *Epicauta vittata*, which had attempted to eat their way through a cork to escape from a bottle. Specimens of *E. marginata* similarly confined made no effort to escape. He also showed hickory twigs which had been severed by an *Agrilus* larva, the marks left by the larva being in the form of a spiral. A letter from a correspondent in Hunterton Co., N. J., on the destructive properties of the larva of the Catalpa sphinx was read. The species had not been before recorded from New Jersey.

Dr. Skinner stated he had received a specimen of this larva from Lisette, Pa. He believed its recent spread into the North is due to the many catalpa trees that had been cultivated in late years, owing to the belief that this tree is free from pests. He also referred to the use of formalin as a preservative, and stated that he believed the formalin might set the

colors, in which case he would advise that the specimen be transferred to alcohol because a low percentage solution of formalin is apt to deteriorate by evaporation.

Mr. Johnson said that formalin is being abandoned as a preservative by most museums, as specimens so preserved will disintegrate in a few years.

Prof. Smith referred to his use of oil of citronella to keep off mosquitoes. He had found it excellent for this purpose, and was surprised to see from the latest publication on the subject that it was apparently not recorded as a remedy for this purpose.

Dr. Skinner referred to the occurrence of the black fly *Simulium* in the Adirondacks. The fly was very annoying at dusk.

Mr. Johnson exhibited pine twigs infested by several species of insects. *Pentilia* sp. was found feeding on a scale *Chionaspis pinifolii* infesting pine needles; and the great damage caused by *Retinia frustrana* was remarked on. The galls of *Diplosis piniinops* was shown.

Dr. Skinner spoke of the scarcity of Pselaphidæ and other small beetles in the Adirondacks. He had sieved the contents of many ants' nests, but not a specimen of beetle was found. The time of collecting between August 5th and September 1st may have been the cause of the lack of specimens.

Mr. Wenzel said that these beetles are no doubt absent during certain periods of the summer.

Mr. Johnson reported the abundance of *Tetracha virginica* near Clifton, Delaware Co., Pa. Hundreds of specimens were taken from a well into which they had fallen during one night.

WILLIAM J. FOX, *Secretary*.

TURKEYS TO THE RESCUE —Tennessee Planters find a new way to Destroy Grasshoppers. Several Tennessee planters have adopted a unique method of destroying the grasshoppers which have overrun plantations in Bolivar and Washington Counties and threatened to cut a figure in the cotton yield of the coming season. The old soapsuds remedy, the Osnaburg cloth remedy and the inoculation process have proved of little value in fighting the pest, and now the farmers have come to the conclusion to discard the artificial remedies and place turkeys in the cotton fields to eat the grasshoppers. The turkey gobbler has a ravenous appetite for the insect, and the planters are counting on him to solve the problem of the grasshopper's extermination and to save the cotton crop so far as these two counties are concerned.—*Newspaper*.



James King
Geo. D. Hulst

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XI.

DECEMBER, 1900.

No. 10.

CONTENTS:

Smith—Rev. George D. Hulst.....	613	Ashmead—Some New Exotic Parasitic Hymenoptera.....	623
Ashmead—Hymenopterous Parasites from Dragon-fly Eggs.....	615	Rehn—Podisma Variegata.....	630
Dyar—Life History of a Callidryas Agarithe.....	618	Soule—Cecropia Cocoons.....	631
Ehrmann—Notes on Coleoptera.....	619	Editorial.....	633
Adams—Odonata from Arkansas.....	621	Entomological Literature.....	634
Cockerell—A new variety of Argynnis Nitocris.....	622	Economic Entomology.....	638
		Notes and News.....	641
		Doings of Societies.....	642

REV. GEORGE DURYEA HULST, Ph.D.

Dr. Hulst died suddenly, November 5, 1900, of apoplexy, at his home, 15 Himrod Street, Brooklyn, N. Y. Dr. Hulst was born March 9, 1846, hence was in his 55th year at the time of his death. A few days before, the writer had spoken with him and discussed matters entomological and otherwise. He was then in apparently perfect health, and good for many years more of active service in his profession and his chosen study. Dr. Hulst graduated from Rutgers College in 1866, and ever remained closely associated with it. He was a faithful alumnus and served for a short time in 1888-89 as Entomologist of the Experiment Station. In 1891 the degree of Doctor of Philosophy was conferred upon him by his Alma Mater. He graduated from the Theological Seminary at New Brunswick in 1869, and in the same year was installed as pastor of the South Bushwick Reformed Church in Brooklyn, where he remained to the day of his death. As a pastor and as a man he had and deserved the confidence of the members of his congregation and of all with whom he came into personal contact. His expressed convictions were honest, his belief was sincere

and his faith was strong. Yet he was not narrow, nor did he feel less regard for any who honestly differed from him in matters of religious belief.

From his student days he was interested in natural history, botany being his first love. Yet he early took an intelligent interest in entomology and was one of the members of the Brooklyn Entomological Society, which was organized in 1872, very soon after its start. At its inception this society was a meeting of collectors for informal discussion, and these discussions were not less attractive because of a social glass with which the members modified any dry problems. When Dr. Hulst joined, the glass was eliminated as part of the regular program, in deference to the cloth; but he was not a total abstainer nor a severe judge of those who made temperate use of alcoholic refreshments. In 1878 the *Bulletin of the Brooklyn Entomological Society* was started, and contributions from Mr. Hulst appeared in all the volumes during its existence. So in its successor, *Entomologica Americana*, of which he was the editor from April 1887 to May 1889. About that time he began to specialize, devoting his attention to the Geometridæ and certain families of the Pyralidæ, in which he became an authority, having described a large percentage of the Geometridæ at present known from the United States and British America.

My acquaintance with Dr. Hulst began in 1880, and the friendship then formed continued without break until the day of his death. I owe to him encouragement and assistance at the outset of my career, and the ready liberality with which he allowed me to take specimens from his cabinet was characteristic of the man.

Dr. Hulst was elected a member of the A. A. A. S. in 1880, and a Fellow in 1888. He was a member of other scientific bodies, in most of which he held office, and notably in the Brooklyn Institute of Arts and Sciences, where he was President of the Department of Botany. Botany shared with Entomology his interest in late years, but what original work he did in this field I do not know.

While he was connected with Rutgers College, in 1898, he

formally donated his collection to the trustees, reserving to himself the custody of the Geometridæ and certain Pyradid families so long as he should need them in his work. The Rhopalocera and Heterocera, exclusive of the groups above mentioned, were transferred to New Brunswick in 1891, becoming the nucleus of the collection at present in the institution there.

For George D. Hulst, the Entomologist, his work will speak; for the man all those who, having known, loved him.

J. B. SMITH.

Some Hymenopterous Parasites from Dragon-fly Eggs.

BY WILLIAM H. ASHMEAD.

FAMILY LXXI EULOPHIDÆ.

HYPERTELES Förster.

(1) *Hyperteles polynemæ* n. sp.

♀.—Length 3 to 3.5 mm. Æneous black, impunctate, the pronotum, the mesonotum and the metanotum with a brassy tinge. Metathorax with a median carina. Abdomen greatly elongated and produced into a long, slender point. Scape, pedicel and legs, except the last joint of tarsi which is fuscous, uniformly brownish-yellow; flagellum dark brown, or brown-black, pubescent. Wings rather long, hyaline and with a delicate marginal cilia, the veins yellowish, the marginal vein very long, nearly twice the length of the subcostal vein; the stigmal vein short, about one-third the length of the subcostal. Abdomen very long, fasiformly pointed, more than three times longer than the head and thorax united.

♂.—Length 1.3 to 2 mm. In color quite variable and difficult to distinguish from males in the genera *Tetrastichus* and *Tetrastichodes*. The scape, pedicel and legs are always brownish-yellow; the scape being rather large, subcompressed; the flagellum long, dark brown, and clothed with short hairs. Some specimens have the head, except the mouth parts, the thorax and abdomen, entirely æneous black or blue-black; others have the whole face below the antennæ and the head behind yellow; others have most of the head, except the vertex, the thorax at sides and beneath and a large spot on the mesonotum, including sometimes the scutellum, yellow; while still others are almost wholly yellow above, except the metanotum. The abdomen in all is elongate, always distinctly longer than the head and thorax.

Hab.—Lake Forest, Illinois.

Type.—Cat. No. 5322, U. S. N. M.

Host.—Odon. : Eggs of *Lestes* sp. Bred August 12, 1899, by Prof. James G. Needham. Evidently a hyper-parasite on the *Polynema* noted below.

TETRASTICHUS Haliday.

(2) ***Tetrastichus polynemæ*** n. sp.

♀.—Length 1.1 mm. Steel blue, impunctate; abdomen, except at base, æneous; scape, pedicel beneath and legs, except coxæ and femora toward base, yellowish or yellowish-white; coxæ metallic; anterior and middle femora tinged with brown, the hind femora brown; flagellum brown pubescent. Wings hyaline, pubescent, the veins very pale, the marginal vein one-third longer than the subcostal. Abdomen pointed, ovate, about one-fourth longer than the head and thorax united.

Hab.—Lake Forest, Illinois.

Type.—Cat. No. 5323, U. S. N. M.

Host.—Odon. : Eggs of *Lestes* sp. Bred August 4, 1899, by Prof. James G. Needham. Undoubtedly a hyper-parasite of *Polynema needhami*.

FAMILY LXXII TRICHOGRAMMIDÆ.

BRACHISTA Haliday.

(3) ***Brachista pallida*** n. sp.

