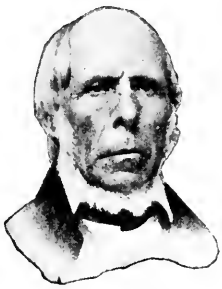
ENTOMOLOGICAL NEWS

VOLUME XXXVII, 1926 - 1927



JAMES RIDINGS
1803-1880

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PUBLISHED BY
THE AMERICAN ENTOMOLOGICAL SOCIETY,
PHILADELPHIA, PA.:
THE ACADEMY OF NATURAL SCIENCES
LOGAN SQUARE
1926

The several numbers of the NEWS for 1926 were mailed at the Post Office at Philadelphia, Pa., as follows:

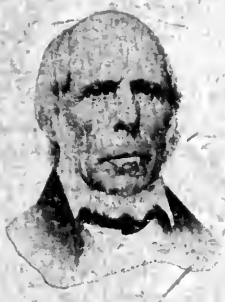
No. 1—January	January 7, 1926
" 2—February	January 29
" 3—March	March 4
" 4—April	April 1
" 5—May	April 29
" 6—June	June 4
" 7—July	June 29
" 8—October	October 15
" 9—November	November 8

The date of mailing the December, 1926, number will be announced on the last page of the issue for January, 1927.

JANUARY, 1926

ENTOMOLOGICAL NEWS

Vol. XXXVII No. 1



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PHILADELPHIA, PA.
THE ACADEMY OF NATURAL SCIENCES.
Logan Square

Entered at the Philadelphia, Pa., Post Office as Second Class Matter.
Acceptance for mailing at the special rate of postage prescribed for in Section 1103
Act of October 3, 1917, authorized January 15, 1921.

ENTOMOLOGICAL NEWS

Published monthly, excepting August and September, by The American Entomological Society.

Philip P. Calvert, Ph.D., Editor. E. T. Cresson, Jr., Associate Editor. Henry Skinner, M.D., Sc.D., Editor Emeritus.

Advisory Committee: Ezra T. Cresson, Philip Laurent, J. A. G. Rehn.

The subscription price per year of ten (10) numbers is as follows:

United States and possessions	$3.00
Canada, Central and South America	3.15
Foreign	3.25

Single copies 35 cents

ADVERTISING RATES. Full width of page. Payments in advance.

One issue,	1 in.,	$ 1.20,	2 in.,	$ 2.40,	half page,	$ 4.00,	full page,, $ 8.00
Ten issues	"	11.00,	"	20.00,	"	35.00,	" 70.00

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All complaints regarding non-receipt of issues of the NEWS should be presented within three months from date of mailing of the issue. After that time the numbers will be furnished only at the regular rate for single copies. Not more than two issues will be replaced gratis, through loss in transit or in change of address, unless such have been registered, at the subscriber's expense.

MANUSCRIPTS. Address all other communications to the editor, Dr. P. P. Calvert, Zoological Laboratory, University of Pennsylvania, Philadelphia, Pa.

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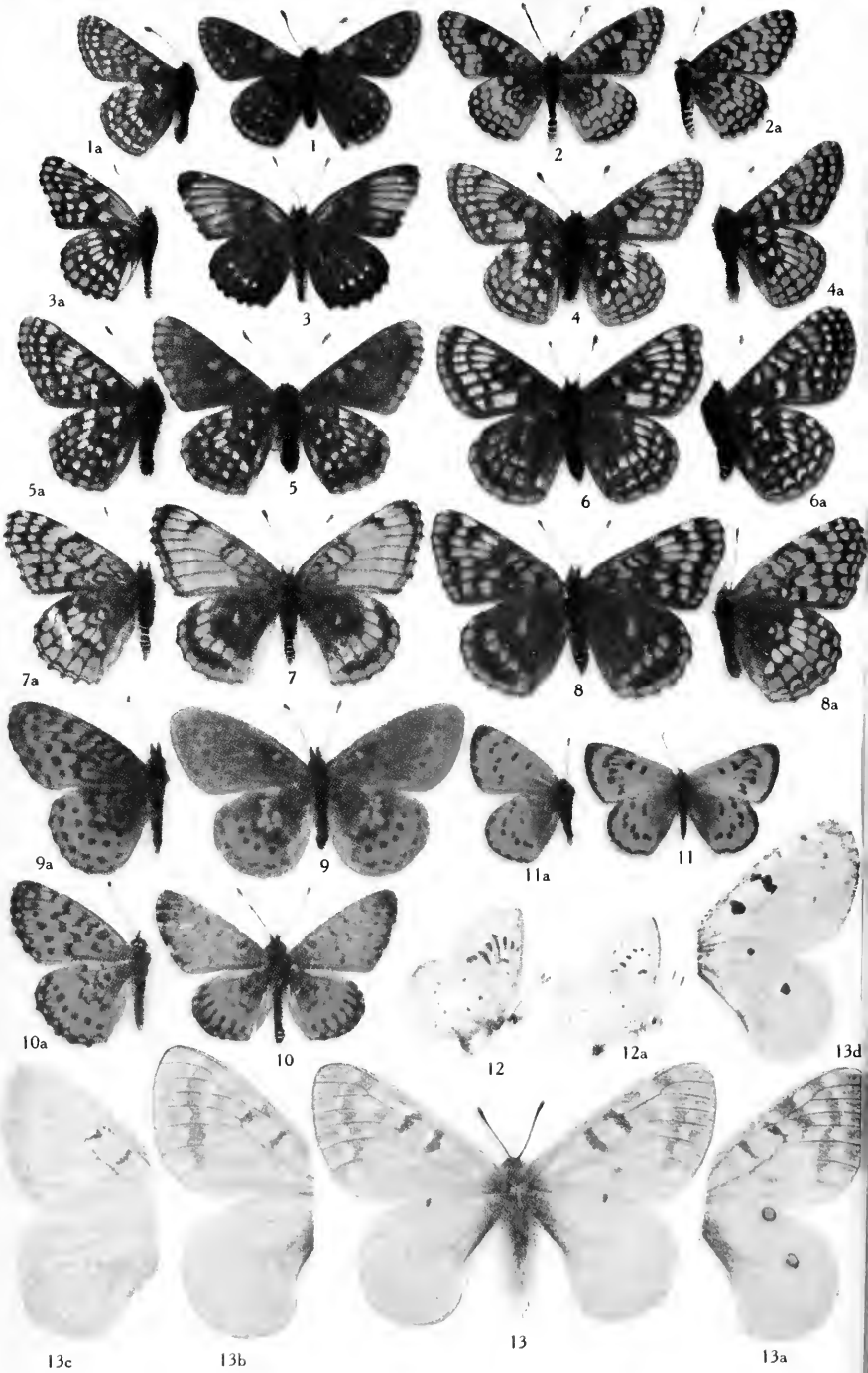


NEW ABERRANT RHOPALOCERA—GUNDER.

ENTOMOLOGICAL NEWS

VOL. XXXVII JANUARY, 1926 No. 1

Several New Aberrant Lepidoptera (Rhopalocera).

By J. D. GUNDER, Pasadena, California.

(Plate I.)

I understand that several well known collectors will soon publish descriptions of their aberrant butterflies. Lepidopterists will be interested to know just what some of these primal forms in the rarer species look like and to note how their lineage is portrayed by the character of their change. For example, compare the aberrant secondaries of Fig. 7 with those of Fig. 8 on Plate I. These are closely related *Melitaeas*. The allied *Euphydryas* group rarely have this type of maculation contour. The secondaries of the above compared specimens represent the style of their aberrants which is furthest possible from normal. It is well known that aberrations run from a degree near normal to a fixed amount furthest possible from normal. This fixed amount does not necessarily mean totally melanism nor completely without color maculation. Each genus has a fixed maculation beyond which its aberrants do not go. Fig. 1 shows the final stage of that butterfly. I believe Fig. 7 represents the limit of aberrancy in its species. Intermediate degrees of aberrant variation can be named provided each step is obvious and does not encroach on the other. Of course slight variation between degrees should never be named. An attempt has been made in this paper, in conjunction with the descriptions, to state or fix the aberrant degree of each specimen named. It is hoped that this will help to establish rank and order among future specimens as they are described.

If selected aberrations of all species in a genus could be placed side by side, it would perhaps prove or disprove generic placing and certainly rearrange the order of the species in some genera. As yet, too few aberrations have been described and, what makes the task more difficult is that, too few have

been figured in conjunction with their descriptions. An old Chinese saying goes—"One look is worth a thousand words." Authors contemplating describing their aberrations might do well to remember this proverb. Clear black and white cuts are good.

The specimens on this plate are slightly reduced in size. Their colors are normal.

1. **Euphydryas nubigena** Behr., var. **beani** Skin (half-fig. 1a), ab. ♂ **blackmorei** nov. aberr. (fig. 1).

Upper side. Primaries: entirely black, excepting row of red normal spots at outer margin and mere traces of several white spots remaining from second row following; two red cell spots conspicuous. Secondaries: black as in primaries with marginal row of red spots followed by row of four smaller red spots; no white maculation; single small red spot at end of cell.

Under side. Primaries: band of red at outer margin; followed by a band of black of equal width; followed by a parallel row of five white spots in red fused over with black, all midway between costal and inner margins; darker black basal and cell areas with outstanding red cell spots. Secondaries: maculation of outer half somewhat normal with more black suffusion through the cell and basal areas.

Aberrant grade and degree: melanic; final, (fully melanic).

Data: Holotype ♂, (Author's Coll.), Mt. Cheam, British Columbia, Canada. August 3, 1903. Expanse: 45 mm.

Mr. E. H. Blackmore, Victoria, B. C., Canada deserves to have this wonderful little black aberration named after him.

2. **Melitaea pola** Bdv., var. **arachne** Edw. (half-fig. 2a), ab. ♂ **polingi** nov. aberr. (fig. 2).

Differs from typical specimens on the upper side of the primaries in having a broad black band extending from the costal to the inner margin. The exterior margin of this band follows the contour and includes that third row of black excurved line maculation typically found on normal specimens. Its interior margin starts near the base on the inner margin extending up and around the cell to the costal margin, the interruption of the cell causing the band to be narrow near this part. On the under side, this band is represented by a series of irregular interspace black spots across the wing. The secondaries are normal on both upper and under sides.

Aberrant grade and degree: melanic; first, (primaries black banded).

Data: Holotype ♂, Expanse: 33 mm., (Author's Coll.), White Mts. Arizona, August, 1925.

Named for Mr. O. C. Poling, Laguna Beach, California.

3. **Melitaea wrighti** Edw. (half-fig. 3a), ab. ♂ **carolynae** nov. aberr. (fig. 3).

Upper side. Primaries: black and red ground color in unchanged position; conspicuous for lack of all white maculation which becomes black, excepting that of first row near outer margin which remains only as white dots, entirely unrimmed by black. Secondaries: ground color entirely jet black; remains of four smaller white spots left midway from first row normally found at outer margin.

Under side. Primaries: basal and discal areas red, lacking all white maculation; single row of indistinct submarginal white spots in red through limbal area entirely lacking those exterior black borders found in normal specimens; heavier black along costal and inner margins, being more pronounced at both outer angles. Secondaries: all margins deeply bordered with black, leaving central disk area only, streaked through interspaces with white; mere black line marking position of former transverse white spotted black band; several small white marks at extreme base.

Aberrant grade and degree: melanic; final?, (secondaries final).

Data: Holotype ♂, Expanse 36 mm., (Author's Coll.), Mint Canyon, Los Angeles County, California, May 5, 1925.

I take pleasure in naming this exquisite little *wrighti* aberration in honor of Dr. Carolyn Comstock of Los Angeles, California.

4. **Euphydryas rubicunda** Hy. Edw. (half-fig. 4a), ab. ♂ **albiradiata** nov. aberr. (fig. 4).

Upper side. Basal and cell areas of primaries and secondaries more darkly marked; immediately beyond these darker areas are white rays extending through interspaces to original submarginal row of white spots, an extra row of fused white spots not found on normal specimens, is here noticeable nearer the apex on the primaries; the white rays are not so noticeable

on the secondaries and do not extend out to the row of white spots.

Under side. Same changed condition prevails with white rays more pronounced.

Aberrant grade and degree: albinic; first, (white-rayed).

Data: Holotype ♂, Expanse 38 mm., (Author's Coll.), Loyalton, Sierra County, California, July 19, 1922.

Note: Similar to Dr. J. A. Comstock's ab. *umbrabasana* of *Euph. sierra* Wright.

5. **Euphydryas perdiccas** Edw. (half-fig. 5a), ab. ♂ **nigri-supernipennis** nov. aberr. (fig. 5).

Upper side. Primaries: entirely black, except for normal red border at outer margin and two red cell spots which remain as in typical specimens. Secondaries: outer row of white spots partly suffused with black, otherwise normal.

Under Side. Primaries: outer row of white maculation somewhat reduced and white streaks at end of cell absent, otherwise red and black as usual. Secondaries: slight black suffusion over submarginal lunate spots, otherwise normal.

Aberrant grade and degree: melanic; first, (primaries final).

Data: Holotype ♂, Expanse 40 mm., (Author's Coll.), Chilcotin, British Columbia, Canada, July 17, 1915.

6. **Euphydryas taylori** Edw. (half-fig. 6a), ab. ♀ **victoriae** nov. aberr. (fig. 6).

Upper side. Primaries: outer marginal row of red spots normal; followed by a band of black of equal width; followed by a full series of white streaks completely filling interspaces to cell and outer basal line just below cell, black veining pronounced, these white interspaces cut midway transversely by a thick black line; base and cell area black, except for the two normal red cell spots. Secondaries: base and cell area dark with no white marks; outer half maculation somewhat suffused, left wing more darkly suffused.

Under side. Base and cell areas as on upper side; both wings broadly streaked with white through interspaces as on upper side primaries, these interspaces cut midway by a narrow band of faint red edged with black; row of red spots at outer margin normal, but black band following becomes a black line.

Aberrant grade and degree: albinic; first, (white streaked).

Data: Holotype ♀, Expanse 39 mm., (Author's Coll.), Victoria, British Columbia, Canada, April 4, 1921.

Note: This aberration closely resembles ab. *fieldi* of *Euph. editha*. It helps prove that *editha* and *taylori* are correctly placed in our Check Lists.

7. **Melitaea acastus** Edw. (half-fig. 7a), ab. ♀ **pearlae** nov. aberr. (fig. 7).

Upper side. Primaries: fine submarginal black line found in normal specimens here becomes quite broad at apex tapering off at inner angle; followed by a very wide immaculate area of yellow-brown, only cut by thin black veining lines through limbal and discal areas, to cell and basal areas which areas remain normal; a semblance of lighter yellow shading marking position of former second row of darker yellow roundish spots; small pointed black area extending down from costal margin between terminals of subcostal nervule 3 and 4 to upper radial. Secondaries: black line at base of fringes normal; fine submarginal black line lacking, being replaced by a narrow band of yellow cut by veins; followed by a wider band of black; followed by a series of roundish yellow spots which correspond in shape and location to those normally found in the second row; entirely black from here on through the discal and basal areas, excepting for a reniform yellow spot at extremity of cell which spot is slightly larger on normal specimens.

Under side: Primaries: as on upper side, excepting no pointed black area on costal margin; central area shading to white near submarginal black line and shading to clear yellow through cell and base which lack usual variegated markings. Secondaries: outer bands of yellow and black as on upper side; followed by a very broad band of white to cell and basal areas which are checkered yellow and black, the yellow being in normal position, while that of the black occupies all former white locations.

Aberrant grade and degree: melanic: final.

Data: Holotype ♀, Expanse 40 mm., (Author's Coll.), Casa Diablo Hills, Mono County, California, June 23, 1925. Paratype 1-♀, (Geo. Malcolm Coll.), same locality June 24 1925

Named for Mrs. Pearl Malcolm who with her son, Geo. Malcolm, have found so much new butterfly material in the high Sierra Mountains.

Note: The paratype is identical in design and marking with the type.

8. **Melitaea palla** Bdv. (half-fig. 8a), ab. ♀ **blackmorei** nov. aberr. (fig. 8).