♀.—Length 0.6 mm. Brownish-yellow; the ocelli, the eyes, the sutures of the mesopleura, a streak on hind coxæ behind, and a row of dots along the lateral margins of abdomen, brown; while the legs, including the coxæ, except the streak behind, are very pale yellowish, nearly white. Wings hyaline, pubescent, the hairs not arranged in rows, the margins ciliate, the marginal vein strongly curved with the stigmal. Antennæ very short, 6-jointed, the flagellum with the pedicel not much longer than the scape; pedicel large, a little shorter but as thick as the club; funicle 2-jointed, the joints small; club fusiform, 3-jointed, brownish. Abdomen sessile, pointed ovate, the ovipositor hardly projecting beyond the tip of abdomen.

Hab.—Lake Forest, Illinois.

Type.—Cat. No. 5320, U. S. N. M.

Host.—Odon. : Eggs of *Lestes* sp. Bred August 12, 1900, by Prof. James G. Needham.

CENTROBIA Förster.

(4) ***Centrobia odonata*** n. sp.

♀.—Length 0.8 mm. Black, slender, the abdomen much acuminate, ending in a prominent ovipositor. Mouth parts brownish-yellow. An-

tennæ short, 6-jointed without a ring-joint, brown-black, the flagellum tapering off at apex, not ending in a distinct club. Wings hyaline, the pubescence arranged in radiating rows, the margins with a distinct but short cilia, the marginal and stigmal veins brown the latter oblique, shorter than the marginal. Legs brownish-yellow, the femora more or less obfuscated. Abdomen elongate, sessile, strongly acuminate towards apex and more than twice longer than the thorax.

Hab.—Lake Forest, Illinois.

Type.—Cat. No. 5321, U. S. N. M.

Host.—Odon. : Eggs of *Lestes* sp. Bred August 12, 1900, by Prof. James G. Needham.

FAMILY LXXIII MYMARIDÆ.

POLYNEMA Haliday.

(5) *Polynema needhami* n. sp.

♀.—Length 0.9 mm. Ovipositor two-thirds the length of the abdomen. Polished black, impunctate, the parapsidal furrows distinct; scape, pedicel, the small first joint of the flagellum, the petiole of abdomen, and the legs, except usually the middle and tibia and last joint of all tarsi, honey-yellow; the flagellum, the middle and hind tibiæ and last joint of all tarsi brown or fuscous. Wings hyaline, with a long marginal fringe, the punctiform marginal vein brown. Abdomen elongate ovate, a little longer than the head and thorax united. Antennæ 9-jointed, terminating in a solid ellipsoid club.

♂.—Length scarcely 0.8 mm. Agrees well with the female, except that the scape, pedicel and legs are more decidedly of a paler yellow, the hind tibiæ and last joint of tarsi alone brown, the tibiæ with a pale annulus at base; sometimes, but rarely, the middle tibiæ are also dusky with a pale annulus at base; the antennæ are much longer, 13-jointed, the joints of the flagellum all long, the first a little shorter than the second; while the abdominal petiole is as long as the hind coxæ, yellow; the remainder of the abdomen being black, ovate, and scarcely the length of the thorax.

Hab.—Lake Forest, Illinois.

Type.—Cat. No. 5319, U. S. N. M.

Host.—Odon. :—Eggs of *Lestes* sp. Bred August 12, 1899, by Prof. James G. Needham.

CATERPILLARS BY THE QUART.—Saratoga, N. Y., has hit upon a novel but apparently effective method of exterminating the caterpillars which had started out to destroy the street shade trees. The village authorities offered to pay so much a quart for all caterpillars brought to them to be burned or buried alive. One day three hundred people, residents and visitors, brought the pests in pails and pans and received twenty cents a quart for them. Nearly \$200 was paid out in one day. This method is found to be much more effective than spraying the trees.—*Newspaper*.

Life History of a *Callidryas* Agarithe.

By HARRISON G. DYAR.

On the young leaves of *Pithecolobium guadaloupense* at Palm Beach, Florida, in January :

Egg.—Cylindrical, the base scarcely narrowed, flat; center a little larger; apex much tapering to a blunt, slightly more cylindrical point; ten low, vertical ribs from base to apex, smooth, but jointed by obscure, regular cross-striae; basal diameter .4 mm.; height 1 mm. Silky white, with pale yellow tint; later orange red.

Stage I.—Head entirely round and smooth, sutures marked by impressed lines, clypeus moderate; orange yellow, ocelli black; width .2 mm. Body yellow, slightly greenish from the food, the anterior edge of joint 2 ochraceous. Cylindrical, feet short; no plates; segments finely 6 annulate; subventral folds slight. Setae white, distinct, stiff; tubercles obsolete, dark; i dorsad to ii, both curved forward; iii curved upward; iv and v in line subventrally, rather remote, short, not much curved. On thoraxia, ib and iia seen, iib apparently absent, v present; no subprimaries. The setae are uniform white tubes, not tapering to the tip, somewhat obliquely out at apex. Cervical shield setae condensed into a group of 5 on the anterior edge of joint 2, the plate really absent; prespiracular tubercle with one seta. Feet short, the subventral area contracted. Skin finely setulose with dark points.

Stage II.—Head rounded, yellow, tinted with green; clypeus moderate; setae short, white, both primary and secondary present; ocelli black, jaws brown; width .4 mm. Body cylindrical, segments 6-annulate, subventral folds rather distinct. Seta i stout, short, black, with distinct drop at tip; ii very short and pale; iii short; iv and v a little larger, in line subventrally as before; a similar secondary seta before, one behind and one below subventrally; several hairs on the leg, all short, pale at the tips. Color pale yellowish, the food showing faintly greenish. Skin with fine brownish granules.

Stage III.—Head rounded, covered with secondary pile, soft green, ocelli black; width .8 mm. Body pale green, 6-annulate, a faint yellowish stigmatal line; setae i and ii large and black, glandular, the rest lost in dense, fine, short, secondary hair, pale subventrally, black dorsally; no shields. Shape cylindrical, normal; feet short.

Stage IV.—Head round, not bilobed, clypeus reaching half way to vertex, sutures not depressed; soft green, pale pubescent; width 1.5 mm. Body uniform, anal flap rounded; segments 6 annulate. Three setae of cervical shield, one on prespiracular tubercle of prothorax, iia and iia of joints 3 and 4, i and ii on abdomen black, glandular; others lost in secondary hair, which is fine, short, black, pointed, arising from rather large green tubercles. Soft green, a pale yellow stigmatal line from the

spiracle of joint 2 to the base of anal flap across the pale flesh-colored spiracles. Feet green. Later the yellow stripe is more distinct, but otherwise unchanged.

Stage V.—Head rounded, outline circular, clypeus half way to vertex, secondary granules dense, large, colorless, setæ minute; yellowish green, ocelli black; width 2.6 mm. Body cylindrical, uniform, segments 6-annulate, annulet 1 large. Soft green, minutely dark pilose, but the hair tubercles pale. A yellow stigmatal line from the spiracle of joint 2 to the anal flap, white on its lower edge, the contained spiracles flesh color, a brown dot below each. Feet pale. No large setæ except on joint 2 and the anal flap, none glandular. Later the green color becomes lighter, very soft, the feet and subventral region whitish. Skin nearly smooth, densely dotted with green spots like the emergence holes of parasitic ichneumons, the spots sparser than the secondary hairs. The yellow stigmatal line is edged with dark green above and below. Shortly before pupation the color changes still further. Dorsum clear greenish yellow with large blackish green specks, two to four on each annulet on each side of the dorsal vessel, the lowest on the second annulet being lateral. Stigmatal line rather broad, dark yellow, edged above with blue, irregularly streaked by the annulets, a crimson line between the blue and yellow; subventer clear yellow, feet reddish amber. *Pupa* as in *C. exbule*, the cases strongly projecting and arched. Green mottled with purplish, a purplish dorsal line and yellowish lateral one; behind the cases with three irregular white spots on each side.

Notes on Coleoptera.

By GEORGE A. EHRMANN, Pittsburg, Pa.

Brennus Cristatus Harr.

One female that has the left antennal joints all greatly shortened and reduced to ten in number, the terminal joint is so much reduced that, in examining it through a magnifier, it is but a little round knob. The other, or "right antenna," is normal. This specimen came from the Belfrage collection and was collected in the Santa Cruz Mountains, California.

Dicaelus teter Bon.

A male, captured some time ago at Baldwin Station, that has a well-developed, double foreleg, beginning at the joint of the tibæ, or knee, and extends to the tarsus. This false member could not work independently, as it only shoots off below the lower side of the joint. The tarsus joints are not fully formed,

nor are the claws fully developed. This false member is on the left foreleg.

Dorcus parallelus Say.

In Mr. H. G. Klages's collection of Coleoptera of Jeannette, Pa., there is a specimen of this species which I believe is of the male sex that has two sets of well-developed tarsal joints and claws. This is on the right foreleg.

Orthosoma brunneum Forst.

A specimen of this I took, which proved to be a female on examination of the genitalia and other characteristic points, except in the antennæ. The left is that of a male, while that on the right is female.

The number of joints are the same, but, as coleopterists know, that in this species of prionid the sexual character in the antennæ is that the male have longer and heavier antennæ than are found in the female. While in the female the joints are shorter, and not nearly so heavy, the number of joints in both sexes are the same.

Neoclytus capræa Say.

In the Hamilton collection, which is now at rest in the Carnegie Museum, of Pittsburg, there is a specimen of this species that has three antennæ, one on the left side and two on the right. With close inspection I noticed that the basal joint is normal in the latter, and from this two joints branch out, both continuing to the end, forming two normal and well-developed antennæ.

This specimen, Professor Jerome Schmitt has informed the writer, was taken at St. Vincent, Westmoreland County, Pa.

Cyclocephala immaculata Oliv.

This I captured on July 12th, 1900, under the electric light in Charleroi. I believe this is the first record of this insect being taken in this locality.

Hoplosia nubila Lec, etc.

From May the 30th until June 20th, 1900, I took 47 specimens of this pretty longicorn. I also took quite a number of

Saperda vestita Say, and *Amphionycha flammata* Newm. These were mostly taken from the trunk and heavier branches of the American Linden. All three species were feeding on the foliage as well as mating on the trunk and larger branches.

***Callida viridipennis* Say.**

I found three specimens of this pretty carabid hibernating under the bark of the oak in midwinter "Feb. 10, 1898," and a fourth specimen I beat from Scrub Hickory in May 13th of the same year.

Odonata from Arkansas.

By CHAS. C. ADAMS.

The specimens listed below were collected by Mr. F. M. McElfresh, in Marion County, Arkansas, during the season of 1897. The region is mountainous and the streams rocky.

1. ***Calopteryx maculata*** Beauv.
June 1st, Jemmey's Creek.
2. ***Heterina Americana*** Fabr.
June 1st and 10th, White River.
3. ***Enallagma exsulans*** Hag.
June 1st and 5th, White River.
4. ***Argia putrida*** Hag.
June 1st, White River ; June 10th, Jemmey's Creek.
5. ***Argia tibialis*** Ramb.
May 30th, June 1st, White River.
6. ***Argia sedula*** Hag.
June 1st, White River ; June 1st and 27th, Wild Cat Creek.
7. ***Argia apicalis*** Say.
May 30th, June 1st and 21st, Jemmey's Creek.
8. ***Boyeria vinosa*** Say.
July 16th, Jemmey's Creek.
9. ***Eschna*** ♀ of the ***verticalis***, ***clepsydra*** and ***constricta*** group.
July 28th, Jemmey's Creek..

10. **Herpetogomphus designatus** Selys.
June 25th, Cedar Creek ; July 13th, Jemmey's Creek.
11. **Dromogomphus spinosus** Selys.
May 30th and June 10th, White River.
12. **Gomphus sordidus** Hag.
May 19-20th, Jemmey's Creek. Dr. Calvert's determination.
13. **Gomphus fraternus** Say.
♂ Upper Jemmey's Creek, May 17th ; ♀ White River, June 10th. [They vary from the typical form toward *externus*.—P. P. Calvert.]
14. **Libellula pulchella** Drury.
July 14-26th, Wild Cat Creek ; July 28th, Jemmey's Creek.
15. **Plathemis trimaculata** De G.
June 10th, White River.
16. **Sympetrum corruptum** Hag.
July 13th, Jemmey's Creek.
17. **Pachydiplax longipennis** Burm.
June 10th, White River.

A New Variety of *Argynnis Nitocris*.

BY WILMATTE P., AND T. D. A. COCKERELL.

***Argynnis nitocris* var. *nigrocærulea* n. var.**

♀.—*Upper side*: basal half of wings dark purple or purple-black instead of blackish brown ; quadrate marks very pale yellowish, slightly suffused with red ; *under side*: marginal band of elongated marks pale green, quadrate spots pale yellow, basal area of wings very dark, being largely suffused with purple-black.

♂.—*Under side*: basal area of hind wings with ground color cinnamon, very much paler than in ♀.

Hab.—Beulah, Sapello Canon, New Mexico, middle of August, 1900. This beautiful insect is in some respects intermediate between *nitocris* proper and Holland's var. *cærulescens*. It will be readily known by the great difference between the color of the sexes on the hind wings beneath, and the purplish color of the ♀ above. Specimens are in Dr. Skinner's collection, and he will doubtless be pleased to show them to those interested.

Some New Exotic Parasitic Hymenoptera.

By WILLIAM H. ASHMEAD, U. S. National Museum.

Prof. T. D. Alfken, Assistant Entomologist in the Städtisches Museum für Natur-, Volker- und Handelskunde at Bremen, by the direction of the Director, Dr. Hugo H. Schauinsland, has recently sent me for determination a small but interesting collection of parasitic Hymenoptera, among which were a few new forms collected by the Director and himself in the Chatham Islands, east of New Zealand.

The latter were of especial interest to me, because I have been working up recently the parasitic Hymenoptera taken some years ago by Mr. Albert Koebele in Australia and New Zealand, as well as a lot of bred material received from Mr. W. W. Froggatt, the Government Entomologist at Sydney, New South Wales.

The new species and genera received from Dr. Schauinsland are described below.

Superfamily VII, **CHALCIDOIDEA.**

Family LXXI, **EULOPHIDÆ.**

EULOPHUS Geoffroy.

(1) ***Eulophus albitarsis*** n. sp.

♀.—Length 2.4 mm. Æneous black, the metathorax sometimes with a metallic green lustre. The head and thorax, including the scutellum, shagreened or reticulate, and clothed with some sparse black hairs; mesopleura on posterior half smooth and polished, but anteriorly reticulate; metathorax short, smooth, shining, with a median elevation and an acute ridge laterally, the latter fringed with long white hairs; spiracles large, oval. The head is transverse and thin, antero-posteriorly the temples being narrow; the face is concave for the reception of the antennæ, which are inserted *far* anteriorly, and 8-jointed; the scape is slender, but does not quite reach to the front ocellus, is about half as long as the flagellum, with the pedicel united, and of an æneous black color; the flagellum is dull black; the pedicel obconical, smooth and longer than thick; the funicle joints gradually become shorter and shorter, the first, the longest, being slightly longer than the pedicel. Legs æneous black, the knees and the anterior tibiæ beneath reddish or dark honey-yellow, while all the tarsi, except one or two terminal joints, are pale honey-yellow or whitish. Abdomen æneous black, oval, wider than the thorax, and as long as or slightly longer than the head and thorax united, the segments

showing greenish bands in certain lights, especially if viewed obliquely in a bright light; the first segment is the longest, often metallic, the following segments, except the sixth, which is very short, subequal in length.

Hab.—Europe and North America.

Described from 5 ♀ specimens; one taken November 1, 1899, on a window in Bremen, and 4 specimens taken by myself on a window-pane in Washington, D. C.

Superfamily VIII, ICHNEUMONOIDEA.

Family LXXVI, ICHNEUMONIDÆ.

Subfamily II, CRYPTINÆ.

Tribe II, *Phygadeuonine*.

BATHYMETIS Förster.

(2) ***Bathymetis antipoda*** n. sp.

♀.—Length 4.2 to 4.5 mm. Head and thorax polished black; mandibles, except the teeth, which are black, the scape, the pedicel and the flagellum beneath to beyond the middle, the legs entirely, except the hind coxæ, which are more or less dusky, and the abdomen, except the petiole or first segment, which is black, pale rufous; the anterior and middle coxæ and trochanters paler or yellowish; antennæ above brown-black. Antennæ 19-jointed, the joints of the flagellum gradually shortening to the last, the first joint the longest, a little more than thrice as long as thick, at apex being narrowed towards base, the second about thrice as long as thick, the third still shorter and so on; the last joint is about as long as the third flagellum joint. The head and thorax, although polished and shining, are microscopically punctate, the prothorax with some lineations laterally, while the strong ridge bounding the mesopleura anteriorly presents some lineations and punctures within; metathorax strongly areolated, subrugose at sides, the hind angles subdentate, the spiracular and middle lateral area confluent, while the spiracles are small and round. Abdomen highly polished, impunctate, the petiole being about as long as the hind femur, the second segment about two-thirds the length of the petiole and a little longer than the third, the fourth segment shorter than the third, twice as wide as long and a little longer than the fifth, the sixth and seventh segments very short, united shorter than the fifth. Wings hyaline, the tegulæ brownish yellow, the large triangular stigma and the veins black or brown-black; the submedian cell is longer than the median, the areolet pentagonal, the outer nerve of same sub-obsolete or whitish hyaline; while the disco-cubital vein is broken by a scarcely perceptible stump of a vein before the middle of the third discoidal cell.

Hab.—Chatham Island.

Described from 2 ♀ specimens.

Family LXXVII, ALYSIIDÆ.

The discovery of the curious genus *Lysiognathus* Ashm., with the mandibles, etc., agreeing with *Alysia* and allies, but with two recurrent nervures, has induced me finally to treat the Alysiinæ and the Dacnusinæ as a distinct family apart from the Braconidæ, since, as was suggested by Dr. Theodore Gill at the time my paper on *Lysiognathus* was read before the Washington Entomological Society, I believe now that the limber and distended jaws of these insects are of more taxonomic value than the number of recurrent nervures in the front wings.

Three distinct subfamilies are recognized in the family, separated as follows :

- Front wings with only one recurrent nervure, or the species are apterous 2.
 Front wings with two recurrent nervures . Subfam. I, LYSIOGNATHINÆ.
 2. Front wings with *three* cubital cells; or if with two only, the first transverse cubitus is wanting; species sometimes apterous or subapterous Subfam. II, ALYSIINÆ.
 Front wings with *two* cubital cells, the third transverse cubitus always wanting; species never apterous . Subfam. III, DÆNUSINÆ.

Subfamily II, ALYSIINÆ.

Tribe II, *Allwini*.**ASOBARA** Förster.(3) ***Asobara antipoda*** n. sp.

♀.—Length 3 mm. Ovipositor hardly two-thirds the length of the abdomen. Head, two basal joints of antennæ, upper part of prothorax and slightly at sides, the mesonotum, the scutellum and the legs brownish yellow or pale rufous; rest of antennæ, the thorax and abdomen shining black; palpi and tegulæ whitish; teeth of mandibles blackish at tips; wings hyaline, ciliate, the stigma and veins dark brown. The antennæ are broken off at tips, but were evidently longer than the body; the second joint of the flagellum is the longest joint, being considerably longer than the first, as well as distinctly longer than the third; the third and fourth joints are about equal, while those beyond are slightly shorter; all are bearded with short, sparse hairs. The entire body, except a small triangular space behind the insertion of the hind wing, which is rugose or wrinkled, is polished, shining and impunctate; the mesonotum has a median longitudinal fovea posteriorly just in front of the scutellum, the latter being convexly elevated with a broad, crenate furrow at base;

the metathorax has a distinct median carina, with the spiracles moderately large and rounded. The marginal cell in the front wings is very large and extends clear to the tip of the wing, while the submedian cell is a little longer than the median, and the second discoidal cell is open at apex below.