Upper side. Primaries: red-brown spots at outer margin slightly wider, otherwise normal; followed by a sinuated band of black replacing original submarginal row of lunate yellow spots; followed by a complete series of rather larger reddish-yellow spots which become clearer yellow at costal margin; followed by a similar row whose spots opposite cell are elongated; base and cell areas broadly suffused with black, only deeper reddish maculation remaining. Secondaries: black and red-brown only with no intermediate yellow shades; border at outer margin as in primaries; row of five red-brown spots from anal angle reaching up to upper radial, repeating those darkest red spots found on normal specimens; single red-brown spot at extremity of cell as in normal specimens.

Under side. Both wings quite aberrant. Outer red margins wider; immediately followed by a complete series of intense black lunate spots replacing and repeating the white ones of normal specimens; immediately followed by a broad white central band, slightly red clouded, more so on primaries, to an outer thin black base line; base and cell areas uniform red-brown, except for a small irregular black spot at extremity of cell on primaries and on secondaries four black spots replacing and duplicating the white spots found there on regular specimens.

Aberrant grade and degree: melanic; ?, (secondaries final).

Data: Holotype ♀, Expanse 43 mm., (Author's Coll.), Lytton, British Columbia, Canada, July 4, 1922.

Named for Mr. E. H. Blackmore, Victoria, British Columbia, Canada.

Note: Melitaea palla, ab. ♂ *wardi* Obthr. has been nicely illustrated on both upper and under sides. The specimen is only slightly aberrant (possibly a melanic first degree only) compared with the one above described. It lacks a few transverse lines on upper side primaries and has a black band across disk on secondaries. I believe a study of this specimen, now in the Barnes Collection, will place it as an aberrant of *whitneyi* Behr.

9. **Brenthis epithore** Bdv. (half-fig. 9a), ab. ♀ **obscuripennis** nov. aberr. (fig. 9).

Upper side. Primaries: entirely fogged over with dark shading, obscuring and submerging maculation, especially on the inner half with cell quite dense where only a single yellow-brown spot shows; normal row of round black spots indistinctly visible. Secondaries: outer half normal; confused yellow-brown maculation of inner half externally edged by black shading which extends also along the costal margin, basal area quite dark.

Under side. Primaries: outer half confused yellow-brown only, shading to bluish near apex; inner half a yellow-brown submerging black maculation, basal area intense black. Secondaries: outer half normal, but faded in color; inner half red-brown and yellow-brown duplicating upper side maculation.

Aberrant grade and degree: melanic; unknown, (well clouded over).

Data: Holotype ♀, Expanse 44 mm., (Author's Coll.), Chilcolin, British Columbia, Canada, May 30, 1915.

Note: ab. *wawonae* lacks row of round black spots of secondaries, with those on primaries obsolete. It has no melanic shading.

10. **Brenthis myrina** Cram. (half-fig. 10a), ab. ♂ **serratimarginata** nov. aberr. (fig. 10).

Upper side. Primaries: normal, except at outer margin which is black, lacking submarginal row of small yellow dots, also the maculation is somewhat less heavy over the entire wing. Secondaries: margin black with row of yellow spots obsolete, its interior edge joins through the interspaces with the row of round black spots giving the entire black outer margin a serrated appearance; less maculation towards base with basal area well suffused with black.

Under side. Primaries: normal. Secondaries: marginal dark markings connected as on upper side; basal area entirely silvered.

Aberrant grade and degree: melanic; first, (marginal black spotting joined).

Data: Holotype ♂, Expanse 36 mm., (Author's Coll.), Vernon, British Columbia, Canada. August 12, 1904.

Note: This specimen is slightly rubbed, but not enough to hinder a first degree aberrant description.

11. **Heodes cupreus** Edw. (half-fig. 11a), ab. ♀ **maculinita** nov. aberr. (fig. 11).

Similar to ab. *fasciata* Stkr. of *Heodes hypophlaeas* in having the black spots elongated inwardly through their interspaces. This tendency has always been more noticeable on the primaries. Seldom is the maculation of the under side affected.

Aberrant grade and degree: melanic; first, (black spots elongated).

Data: Holotype ♀, Expanse 28 mm., (Author's Coll.), Mammoth, Mono County, California, July 12, 1920. Paratype 1-♀, (Geo. Malcolm Coll.), same date and place.

Note: An aberrant *cupreus* has been taken at Mammoth which is identical with *hypophlaeas*. I believe it only suggests an atavistic tendency towards the parent Eastern race and that *hypophlaeas* cannot be therefore recorded from the West. However, it proves the necessity of noting aberrants in order that ancestry may be tentatively traced.

12. **Plebeius icarioides** Bdv. (side-fig. 12a), ab. ♂ **spinimaculata** nov. aberr. (side-fig. 12).

Upper side. Normal.

Under side. Primaries: inner row of black spots elongated through their interspaces towards base; starting with an abrupt outside bottom edge, as formed by their original shape, they taper inward to sharp points, as defined by their respective interspaces; they appear thornlike or spinelike in shape. Secondaries: normal.

Aberrant grade and degree: melanic; first, (black spots elongated).

Data: Holotype ♂, Expanse 30 mm., (Author's Coll.), Delta, Trinity County, California, May 22, 1925.

Note: icarioides from Northern California appear to have a whiter ground color than those from the South. This specimen was taken by Mr. Sternitzky of San Francisco.

13. **Parnassius clodius** Men., var. **baldur** Edw. (part-fig. 13a), ab. ♂ **binigrimaculella** nov. aberr. (fig. 13).

Primaries: Normal as in typical *baldur*.

Secondaries: two spots black, smaller and with no red centers

showing on either upper or under sides. What ab. *niger* Wright is to *sminthcus*, so is this aberration to *clodius*. Fig. 13d shows Wright's ab. *niger* of *sminthcus*.

Aberrant grade and degree: albinic; first, (black spots without red).

Data: Holotype ♂, Expanse 59 mm., (Author's Coll.), Gold Lake, Sierra County, California, July 14, 1922.

Note: Order in degrees of aberrancy is nicely shown as follows:

Fig. 13a is typical *clodius baldur*.

Fig. 13 is above described specimen; 1st degree.

Fig. 13b is ab. *immaculata* Skin., secondaries without spots; 2nd degree.

Fig. 13c is ab. *lorquini* Oberth., lacking the second black band on primaries; 3rd degree.

EXPLANATION OF PLATE I.

The numbers of the figures on this plate correspond to the numbers placed in front of the species in the text.

Descriptions of Four New Species of Plagiognathus from the Eastern United States (Hem., Miridae).*

By HARRY H. KNIGHT, Ames, Iowa.

Plagiognathus atricornis new species.

Color aspect of *chrysanthemi* Wolff, but distinguished by the pale pubescence and black antennae.

♂. Length 3.5 mm., width 1.2 mm. Head: width .77 mm., vertex .27 mm.; eyes prominent, black. Rostrum, length 1.17 mm., just attaining posterior margins of intermediate coxae, greenish yellow, apex black. Antennae: segment I, length .24 mm.; II, 1.07 mm.; III, broken; uniformly black, narrow tip of segment I pale. Pronotum: length .54 mm.; width at base 1.03 mm.

Color pale greenish testaceous, pronotum distinctly green, calli yellowish; hemelytra somewhat translucent, membrane and veins uniformly pale fumate, anal area slightly darker bordering vein, a small whitish opaque spot lying just outside apex of larger areole. Clothed with simple, pale yellowish pubes-

* Contributions from the Department of Zoology and Entomology, Iowa State College, Ames, Iowa.

cence, embolar margins and lateral margins of pronotum set with dusky to fuscous pubescence. Legs pale, femora and tibiae with black spots nearly identical with *chrysanthemi*, pubescence pale yellowish, tibial spines black.

♀. Length 3.4 mm., width 1.34 mm. Head: width .67 mm., vertex .31 mm. Antennae: segment I, length .24 mm.; II, 1 mm.; III, .66 mm.; IV, .34 mm. Form and coloration similar to the male.

Holotype: ♂. July 26, 1918, Point Trevioton, Pennsylvania (J. G. Sanders); author's collection. *Allotype:* same data as type. *Paratype:* ♀. taken with type.

Plagiognathus carinatus n. sp.

Suggestive of *annulatus* Uhler but with rostrum shorter, also the yellowish femora somewhat obscured with fuscous on apical half yet not forming a distinct line above and below; left genital clasper with dorsal angle distinctively carinated along anterior margin.

♂. Length 4.2 mm., width 1.7 mm. Head: width .79 mm., vertex .31 mm.; black, vertex yellowish. Rostrum, length 1.28 mm., just attaining posterior margins of intermediate coxae, black, segments two and three sometimes brownish. Antennae: segment I, length .27 mm., black, narrow apex pale; II, 1.11 mm., brownish to black, black at base; III, .74 mm.; IV, .37 mm.; last two segments yellowish to dusky. Pronotum: length .64 mm., width at base 1.28 mm.

General coloration dark brownish black, base of cuneus somewhat translucent but not distinctly pale; femora pale to yellowish and provided with a double row of black spots on anterior face nearly as in *annulatus* Uhler, but hind femora obscured with dusky on apical half, with a subapical black spot above although never forming a distinct black line above and below. Dorsum clothed with simple, golden yellow pubescence, nearly as in *annulatus*. Left genital clasper distinctive, the dorsal angle being deeply impressed and distinctly carinated along anterior margin, terminating above in a rather blunt point, before which arises a single, rather long bristle-like hair.

♀. Length 3.8 mm., width 1.57 mm. Head: width .74 mm., vertex .34 mm.; antennal segment II, length .97 mm. Very similar to the male in pubescence and coloration although antennal segment II more yellowish in middle.

Holotype: ♂ June 2, 1917, Dewitt, Virginia (H. H. Knight); author's collection. *Allotype:* same data as the type. *Para-*

types: 10 ♂ 5 ♀, taken with types on persimmon (*Diospyros virginiana*) where the species was evidently breeding. Paratypes deposited in Cornell University collection and Iowa State College collection.

In my key to the species of *Plagiognathus* in the "Hemiptera of Connecticut," *carinatus* runs to *repetitus* Knight, from which it may be separated by the double row of prominent black spots on anterior face of hind femora, also by the larger size. Some specimens of *carinatus* have antennal segment II more yellowish than black, and such individuals will run to *punctatipes* Knight, in my key to the species of *Plagiognathus*. These species may then be separated by the relative length of antennal segments as compared with the head. In the male of *carinatus* the length of antennal segment II is equal to the width of head across eyes plus the width of vertex, while in the male of *punctatipes* the length of segment II is distinctly less than width of head plus width of vertex. In the female *carinatus* the length of antennal segment II is greater than width of head across eyes plus the dorsal width of an eye, while in the female *punctatipes* the length of segment II is less than width of head plus dorsal width of an eye.

Plagiognathus dispar Knight.

This species was originally described as a variety of *punctatipes* Knight, but more recent examination of the genital characters under the high power binocular microscope reveals a distinct difference in structure of the left genital clasper. In *punctatipes* the dorsal projection of the left clasper takes the form of an incurved acuminate claw, while in *dispar* the dorsal angle of left clasper is distinctly impressed and with anterior margin carinate much as in *carinatus*.

Plagiognathus inopinus n. sp.

This species runs to *punctatipes* and *dispar* in my key to the species of *Plagiognathus* in the "Hemiptera of Connecticut," but differs from both in that antennal segment II is equal to (♀), or greater than (♂) width of pronotum at base.

♂. Length 4 mm., width 1.4 mm. Head: width .77 mm., vertex .34 mm. Rostrum, length 1.6 mm., reaching upon middle of posterior coxae, yellow, basal and apical segments becoming fuscous. Antennae: segment I, length .26 mm.,

black, apex slenderly pale; II, 1.26 mm., yellow, narrowly dusky or fuscous at base; III, .80 mm., yellowish to dusky; IV, .43 mm., dusky. Pronotum: length .60 mm., width at base 1.17 mm.

Dark brownish black, moderately shining, clothed with simple, yellowish pubescence; base of vertex pale to yellowish, lateral margins of mesoscutum yellowish, cuneus narrowly pale at inner basal angle, the extreme apex of embolium also pale; membrane fuscous, somewhat paler on middle, veins and bordering apex of cuneus pale. Legs pale yellowish, femora with black spots similar to *dispar* but the tibia with much more prominent black spots at base of spines.

♀. Length 3.8 mm., width 1.4 mm. Head: width .71 mm., vertex .36 mm. Antennae: segment I, length .24 mm.; II, 1.11 mm., yellow, narrowly fuscous at base; III, .66 mm.; IV, .40 mm. Pronotum: length .57 mm., width at base 1.11 mm. Very similar to the male in pubescence and coloration.

Holotype: ♂ June 27, Harrisburg, Pennsylvania (Champlain), on Sycamore; author's collection. *Allotype:* same data as type. *Paratype:* ♂, taken with the types.

Plagiognathus intrusus new species.

In my key this species runs to *politus* Uhler, but differs in the shorter rostrum and larger size; size and coloration suggestive of *annulatus* Uhler, but differs distinctly in the short rostrum.

♂. Length 4.75 mm., width 1.7 mm. Head: width .86 mm., vertex .40 mm. Rostrum, length 1.31 mm., barely extending over posterior margin of sternum or to middle of intermediate coxae, blackish, segment three and apex of two yellowish. Antennae: segment I, length .39 mm., black, extreme apex pale; II, 1.42 mm., black; III, 1.12 mm., yellowish to fuscous; IV, .63 mm., fuscous. Pronotum: length .68 mm., width at base 1.38 mm.

General coloration nearly as in *politus* Uhler, but the pubescence yellowish; size and form very near that of *annulatus* Uhler, but differs in the short rostrum and black femora.

Holotype: ♂ July 31, 1920, Cranberry Lake, New York (C. J. Drake); author's collection. *Paratypes:* 2♂, ♀, July 3, 1904, McLean, New York (Cornell University Collection); these specimens somewhat teneral.

Notes on Nearctic Hemiptera.

By W. L. McAtee, U. S. Biological Survey, Washington, D. C.

The following notes comprise extensions of knowledge of the range, and other interesting data relating to a variety of nearctic Heteroptera and Homoptera. They result from miscellaneous work on the collection of the U. S. National Museum but do not imply a systematic inspection of the collection for other similar material.

Pentatomidae.

Nezara viridula var. torquata Fabricius.—The present note is merely for the purpose of pointing out that this variety is the subject, there unnamed, of an article by Thos. H. Jones, entitled "A peculiarly marked adult of *Nezara viridula* L. (Hemip.)" (Proc. Ent. Soc. Wash. Vol. 22, No. 7, Oct., 1920, pp. 171-172, 1 fig. The specimen Mr. Jones refers to was collected in Louisiana, and the form has been elsewhere recorded from that and other southern States.

Elasmostethus atricornis Van Duzee.—Found breeding on *Aralia spinosa* at Mt. Calvert, Maryland, September, 1920, by Messrs. H. S. Barber and William Palmer. The species has been recorded from Quebec, New York and Indiana, a range to which the present record adds a considerable southward extension. It is worthy of note that at this most southern point in its known range, the insect was found feeding on a plant which there approaches its northern limit.

Alcaeorrhynchus grandis Dallas.—Brownsville, Texas, Jan. 16, 1923, T. C. Barber. Previously recorded from Florida.

Coreidae.

Leptoglossus gonagra Fabricius.—Brownsville, Texas, Aug. 10, 1922, T. C. Barber. Previously recorded from Florida.

Savius turgidus Stal.—Brownville, Texas, Jan. 18, 1923, T. C. Barber. Hitherto unrecorded from the United States.

Leptocoris trivittatus Say.—In further illustration of the

eastward trend of this species, it may be noted that in recent years several specimens have been collected in the district of Columbia and vicinity.

THAUMASTOTHERIIDAE.

Apparently the genus *Thaumastocoris* should be known as *Thaumastotherium*. Kirkaldy proposed[1] the latter name on pages 777-778 of the article in which it appears and used it in combination with that of the genotype, *Thaumastotherium australicum* new species (p. 778, Bundaberg, Queensland). The illustrations (Pl. 43, figs. 1-3) of the insect, however, are labelled *Thaumastocoris australicus*, and an inserted slip of Corrigenda makes a corresponding correction to the text. *Thaumastotherium* does not seem to be preoccupied, the description has page priority over the Plate, and the Corrigenda necessarily are subsequent to the pages they are intended to correct. Since the International Code provides: "Art. 32.—A generic or a specific name, once published, can not be rejected, even by its author, because of inappropriateness," it would appear that Kirkaldy did not take effective steps to change the name and that *Thaumastotherium* should stand.