Hab.—Chatham Island.

Described from 1 ♀ specimen.

Family LXXVIII, BRACONIDÆ.

Among the material from Chatham Island, I find a new Braconid genus represented by three distinct species. Its position and distinctive characters may be best shown by reproducing from my forthcoming monograph on the North American Braconidæ, my generic table of the group to which it belongs.

Subfamily VI, HELCONINÆ.

Tribe I, *Helconini*.

TABLE OF GENERA.

- | | |
|---|---|
| Abdomen attached to the metathorax far above the hind coxæ | 1. |
| Abdomen attached normally. | |
| Hind femora beneath <i>unarmed</i> | 2. |
| Hind femora beneath <i>armed</i> with one or more teeth. | |
| Hind femora armed with many small teeth beneath; recurrent nervure joining the second cubital cell (Sarawac). | |
| | (1) Euscelinus Westw. |
| Hind femora armed with one tooth beneath; recurrent nervure joining the first cubital cell | (2) Helcon Nees.* |
| 2. Recurrent nervure joining the first cubital cell. | |
| Second cubital cell not longer than wide, usually <i>wider</i> than long; clypeus at apex rounded | 3. |
| Second cubital cell always longer than wide; clypeus at apex truncate. | |
| Basal joint of hind tarsi <i>not</i> longer than joints 2-4 united; median cell in hind wings <i>not</i> or scarcely shorter than the costal cell. | |
| | (3) Gymnoscelis Först. |
| Basal joint of hind tarsi longer than joints 2-4 united; median cell in hind wings much shorter than the costal cell | (4) Eumacrocentrus Ashm., n. g. (type <i>H. americanus</i> Cr.). |
| 3. Submedian and median cells in front wings of an equal length; second cubital cell petiolate, <i>not</i> longer along the radius than along the cubitus, if anything a little shorter | (5) Aspicolpus Wesm. |

* Mr. Peter Cameron has recently rechristened this well-known genus under the name *Wroughtonia*, vide Mem. and Proc. Manchester Lit. and Phil. Soc., vol. 43, 1899, p. 56.

Submedian cell considerably longer than the median; second cubital cell sessile, or at most subsessile and *longer* along the radius than along the cubitus, so as to appear obtrapezoidal.

(6) **Schauinslandia** Ashm. n. g. (Type *S. femorata* Ashm.).

4. Recurrent nervure interstitial or joining the first cubital cell; first discoidal cell longly petiolate; second cubital cell not large.

(7) **Cenocœlius** Hal.

= **Aulacodes** Cr.

= **Laccophrys** Först.

= **Capitonius** Br.

= **Promachus** Marshall.*

SCHAUINSLANDIA Ashmead, n. g.

The affinities of this new genus is clearly with *Helcon* and *Cenocœlius*, and with the exception of the attachment of the abdomen, shows the closest relation with the latter genus. Its generic characters and its position in the group, are, I think, clearly brought out in my table, and little more may be said of it: *the head is large, quadrate or subquadrate; mandibles bidentate, the upper tooth the longer; maxillary palpi long, 5-jointed, the first joint the shortest, the third the longest, the second somewhat dilated towards one side at base; labial palpi 4-jointed, much shorter; antennæ 16-jointed in S. femorata, the first and last joints of flagellum the longest, about equal in length; mesonotal furrows distinct; scutellum with a crenate furrow across the base; metathorax not or very incompletely areolated. Wings similar in venation to Aspicolpas Wesmæel, but with the submedian cell much longer than the median, and with the second cubital cell quite differently shaped, being obtrapezoidal, never quadrate.*

This genus is dedicated to the distinguished Director of the Museum, Dr. Hugo Hermann Schauinsland.

(4) **Schauinslandia femorata** n. sp.

♀.—Length 5 to 6 mm. Head, except a spot on the vertex, the antennæ, except the last three joints, the abdomen and the legs *mostly* ferruginous; spot on vertex, enclosing the ocelli and extending forward to the base of the antennæ, black; palpi, trochanters and tarsi white; hind coxæ black; hind femora dark red, their tibiæ fuscous. The frontal depression of the head is transversely wrinkled, but with a distinct median

* Mr. Marshall claims the genus *Promachus* Marshall was never published. I dispute this; the name was published in 1887, in a table furnished by him for Cresson, *vide* Cresson's Synopsis of N. A. Hym., p. 61, line 23.

grooved line extending from the front ocellus to the base of the antennæ. The thorax, except sutures anteriorly and in and along the parapsidal furrows, and the scutellum, which are reddish, is black; the surface is smooth, but still sparsely microscopically punctate; the metathorax is somewhat rugoso-punctate, with slight indications of irregularly formed carinæ at base and laterally. Wings hyaline, the stigma and veins black or mostly black, the costal vein within towards base and the median and submedian veins in both wings are more or less testaceous basally. Abdomen a little shorter than the head and thorax united, sessile, but narrowed towards base, the surface, except the first segment, which is roughened and striate at basal two-thirds, is smooth and polished; the first and second segments are long, nearly equal in length, the second being somewhat the longer; the third, fourth and fifth segments are short, nearly equal in length, but all united shorter than the first; the following segments are more or less retracted; ovipositor hardly as long as the abdomen, the sheaths black.

Hab.—Chatham Islands.

Described from 2 ♀ specimens.

(5) *Schauinslandia alfkenii* n. sp

♂.—Length about 4 mm. Head, the thorax, except the pronotum at the sides, and the abdomen black; mandibles rufous, with black teeth; palpi white; first joint of antennæ, the tegulæ, and the legs, except the hind tibiæ outwardly at base and apex and the hind tarsi, brownish yellow; hind tibiæ outwardly at base and apex and their tarsi dark fuscous, almost black. The head and the thorax are sparsely punctate; the mesonotum is rugosely punctate in the depression at termination of the parapsidal furrows; the scutellum has a crenate furrow across the base, while the metathorax is distinctly and rather closely punctate, but without even traces of carinæ. Wings hyaline.

Hab.—Chatham Islands.

Described from 1 ♂ specimen.

(6) *Schauinslandia pallidipes* n. sp.

♀.—Length about 3.5 mm. Black and shining, but distinctly, although somewhat sparsely punctate, the prothorax alone ferruginous or testaceous; tegulæ and legs, except the last joint of the tarsi, uniformly yellowish. The thorax is similar to that of *S. alfkenii*, except the mesonotum is sparsely, minutely punctate, without the rugoso-punctate depression posteriorly. Wings hyaline, the large triangular stigma and the veins brown, not black; otherwise as in *alfkenii*. Abdomen subpetiolate, the first segment narrower than in *S. femorata* and punctate for four-fifths its length; rest of abdomen smooth, shining, the second dorsal segment having a rufous tinge towards base. The ovipositor in the single specimen is exerted to more than the length of the abdomen, but

the body sheaths are distinctly shorter than the abdomen. Dorsal segments 2-6 are subequal in length and quite different from *S. femorata*.

Hab.—Chatham Islands.

Described from 1 ♀ specimen.

Subfamily XVI, RHOGADINÆ.

Tribe IV, *Doryctini*.

DORYCTOMORPHA Ashmead, n. g.

This interesting new genus is allied to *Cænopachys* Förster and *Doryctes* Haliday; but tabulated it may be easily separated from them and their allies as follows:

- Second abdominal segment above blending with the third, *not* separated by a strong transverse suture or furrow 2.
- Second abdominal segment above separated from the third by a more or less strong transverse suture or furrow . . . **Odontobracon** Cam.,
Hedysoma Först., **Rhaconotus** Reinh.
2. Basal joint of hind tarsi not longer than the four following joints united, always much shorter; antennæ very long 3.
- Basal joint of hind tarsi about twice as long as the four following joints united; antennæ very short . . . **Histeromerus** Wesm.
3. Wingless species 5.
- Winged species.
- Recurrent nervure joining the first cubital cell or interstitial with the first transverse cubitus 4.
- Recurrent nervure joining the second cubital cell.
- Second and third abscissæ of the radius and the cubitus abnormally thickened; hind wings *without* an anal cell.
- Cænopachys** Först.
- Second and third abscissæ of the radius and the cubitus normal, *not* thickened; hind wings *with* an anal cell. . . **Doryctomorpha** Ashm. n. g. (Type *D. antipoda* Ashm.).
4. Abdominal segments *without* arcuate punctate lines at the most with transverse or oblique impressed lines.
- Second abdominal segment *without* deep oblique impressed lines; hind wings in the ♂ *without* a stigma.
- Submedian cell longer than the median; abdomen sessile.
- Metathorax areolated or at least always with a complete areola.
- Ischiogonus** Wesm.
- Metathorax *not* areolated, the areola wanting, or if at all indicated, always confluent with the petiolar area . . **Doryctes** Hal.
- Submedian cell *not* longer than the median; abdomen distinctly petiolate or the first segment very long, petioliform.
- Stenophasmus** Smith.

Second abdominal segment *with* two distinct oblique impressed lines; hind wings in ♂ *with* a stigma (very rarely without); recurrent nervure not interstitial with the first transverse cubitus **Glyptodoryctes** Ashm.

Abdominal segments with punctate arcuate lines (♂ unknown); recurrent nervure interstitial with the first transverse cubitus.

Bathycentor Kriechb.

(7) **Doryctomorpha antipoda** n. sp.

♀.—Length 3.3 mm. Ovipositor longer than the body. Head and thorax black; abdomen above dark brownish piceous, almost black, beneath paler; base of mandibles, the palpi, the tegulæ, anterior legs, the middle and anterior coxæ, the trochanters, base of femora, knees and base of hind tibia yellowish white; rest of legs ferruginous or fuscous. Antennæ 2-3 jointed, the scape large and considerably thickened, longer and much thicker than the first joint of the flagellum, which is the longest flagellum joint, and a little more than thrice as long as thick at apex; second flagellum joint about two-thirds the length of the first; the following to the last are shorter and imperceptibly become shorter or smaller, all being delicately fluted from the fifth. Head large, quadrate, coriaceously opaque; thorax shining, but finely, sparsely punctate, the mesopleura with a slight femoral impression, the metathorax not short, its posterior face feebly transversely aciculate and bounded by a prominent carina superiorly, the metanotum thus enclosed and with a poorly defined median carina. Wings hyaline, the stigma and veins brown, the second and third cubital cell large, nearly equal in length, the second receiving the recurrent nervure at its lower basal angle; submedian cell very much longer than the median.

Hab.—Chatham Islands.

Described from 1 ♀ specimen.

Notes on the Distribution of *Podisma variegata* Scudder.

By J. A. G. REHN, Acad. Nat. Sci., Phila.

The recent acquisition of a number of this species by the author induced him to gather together all the data which he could secure concerning this very interesting species. The original description (Rev. Melan, p. 101) was based on two males and one female, from Ithaca and Enfield Falls, Tompkins County, New York, taken at elevations of 400 and 450 feet respectively. Mr. Scudder also mentions having had sent

to him drawings of this species from specimens taken at De Grasse Point, Lake Simcoe, Ontario, Canada.

The first capture of this species which has come under my notice was by Mr. Chas. W. Johnson, at North Mountain (Ricketts), Sullivan County, Pennsylvania, in September, 1897. A number of specimens were collected in a section from which hemlock had been recently cut, the species being rather abundant. In August, 1900, I received several specimens collected at Bellasylva, Wyoming County, Pennsylvania, by Mr. Otto Behr. Mr. Behr is a resident of that section, and his statement is to the effect that the species always occurs on the branches of the hemlock, and that, on removal, they will immediately return to the same.

The third instance I know of is the capture of a single specimen of this insect at Ganoga Lake, Sullivan County, Pennsylvania, by Mr. Stewardson Brown, on September 2, 1900. Mr. Brown states that the specimen was captured in a clearing in a woods containing hemlock, birch and maple, it being the only one observed.

Quite recently a specimen has been presented to me by Mr. W. S. Huntington, who collected it at Glen Onoko, Carbon County, Pennsylvania. The specimen is a male, and was collected in grass, it being the only one observed.

From the above recorded captures it is very evident that hemlock exercises a very strong influence over this insect; for while the last-mentioned capture was not taken in hemlock, there undoubtedly is hemlock somewhere in the vicinity, and, while it is not the prevailing tree, it is there in moderate numbers—at least, that is the writer's experience not far from that locality.

From present indications the occurrence of this insect may be expected in any section of the State which contains moderate quantities of hemlock.

Cecropia Cocoons.

BY CAROLINE G. SOULE.

I am much interested in the *Cecropia*-cocoon question as stated in the ENTOMOLOGICAL NEWS for June, for I have in

the past three years examined about 400 cocoons in the hope of finding a certain guide to sex, and without result. Some of my biggest and roundest, baggiest and most "inflated" cocoons gave fine males, while some of the slenderest, longest and "trig"-est cocoons gave females. I have had these cocoons from Illinois, Massachusetts, Vermont and New Hampshire, and a very few from New York. Many of the baggy ones were taken from willow and box-elder trees, eight or ten feet from the ground, while one I took from a tree whose branch I had to pull down with my umbrella in order to reach the cocoon.

On the other hand, many of the slender, long cocoons were found on low stems of shrubs, while others were high on the box-elders and willows.

The smallest, thinnest cocoon I had gave a female, the pupa being so large that there was no spare space in the cocoon, and it did not rattle when shaken.

I have reared many broods of *cecropia*, and have never had a larva spin a baggy cocoon in captivity, while in these broods the females so outnumber the males that I suspect polygamy; yet I have this year had a ♀ *cecropia* mate for the second time after ovipositing for three nights.

The more I study the habits of these creatures, the more variety I find in them—the experiences of one year or one brood differing from those of another.

[A few observations made last spring gave the following results: Eleven "baggy" cocoons disclosed seven males and four females; twenty-one slender and compact cocoons disclosed twelve males and nine females. Mr. I. B. Roberts, of Chicago, Ill., sends the following result: "Thirty-one 'baggy' cocoons disclosed twenty-five females and six males. The inflated cocoons were all found in marshy places and nearly always near the ground, and it seems as though the outer part was made as a protection in case of floods." Miss Soule has probably explained my original observations on the theory of several or individual broods having peculiar characteristics. I do not believe in Mr. Roberts' theory of protection against flood.

HENRY SKINNER.]

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, three 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, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., DECEMBER, 1900.

A well-known entomologist writes to the NEWS as follows: "I have been surprised that there is no means for the many entomologists of the non-economic kind to see each other without each makes a pilgrimage to the shrines of all the others.

Now, why can not we get together somewhere once in a while and have a royal good time, exchange notes and specimens, and see how each other looks? Say, for instance, that about the Christmas holidays the scattered entomologists throughout New England and the Eastern States in general, as well as those of the larger cities, meet in conference at some central point. Let each one bring some specimens of the things he loves best and be prepared to give some little talk on the subject which interests him most. I do not know whether any such thing has ever been proposed, but I cannot see why it should not prove a success. If the economic entomologists can do it, why can not the others?" The NEWS would be pleased to see some active entomologist interest himself in this and try and make such meetings successful and profitable.

LENGTH OF LIFE IN A BEETLE.—At the meeting of the Natural History Society of Brunn, Austria, March 10, 1898, Herr Ign. Czizek showed a beetle, *Gibbium psylloides*, which he had kept living in a small box since the spring of 1895, and which was still active and lively.

Entomological Literature.

COMPILED BY P. P. CALVERT.

Under the above head it is intended to mention papers received at the Academy of Natural Sciences of Philadelphia pertaining to the Entomology of the Americas (North and-South). Articles irrelevant to American entomology will not be noted. Contributions to the anatomy, physiology and embryology of insects, however, 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; * denotes that the paper in question contains descriptions of new North American forms. Titles of all articles in foreign languages are translated into English; usually such articles are written in the same language as the title of the journal containing them, but when such articles are in other languages than English, French, German or Italian, this fact is indicated in brackets.

4. The Canadian Entomologist, London, Ont., Nov., '00.—**5.** Psyche, Cambridge, Mass., Nov., '00.—**7.** Bulletin 26, new series, U. S. Department of Agriculture, Division of Entomology, Washington, '00.—**8.** The Entomologist's Monthly Magazine, London, Nov., '00.—**9.** The Entomologist, London, Nov., '00.—**15.** Biologia Centrali-Americana, part clvii, London, Aug., '00. Rec'd. Oct., '00.—**18.** The Ottawa Naturalist, Oct., '00.—**22.** Zoologischer Anzeiger, Leipsic, '00.—**36.** Transactions, Entomological Society of London, 1900, pt. iii, Oct. 22.—**40.** Societas Entomologica, Zürich-Hottingen, '00.—**41.** Entomologische Nachrichten, xxvi, Berlin, '00.—**49.** Termesztudományi Füzetek, xxiii, 3-4, Budapest, '00.—**50.** Proceedings, United States National Museum, Washington, '00.—**73.** Archives de Zoologie Experimentale et Generale, (3) viii, Notes et Revue, Paris, '00.—**84.** Insekten Börse, Leipsic, '00.—**93a** Atti, **93r** Rendiconti, R. Accademia dei Lincei, Rome, '00.—**101.** Rovartani Lapok, Budapest, '00.—**132.** Popular Science, New York, Aug., '00.—**139.** Proceedings and Transactions, Royal Society of Canada, (2) v, Ottawa, 1899, rec'd. Oct. 20, '00.

THE GENERAL SUBJECT.—**Anon.** Obituary notice of Dr. Otto Staudinger with portrait, **84.** Oct. 25.—**Cockerell, T. D. A., Banks, N.** (Arachnida, Neuroptera*), **Scudder, S. H.** (Orthoptera*), **Smith, J. B.** (Noctuidæ), Some insects of the Hudsonian zone in New Mexico, **5.**—**Lameere, A.** Manuel de la Faune de Belgique. Tome II. Insectes Inférieurs avec 721 figures. Corrodants, Dermaptères, Orthoptères, Plecoptères, Agnathes, Odonates, Thysanoptères, Hémiptères, Planipennes, Panorpates, Trichoptères, Coléoptères. Bruxelles, H. Lamertin, 1900. Pp. 858, including the index. The author estimates the number of species of these groups now living in Belgium at a maximum figure of 5000, of which 3106 are actually described in the present volume. The arrangement of the text throughout is in the form of analytical keys, and should consequently be useful to others than those interested in the Belgian fauna.—**Oestlund, O. W.** A Laboratory Guide in Entomology. For use as an Introduction to the Study of Entomology, and as Introductory to a Course in General Zoology. H. W. Wilson, Minneapolis, 1900. 49 pp. 9 figs.—**Oudemans, J. T.** De Neder-

landsche Insecten. 15 Aflevering. s'Gravenhage Martinus Nijhoff. 1899. Rec'd. Nov., 1900. This is the concluding part of this work. Pp. 737-810 Hymenoptera concluded; 811-836 index. Title page, preface, table of contents, pp. i-xv.—**Pic, M.** Where are the types? Not enough or too much of absolute priority? Procès-Verbaux des Séances, Société d'Histoire Naturelle d'Autun, 1898. Rec'd. Oct. 19, 1900.