The only known nearctic representative of the family is *Xylastodoris luteolus* Barber[2] described from Cuba. A record for the insect in the United States has been published[3] but in a place where it is very likely to be overlooked. The locality at which numerous specimens were collected is Coconut Grove, Florida.

PYRRHOCORIDAE.

DYSDERCUS OBSCURATUS Distant.—Brownsville, Texas, Jan. 18, 1923, T. C. Barber. There seems to be no previous definite record for the United States.

NABIDAE.

METATROPIPHORUS BELFRAGII Reuter.—This species seems rare and previous reports have all pertained to the Gulf States.

[1]Kirkaldy, G. W., Memoir on a few Heteropterous Hemiptera from Eastern Australia, Proc. Linn. Soc. New South Wales, Vol. 32 (1907), March 11, 1908.

[2]Bul. Brooklyn Ent. Soc. 15, No. 4, Oct. 1920, pp. 100-102.

[3]Moznette, G. F., Notes on the Royal Palm Bug, Quart. Bul. State Plant Bd. Fla., VI, No. 1, Oct. 1921, pp. 10-15.

Material examined at the National Museum, however, shows that the species ranges north to Maryland and Illinois.

MEMBRACIDAE.

CERESA BOREALIS Fairmaire.—Oregon, Baker Collection; Yakima, Washington, M. A. Yothers. These collections extend northwesterly the recorded distribution of this species.

CERESA VITULUS Fabricius.—A specimen from the Ashmead Collection is labelled Jacksonville, Florida. It seems probable that something is wrong here; however, as noted under subsequent species there is evidence for the occurrence of neotropical membracids in Florida, that at least demands further carful investigation

ATYMNA CASTANEAE Fitch.—Received from Knox Dale, Pennsylvania, with the notation, "destroying leaves of maple and apple trees." This indicates what we may expect of this species that has been so largely deprived of its customary food plant by the chestnut blight.

MEMBRACIS MEXICANA Guerin.—Two specimens from Ashmead Collection, labelled Key West, Florida. Previously recorded from California.

AETHALION QUADRATUM Fowler.—A specimen from the Ashmead Collection ticketed Jacksonville is also labelled, Type, *Polydontoscelis cinctifrons* Ashmead. In the description of the latter (Psyche, 8, pp. 387-388, July, 1899), the type locality is given as St. Nicholas, Florida. Regardless of possible errors in the locality labels, the specimen here cited doubtless serves to fix the identity of *Polydontoscelis cinctifrons* Ashmead, which the author compares with *Aethalion* in the original description.

CALLICENTRUS AURIFASCIA Walker.—Florida, Snow Collection. This record from a different collection lends some support to the Ashmeadian records of neotropical Membracids from Florida. The probability that they may be verified is further indicated by the accepted Florida records of such species as *Ceresa patruelis* Stal, *Antianthe expansa* Germar, and *Umbonia crassicornis* Amyot et Serville. Investigation of the status of these various forms as well as rediscovery of the

Walker species from St. John River, are interesting lines of field research for Florida collectors. Dr. W. D. Funkhouser writes me "I see no reason to question the Florida record (Snow Coll.) for *Callicentrus aurifascia* Walker. This species was described from Jamaica, is found in Cuba, and I should think might well be in Florida."

CICADELLIDAE.

EUSCELIS STACTOGALUS Fieber.—The taxonomic wanderings of this species have been discussed by Chris E. Olsen (Bul. Brooklyn Ent. Soc., 16, No. 2, April, 1921, pp. 33-37) who mentions its occurrence in California, Texas, Missouri, New York and New Jersey. There may now be added Tempe, Arizona, May 24, 1923, E. V. Walter and M. Martinez; and Botanical Garden, Brooklyn, New York, July 12, 1921, S. E. Griffith.

FULGORIDAE.

ASARCOPUS PALMARUM Horvath.—Dr. F. S. Stickney sent in from Indio, California, May, 1923, ample material of all stages of an insect attacking the crown leaves of the date palm. It was recognized as an Issine of the tribe Caliscelini, and by good luck the description* of *Asarcopus palmarum* from crown of the date palm, Cairo, Egypt, was found. Our insect is undoubtedly the same thing introduced with the host plant. How long it may have been established in this country is not known, but probably it was thriving here prior to the date it was first scientifically described from its native land.

A Collecting Trip for South American Lepidoptera.

Mr. and Mrs. A. F. Porter and Mrs. Emma Young, Mrs. Porter's mother, were to leave Decorah, Iowa, on November 10, and New York on November 21, for Rio de Janeiro, where they should arrive December 3. After a month there they plan to go to Sao Paulo, where Dr. Bruno Pohl will meet them, thence to Santos, thence to Montevideo where they expect to be met by Dr. Florentino Felippone. About June 20, 1926, they hope to be at Buenos Aires. Their further itinerary includes Mendoza, Santiago and Valparaiso, La Paz, Lima, Bogota and other points in Colombia. Mr. Porter expects to return to New York in April, 1927, the ladies having preceded him.

*Bul. Soc. d'Hist. Nat. de l'Afrique du Nord, 12, 1921, pp. 179-180.

ENTOMOLOGICAL NEWS

PHILADELPHIA, PA., JANUARY, 1926.

A Suggestion for Subject Indexes.

Catalogs of species with references to the literature appertaining to them, bibliographies and abstracts are useful and often indispensable to the biologist, be he taxonomist, morphologist, physiologist, ecologist, or what not. A bibliography brings together the literature on a given topic and, if approximately complete, lists all the papers of R. S. T. thereon. A bibliographical catalog of species gives the references to R. S. T.'s remarks on each of these species. Both this bibliography and this catalog repeat titles and references that have already been listed in the annual record, or summary, published for that science. Thereby arises repetition, republication, that means additional expense for printing, paper and shelf room. The catalog of species is to a considerable degree self-indexing as to topic. The bibliography is often incompletely indexed or not at all. Indexes to the literature of biology are quite as much needed as the other bibliographical aids referred to above. Can not useful indexes be provided with little republication of titles and references and hence with a minimum of expense?

Thus, suppose the topic be the physiology of the Malpighian tubes of the Itonididae. Under this heading we might find such entries as B., R. S. 1857, pp. 603-627; C., A. V. 1841, pp. 3-6; H., J. P. 1873a, pp. 10-37; X., L. B. 1916, pp. 7-20. In each entry the names would be spelled out, not merely the initials given as here, or the dates in each case might come first, then the author's name and the entries be arranged chronologically, instead of alphabetically as above.

A preface at the beginning of this Index would explain that all dates previous to 1862 referred to papers in Hagen's *Bibliotheca Entomologica* under the author and the date quoted; dates subsequent to 1863, unless otherwise designated, referred to the given year of the *Zoological Record*, in which volume, in the Insect (or Diptera) section, one would find the paper here referred to. If there were several papers by the same author in the same year, then the paper would be designated by the appropriate letter of the alphabet *a*, *b*, *c*, etc., to show whether it was the first, second, third, etc., of that author's in that year.

In later volumes of the *Zoological Record,* where each title has a number, that number could be used instead of these small letters. It might, or it might not, be desirable to give the page references.

Of course such an index could only be used by one having access to the *Bibliotheca* and the *Record,* but this disadvantage is hardly important enough to overbalance the great saving in expense in printing and in page space which this suggestion would accomplish.

Prof. Strand's Bibliographical Entomological Dictionary.

Science for November 20, states that the manuscript for this work, notice of which appeared in *Science* for November 7, 1924, page 431 [and in the NEWS for May, 1924, page 178], will be sent to the press during the Christmas holidays. Any entomologists or arachnologists who have not yet submitted a sketch of their lives are urged to do so without delay. Sketches may be sent direct to Prof. Embrick Strand, director of the Systematic Zoological Institute, University, Kronvalda bulvars 9, Riga, Latvia, or Prof. H. P. K. Agerborg, James Milliken University, Decatur, Illinois, or Prof. C. L. Metcalf, Natural History Building, University of Illinois, Urbana, Illinois, will forward such sketches.

A Few Additions to the Diptera of New Jersey.

While making with Mr. Erdman West, a plant and insect survey, during 1924, of a restricted area along the coast of New Jersey, one mile below Seaside Park, the following species, which are not recorded in Smith's "List of the Insects of New Jersey" (N. J. State Mus. Rept. 1909) were collected. Mr. Charles W. Johnson very kindly identified our captures.

CHIRONOMIDAE: *Ceratopogon levis* Coq. May 29. *Chironomus dux* Johann. May 7.

BOMBYLIIDAE: *Villa shawi* John. Sept. 20, Oct. 24.

EMPIDAE: *Eudrapetis parvicornis* Mel. May 15. *Colobaneura inusitata* Mel. July 2.

PIPUNCULIDAE: *Pipunculus scoparius* Cress. May 15, 29, Sept. 8.

SARCOPHAGIDAE: *Sarcophaga pachyprocta* Park. May 15, June 16, July 15, August 20, Sept. 8. *S. bullata* Park. May 29, Sept. 26.

SEPSIDAE: *Sepsis significra* Mel.-Spul. May 29, Oct. 24.

OSCINIDAE: *Hippelates subvittatus* Mall. June 16, July 2, 15, August 5, Sept. 8, 26. *Chlorops integra* Beck. Sept. 8. *Botanobia dorsalis* Lw. June 16, July 12. *B. melancholica* B. June 16. *B. minor* Ad. May 29. *Diplotoxa microcera* Lw. June 16, Sept. 8.

AGROMYZIDAE: *Rhicnoessa parvula* Lw. May 29, July 2, August 5. *Agromyza pusilla* Meig. Aug. 5. *A. coquillctti* Mall. July 15. *A. pruinosa* Coq. Aug. 20.

HARRY B. WEISS, New Brunswick, New Jersey.

Personal Mention.

Recent numbers of *Science* state that:

Franklin Sherman, of the North Carolina State College, has been appointed head of the division of entomology at Clemson College, South Carolina.

Glenn W. Herrick, professor of entomology in the College of Agriculture at Cornell University, is going abroad to spend his sabbatic leave, visiting entomologists and laboratories in France and Italy.

Dr. W. E. Britton, Connecticut State Entomologist, has been appointed to succeed the late Dr. H. H. Robinson as superintendent of the Connecticut Geological and Natural History Survey and will carry on the work in connection with his duties as state entomologist.

Dr. E. D. Ball, director of scientific work in the United States Department of Agriculture, has been appointed associate entomologist of the Florida State Plant Board.

Dr. E. P. Felt, state entomologist, State Museum, Albany, New York, completed his thirtieth year of service on September 14.

From another source we learn that Miss Grace Sandhouse has been appointed to the position of Senior Scientific Aide with the Federal Horticultural Board, Washington. She will continue her studies in the hymenopterous genus *Osmia* and its allies.

Recent visitors to the entomological collections at the Academy of Natural Sciences of Philadelphia have included Messrs. C. F. W. Muesebeck, Melrose Highlands, Massachusetts, consulting the type collection of the hymenopterous family Braconidae; Emil Liljeblad, of the Field Museum of Natural History, who examined the coleopterous family Mordellidae, and Alan S. Nicolay of Upper Montclair, New Jersey, who studied various Coleoptera.

Entomological Literature

COMPILED BY E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published.

All continued papers, with few exceptions, are recorded only at their first installments.

Papers of systematic nature will be found in the paragraph beginning with (N). Those pertaining to Neotropical species only will be found in paragraphs beginning with (S). Those containing descriptions of new forms are preceded by an *.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

Papers published in the Entomological News are not listed.

4—Canadian Entomologist. **9**—The Entomologist. **14**—Entomologische Zeit., Frankfurt a.M. **17**—Ent. Rundschau, Stuttgart. **18**—Internationale Ent. Zeit., Guben. **22**—Bulletin of Ent. Research. **26**—Ent. Anzeiger, Wien. **30**—Tijdschrift v. Ent., Holland. **39**—The Florida Entomologist. **49**—Ent. Mitteilungen, Berlin. **51**—Notulae Ent., Helsingfors. **60**—Stettiner Ent. Zeit. **69**—Comptes Rendus, Acad. Sci. Paris. **101**—Biolog. Bull., Woods Hole, Mass. **103**—Proc. Zool. Soc. London. **105**—Proc., Biol. Soc. Washington. **107**—Biologisches Zentralblatt. **108**—Jour. Washington Acad. Sci. **111**—Archiv f. Naturg., Berlin. **113**—Jour. Agric. Research, Washington. **118**—Die Naturwissenschaften, Berlin. **119**—Proc., Nat. Acad. Sci. Washington. **131**—Ent. Blatter, Berlin. **135**—Quart. Jour. Microsc. Sciences. **138**—Amer. Mus. Novitates, New York. **139**—Bulletin, So. California Acad. Sciences. **142**—Arch. Zool. Exper. et Gen., Paris. **158**—Boll. Mus. Zool. ed Anat. Comp. R. Univ. Torino.

GENERAL.—Aue, A. U. E.—Entomologisches allerlei.—**14**, xxxix, 109-10 (cont.). **Bright, P. M.**—Over-collecting.—**9**, 1925, 273-5. **Cockerell, T. D. A.**—Tertiary fossil insects from Argentina.—Nature, cxvi, 711-12. **Felt, E. P.**—Insects and human welfare.—Sci. Month., xxi, 649-53. **Jacobs, W.**—Vernachlassigten insektenordnungen.—**14**, xxxix, 117-8. **Johnson, C. W.**—Insects that infest birds.—Bul. Northeastern Bird-Band. Assoc., 1, 51-3. **Lankester, E. R.**—Blindness of cave animals.—Nature, cxvi, 745-6. **Lefroy, H. M.**—Obituary.—Nature, cxvi, 651-2. **Meyer, P.**—Ein wort zur lokalfaunenfrage.—**49**, xiv, 358-60. **Scheerpeltz, O.**—Reichert'sche stereoaufsatz als entomologisches universalinstrument.—**26**, v, 153-6 (cont.). **Schuster, W.**—Der letzte warmwinter 1924/25 und seine einwirkung auf

kerbitiere.—18, xix, 221. **Tragardh, I.**—Entomological analysis of trees.—22, xvi, 169-74. **Zerkowitz, A.**—Bericht uber den dritten internationalen kongress fur entomologie. —18, xix, 210-11.

ANATOMY, PHYSIOLOGY, MEDICAL, ETC.—Bridges, C. B.—Elimination of chromosomes due to a mutant in Drosophila. Haploidy in Drosophila.—119, xi, 701-6; 706-10. **Gatenby, J. B.**—Reinvestigation of the spermatogenesis of Peripatus.—135, lxix, 629-42. **Jeannel, R.**—Sur les homologies des articles de la patte des insectes. 142, lxiv, 37-55. **McEwen, R. S.**—Concerning the relative phototropism of vestigal and wild type Drosophila.—101, xlix, 354-64. **Malan & Malan.**—Spermatogenesis of Locustana pardalina (Brown tree locust).—Trans. R. Soc. So. Africa, xii, 1-22. **Metz, C. W.**—Prophase chromosome behavior in triploid individuals of Drosophila mel.—Genetics, x, 345-50. **Nath, V.**—Mitochondria and sperm-tail formation, with particular reference to moths, scorpions and centipedes.—135, lxix, 643-59. **Strohl, J.**—Giftproduktion bei den tieren von zoologisch-physiologischen standpunkt. —107, lxv, 513-36.

ARACHNIDA AND MYRIOPODA.—Thor, S.—Ueber die phylogenie und systematik der Acarina, mit beitragen zur ersten entwicklungsgeschichte einzelner gruppen.—Nyt Mag. f. Naturvid., Oslo, lxiii, 260-313.

(N) ***Chamberlin, R. V.**—Notes on N. Amer. spiders heretofore referred to Coelotes.—105, xxxviii, 119-24. ***Ewing, H. E.**—New mites of the parasitic genus Haemogamasus.—105, xxxviii, 137-44.