ECONOMIC ENTOMOLOGY.—**Felt, E. P.** Fifteenth report of the State Entomologist on injurious and other insects of the State of New York, 1899. Bulletin of the New York State Museum, vi, No. 31, Albany, June, 1900.—**Id.** Some effects of early spring applications of insecticides on fruit trees, **7**.—**Fletcher, J.** Recent additions to the list of injurious insects of Canada, figs., **139**; Notes from Canada, **7**.—**Gillette, C. P.** Apiary experiments, 6 pls., Bulletin 54, Agric. Exper. Station of the Agricultural College of Colorado, Fort Collins, Colo., May, '00.—**Id.** Objects of the Association of Economic Entomologists, **7**.—**Id.** Entomological notes from Colorado, **7**.—**Grassi, B.** Further studies on malaria: the malaria of Grosseto and some observations on the habits of *Anopheles*, **93r**, Oct. 7.—**Grassi, B.**, and **Martirano, Blessich, Druetti, Gilblas, Jacobelli and Marcovecchio.** First summary account of the experiment against malaria made in the vicinity of Pesto, **93a**, Sept. 16.—**Howard, L. O.** The principal insects affecting the tobacco plant, figs. Reprinted with slight revision by the author from the yearbook of the Dept. of Agriculture for 1898. Farmers' Bulletin No. 120. U. S. Dep't. of Agriculture, Division of Entomology, Washington, '00.—**Id.** Establishment of a new beneficial insect [*Scutellista cyanea*] in California, **7**; Beneficial work of *Hyperaspis signata*, **7**.—**Id.** Regulations of foreign governments regarding importation of American plants, trees and fruits [affected by San José scale], Circular No. 41, second series, U. S. Dept. of Agriculture, Division of Entomology, Washington, Aug. 24, '00.—**Johnson, W. G.** Notes upon the destructive green pea louse (*Nectarophora destructor* Johns.) for 1900, 2 pls., **7**; *Aphelinus fuscipennis*, an important parasite upon the San José scale in Eastern United States, **7**.—**Id.** Notes on insects of economic importance for 1900, **7**.—**Kirkland, A. H.** The brown-tail moth in Massachusetts, **7**.—**Lounsbury, C. P.** Notes on some South African ticks, **7**.—**Marlatt, C. L.** How to control the San José scale, Circular No. 42, second series, U. S. Dept. of Agriculture, Division of Entomology, Washington, Oct. 22, '00.—**Quaintance, A. L.** Observations of *Diabrotica 12 punctata* Oliv., **7**.—**Sanderson, E. D.** Notes from Delaware, **7**.—**Sanderson, E. D.**, and **Penny, C. L.** Hydrocyanic acid gas as an insecticide on low-growing plants, **7**.—**Scott, W. M.** Notes on Coccidæ of Georgia, **7**.—**Webster, F. M.** Insects of the year in Ohio, **7**.—**Id.** The Hessian fly in Ohio in 1899 and 1900, Bulletin 119, Ohio Agric. Exper. Station, Wooster, Ohio, June, 1900.—**Woodworth, C. W.** Notes from California, **7**.

ARACHNIDA.—**Banks, N.** See the General Subject.—**Cambridge, F. O. P.** Arachnida Araneidea, vol. ii, pl. x, **15**.—**Simon, E.**

Descriptions of new Arachnids of the family Attidæ, *Annales Société Entomologique de Belgique*, xlv, 10, Brussels, Oct. 29, '00.—**Wallace, L. B.** The accessory chromosome in the spider, figs., *Anatomischer Anzeiger*, Leipsic, Oct. 19, '00.

MYRIOPODA.—**Banks, N.** Camphor secreted by an animal [other secretions of Myriopods], *Science*, New York, Oct. 26, '00.—**Dubosq, O.** The development of *Scolopendra* according to Heymons, figs, **73**, Nos. 1-2, May 5.—**Verhoeff, K. W.** An unknown character of young Julidæ, fig., **22**, Oct. 22.

APTERYGOTA.—**Absalon, K.** Preliminary communication on the Aphoruridæ from the caves of the Moravian Karst, figs., **22**, July 23.—**Folsom, J. W.** The development of the mouth-parts of *Anurida maritima*. Guér., 8 pls., Bulletin, Museum of Comparative Zoology at Harvard College, xxxvi, 4, Cambridge, Mass., Oct., 1900.—**Lie-Petersen, O. J.** Biological [notes] on Norwegian Collembola [Copulation, food], *Bergens Museum Aarbog* 1899, heft 2, '00.

ORTHOPTERA.—**Morse, A. P.** Orthoptera, vol. ii, pp. 9-16* [Tettigæ], **15**.—**Scudder, S. H.** New or little known Californian Orthoptera,* **4**; see also the General Subject.

NEUROPTERA.—**Banks, C. S.** The horned *Corydalis*, figs., **132**.—**Banks, N.** See the General Subject.

HEMIPTERA.—**Ball, E. D.** Additions to the western Jassid fauna,* **4**; Notes on the species of *Macropsis* and *Agallia* of North America,* **5**.—**Champion, G. C.** A species of *Scaptocoris* Perty, found at the roots of sugar-cane, figs.,* **8**.—**Cockerell, T. D. A.** Food-plants of Homoptera, **9**.—**Fowler, W. W.** Rhynchota Homoptera, vol. i, pp. 49-56* [*Flata*, etc.], pl. vii; vol. ii, pp. 273-280* [*Tettigonia*], **15**.—**Montandon, A. L.** New or little known exotic Hemiptera of the collections of the Hungarian National Museum, **49**.—**Scott, W. M.** See Economic Entomology.

COLEOPTERA.—**Beaulieu, G.** The Cicindelas of the Province of Quebec, *Naturaliste Canadien*, Chicoutimi, Quebec, Oct. 15, '00.—**Csiki, E.** New Coleoptera in the collection of the Hungarian National Museum, **49**.—**Fenyès, B.** From the diary of a Californian coleopterologist, ii, *The Californian Tenebrionidæ* [in Magyar], **101**, Sept.—**Gahan, C. J.** Stridulating organs in Coleoptera, 1 pl., **36**.—**Horn, W.** To study of the Cicindelidæ, **41**, 13-14, July.—**Kerremans, C.** Three new Buprestidæ of the Hungarian National Museum,* **49**.—**Leger, L.**, and **Hagenmuller, P.** On the morphology and evolution of *Ophryocystis Schneideri*, n. sp., figs. [sporozoon parasitic in *Blaps*], **73**, No. 3, June 15.—**Seurat, L. G.** On the morphology of the respiratory apparatus of the larva and of the nymph of *Bruchus ornatus* Böhm, *Comptes Rendus, l'Académie des Sciences*, Paris, Oct. 15, '00.—**Tschitschérine, T.** Memoir on the genus *Trichocellus* (Gangl.), *Horæ Societatis Entomologicæ Rossicæ*, xxxii, 3-4, St. Petersburg, 1898. Rec'd. Oct., 1900.—**Wickham, H. F.** Notes on some Cicindelidæ from the southwestern United States, **40**, Sept, 1.

DIPTERA.—**Cockerell, T. D. A.** *Asphondylia mentzelia*,* **9**.—**Harrington, W.** Fauna Ottawaensis, Diptera, **18**.—**Kertész, K.** Review of the species of *Griphoneura*, fig., **49**.—**Stein, P.** Four new species of *Homalomyia* from Bolivia, in the Hungarian National Museum, **49**.—**Vignon, P.** Cytoplasmic differentiations, vibratile hairs and cuticles, figs [*Chironomus plumosus*], **73**, Nos. 1-2, May 5.

LEPIDOPTERA.—**v. Aigner-Abafi, L.** The sound produced by *Acherontia atropos* [in Magyar, brief German summary], figs., **101**, Sept., Oct.—**Bachmetjew, P.** Weakening of Lepidoptera in consequence of increased body temperature, **40**, Sept. 15, Oct. 1, 15.—**Busck, A.** New species of moths of the superfamily Tineina from Florida,* **1** pl., **50**, No. 1208, rec'd. Oct. 16.—**Chapman, T. A.** Note on the oviposition of *Parnassius apollo*. **9**.—**Dannatt, W.** Description of a new species of *Dircenna* from Peru, fig., **9**.—**Dyar, H. G.** Life histories of some North American Moths, **50**, No. 1209, rec'd. Oct. 16; New species of Anaphorinæ,* **4**; Change of preoccupied names, **4**; Life-histories of North American Geometridæ, xvi, **5**.—**Ehrmann, G. A.** Variations in some common species of butterflies, **4**.—**Gauckler, H.** Degeneration of *Ocneria dispar* in consequence of inbreeding, **84**, Sept. 6.—**Gibson, A.** *Colias eurytheme* [near Ottawa], **18**; The Life-history of *Euprepia caja* L., var. *americana* Harr., **4**.—**Godman, F. D.** Lepidoptera Rhopalocera, vol. ii, pp. 485-500, pls. xciii, xciv, **15**.—**Jordan, K.** Some remarks on Prof. Grote's Systema Lepidopterorum Hildesieæ, **41**, 17-18, Sept.—**Meyrick, E.** New Hawaiian Lepidoptera, **8**.—**Quail, A.** Life-histories in the Hepialid group of Lepidoptera, with description of one new species and notes on imaginal structure, 2 pls., **36**.—**Scudder, S. H.** A caterpillar with two lives [*Papilio turnus*], **132**.—**Sharpe, Emily M. B.** Monographiæ Entomologiæ, i. A Monograph of the genus *Teracolus*. London, Lovell Reeve & Co., Pt. vii, 1900. Rec'd. Nov., '00. Pp. 69-84, pls. 24-27.—**Smith, J. B.** Contributions toward a monograph of the North American Noctuidæ: revision of the species of *Xylina*,* 5 pls., Transactions, American Entomological Society, xxvii, Philadelphia, Aug., '00; Notes on some species of *Acronycta* in the British Museum, **4**; See also the General Subject.—**Standfuss, M.** Synopsis of experiments in hybridization and temperature made with Lepidoptera up to the end of 1898, part ii (cont.), 1 pl., **9**.—**Stitz, H.** The genital apparatus of the Microlepidoptera, 5 pls., Zoologische Jahrbücher, Abtheilung für Anatomie und Ontogenie der Thiere, xiv. 1, Jena, Oct. 11, '00.—**Thurau, F.** A case of copula intermares between *Bombyx mori* L. and *Ocneria dispar* L., **41**, 12, June.—**Tutt, J. W.** Migration and dispersal of insects: Lepidoptera, Entomologist's Record, London, Oct. 15, '00.

HYMENOPTERA.—**Ashmead, W. H.** Classification of the Ichneumon flies, or the superfamily Ichneumonoidea, **50**, No. 1206. Rec'd. Oct. 15. The Ichneumonoidea, as here defined, comprise the families Evaniidæ, Agriotypidæ, Ichneumonidæ, Alysiidæ, Braconidæ and Stephanidæ. The main body of the work is made up of tables of the sub-

families, tribes and genera. Lists are given of genera unknown to the author and not classified, of genera incorrectly placed with the Ichneumonoidea, and of authors and works quoted; a bibliography of genera alphabetically arranged, synopses of the families of Hymenoptera, and lastly an index. The author "has had material for examination from all parts of the world, and hopes in the tables he is now publishing to place the families, subfamilies, tribes and genera on a better foundation. . . . Very few persons have given any attention to these insects, and the necessity for these fine subgeneric and tribal divisions is evidently apparent to only a few active workers. The great majority of the workers in other groups seem totally ignorant of this vast complex, or at least have no conception of its immensity, or the difficulties encountered in studying and identifying material belonging to it derived from different parts of the world When the body of this work is examined . . . it is found that no less than *eleven hundred and forty genera*, or more, have been recognized and tabulated, although when Burmeister [wrote] . . . in 1835, the Ichneumonoidea contained only about *one hundred and nine genera*. . . . In my tables, therefore, there will be found many genera which by some eminent living hymenopterologists are thought to be of no value, but which the writer, on the contrary, holds to be good and distinct—a difference of opinion that time alone can settle."—**Cameron, P.** Hymenoptera, vol. i, pp. 475-487 [Index], i-xii, title page; vol. ii, pp. 405-413 [Index], i-xi, title page, **15**.—**Friese, H.**—New species of bees from South America, **41**, 12, June; New species of the bee genera *Melipona* Ill. and *Trigona* Jur.*, **49**.—**Harrington, W. H.** Catalogue of Canadian Proctotrypidæ,* **139**.—**Moreno, A.** Observations concerning the habits of ants [in Spanish], *Memorias y Revista de la Sociedad Científica "Antonio Alzate"* xiv, 11-12, Mexico, 1900.—**Rudow.** Remarks on the distribution of the sexes in Hymenoptera, **84**, Oct. 18.—**Szepligeti, G.** Joppinæ of the Hungarian National Museum,* **49**.—**Weed, C. M.**, and **Fiske, W. F.** The relations of *Pimpla conquisitor* to *Clisiocampa americana*, **7**.—**Wheeler, W. M.** A study of some Texan Ponerinæ, figs., *Biological Bulletin*, ii, 1, Boston, Oct., 1900.

DEPARTMENT OF ECONOMIC ENTOMOLOGY

Edited by Prof. JOHN B. SMITH, Sc.D., New Brunswick, N. J.

Papers for this department are solicited. They should be sent to the editor Prof. John B. Smith, Sc.D., New Brunswick, N. J.

NOTES ON THE OCCURRENCE OF BROOD XX OF THE PERIODICAL CICADA, *CICADA SEPTENDECIM*, IN OHIO IN 1900.

The accompanying map will show the area covered by this brood the present year. The supposition, however, has been that it covered nearly

or quite the entire counties of Ashtabula, Trumbull, Mahoning, Columbiana, and perhaps portions of Lake, Geauga and Portage. In Bulletin 87 of the Ohio Agricultural Experimental Station I have given a map illustrating the area covered by Brood XV of this species. I will simply



say that the brood at present under consideration—Number XX—overlaps Brood XV in northern Jefferson, eastern Carroll, Stark and Southeastern Portage Counties. I have been totally unable to find any evidence of the

occurrence of the species north of the southern third of Trumbull County. The area indicated by the accompanying map will show the extent to which the latter county is covered by this brood. Excepting along the borders of the area covered by the cicada the present year in Ohio, the occurrence was very marked and the insects were present in very great abundance, and the brood might be designated in Ohio as a very compact one.

The exact area over which the species occurred the present year in Ohio may be indicated as follows: Starting near Empire, Jefferson County, on the Ohio River, and extending across the northeast corner of the county into Carroll, thence to Minerva, in the extreme southeast corner of Stark County, northward to Alliance, in the northeastern portion, near the extreme northwest corner of Columbiana County east of near Deerfield, in the extreme southeast portion of Portage County, thence to North Jackson, Mahoning County, Lordstown, Niles and Tyrrell Hill, in Trumbull County. This line marks very nearly the extreme border of occurrence of the species, but does not mark the outline of its area of greatest abundance.

Nothing has been learned the present year that will extend our knowledge of the habits of the species. It is both interesting and surprising that it should not occur north of the area indicated, even in limited numbers. Of course, there might be an occasional stray in this area, but certainly there were not enough to warrant any portion of it being included in the territory covered by the brood.—F. M. WEBSTER.

CRIOCERIS ASPARAGI: THE FOUNDING OF A COLONY.

This species is working its way slowly across Northern Ohio from east to west, and I have been much interested in the details of its progress.

Several years ago some asparagus was planted near the insectary at the Agricultural Experiment Station at Wooster, with a view of determining the first appearance of the insect in this section of the State.

The first individual made its appearance on the decoy plants July 25, 1899. This individual was watched carefully, but no others were observed during the remainder of the year and there were no offspring.

From early spring of 1900 the asparagus plants were watched closely, but it was July 20th when a single adult appeared. The next day there were two, and on the 23d two of each of the sexes. Pairing began at once, and soon there were eggs. By September 1st the plants had become badly infested, both adults, eggs and larvæ being all very numerous.

I take it that this is the usual method of diffusion over and occupation of new territory by this species, and it would be interesting if the observations of others could be placed on record, not alone as regarding this species, but others as well.—F. M. WEBSTER.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS
OF THE GLOBE.

INDIANA ODONATA.—I saw in ENT. NEWS for September, your comments on Mr. E. B. Williamson's catalogue—Dragonflies of Indiana. During and since the printing of the catalogue I have found a number of species which have not been recorded heretofore as occurring in Indiana. I have appended these species as well as those records which have been omitted from the compilation.

Lestes eurinus ♀ Say. Elkhart city limits. June 10, 1900. Very rare.

Enallagma civile Say. Elkhart city limits. May 15, 1897. Rare.

Gomphus fraternus Say. Simonton lake woods. Elkhart, May 17, 1900. Not common.

Gomphus spicatus Hag. Simonton lake woods and margin of lake. Elkhart, May 17, 1900. Fairly common.

Æschna multicolor Say. ♀ ♀ ♀. In grove of city limits. Elkhart, Sept. 5, 1899. Very rare.

Æschna juncea var. *verticalis* ♀ Hag. Grove in city limits. Elkhart, September 15, 1897. Rare.

Æschna pentacantha Ramb. ♀ ♂. Woods in city limits. Elkhart, June 10 and 12, 1900. Rare.

Have also found here *Didymops transversa*, although reported from south of here. Elkhart city limits and Simonton lake woods, May and June, 1900. Very plenty.

Epicordulia princeps Hag. Along the banks of St. Joe river, Elkhart city, July 7, 1900. Not common.

Libellula exusta Say. Very common in Simonton lake woods. Elkhart, Indiana, May 5, 1900.

I thought these notes might be of interest on account of geographical distribution of species. Yesterday I rode out to Simonton lake and saw a *L. exusta*. Is this not rather late?—R. J. WEITH.

Elkhart, Indiana, Sept. 5, 1900.

[As regards the *Ae. multicolor* cited above, I may say that I am responsible for the determination, and that the females I saw resembled those of that species more than any other, although I am not aware that *multicolor* has previously been found east of the Dakotas. It will, of course, be necessary to find the male in Indiana in order to be sure that the species occurs in that State —P. P. CALVERT.]

FLIES CLOGGED THE ENGINES.—When the pesky, blood-thirsty, green-headed flies become so thick as to stop naphtha launches there's time to seriously reflect. Commodore Lewis A. Scott and Dr. Emlen Physick agree with this statement to a man. The doctor was taken across to Holly Beach in the commodore's launch the other day, and they had a close call with their lives.