THE SMALLER ORDERS OF INSECTA.—Macnamara, C.—Insects of the snow.—Nature Mag., 1925, 349-50. **Snyder, T. E.**—Notes on fossil termites with particular reference to Florissant, Colo.—105, xxxviii, 149-66.

(N) ***McDunnough, J.**—Ephemeroptera of Covey Hill, Que.—Trans. R. Soc. Canada. (3), xix, 207-23.

(S) ***Karny, H. H.**—Ueber Phloeothrips sanguinolentus, nebst einer revision der Diceratothripinengenera.—51, v, 77-84. ***Navas, R. P. L.**—Neuropteros del museo de Berlin.—Rev. Ac. Cien Zaragoza, ix, 20-34. ***Watson, J. R.**—A New sp. of Symphyothrips from Argentina.—39, ix, 29-30 (cont.).

ORTHOPTERA.—Hoffmann, C. C.—Las migraciones de la langosta.—Soc. Cien. Antonio Alzate, Mexico, xliv, 191-27. **Voinov, D.**—Les elements sexuels de Gryllotalpa vulgaris.—142, lxiii, 437-523.

HEMIPTERA.—(N) ***Hungerford, H. B.**—Study of the Notonecta mexicana series, with descr. of n. sps.—**4**, lviii, 238-41. ***Knight, H. H.**—Descr. of 12 n. sps. of Polymerus from No. Amer. (Miridae).—**4**, lvii, 244-53. ***List, G. M.**—Three n. gen. and three n. sps. of Cimicidae from N. Amer. —**105**, xxxxviii, 103-110. ***McAtee & Malloch.**—Another annectant genus (Cimicoidea).—**105**, xxxviii, 145-8. ***McDunnough, J.**—Notes on Saldula obscura, with descr. of a new sp.—**4**, lvii, 257-60.

LEPIDOPTERA.—Ebert, H.—Wie totet man Zygaenen. **18**, xix, 219-20. **Engelhardt, G. P.**—Chapters from the long life of a butterfly collector.—Brook. Mus. Quart., xii, 171-7. **Gibson, A.**—Observations on the spruce budworm.—Trans. R. Soc. Canada, (3), xix, 195-205, col. pl. **Pfeiffer, L.**—Eineges uber die Uraniiden und Sematuriden der alten und der neuen welt.—**14**, xxxix, 118-9 (cont.). **Schwanwitsch, B. N.**—On a remarkable dislocation of the components of the wing-pattern in the satyrid genus Pierella.—**9**, 1925, 266-9. **Snodgrass, R. E.**—Cankerworms.—Smiths. Rep., 1924, 317-34.

(N) ***Comstock, J. A.**—Eight new races, forms or aberrations of California butterflies.—**139**, xxiv, 62-8. ***McDunnough, J.**—Euxoa ridingsiana and its allies.—**4**, lvii, 242-4.

(S) ***Kohler, P.**—Fauna argentina. Theil 2, Heterocera. Syst. Katalog u. Stud. Bericht, Neubeschr., 28 pp. pls. ***Prout, L. B.**—New Geometridae in the collection of the Deut. Ent. Inst.,—**49**, xiv, 309-12. ***Roeber, J.**—Neue falter (Papilio)—**17**, xlii, 42-3 (cont.).

DIPTERA.—Buxton & Hopkins.—Race suicide in Stegomyia.—**22**, xvi, 151-3. **Martiis, L. C. de**—Contributo alla conoscenza istologica delle ghiandole rettati dei Ditteri.—**158**, xxxix, N. 25. **Meijere, J. C. H.**—Larven der Agromyzinen.—**30**, lxviii, 195-293 (cont.). **Puri, 8.**—On the life history and structure of the early stages of Simuliidae.—Parasitology, xvii, 335-69. **Tillyard, R. J.**—Alleged rhaetic crane flies.—Nature, cxvi, 676-7. **Whitfield, G. F. S.**—Relation between the feeding-habits and the structure of the mouth-parts in the Asilidae.—**103**, 1925, 599-638.

(N) ***Curran, C. H.**—American sps. of the tachinid genus Peleteria.—Trans. R. Soc. Canada, (3), xix, 225-57. ***Curran, C. H.**—Four new Nearctic diptera.—**4**, lvii, 254-7. ***Duda, O.**—Aussereuropaischen arten der gattung Leptocera.—**111**, 1924, A, 11, 5-215. [There may not be any new sps. from North America described in this voluminous, poorly presented paper, but it will prove interesting to all

students of this family.] **Frey, R.**—Zur systematik der Diptera Haplostomata Sepsidae.—**51,** v, 69-76. **Seguy, E.**—Sur les caracteres communs aux Oestrides et aux Calliphorines.—**69,** 1925, 735-36.

(S) ***Curran, C. H.**—New exotic diptera in the Am. Mus. Nat. History.—**138,** No. 200. **Lichtwardt, B.**—Ueber Nemestriniden.—**49,** xiv, 392-94.

COLEOPTERA.—Cook, W. C.—Distribution of the alfalfa weevil (Phytonomus posticus). A study in physical ecology.—**113,** xxx, 479-91. **Fink, D. E.**—Physiological studies on hibernation in the potato beetle, Leptinotarsa decemlineata.—**101,** xlix, 381-496. **Jeannel, R.**—Morphologie de elytre des coleopteres adephages.—**142,** lxiv, 1-84. **Kern, P.**—Beitrage zur biologie der Caraben.—**131,** xxi, 114-9. **Roepke, W.**—Zur vermeintlichen myrmekophilie des Trochoideus desjardinsi (Endomychidae).—**107,** lxv, 572-4. **Zimmermann, A.**—Beitrage zur kenntnis der sudamerikanischen wasserkaefer.—**158,** xxxix, N. 29.

(N) **Blunck, H.**—Syllabus der insektenbiologie bearbeitet von zahlreichen fachleuten und herausg von. Coleopteren: Lief. 1. 136pp. ***Fisher, W. S.**—New cactus weevil from Texas.—**108,** xv, 425-6.

(S) ***Corporral, J. B.**—Ein neuer Clerus (Cleridae).—**49,** xiv, 394-5. ***Horn, W.**—Ueber 16 alte und neue Cicindeliden der welt.—**131,** xxi, 131-9. ***Knisch, A.**—Coleoptera aus dem tropischen Amerika.—**158,** xxxix, N. 30. ***Reichensperger, A.**—Weitere Histeriden-beitrage.—**49,** xiv, 351-7.

HYMENOPTERA.—Chittenden, F. H.—Note on a secondary egg parasite of the celery leaf-tyer.—**4,** lvii, 260. **Gray, H. E.**—Observations on tripping of alfalfa blossoms.—**4,** lvii, 235-7. **Hintzelmann, U.**—Beitrage zur morphologie von Trichogramma evanescens.—Arb. Biol. Reichs. f. Land-u. Forstw., Berlin, xiv, 225-30. **Wasmann, E.**—Die ameisenmimikry.—**118,** 1925, 925-32. **Whiting & Whiting.**—Diploid males from fertilized eggs of hymenoptera.—Science, lxii, 437.

(N) **Bluthgen, P.**—Bienengattung Nomioides.—**60,** 1925, 1-98. **Emery, C.**—Genera insectorum. Formicidae, Subf. Formicinae. 302pp., 4pls. **Ferris, G. F.**—Generic types of the Diaspidae.—**22,** xvi, 163-7. ***Viereck, H. L.**—Preliminary revision of some Charopsinae, a subf. of Ichneumonoidea.—Trans. R. Soc. Canada, (3), xix, 259-73.

(S) ***Menozzi, C.**—Qualche formica nuova od interessante del Deut. Ent. Inst. (Formicidae).—**49,** xiv, 368-71.

SPECIAL NOTICES.

Monographie des Bathysciinae (Silphidae). By R. Jeannel. Arch. Zool. Exper. et Gen., Paris. This monograph of 436 pages, although treating of European species will probably be useful to American students of this family of the Coleoptera. **Sinopse dos Hemipteros** Heteropteros de Portugal. Por A. F. de Seabra. Mem. e Estud Mus. Zool. Univ. Coimbra, Ser. 1, N. 1, Fasc. 1-2, 48 plus 19 pp. This faunistic paper may be of interest to American students.

Recent issues of the **Catalogue of Indian Insects** are Part 6—Staphylinidae by Malcolm Cameron, lately Systematic Entomologist, Forest Research Institute, Dehra Dun; 126 pp., listing 194 genera and over 1100 species. Part 9—Zygaenidae by T. Bainbrigge Fletcher, Imperial Entomologist; 92 pages, 56 genera, 225 species. Both parts are dated 1925, Calcutta: Goverment of India Central Publication Branch.

DYTISCUS MARGINALIS, the first monograph of "BEARBEITUNG EINHEIMISCHER TIERE," edited by DR. E. KORSCHELT, of the University of Marburg. Two volumes, 1827 pages in all, with 876 text figures. Published by Wilhelm Engelmann, Leipzig, 1924. Price, 40 gold marks, $10.00 in New York.

Probably every investigator in scientific work has many times wished that he might have a collaborator to assemble and abstract for him the literature of his subject. The conscientious worker is beginning to find that, if he shall be compelled to spend much more of his time in reading, he is in danger eventually of being barred by his books from his microscope. And now, just as our trouble is becoming acute in entomology, there appear these two comprehensive volumes on the morphology and biology of the water beetle, *Dytiscus marginalis*, in which is brought together in edited form the work of a score of special investigators whose numerous publications on this one insect have heretofore been scattered through the various German zoological journals over a period of sixteen years.

This great work on *Dytiscus*, however, which appears under the editorship of Dr. E. Korschelt, is not a mere assemblage of independent papers; it is the result of a broad project conceived and brought to a successful finish by Dr. Korschelt. The various chapters in the books, all modeled on a general plan, are from the works of a group of men who have been, at various times since 1907, students at Marburg under Dr. Korschelt, or

collaborators with him on this project. Dr. Korschelt records many unfortunate interruptions in the work owing to the advent of the war, and the loss of four of the workers on the battle front. Some of the chapters, therefore, have been left in the stage at which they were first written, and consequently do not take into account more recent papers on related subjects; yet, this defect does not invalidate the facts recorded, and these, together with the ample bibliographical lists accompanying each chapter, must relieve the student, who would carry the subject further, of a great amount of preliminary research.

Specialists in insect morphology, who have read the various papers comprising these volumes as they have appeared will be already familiar with their contents; to those who will better appreciate the work in its unified form, a brief review of the chapter subjects will probably give best an idea of its scope.

A description of methods found most satisfactory in making dissections is given in the first chapter; in the other chapters each worker furnishes a detailed account of his own special technique. Chapters 2 and 3 have to do with the outer parts of the beetle; the fourth, based on the work of A. Casper, contains an exhaustive account of the structure of the body wall and the hypodermal glands, and constitutes an important contribution to insect histology.

The following four chapters are devoted to the sense organs. In the first, R. Hochreuther gives a full description of the sense organs of the hair type, and contributes much to an understanding of the general morphology of insect sense organs. The next chapter, by R. Lehr, treats in particular of the sense organs of the wings, including the external sensory pits and hairs and the internal chordotonal organs. In the succeeding chapter Lehr describes the sense organs in the pedicel of the larval antenna, where, besides a simple organ of Johnston, he finds four associated true chordotonal organs. Chapter 8 details the structure of the eyes of both the beetle and the larva, and it is shown here by K. Günther that the compound eye of the beetle is developed from the hypodermis independent of the similarly placed ocelli of the larva, remnants of the larval eyes being found in the adult associated with the strands of the optic nerve.

Chapter 9, from the work of G. Holste, takes up the nervous system, and is illustrated with beautiful halftone drawings showing the distribution of the nerves throughout the body and appendages. In the following chapter Holste goes into the finer structure of the brain and, while his study is not exhaustive, it adds a few details to what is known of the brain in other

insects and extends the foundation of our knowledge of the insect nervous mechanism.

Next come three chapters on the muscles, mostly by A. Bauer, and then one on the respiratory system, based on several papers by W. Alt. Chapter 15 contains a thorough study of the organs of circulation, taken from recent papers of W. Kuhl and E. Oberle. This chapter constitutes probably the most up-to-date treatment on the circulatory organs of any insect, and may well be taken as a model for other studies on these organs.

Volume II opens with a chapter on the fat body and the œnocytes of the beetle and of the larva, by A. Kreuscher. It is shown that the fat cells of the larva store up both fatty and albuminoid substances, the former, however, being almost replaced by the latter when the larva is ready for pupation. The fat cells suffer but little destruction during metamorphosis, most of them being carried over intact to form the fat body of the adult. The alimentary canal of the beetle and the larva is the subject of Chapter 19, the work of H. Rungius. Particularly interesting is the description of the mouth of the larva and its connection with the channels of the mandibles.

The series of four chapters following, on the reproductive organs, mating, the laying of the eggs, and the embryological development, contain much that is of interest. Especially instructive are the painstaking studies of H. Blunck on the manner of the formation of the spermatophore, its transfer to the copulatory pouch of the female, and the entrance of the sperm into the spermatheca. These investigations furnish an excellent example of a thoroughgoing piece of anatomical research. The subject is illustrated by a series of twenty-seven figures showing concisely all stages of the process—the exit of the sperm into the penis, their envelopment by mucous from the mucous glands and the final discharge of the completed spermatophore into the copulatory pouch of the female. The relative position of the female and male genital parts and the position of the spermatophore within the female are well shown in a diagrammatic longitudinal section. The wall of the spermatophore turned toward the vaginal opening is now apparently dissolved by a secretion of special vaginal glands, the sperm are forced into the vagina by compression of the surrounding parts, and are sucked up through the vagina by the action of the muscular walls of the latter. From the anterior end of the vagina they enter the spermatheca, probably by their own motion. Most females of *Dytiscus marginalis* are fertilized in the fall; egg-laying begins the following spring, continuing into July. When

a ripened egg passes into the vagina a small mass of sperm, in a liquid from the spermathecal glands, is discharged upon the egg through a channel in the anterior wall of the neck of the spermatheca, by the contraction of the muscular walls of the organ.

The chapter on the laying of the eggs, also from the work of Blunck, contains data on the time of oviposition, the number of eggs laid by a single female, the place, and the manner of oviposition. The female beetles always entrust their eggs to healthy chlorophyll-bearing parts of the plants, and it appears that the production of oxygen by the plants promotes metabolism in the eggs, and, therefore, the development of the embryo. A history of the development from segmentation to the fully-formed larva is given in Chapter 23. Though there is little in this account that throws new light on general insect ontogeny, it is satisfactory to find established ideas verified and further exemplified. A number of points, however, are worth a special notice. The curved side of the Dytiscus egg is not necessarily the ventral side of the future embryo. The micropyle apparatus consists of a disc at the cephalic pole of the egg surrounded by a circle of about 60 pores through the chorion. Water diffuses rapidly through the chorion and causes the latter to separate from the vitelline membrane, until finally, the chorion bursts, leaving the older embryos covered only by the vitelline membrane. The inner germ layer, or mesoderm, is formed by proliferation of cells from a ventral groove of the germ band, but there is no invagination (gastrulation) as in *Hydrophilus*. The description of the segmentation of the embryo is somewhat confusing, because the antennal segment is enumerated as a segment following the procephalon, which latter, it is stated, consists of three segments. Then there are three gnathal segments, three thoracic, and eleven abdominal segments besides a terminal telson, giving 21 segments and the end piece, or telson. Later, in this same chapter, however, as well as in the former chapter on the nervous system, the brain of Dytiscus is shown to be composed of the ordinary three procephalic ganglia, and is followed by three gnathal, three thoracic, and eleven abdominal ganglia, the telson alone lacking a ganglion in the embryo. This is the complete number of ganglia typical for insects, and the enumeration must assume the presence of only 20 segments besides the last one, or telson—a total of 21.

Chapter 24, entitled the "Larval Development," treats principally of the anatomy of the larva. The following chapter, one of 222 pages, on the metamorphosis, mostly the work of

Blunck, deals with the life and changes of the larva, and with the structure, life, and transformation of the pupa. Under the many sub-headings are described the locomotion, respiration, and senses of the larva, its feeding, digestion, and the function of the various parts of its alimentary canal. Also, there is given a great mass of observations on the influence of temperature, food, light, etc., on the larval life.

The next three chapters treat of the biology of *Dytiscus,* of its diseases, enemies and parasites, and of the economic phase of the water beetle, the last arising from its destructiveness to fish. Chapter 29 gives a history of the water beetle in literature, with a long bibliographical list beginning with the year 1536. The subject matter of the final chapter is palaeontologic, systematic and faunistic. The earliest fossil remains of *Dytiscus,* mostly elytra, come from the Oligocene and Miocene.

The foregoing outline is sufficient to suggest that this work on *Dytiscus* contains a fund of information that should become familiar to every student in entomology. Though few American students are likely to read through the two volumes consecutively, the chapters taken individually will furnish some of the best working models available on any subject of insect anatomy. Too much of our morphological work ends with a mere description of structure, making no effort at contact with the physiological aspect of the subject. The study of form in itself has generally been regarded as sufficient for purposes of classification and phylogeny, and so it may be in many cases, but even here a knowledge of function is likely to be a great help in determining the most probable line of evolution of an organ.

There is a more important reason, however, for the study of insect anatomy from the physiological standpoint, and this is the increasing importance of physiology itself in modern entomology. The natural steps in the expansion of a biological science lead through taxonomy, morphology, physiology, and psychology. Entomology is now entering the third field of its growth, and is looking toward the fourth, but is finding, in many cases, that the second has been too hurriedly traversed. In insect physiology too much can not be assumed from a knowledge of vertebrate physiology. Though physiological processes may be fundamentally alike in all animals, the means of arriving at the same results often differ widely in different groups. A thorough knowledge of comparative anatomy, therefore, is fundamental to the study of physiology. In entomology there is now, more than ever before, a need of good ref-

HENRY W. WENZEL.

erence books on the detailed structure of insect organs, and the timely appearance of this assembled work on *Dytiscus* should be welcomed by all entomologists, and especially by every student in the more advanced fields of insect physiology and biology. R. E. Snodgrass.

OBITUARY.

Henry W. Wenzel died on November 7, 1925, at his home in West Philadelphia, Pennsylvania, aged 68 years, of a lingering illness. He was born in Philadelphia on May 16, 1857. He received his education in the Public Schools of Philadelphia, and for a period in one of the then German Schools.

From boyhood days he was interested in Natural History, and under the leadership and guidance of his grandfather, Henry Feldman, he finally confined his studies to the Coleoptera, in which order he accumulated one of the finest collections of North American species extant. The collection contains many paratypes, and all the specimens are properly labeled with place of capture, date and name of collector, and such as have been bred have biological notes on a supplementary label.

Mr. Wenzel had corresponded with nearly every North American Coleopterist of note, who lived in his time, and had entertained many of them at his home, and in most cases his visitors went away richer than when they came to him, as he was always liberal in dividing his specimens with those who were especially interested in Coleoptera. He did not describe any new species. He was satisfied to have that done by those who specialized in the various families and groups. His chief collecting ground in the early part of his career was in the "Philadelphia Neck," in the southern part of the city, close to which neighborhood he lived at that time; later he worked in the Pine-barrens of Southern New Jersey for many years, and in the latter locality established many new records which were published in Smith's famous List of Insects of New Jersey in 1909. Since that time he made a number of extended collecting trips, notably to the mountains of North Carolina, also along the Gulf of Mexico, in Alabama, and his last trip

was to the Province of Ontario, Canada. Besides the above mentioned trips his son Harry A., made a trip to the Huachuca Mountains in Arizona in company with H. A. Kaeber, another to Tybee Island, off the coast of Georgia, and also a trip with Wagner Green through Texas; the material collected on the trips of his son were divided between the respective collectors and Harry's share all went into the collection of his father and I want to lay stress on the fact that he has been an enthusiastic and never tiring collector. On all of these expeditions many new species were discovered and turned over to specialists for description, and the collection is adorned with paratypes of nearly all such.

Mr. Wenzel was the organizer and really the sponsor of the Feldman Collecting Social, which was started in December, 1887. The greater number of the meetings of the Social were held at Mr. Wenzel's home which was always a welcome place for Entomologists; members and friends would always bring boxes of current capture for him to identify, which he did willingly and patiently.

I have personally collected Coleoptera but incidently, and will always recall with much pleasure, the many afternoons and evenings which I spent with him going over my material and he determining the same for me.

Besides collecting Coleoptera he was interested in Natural History in every phase; he was anxious to know the trees and smaller plants; he knew all the common and many rare birds as well as the reptiles. He always collected some specimens in other orders of the Insect World and turned them over to his friends who were interested in such orders. I have in my collection of Lepidoptera, many specimens which bear the label collected by H. W. Wenzel and H. A. Wenzel.

Since about a year the Feldman Collecting Social has not held a meeting, on account of Mr. Wenzel's illness, but I hope that we can get the boys together again, as I am sure that if he could express himself it would be his wish that the Social live on after him.

He was elected a member of The American Entomological

Society April 23, 1896, was Vice President from 1901 to 1915 and a member of the Advisory Committee of the NEWS since 1906.

Mr. Wenzel has published a number of faunistic papers which were of value to science, several of which are mentioned in "Bibliography of Taxonomic Coleopterology" by Charles W. Leng, B. Sc. published in 1920.

We have lost a dear friend and a good fellow.

FRANK HAIMBACH.

Under date of September, 1925, the German Folk Song Union in Vienna, in conjunction with Frau Angela Kohl and friends and admirers of the late FRANZ FRIEDRICH KOHL, has issued a memorial portrait of the deceased entomologist. It announces also that a memorial committee has been formed in Traismauer, where he died, which plans to place a tablet to his memory on the house in which he passed away. The sculptor Karl Philipp, creator of the Adalbert monument in the Türkenschanz Park in Vienna, has undertaken the work. Contributions for this purpose are solicited and may be sent to Herr Richard Gutscher, chairman, Hofrat Kohl Stiftung, Kunstmühle, Traismauer, Austria.

Dr. F. Maidl, curator in the Natural History Museum in Vienna, has published in Volume 38 of the *Annalen* of the Museum (pages 174-179, April, 1925) an obituary notice of this distinguished hymenopterist. He was born January 13, 1851, at St. Valentin auf der Heide (Vintschgau, Tyrol) and died December 15, 1924. In his early years he lost his father, Johann Kohl, and removed with his mother to Bozen where he attended the Volksschule and the Franciscan Gymnasium. One of the professors of the latter institution, P. Vinzenz Gredler, appears to have awakened in the young Kohl an interest in the natural sciences. Later Kohl went to the university at Innsbruck, where he studied under Adolf Pickler, Kerner and Heller. The period that followed was a struggle for existence. After five years of teaching at Bozen and at Innsbruck, he abandoned the profession and worked with Frey-Gessner in Geneva, then in Münich, where he became acquainted with Kriechbaumer and

then on December 31, 1885, was appointed scientific assistant in the museum at Vienna. Here he eventually was placed in charge of the collection of Hymenoptera which, "under his direction, expanded from a small store-box to fill a large room, and became indispensable for everyone who investigated this subject anywhere in the world, just as Kohl's advice and aid were willingly placed at the service of hundreds of correspondents."

He published seventy-five papers on entomology and zoology from 1878 to 1923; Dr. Maidl gives a list of them, twelve being monographs.

Most extensive were those treating of the genera of the Pompilidae, Larridae and Sphecinae (1885), *Thyreopus* (1888), the monograph of *Sphex* (1890, 1895), *Philanthus* (1891), *Ampulex* and allies (1893), genera of the Sphegidae (1896), *Ammophila* (1901, 1907), *Podium* (1902), *Cerceris* (1915), *Sceliphron* (*Pelopaeus*) (1918) and *Belomicrus* (1923) and many on the Hymenoptera of different geographical areas and descriptions of new species.

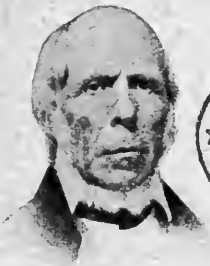
Dr. Walter David Hunter, chief of the section of insects affecting southern field crops, Bureau of Entomology, United States Department of Agriculture, and a member of the Federal Horticultural Board, died suddenly at El Paso, Texas, on October 13, 1925, in his fiftieth year. He received the A.B. from the University of Nebraska in 1895, continuing there as an assistant in entomology, became assistant entomologist in the Iowa Agricultural Experiment Station in 1901, assistant entomologist in charge of boll weevil investigations of the United States Department of Agriculture in 1902; in 1905 was placed in charge of all southern field crop insect investigations and made a member of the Federal Horticultural Board in 1908. He took a large part in the eradication of the pink boll worm in Louisiana and Texas and also had direction of investigations of insects affecting the health of man and animals. Dr. L. O. Howard contributes an appreciative notice of the man and his work to *Science* for November 13, from which we have taken the above.

Entomological News for December, 1925, was mailed at the Philadelphia Post Office on December 11, 1925.

FEBRUARY, 1926

ENTOMOLOGICAL NEWS

Vol. XXXVII No. 2



JAMES RIDINGS
1803-1880

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PHILADELPHIA, PA.
THE ACADEMY OF NATURAL SCIENCES,
Logan Square

Entered at the Philadelphia, Pa., Post Office as Second Class Matter.
Acceptance for mailing at the special rate of postage prescribed for in Section 1103,
Act of October 3, 1917, authorized January 15, 1921.

ENTOMOLOGICAL NEWS

published monthly, **excepting August and September**, by The American Entomological Society.

Philip P. Calvert, Ph.D., Editor; E. T. Cresson, Jr., Associate Editor; Henry Skinner, M.D., Sc.D., Editor Emeritus.

Advisory Committee: Ezra T. Cresson, Philip Laurent, J. A. G. Rehn.

The subscription price per year of ten (10) numbers is as follows:

United States and possessions	$3.00
Canada, Central and South America	3.15
Foreign	3.25

Single copies 35 cents

ADVERTISING RATES: Full width of page. Payments in advance.
One issue, 1 in., $ 1.20, 2 in., $ 2.40, half page, $ 4.00, full page,, $ 8.00
Ten issues " 11.00, " 20.00, " 35.00, " 70.00

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STATED MEETINGS

Of The American Entomological Society will be held at 7.30 o'clock P. M., on the fourth Thursdays of each month, excepting June, July, August, November and December, and on the third Thursdays of November and December.

Communications on observations made in the course of your studies are solicited; also exhibits of any specimens you consider of interest.

The printer of the NEWS will furnish reprints of articles over and above the twenty-five given free at the following rates: One or two pages, twenty-five copies, 35 cents; three or four pages, twenty-five copies, 70 cents; five to eight pages, twenty-five copies, $1.40; nine to twelve pages, twenty-five copies, $2.00; each half-tone plate, twenty-five copies, 30 cents; each plate of line cuts, twenty-five copies, 25 cents; greater numbers of copies will be at the corresponding multiples of these rates.

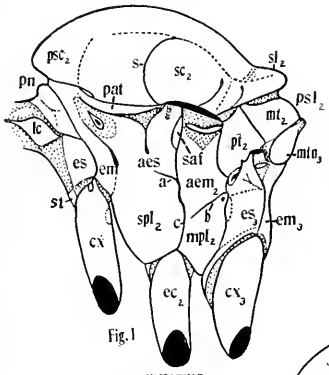


Fig. 1

MACROCHILE

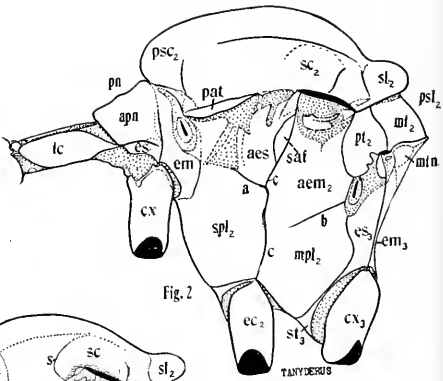
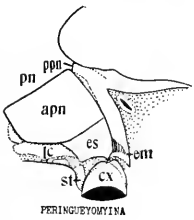


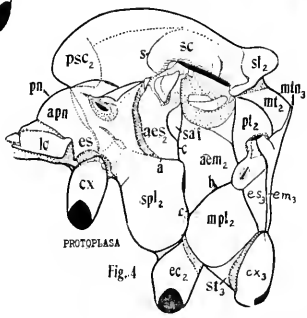
Fig. 2

TANYDERUS



PERINGUEYOMYINA

Fig. 3.



PROTOPLASA

Fig. 4

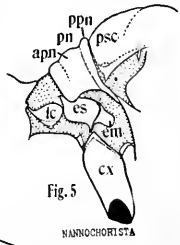


Fig. 5

NANNOCHORISTA

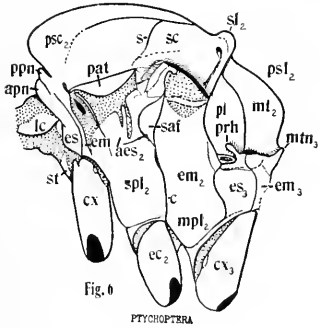


Fig. 6

PTYCHOPTERA

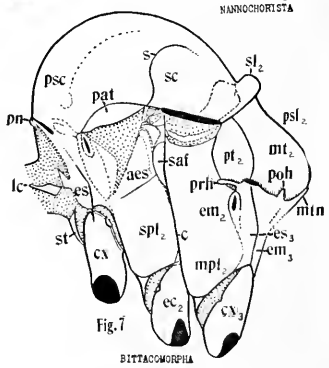


Fig. 7

BITTACOMORPHA

THORACIC SCLERITES OF PSYCHODOID DIPTERA - CRAMPTON.

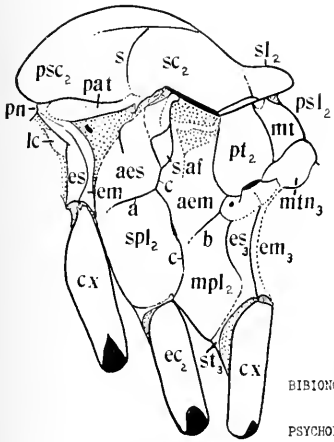


Fig. 8

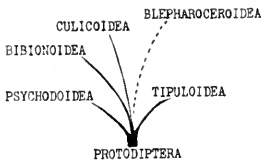


Fig. 12

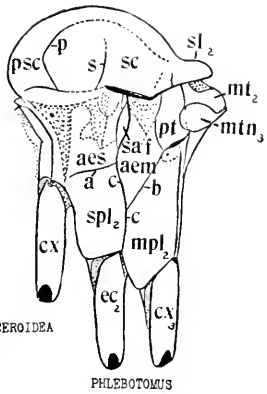


Fig. 9

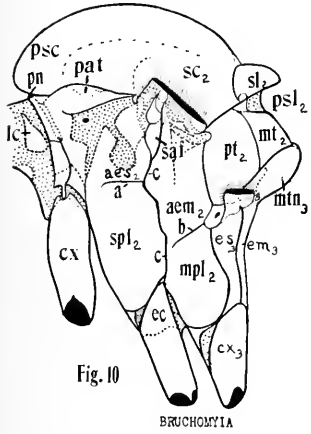


Fig. 10

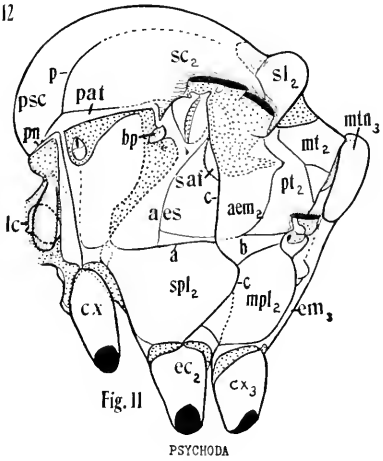


Fig. 11

THORACIC SCLERITES OF PSYCHODOID DIPTERA.—CRAMPTON.