The launch was bowling along merrily through the sounds, and the occupants were murdering green heads with fiendish energy. At every point where the green blades of seaweed grew down to the edge of the water hundreds of flies would be taken on board. The white foam in the wake of the boat grew perceptibly less as the craft took in these new passengers, until at last the boat actually stopped. The terribly-bitten occupants were amazed and mystified. An investigation resulted in the finding of about two gallons of "green headers" tightly packed into one of the air chambers which feed the flame with oxygen. The flies had been drawn in by the suction until they were as solidly packed as powder and shot in a gun barrel. It required an hour of patient work to remove the mass of dead flies from the hot cylinder and get the boat in working order again. During this hour the commodore and his companion were almost devoured. After the cylinder had been relieved of its foreign substance Commodore Scott tied a silk handkerchief over the air passage, turned on all power, and left the flies guessing at the sudden burst of speed of the boat.—*Newspaper*.

Doings of Societies.

At the October meeting of the Feldman Collecting Social, held at the residence of Mr. H. W. Wenzel, 1523 South Thirtieth street, twelve persons were present.

Mr. C. Schaeffer, of New York, recorded the capture of *Phyllobrotica decurrata* at Arlington, N. J., a species not before recorded from New Jersey.

Mr. C. F. Seiss remarked on specimens of *Gryllotalpa borealis*, taken in the Phila. Neck, some which had just emerged from the egg and were quite active, springing about when disturbed. He believed that the species devours its young, as many young ones which were confined in a box with a large female specimen had disappeared. Other habits of the species were dwelt on.

Mr. Daecke spoke on collecting at Castle Rock, Pa., and Manumuskin, N. J. At the latter place *Pamphila attalus* was taken. It is allied to *P. leonardus*, which seems to live in damp places, whereas *P. attalus* seeks the dryer localities. Also numerous specimens of *Melipodes jucunda* were captured at the same place. The species alights on the sand, which it closely resembles in color, and is therefore difficult to see when at rest.

Mr. F. Haimbach reported the capture of several specimens of *Citheronia regalis* and *Eacles imperialis* at Holly Beach, N. J., and one *Eacles imperialis* var. *didyma*.

Mr. H. Wenzel remarked that he had observed a specimen of *Papilio ajax* during the past summer near Wildwood, N. J.

Mr. Haimbach exhibited some of his captures at Holly Beach.

Mr. Schaffer spoke of the good results obtained with the sweeping net at dusk.

Mr. H. Wenzel recorded the capture of *Neladius tenuis* Casey near Philadelphia.

Mr. E. Daecke, 1709 Chestnut street, was nominated for membership.

WILLIAM J. FOX, *Secretary*.

The tenth regular meeting of the Harris Club was held at 35 Court street, Boston, on Friday evening, October 19, 1900. Vice President Newcomb occupied the chair.

Mr. W. L. W. Field gave a second talk on "The Quantitative Study of Variation." Mr. Newcomb showed a number of interesting variant Lepidoptera, among them a very dark suffused example of *Argynnis myrina*, and a specimen of *Papilio philenor*, with two red spots at the anal angle of each hind wing. Mr. W. D. Denton brought forward a *philenor* with five red spots on each hind wing (two at the anal angle and three near the forward margin) showing a tendency to form a row of red spots just within the line of gray lunules. Further exhibits by Mr. Denton comprised specimens of *Actias leto*, whose very long tails serve well to illustrate Darwin's law of high variability in extraordinarily developed parts, a remarkable *Pyrameis*, possibly a sport from *huntera*, and an example of *Vanessa antiopa hygeia* with asymmetrical markings. Mr. P. G. Bolster displayed some variable wasps. Professor A. P. Morse showed a specimen of *Colias philodice* ♀ *albinic*, in which the usual discal dots of the primaries were replaced by large triangular patches of brown.

Mr. Newcomb gave a most interesting account of his recent trip to Montreal, and of the entomological collections which he saw in that city.

The subject of mimicry was agreed upon for discussion at the November meeting.

W. L. W. FIELD, *Secretary*.

Vice-President Newcomb presided at the eleventh regular meeting of the Harris Club, held at 35 Court Street, Boston, on Friday evening, November 16, 1900. Prof. A. P. Morse was unanimously elected to active membership.

Mr. Newcomb opened the discussion of "Mimicry" by displaying a cocoon of *Cerura cinerea* which harmonized in a wonderful way with the bark on which it was placed. Mr. Bolster showed an interesting series of Diptera which mimic Hymenoptera. Exhibits by Mr. W. D. Denton comprised a moth from Java—*Phyllodes verhuelli*, whose fore wings closely resemble leaves; *Charagia daphnandræ*, a rare Australian moth with with fore wings of a deep green color; a beetle from Borneo—*Mormolyce phyllodes*; a specimen of the "walking leaf" *Phyllium scythe*, of Ceylon, and other interesting insects.

The subject of "Hybridity" was chosen for discussion at the December meeting.

Mr. Newcomb showed a curious Tineid larva—*Metzneria lappella*, which inhabits the burrs of the common burdock. The species, a European one, has been introduced into Canada, probably in the fodder accompanying imported cattle. The same speaker then entertained the club with some amusing samples of newspaper entomology.

The Messrs. Denton reported seeing in Wellesley, Mass., in October, a butterfly which they believed to be *Terias nicippe*, but which successfully eluded its pursuers.

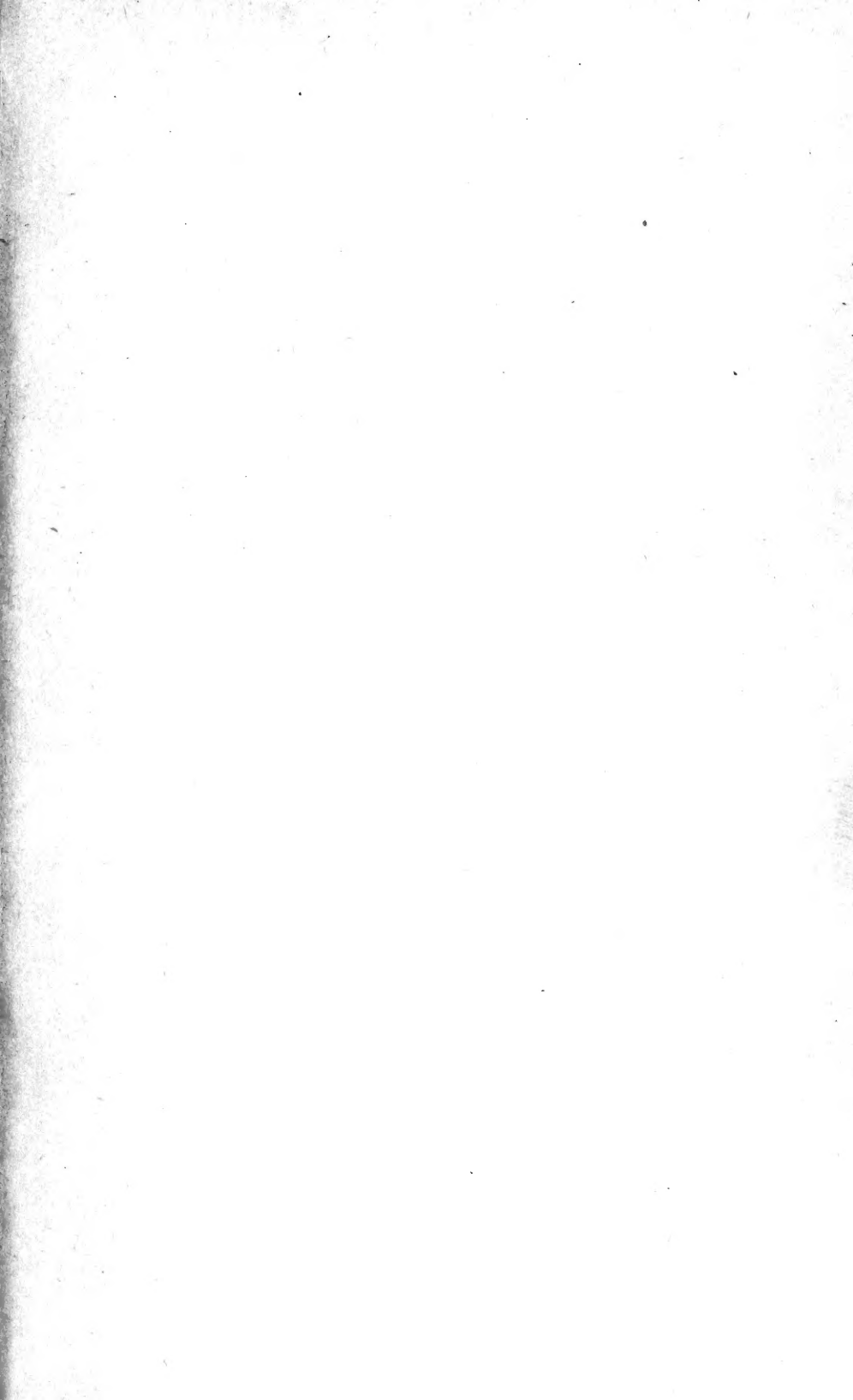
W. L. W. FIELD, *Secretary*.

At the meeting of the Newark Society, held on November 11th, the following officers were elected: *President*, Mr. Buchholz; *Vice-President*, Mr. Stortz; *Secretary*, Mr. Kemp; *Treasurer*, Mr. Seib; *Librarian*, Mr. Angelman.

A set of resolutions on the death of Mr. G. D. Hulst, an honorary member, was adopted.

Prof. Smith and Mr. Bischoff gave some interesting remarks on entomology during the meeting, after which adjournment was in order.

WM. H. BROADWELL, *Secretary*.





QL
461
E574
v.11

Entomological news

**Biological
& Medical
Serials**

PLEASE DO NOT REMOVE
CARDS OR SLIPS FROM THIS POCKET

UNIVERSITY OF TORONTO LIBRARY

STORAGE