ENTOMOLOGICAL NEWS

VOL. XXXVII FEBRUARY, 1926 No. 2

A Phylogenetic Study of the Thoracic Sclerites of the Psychodoid Diptera, with Remarks on the Interrelationships of the Nematocera.

By G. C. CRAMPTON, Mass. Agricultural College, Amherst, Mass.

(Plates III and IV.)

Through the kindness of Dr. J. W. Campbell and Mr. T. R. Harris, I have been able to make a study of the anatomy of such rare and primitive New Zealand Diptera as *Nemopalpus*, *Tanyderus*, etc., and Dr. C. P. Alexander has very generously permitted me to make a detailed study of the amber Dipteran *Macrochile*, which is in some respects the most primitive Dipteran of which we have any knowledge and presents many features common to several groups of Diptera. Mr. R. Shannon and Mr. H. S. Barber have very kindly given me a number of specimens of *Phlebotomus*, and through the kindness of Mr. F. W. Edwards, I have been able to study several other types of Psychodidae. For the specimens of *Nannochorista* studied, I am indebted to Dr. Campbell and Mr. Harris. Since most of the insects here figured are extremely rare and valuable, I am more than grateful to the above-mentioned gentlemen for permitting me to make this study.

The principal point brought out in this study, is the close relationship between the Ptychopteridae, Tanyderidae and Psychodidae, indicated by the thoracic sclerites. Mr. Edwards has very kindly consented to allow me to quote his statement, made *in litteris*, that the Tanyderidae and Psychodidae should be grouped in a single superfamily, the Psychodoidea. Just after learning of Dr. Edwards' view, I had an opportunity of making a detailed anatomical study of *Macrochile* contained in a collection of amber Diptera received by Dr. Alexander; and the study of *Macrochile*, which offers the key to the whole

situation, clearly indicates that the Ptychopteridae, Tanyderidae and Psychodidae should be grouped in a single superfamily or similar division of the Nematocerous Diptera, since *Macrochile* is in a sense a synthetic type combining characters occurring in the Ptychopteridae, Tanyderidae and Psychodidae. In fact, I consider that *Macrochile* is the nearest living representative of the common ancestor of these families, although *Macrochile* is itself an "out and out" Tanyderid, as Dr. Alexander points out from its venational characters—and as is indicated by its head and thoracic structures as well.

Before taking up the discussion of those features in which *Macrochile* is annectant between the rest of the Tanyderidae and the Ptychopteridae and Psychodidae, I would call attention to some of the thoracic characters which all of these insects have in common, and which indicate that they should be grouped in a single superfamily, the Psychodoidea.

In all of the Psychodoidea, the meral region of the middle coxa becomes detached from the coxa and fuses with the lower portion of the mesothoracic epimeron to form the area labelled *mpl* in all figures. The only other lower Diptera in which this occurs are the Eriopterine Tipuloids, and this fact may have some phylogenetic significance. There is a fusion of the meral region with the lower portion of the epimeron in the mesothorax of the Blepharoceridae, also, but the meron does not become detached from the coxa as in the Psychodoidea and Eriopterine Tipuloids, so that the end result in the Blepharoceridae is different, and hence has no particular phylogenetic significance.

A second feature common to all Psychodoids is the fact that the scutal suture labelled *s* in all figures is incomplete, while in the Tipuloids, and of course in the Eriopterine Tipuloids as well, the scutal suture forms the well-known "V-shaped" suture familiar to all systematists.

In practically all Psychodoids, the suture labelled *a* in all figures, is incomplete, and in all of these insects, the sclerite labelled *saf* is more or less clearly demarked.

Macrochile exhibits all of the above-mentioned features common to all Psychodoids, and in addition, it offers certain characters indicating that it is anatomically intermediate between the different Psychodoid families, and hence has departed less than any of the other forms here studied, from the condition characteristic of the common ancestor of these Psychodoid families.

Thus, in the length of the coxae, *Macrochile* (Fig. 1) is intermediate between the Tanyderid types with short coxae shown in Figs. 2 and 4, on the one hand, and the Psychodid types with extremely long coxae shown in Figs. 8 and 10, on the other; and it is aproached by the Ptychopterid shown in Fig. 6. This fact taken alone, has no particular significance, since short and long types of coxae occur in some members of all three Psychodoid families, but taken in connection with the other features here mentioned, this fact does have some significance.

In the relative sizes of the prothorax, and the pronotum in particular, *Macrochile* (Fig. 1) is intermediate between the Tanyderid types shown in Figs. 2, 3 and 4, with their greatly elongated pronota and the Psychodid types shown in Figs. 8 and 10, with their greatly reduced pronota; and again, the condition exhibited by *Macrochile* is approached by that of the Ptychopterid shown in Fig. 6. In fact, the general character of the thorax of *Macrochile*, which is not as depressed as that of the rest of the Tanyderids, nor as elongated as that of the lower Psychodids, furnishes a more suitable "starting-point" from which these other types (and that of the Ptychopterid shown in Fig. 6, as well) could be derived, than does any other of the forms here shown; and I think that *Macrochile* represents more nearly than any other, the type ancestral to the Psychodoidea in general, although, of course, this does not mean that *Macrochile* is the actual ancestor of the Psychodoidea.

Since some Mecoptera (which are very like the ancestors of the Diptera) have a rather broad pronotum, as in the Mecopteran *Nannochorista*, shown in Fig. 5, this might be taken to indicate that the broader type of pronotum exhibited

by the Tanyderids shown in Figs. 2, 3 and 4, represents a more primitive condition than that of *Macrochile*. On the other hand, some Mecoptera also have quite narrow pronota (as in *Bittacus* and other members of the order) so that the narrow pronotum of *Macrochile* is not of necessity a specialization, and its pronotum is assuredly more like those of the rest of the Psychodoidea than is the case with pronota of the Tanyderids other than *Macrochile*.

Although the enlarged pronotum of such Tanyderids as the ones shown in Fig. 2, may not represent a specialization, the greatly elongated neck plate *lc* of this insect certainly seems to be a case of specialization in the direction of extreme length, when we compare this region in *Tanyderus* (Fig. 2) with the same region in a Mecopteran such as *Nannochorista* (Fig. 5), and it would seem that the elongated lateral cervical *lc* of the Tanyderids shown in Figs. 4 and 3 shows more specialization than does the more normal type of lateral cervical *lc* in the insect shown in Fig. 1. If the lateral cervical plates of these Tanyderids are more specialized than that of *Macrochile*, it is also possible that their pronota are likewise more specialized than that of *Macrochile*; and the huge pronotum of *Peringueyomyina* (Fig. 3) seems to indicate that there is an orthogenetic tendency in the group to develop an unusually long pronotum, so that the large pronota of these Tanyderids may possibly denote a degree of specialization rather than a retention of a condition more primitive than that exhibited by *Macrochile*.

Whether or not *Macrochile's* pronotum is more primitive than the pronota of the other Tanyderids, it is none the less true that *Macrochile's* pronotum is more like that of the rest of the Psychodoidea; and the rest of the Psychodoidea exhibit a marked tendency toward the reduction of the pronotum which is carried to the extreme in such Psychodoids as the one shown in Fig. 7, or in those shown in Figs. 11, 10 etc. *Macrochile* would thus offer a better "starting point" than any other Tanyderid, in attempting to trace the modification of the pronota of the Psychodoidea in general.

In regard to the metanotum, this region is extremely large

in *Nemopalpus*, *Bruchomyia* and *Psychoda* (*i. e.*, the region labelled *mtn* in Figs. 8, 10 and 11), although in such a Psychodid as *Phlebotomus* (Fig. 9, *mtn*) it becomes markedly narrow in the median region. The metanotum *mtn* of *Macrochile* (Fig. 1) is somewhat intermediate in type between that of the Tanyderids and Psychodids, so that even in this particular also, *Macrochile* occupies an intermediate anatomical position in keeping with its general annectant character.

It is rather disappointing to find that *Phlebotomus*' metanotum is narrowed in the median region, since the combination of peculiarly broad metanotum and extremely narrowed pronotum would otherwise serve to differentiate the Psychodidae from the other Psychodoid families. The very narrow pronotum and medianly narrowed metanotum of *Bittacomorpha* (Fig. 7) however, would indicate that *Bittacomorpha* might have inherited some of the tendencies which affect the mode of development of *Phlebotomus* (Fig. 9) also, and the Psychodidae and Ptychopteridae thus exhibit in some of their members peculiar tendencies which may have been inherited from a common ancestry. The type of pronota, however, is not precisely similar in the Psychodidae and in the Ptychopteridae with reduced pronotum (Fig. 7), so that there is no difficulty in distinguishing the two groups thoracically, and the suture *b*, present in the Psychodids, is lacking in the Ptychopterids.

All of the Ptychopteridae which I have examined have a peculiar "prehaltere" labelled *prh* in Figs. 6 and 7. This "prehaltere" may possibly serve as an organ for detecting currents of air in flight, or for directing flight, or some similar function, although its real significance is not known. It seems to be peculiar to the Ptychopteridae, since I have seen no mention of its occurrence in other groups of Diptera, although in the Syrphidae an organ having a somewhat similar appearance occurs under the fore wing in the region of the subalar plate, but of course it is not in any sense homologous with the organ in question in the Ptychopteridae.

The location of the metathoracic spiracle extremely close to

the base of the cut-off halter in the Ptychopterids here figured is a character they share with all Psychodoids, while the very tiny mesothoracic spiracle (located just back of the pronotum) is peculiar to all the Psychodidae and the tendency toward the reduction of the mesothoracic spiracle is not shared by the rest of the Psychodoidea. It may be remarked in passing, that the mesothoracic spiracle of the Mecopteran *Nannochorista* (Fig. 5) is very tiny also, but the mesothoracic spiracle is proportionately much larger in the Mecopteran *Bittacus*.

The thoracic features indicating a close relationship between the Ptychopteridae, Tanyderidae and Psychodidae, then, are the location of the metathoracic spiracle very close to the halter, the fusion of the detached mesothoracic meron with the lower portion of the epimeron, the demarcation of the sclerite *saf*, and the incomplete character of the suture *a*, and of the suture *s* (of all figures). The nature of the thoracic structure would thus indicate that the Ptychopteridae, Tanyderidae and Psychodidae were descended from a common ancestry (from which *Macrochile* has departed but little) and should be grouped in a single superfamily, the Psychodoidea.

I formerly thought that the subfamily Bruchomyinae, placed in the Tanyderidae by Dr. Alexander, represents a distinct family, the "Bruchomyidae," but the thoracic sclerites of *Bruchomyia* and *Nemopalpus* (Figs. 10 and 8) are so similar to those of such Psychodidae as *Phlebotomus* (Fig. 9) that it is necessary to place the Bruchomyines in the family Psychodidae. The male genitalia, venation, etc., of *Bruchomyia*, however, are of a quite different type from those of *Phlebotomus* and *Psychoda*, and I would prefer to retain the subfamily Bruchomyinae instead of sinking it in the Phlebotominae as Mr. Edwards seems inclined to do.

(To be continued.)

ABBREVIATIONS.

a.....Anepisternal suture
acm.....Pteropleurite or anepimerum
aes.....Anepisternum

apn.....Antepronotum
b.....Anepimeral suture
bp.....Basalar pit
c.....Pleural suture
cx.....Coxa
ec.....Eucoxa
em.....Epimerum
es.....Episternum
lc.....Lateral cervical plate (laterocervicale)
mpl.....Meropleurum
mt.....Mediotergum
mtn.....Metanotum
p..... Prescutal suture
pat.....Paratergum
pn.....Pronotum
poh..... Posthaltere
ppn.....Postpronotum
prh..... Prehaltere
psc..... Prescutum
psl.....Postscutellum
pt.....Postalare or pleurotergum
s.....Scutal suture
saf.....Subalifer
sc.....Scutum
sl..... Scutellum
spl.....Sternopleurum or katepisternum
st.....Sternum

Explanation of Plates III and IV.

Fig. 1....Thorax of Tanyderid *Macrochile spectrum*
Fig. 2....Thorax of Tanyderid *Tanyderus forcipatus* and another species combined
Fig. 3....Prothorax of Tanyderid *Peringueyomyina barnardi*
Fig. 4....Thorax of Tanyderid *Protoplasa fitchii*
Fig. 5....Prothorax of Mecopteran *Nannochorista dipteroides*
Fig. 6....Thorax of Ptychopterid *Ptychoptera rufocincta*
Fig. 7....Thorax of *Bittacomorpha clavipes* (a Ptychopterid)
Fig. 8....Thorax of Psychodid *Nemopalpus zeylandiae*
Fig. 9....Thorax of Psychodid *Phlebotomus* sp.
Fig. 10...Thorax of Psychodid *Bruchomyia argentina*
Fig. 11...Thorax of Psychodid *Psychoda* sp.

All figures are lateral views, and the anterior end is directed toward the left hand margin; the dorsal region is toward the top of the plate.

A New Californian Syrphid (Diptera).

By W. M. Davidson, U. S. Bureau of Entomology,
Vienna, Virginia.*

Ceriodes durani sp. nov.

Medium-sized species; pedicel of antennae very short; third antennal joint longer than second; abdomen slightly longer than head and thorax combined, basally constricted; black and yellow species with rufous legs.

♀. Length (antennae excluded) 12mm. Length of wing 9mm. Antennal process or pedicel short, below practically obsolete, one-fifth as long as first antennal joint, testaceous, black at base where it joins the frons. First antennal joint a little shorter than third, third nearly three times as long as

Antennae of *Ceriodes durani*.

second, style two-thirds as long as second joint; first joint rufo-testaceous, second fuscous, shining, third dull velvety black, style bright yellow, terminal; first two joints short black pilose. Front yellow, a broad transverse black band across the ocelli reaching the eyes, pile fulvous. Rugose areas of the chitin are present adjacent to the upper eye corners. Post-ocular orbits black, yellow pollinose and pilose and enclosing an irregularly-shaped orange spot at lower third of the eyes. Below the eyes is an elongate orange spot widening at its junction with the mouth edge and enclosed by the black of the cheeks and the black oblique facial stripe which connects the lower eye margin with the mouth edge. Sparse fulvous pile on cheeks and lower face. Face yellow, about the base of the antennal pedicel black, a small black dash on either side of the median below the antennae, a brown median spot just above the oral margin, an oblique black stripe connecting the lower eye corner with the mouth edge. Profile almost straight, a hardly perceptible tubercle just above the center of the mouth.

Thorax dull black, with two narrow yellow parallel dorso-

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lateral stripes behind the suture and not attaining any margin or suture. Posterior angles brown. Humeral and ante-alar callosities yellow; a large oval yellow spot on the mesopleura, a smaller one on the sternopleura below, no yellow spot on the pteropleura. Halteres orange. Squamae white; pile fulvous, short. Wings without bristles except on the costa; anterior half clouded light brown; discal portion of third vein obtusely angulate and petiolate midway between its apex and the anterior cross-vein. Legs reddish-yellow; femora on distal half below armed with two rows of short black spines. Pile of legs fulvous. Coxae brown, light pilose. Scutellum yellow, anterior margin narrowly black, pile yellow. The thoracic pile is white and recurvent on the dorsum and fulvous on the yellow side areas. Post-scutellum black.

Abdomen constricted at the suture between first and second segments, widest at middle of third segment. First segment black, sides narrowly brown, pile mostly whitish and erect at sides. Second segment about two-thirds as long as third or fourth, black, sides narrowly brown, the posterior border broadly yellow, annulate and shining; pile mostly fulvous and recurvent. Third and fourth segments black, each with a broad posterior yellow shining fascia and fulvous recurvent pile. On the dull disc of the third segment are two small triangular areas of yellow pollen, separated narrowly in the middle, their bases almost attaining the yellow posterior fascia. Similar but more extensive pollinose areas occur on the fourth segment, and these almost reach the anterior and lateral margins of the segment. Fifth segment and venter of fourth black, entirely clothed with yellow pollen. Pile of the posterior segments fulvous and recurvent. The yellow fasciae reach the lateral margins for their full width.

♂. Length (antennae excluded) 11.5mm.

Vertical triangle black, shining. The enclosed yellow stripe below the eyes reduced to two small spots, and the orange spot behind the eyes much less extensive than in the female. The brown spot on the face below darker and more extensive than in the female, and produced upwards almost to the antennal pedicel in two narrow brown lines. Eighth tergite black, yellowish pollinose, with two small testaceous spots in front, the pile yellow and black. Sixth and seventh tergites light brown, chiefly black pilose.

Type female collected on April 18, 1915, in Mitchell Canyon at the base of Mt. Diablo, Contra Costa County, California.

Allotype male collected on April 23, 1916, in the same locality. Both were taken about blossoms of poison oak *(Rhus diversiloba)*, a plant much favored by syrphids. Types in the U. S. National Museum (Cat. No. 28121).

Named for Mr. Victor Duran, who has collected extensively in California.

Enodia portlandia, andromacha and creola (Lep., Rhopalocera).

By Henry Skinner.

Mr. George P. Engelhardt, Curator of the Department of Natural Science of the Brooklyn Museum, has recently sent me six specimens of an *Enodia*, one from Mobile, Alabama, and five from Gainesville, Florida, all taken in the month of May.

There were five specimens here at the Academy of Natural Sciences of Philadelphia: four from Chicasaw, Alabama, taken near the end of August, by W. C. Dukes, and one from Macon, Georgia, caught by Fred. W. Walker, April 11th, 1915. The specimens from Florida and the other places are a form or race that have been sent to me as *creola* Skinner. However, it is not the same form or species. I only know of *creola* from the type and allotype in the collection here at the Academy and the perfect figure of the insect in Dr. Holland's *Butterfly Book*.

The southern form from Florida, Alabama and Georgia is very well figured under the name *andromacha* in Hübner's Samm. Exotischer Schmetterlinge, Band I. It is also beautifully figured by Boisduval and Leconte, Hist. Gen. Lep. Amer. Sept. pl. 58, under the name *portlandia*. Typical *portlandia* is well figured by W. H. Edwards in his great work on the Butterflies of North America, volume three We have some nice specimens of *portlandia* from as far north as Miniota, Manitoba, Canada, taken by Hugh Gibbon, in the latter part of June. *Andromacha* represents the Gulf State form of *portlandia*, or a different species, according to whether you are a lumper or a splitter.

The exact status of *creola* is not known; the spaces between the veins on the primary wings are filled by plush-like scales,

olive-green in color and on each of these spaces is a fawn-colored spot, wedge-shaped, and at the outer end of each of these is an ocellus; the first, third and fourth are of the same size and the second and fifth are almost obsolete. The ocelli in *andromacha* vary in size and are twice as large as in *crcola*. There is no white on *crcola* below, which is so conspicuous in *andromacha*. If one compares Dr. Holland's figure of *crcola* with the figure of *andromacha* (as *portlandia*) in Boisduval and Leconte, the differences will be readily seen. What their relationship is, time, study and plenty of material will determine.

A Short List of Scutelleroidea Collected in New Mexico in 1916.

By Geo W. Barber,
Cereal and Forage Insect Investigations, Bureau of Entomology, United States Department of Agriculture.

During the summer of 1916 at a field station located at Maxwell, New Mexico, the writer was engaged in a study of a Pentatomid (*Chlorochroa sayi* Stal) injurious to the immature heads of grain. Several species of Scutelleroidea were collected from May to September of that year and the following list of these captures is offered here in the interest of geographical distribution.

Maxwell, Colfax County, New Mexico, lies in the northeastern corner of the state on the Santa Fe railroad, about 20 miles from the Colorado line. The immediate country is a rolling plateau, the elevation of Maxwell being 6,078 feet according to Gannett's *Dictionary of Altitudes in the United States* (1890, U. S. Geol. Surv., Bull. 160). This plateau is bounded by mountains on the north, east and west, but is open towards the south. On the west Culebra range lies some 30 miles distant while the Raton range lies about 10 miles to the east and borders the plateau on the north. At Maxwell, a small irrigation project supported a population of a few hundred people in 1916, the principal crops being alfalfa, sugar beets, beans and so forth.

Several years ago Mr. Otto Heidemann determined several of the species listed, while Prof. E. P. Van Duzee has more recently named several others. A list of the species collected during 1916 follows:

Homaemus parvulus (Germ.)	VIII 18; IX 18, 30.
Amnestus pusillus Uhl.	IX 2.
Rhytidolomia viridicata (Walk.)	V 28.
Rhytidolomia facceta (Say)	V 19.
Chlorochroa ligata (Say)	V 22 IX 16.
Chlorochroa sayi Stal	Throughout season.
Carpocoris remotus Horv.	VII 14.
Aelia americana Dall.	V 25.
Thyanta custator (Fabr.)	Throughout season.
Thyanta rugulosa (Say)	V 18.
Murgantia histrionica (Hahn)	V 19.
Perillus bioculatus (Fabr.)	V 28.
Perillus virgatus Dist.	V 22; VI 14.
Apateticus marginiventris (Stal)	VII 21.
Podisus acutissimus Stal	VIII 7.

Undescribed Species of Crane-Flies from the Eastern United States and Canada. (Dipt.: Tipulidae). Part II.

By Charles P. Alexander, Massachusetts Agricultural College, Amherst, Massachusetts.

In the present paper a few of the more interesting novelties that have recently come to hand are described. These were included in extensive collections submitted by Professor Rogers and Mr. Curran, and smaller lots received from Dr. Crampton, Mr. Lacroix and Mr. Shannon. The very interesting *Hexatoma* was included in the extensive collections of the Vienna Museum, kindly sent to me for study by Dr. Zerny in 1921. The fly was described at that time, but the diagnosis withheld from press in the hope that more material would be forthcoming in some one or another of the extensive collections of North American Tipulidae now being studied. No further material has come to hand, however, and it seems best to describe the species without further delay. My sincere thanks are extended to all of the gentlemen mentioned for their kind co-operation in making known this still insufficiently-known fauna. Where

not mentioned to the contrary, the types are preserved in the writer's collection.

Dicranomyia rogersiana sp. n.

General coloration shiny brown and yellow; antennae brownish black throughout; head gray, the center of the vertex black; mesonotal praescutum with three broad darker stripes; wings with a faint brownish tinge, stigma oval, darker brown; *Sc* long, Sc_1 and Sc_2 subequal; cell 1*st* M_2 closed; male hypopygium with a single dististyle that is narrowed at apex into a slender finger-like lobe.

♂ Length about 4 mm.; wing 4.8 mm. ♀ Length about 5 mm.; wing 5.4 mm.

Rostrum and palpi brownish black. Antennae brownish black throughout, the flagellar segments short-oval, becoming more elongate outwardly, the verticils longer than the segments. Head dark gray, the center of the vortex black.

Pronotum dark brown above, paler laterally. Mesonotal praescutum shiny yellow with three broad shiny brown stripes, the median one broad, more widened posteriorly; lateral stripes widely separated from the median one, occupying the lateral margin of the praescutum and not confluent with the scutal vittae; remainder of mesonotum shiny light brown. Pleura dark brown. In the type male, the colors are much paler and the specimen is presumably teneral. Halteres short, yellow, the knobs brown.

Legs with the coxae and trochanters brownish testaceous; femora dark brown, the bases paler; tibiae and tarsi brownish black.

Wings with a very faint brownish tinge, the oval stigma darker brown; veins dark brown. Macrotrichiae of veins relatively long and conspicuous. Venation: *Sc* long, ending opposite two-thirds the length of *Rs* (♀) to four-fifths this distance (♂) Sc_2 at tip of Sc_1, *Rs* arcuated to slightly angulated at origin; *r* at tip of R_1, provided with macrotrichiae, the tip of R_1 pale and subobsolete; cell 1*st* M_2 large, short-rectangular, about one-half longer than vein M_4 beyond it; *m-cu* close to fork of *M*. In the female, *m* is longer and arcuated.

Abdomen dark brown, the ninth segment of male more yellowish; hypopygium dark. Male hypopygium with the basistyles elongate, with a simple lobe near base of the ventro-mesal aspect. A single dististyle, this broad on basal two-thirds, the apical third suddenly prolonged into a slender, finger-like lobe; outer face of style with a few long powerful setae, the

lower or cephalic face with more abundant microscopic setulae. Ovipositor with the tergal valves slender, acute at tips, gently upcurved.

Habitat.—Georgia, Florida. *Holotype*: ♂, Gainesville, Alachua County, Florida, May 30, 1924 (*J. S. Rogers*); Collector's No. 156. *Allotype:* ♀, 2 miles north of Vienna, Dooley County, Georgia, June 1, 1923, at light (*J. S. Rogers*).

This interesting crane-fly is named in honor of my friend, Professor J. Speed Rogers. Of the described Nearctic species the fly may be confused only with *D. globithorax* Osten Sacken, from which it differs in the normal structure of the mesonotum, the venation, and structure of the male hypopygium. The type is preserved in the writer's collection, the allotype returned to Professor Rogers.

Dicranomyia lacroixi sp. n.

General coloration brownish ochreous, the praescutum with three conspicuous dark brown stripes; pleura uniformly ochreous; antennae black throughout; wings narrow, cell 1*st M*$_2$ closed; male hypopygium with a single dististyle, this produced into an elongate powerful rostrum bearing a single small spine near midlength.

♂ Length about 6 mm.; wing 6.9 mm.

Rostrum brownish yellow, the palpi black. Antennae black throughout, the flagellar segments oval with short verticils. Head dark gray, the anterior vertex more infuscated, the occiput paling into brownish ochreous; anterior vertex about one-half wider than the diameter of the basal scapal segment.

Pronotum brownish ochreous with a broad, dark brown, dorsal stripe. Mesonotum brownish ochreous the praescutum with three conspicuous dark brown stripes, the short lateral stripes crossing the suture and including the scutal lobes; remainder of mesonotum dark-colored, pruinose. Pleura uniformly brownish ochreous, this color likewise including the postnotal pleurotergite. Halteres relatively short, dark brown, the extreme base of stem yellowish.

Legs with the coxae and trochanters obscure yellow; remainder of legs elongate, dark brown, the femoral bases paler.

Wings long and narrow, tinged with yellowish; a vague dusky seam along vein Cu_1 and the anal angle strongly infuscated; veins of the costal region yellowish, the distal and posterior veins darker. Venation: Sc_1 ending about opposite

one-fifth the length of *Rs*, Sc_2 not evident; *Rs* gently arcuated, about one-half longer than the basal section of R_4+_5 which is almost in alignment; *r* faint, at extreme tip of R_1; cell 1*st* M_2 closed, rectangular, approximately equal in length to the veins beyond it; transverse elements closing cell 1*st* M_2 very pale; *m-cu* at fork of *M*.

Abdomen brown, the sternites paler. Male hypopygium with the ninth tergite deeply notched medially, each lateral lobe rounded and with about a dozen powerful elongate setae, with additional smaller ones. Basistyles relatively small, the mesal lobe slender, the setae on its cephalic face longer. A single developed dististyle, this a small fleshy lobe that is provided with long setae, the mesal face produced mesad into a long, gently curved rostrum with a single, gently curved spine near midlength of caudal margin; apex of rostrum with a few small setae. Gonapophyses with the mesal lobe long and slender, the tip subacute.

Habitat.—Massachusetts. *Holotype:* ♂, Rochester, Plymouth County, on cranberry bog, July 9, 1924 *(D. S. Lacroix)*.

Dicranomyia lacroixi is named in honor of the collector of the type-specimen, Mr. Donald Lacroix. The species is very isolated although bearing a superficial resemblance to *D. longipennis* (Schummel), to which species it would run by the author's key to the Eastern species of *Dicranomyia* (Cornell Univ. Agr. Expt. Sta., Mem. 25: 894-895; 1919). The fly is readily distinguished by the diagnostic characters indicated above.

Dicranomyia cramptoni sp. n.

General coloration dark brown, the pleura yellowish gray pruinose; antennae black throughout; rostrum dark; halteres short, the knobs infuscated; wings tinged with gray, the stigma brown; Sc_1 long, ending opposite or just beyond the origin of *Rs;* male hypopygium large and very complicated in structure.

♂. Length 5.5-5.8 mm.; wing 6-6.5 mm. ♀. Length about 6.5-7 mm.; wing about 6.2 mm.

Rostrum and palpi brownish black. Antennae black throughout, the flagellar segments oval. Head gray, the anterior vertex about twice as wide as the diameter of scape.

Pronotum dark brown. Mesonotum dark brown, the praescutum laterally with a sparse yellow pollen, the median stripe remaining shiny, scutellum dark brown with an obscure yellow basal median spot; postnotum dark brown, gray pruinose.

Pleura dark brown, heavily yellowish gray pruinose. Halteres relatively short, obscure yellow, the knobs dark brown.

Legs with the coxae and trochanters obscure yellow; femora light brown, the bases extensively more yellowish, the tips narrowly dark brown; tibiae brown, the tips somewhat darker, tarsi brownish black.

Wings with a faint grayish tinge; stigma small, circular, brown, veins dark brown. Venation: Sc_1 ending opposite or slightly beyond the origin of *Rs*, Sc_2 some distance from its tip, Sc_1 alone about equal to or longer than *m-cu;* vein R_1 curved toward R_2+_3 at the stigma, the tip pale and subobsolete; *Rs* arcuated, about twice the basal deflection of R_4+_5; cell 1*st* M_2 closed, rectangular, shorter than any of the veins beyond it; *m-cu* at or before the fork of *M*.

Abdominal tergites dark brown, the sternites obscure brownish yellow; hypopygium dark. Male hypopygium very large and complicated in structure. Ninth tergite with a stout lobe at each caudo-lateral angle, each of these provided with two tufts of stout yellow setae, the space between the lobes extensive, broadly U-shaped. Basistyle stout, the ventro-mesal lobe large and complicated, with a dusky, more basal, cylindrical lobule terminating in a brush of yellow setae; apex of lobe broadly expanded into a flattened pale blade that is further split into three conspicuous divisions, the margins of which are conspicuously fringed with setae. At the base of the ventral dististyle, on ventral side, a powerful, terete, boomerang-shaped structure, pale in color, directed ventrad and caudad. Ventral dististyle large and fleshy, the usual rostriform structure here greatly complicated by supernumerary outgrowths, including a long, pale tail-like blade near the usual two spines; apex of rostrum expanded into two flattened, divergent blades, the more basal of which is densely set with setae and short spinulae. Dorsal dististyle strongly curved, the tip suddenly narrowed to an acute point. Ovipositer with the tergal valves relatively small and slender, gently upcurved, projecting very slightly beyond the level of the stout, straight sternal valves.

Habitat.—Massachusetts. *Holotype:* ♂, Fish-hatchery, near Sunderland, Franklin County, altitude 200 feet, October 16, 1924 *(C. P. Alexander). Allotopotype,* ♀. *Paratopotypes,* 3 alcoholic ♂♂, October 15, 1924 *(G. C. Crampton);* 3 ♂♂, 3 ♀♀, with the type *(C. P. Alexander).*

Dicranomyia cramptoni is named in honor of Dr. G. C. Crampton, who collected the first-discovered specimens. The

flies were swept from small patches of *Juncus* in a single restricted locality. The fly is very different from any known to the writer. The structure of the male hypopygium is exceedingly complicated by outgrowths that involve not only the basistyles but even more strikingly the rostral region of the ventral dististyle. The hypopygium is more complicated in structure than in either of the Palaearctic species, *D. magnicauda* Lundström (Northern Europe) or *D. megacauda* Alexander (Northern Japan).

Hexatoma microcera sp. n.

General coloration gray pruinose; antennae of male short, if bent backward barely attaining the wing-root; praescutum with three blackish stripes; legs comparatively short and stout; wings subhyaline, faintly tinged with brown; *r* on R_2+_3 near the fork.

♂. Length 5.8-6.5 mm.; wing 7.1-8 mm.

Rostrum short, brown, pruinose; palpi dark brown. Antennae relatively short, if bent backward barely attaining the wing-root, dark brown; seven antennal segments, the terminal one microscopic; first flagellar segment about equal to the following two taken together; flagellar segments 2, 3 and 4 gradually shortened. Head dark brown, the orbits narrowly light gray pruinose, the low vertical tubercle likewise pruinose.

Mesonotum light gray, the praescutum with three blackish stripes; scutum gray, the centers of the lobes blackish; scutellum and postnotum gray pruinose. Pleura dark brown, pruinose, the dorsopleural membrane dark brown. Thorax clothed with moderately long erect white setae. Halteres pale, the knobs infuscated.

Legs comparatively short and stout; coxae gray pruinose; femora reddish brown, the tips passing into black; tibiae and basitarsi similar, their tips narrowly darkened; remainder of tarsi dark brown.

Wings subhyaline, faintly tinged with brown in cells *C* and *Sc*, along *Rs* and the radial veins and along the cord; veins dark brown. Venation: Sc_1 ending immediately before the fork of *Rs*, Sc_2 some distance from its tip, Sc_1 alone about equal to *r-m*; *r* on R_2+_3 a little more than its own length before the fork; cell R_2 larger than cell *2nd* R_1; veins M_1+_2, M_4 and Cu_1 subevanescent at tips; *m-cu* at or just before the fork of *M*.

Abdomen dark brown, provided with erect white setae.

Habitat.—North America, without exact data. *Holotype*, ♂, Labelled "Smiths, Amer. bor., 1867." *Paratopotypes*, 2 ♂♂.

Type in the collection of the Vienna Museum.

Compared with *Hexatoma megacera* (Osten Sacken), the present species is seen to be a large light gray fly with heavier body and stouter legs. The short antennae contrast strikingly with the condition found in *megacera* where the organ is longer than the entire body. The fly is more closely allied to the larger *H. burmeisteri* (Loew) of Europe but is distinct from any of the numerous European species. It is unfortunate that the exact locality is in doubt since the species is of more than ordinary interest. Dr. Zerny suggests that the "Smiths" of the locality label may refer to the collector (as Smithson) rather than to any locality.

Dicranota currani sp. n.

♂. Length about 5 mm.; wing 7-7.3 mm.

Closely related to *D. divaricata* Alexander, from which it differs as follows:

Mesonotal praescutum yellowish gray with three very conspicuous dark brown stripes, the broad median stripe entire except near the suture. Legs stouter, especially the middle legs, brownish black with the exception of the restricted femoral bases. Abdomen uniformly dark brown, including the hypopygium. Male hypopygium with the ventral interbase a long flattened blade, the apex subacute to acute, the mesal or inner edge nearly straight, the lateral or outer edge gently curved to the apex. Lateral arms of gonapophyses much broader and stouter than in *D. divaricata*.

Habitat.—Ontario, Quebec. *Holotype*: ♂, Ottawa, Ontario, May 9, 1923 *(C. H. Curran)*. *Allotype*, ♀, Hull, Quebec, May 9, 1924 *(C. H. Curran)*. *Paratopotypes*, 8 ♂♂; *paratypes*, 23 ♂♀, with the allotype.

Type in the Canadian National Collection.

This interesting *Dicranota* is named in honor of the collector, Mr. C. Howard Curran, to whom I am indebted for many favors in the past.

Rhaphidolabis (Rhaphidolabis) avis sp. n.

Very similar to *R. (R.) tenuipes* Osten Sacken, from which it differs strikingly in the structure of the male hypopygium.

Median lobe of ninth tergite slender, as in the *tenuipes* group. Dorsal interbase produced into a slender chitinized rod, at about two-thirds the length narrowed and bent at a right angle to the acute tip. Ventral interbase in its general contour suggesting the body of a bird, the flattened body portion with about eight delicate setae, the head produced mesad into a strong chitinized beak, the region of the frons with a smaller squat spine. Dististyle a long flattened blade that narrows gradually to the subacute apex.

Habitat.—Virginia. *Holotype:* ♂, Dead Run, Fairfax County, September 27, 1914 *(R. C. Shannon).*

A New Species of the Genus Condidea (Diptera, Syrphidae).

By RAYMOND C. OSBURN, Ohio State University, Columbus, Ohio.

The genus *Condidea* was erected in 1907 by Coquillett (Canadian Entomologist, XXXIX, p. 75) to include only his new species *Condidea lata*, which thereby became the genotype. Although *Condidea* is related rather closely to *Sericomyia* Meigen, it has been generally accepted as a distinct genus. *C. lata* has been taken a number of times and shows a considerable range in distribution, from the New England states to Wisconsin, but it has nowhere been reported as common. Johnson (Fauna of New England, 15, Occasional Papers of the Boston Soc. Nat. Hist., VII, Feb., 1925) has placed the *Sericomyia sexfasciata* of Walker, also a rare species, in the genus *Condidea*. Both of these species are probably quite northern in their distribution. In consideration of these facts, it will be of interest to describe and record another species of *Condidea*. This is also northern, taken at Fargo, North Dakota, and thus far is known from a single female. The specimen has been in my hands for a number of years, but I have delayed describing it in the hope that more material might come to hand.

Condidea transversa n. sp.

General characters very similar to those selected by Coquillett in *C. lata* for defining the genus, but differing in a number of ways, especially in the character of the abdominal markings.

♀. Face yellow, with yellowish pollen and fine yellowish white pile; a black facial stripe connects on the antennal process with the black of the front, and below with a broad oral margin of the same color, which also covers the cheeks broadly. Front narrowed above with a well-marked median groove; whitish pollinose on the lower part, a supra-antennal spot and the upper part more shining, pile short and black. First two antennal joints black, third joint reddish brown, sub-quadrate, with rounded angles; arista also reddish and long reddish plumose. Occiput with long yellow pile behind the vertex and on the lower part, between these the pile is very short and is black near the eye margins. Face and tubercle moderately produced.

Thorax bronze, with blue reflections, humeri distinctly white pollinose, pile above very short, dark yellowish, becoming blackish on the disc, on the pleurae longer and light yellowish. Scutellum purplish bronze, with pile above very short and black, longer on the margin and mixed with yellow on the sides. There is a transverse band of light yellow short pile between the black pile of the thorax and that of the scutellum.

Abdomen ovate, distinctly broader than thorax, depressed, hind margins of the third and fourth segments somewhat shining and the whole of the fifth conspicuously shining. Segments 2, 3 and 4 each with a pair of conspicuous, straight, transverse yellow spots, broadly separated on the midline, more narrowly separated from the lateral and anterior margins. The spots on segment 2 are very striking, more than half the length of the segment and fully twice as broad as the following spots, which are about equal in size. The anterior and posterior borders of all the spots are straight and parallel. Pile very short, longer and yellowish on the anterior angles and on the yellow spots of segment 2; otherwise black. Venter reddish yellow on sides near base; otherwise black.

Femora black, tibiae and tarsi dark brown, the knees narrowly reddish brown, pulvilli yellowish. Wings somewhat infuscated at base and on anterior part, veins black, pleurostigma brown, venation like that of *C. lata*, the third vein considerably incurved into the first posterior cell. Halteres light reddish yellow; alulae white, with long whitish yellow pile. Length, 13 mm.

Holotype, a single female taken by O. A. Stevens at Fargo, North Dakota, June 22, 1913, on flowers of *Rubus strigosus*.

The species of *Condilea*, *lata*, *sexfasciata* and *transversa*, differ from *Sericomyia* in the curved third vein, the very broad first pair of abdominal spots, and the more depressed form of

the abdomen. These species may be separated by the shape and position of the abdominal spots, as follows:

1. First pair nearly round, the following ones reniform or broken into spots, the third noticeably oblique ....*C. lata*
2. First pair constricted at the middle or abruptly widened at the outer end, the following ones similar in form but narrower ..... *C. sexfasciata*
3. First pair nearly twice as long as wide, the anterior and posterior borders straight and parallel, the following spots much narrower, all the spots transverse.....*C. transversa*

Assistance Wanted in the Study of Ants (Hym.: Formicidae).

EDITOR, ENTOMOLOGICAL NEWS:

The writer, who is a graduate student in the Department of Entomology at the University of Illinois, has chosen as a subject for his doctorate thesis a study of the ants of a Middle-Western town, with especial reference to those infesting houses.

Among the eight or ten species of ants known as common house pests in Urbana, Illinois, there is one species that is extremely abundant and annoying; this species is *Tapinoma sessile* Say.

This ant is about 2.4 mm. long, varies from a light brown to almost a pitch black in color, and is easily recognized by the absence of a well-developed scale or node on the petiole. The workers when crushed have a peculiar rotten cocoanut-like or nauseating odor. These ants have a fondness for nesting in the soil under logs, stones, planks or leaves and are often found nesting in rotting wood or under the loose bark of fallen logs and limbs. As it is a native ant, it has a wide distribution and should be found in every state in the Union.

I wish to fully investigate the distribution, biology, and control of this species and also attempt to definitely ascertain whether it has sub-species or varieties. If you have alcoholic or mounted specimens of *Tapinoma sessile*, will you not kindly loan them to the writer for study? Any information you are in position to furnish concerning any phase of this ant's biology, distribution, control, natural enemies, etc., will be very helpful to me and will be greatly appreciated. In the event that I publish, I shall be glad to make the proper acknowledgments.

Trusting that I may secure your interest and co-operation in this investigation, and assuring you of my willingness to reciprocate in any possible way,

M. R. SMITH, Natural History Bldg., Urbana, Illinois.

ENTOMOLOGICAL NEWS

PHILADELPHIA, PA., FEBRUARY, 1926.

Entomology at the "Convocation Week" Meetings, December 28, 1925, to January 2, 1926.

Our annual summary of the papers on Tracheate Arthropods is based, this time, exclusively on the printed programs of (*a*) The American Association for the Advancement of Science and Associated Societies meeting at Kansas City, Missouri, and (*b*) The American Society of Naturalists and The American Society of Zoologists at New Haven, Connecticut. It is proper to admit that the term "Convocation Week," so widely emphasized some years ago, appears to have fallen into disuse and would not appear in our title if it were not that it gives a certain continuity to the editorials of the February numbers of the NEWS.

The programs for Kansas City listed entomological papers for the following bodies (after deducting duplications):

Entomological Society of America alone	27
The same with American Association of Economic Entomologists	7
American Association of Economic Entomologists alone	83
Section F (Zoology), Amer. Asso. Adv. Science alone	7
The same with Ecological Society of America	5
The same with American Society of Parasitologists	2
American Society of Parasitologists alone	1
Botanical Society of America, Joint Genetics Sections	3
The same with Ecological Soc. Amer.	1
Ecological Society of America alone	5
American Phytopathological Society alone	2
The same with Potato Association of America	1
Total	144

The corresponding numbers on the programs for New Haven, after similar deductions, were

American Society of Naturalists	7
American Society of Zoologists	7
Total	14
Total for both localities	158

The subjects treated in these 158 papers follow; where two numbers are given separated by a comma, the first refers to Kansas City, the second to New Haven; otherwise the number is that of papers announced for the Missouri City.

i	
Teaching entomology	2
Technique	2
Cytology	3, 3
Anatomy	3
Physiology	8, 2
Ontogeny	3, 1
Genetics	3, 4
Ecology	17
Parasites of Insects	8, 4
Insects affecting Man and Animals	6
Bibliography	1
Nomenclature	1
General Subjects	3
General Economic Entomology	11
Insecticides	20
Apiculture	11
Insects affecting Cereal, Forage and Field Crops	15
Do. Truck Crops	7
Do. Greenhouse Plants	2
Do. Fruit	12
Do. Stored Products	4
Do. Forest & Shade Trees	3

ii	
Comprehensive Groups	4
Myriopoda	1
Araneina	1, 1
Acarina	1
Orthoptera	8, 2
Isoptera	2, 2
Odonata	2, 1
Neuroptera	1
Homoptera	12
Heteroptera	4
Coleoptera	16
Hymenoptera *(excl. Apis)*	3
Apis	7
Lepidoptera	14
Diptera *(excl. Drosophila)*	8, 2
Drosophila	1, 5
Siphonaptera	1

Many of these figures are duplicated, both between sections i and ii and also within each section.

It will be noted that the total number of papers, 158, is lower than that of the two preceding years: 166 (Washington, 1924-5) and 180 (Cincinnati, 1923-4).

The annual public address of the Entomological Society of America was by Dr. Vernon Kellogg, "Co-operation or Isolation in Science," while Dr. L. O. Howard reported to both entomological societies on the International Congress of Entomology of Zürich. A joint meeting of the two societies was held for a symposium on Insect Parasitism, seven speakers having been announced.

Another symposium, participated in by Section F, A. A. A. S. and the new American Society of Parasitologists, entitled

"Medical Aspects of Parasitology," included two entomological titles, and two such were also announced for the symposium of the joint session of the Botanical and Ecological Societies of America on "Prairie Ecology."

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE

Personal Mention.

Dr. Vernon Kellogg has been made Commander of the Order of Leopold by King Albert.

H. H. Knight, assistant professor of entomology, Iowa State College, has been advanced to associate professorship.

F. M. Hull has been appointed an instructor in zoology and entomology at the State College, Pullman, Wash.

H. G. Barber is working on a catalogue of the Lygaeidae of the world, in co-operation with other hemipterists.

C. F. Muesbeck is preparing a revision of the American braconid flies belonging to the subfamily Braconinae.

—*Journal of Economic Entomology.*

Changes of Address.

Wm. F. Lawler, Jr., Pompton Plains, N. J.
W. S. Blatchley, Box 374, Dunedin, Fla.
Owen Bryant, Banff, Alta., Canada.
A. B. Wolcott, Field Mus. N. H., Chicago, Ill.
R. A. Leussler, 115 South 52nd Street, Omaha, Nebr.
L. G. Gentner, 225 Bailey Street, East Lansing, Mich.
Lawrence Bruner, 3033 Deakin Street, Berkeley, Cal.
Hugo Kahl, Carnegie Museum, Pittsburgh, Pa.
S. W. Frost, Penn State College Laboratory, Arndtsville, Pa.
Bennet A. Porter, 2 East Locust Street, Vincennes, Ind.
J. N. Knull, 1120 North 17th Street, Harrisburg, Pa.

The Dognin Collection of Lepidoptera at the U. S. National Museum.

Last spring Dr. Wm. Schaus carried on a successful campaign to raise the money for the purchase of the Dognin collection of Lepidoptera for the National Museum. Mr. Dognin, a well-known French Lepidopterist, offered his collection for $50,000. This amount Dr. Schaus succeeded in raising, largely among his personal acquaintances. In the early summer he went to France, accompanied by Mr. J. T. Barnes as assistant, and they personally attended to the packing of the collection,

which reached the National Museum in good condition in September. It contains about 82,000 specimens of butterflies and moths, among which are types of about 3,300 species, nearly all American.

This is the second notable addition to the Division of Insects within the year, the first having been the late Colonel Thos. L. Casey's large collection of Coleoptera. These collections represent the life work of two distinguished entomologists and are the greatest additions which the Division of Insects has ever received since its establishment, except the gifts of Dr. Schaus himself. J. M. ALDRICH,

Associate Curator, Division of Insects, U. S. N. M.

Lecture by Dr. E. P. Felt.

A course of free public lectures will be given in the lecture room of the Education Building, New York State Museum, Albany, New York, from January to April, 1926, on Friday afternoons. The opening lecture was to be on January 8, "Social Life Among Insects," by Dr. E. P. Felt, State Entomologist.

Collecting in the West.

Many Lorquin Entomological Club members and associates spent the past summer months of 1925 collecting in new territories on the Pacific Coast. The attached list of names and localities visited may be of interest to Eastern collectors who desire exchange of specimens from these places.

Jack Beller—Sierra Madre Mts. California, Dr. J. A. Comstock—Desert Mts. of Nevada and Utah, J. E. Cottle—Shasta County, Calif., Geo. Field—Colorado Desert, Calif., Chas. Fox—Oregon and Washington, J. D. Gunder—Plumas County, Calif., Chas. Ingham—Northwestern Calif., Geo. Malcolm—Owens Valley district, Calif., Hal Newcomb—San Bernardino Mts., Calif., R. F. Sternitzky—Northwestern Calif., John Strohbeen—Sierra County, Calif., V. Wyckoff—Kern County, Calif. CHAS. INGHAM, *Secretary*.

Oviposition of Brenthis bellona (Lep.: Nymphalidae).

Brenthis bellona has enough originality to depart from the usual custom of butterflies, of placing eggs only on the food-plant. One year on the 13th of May, a meadow fritillary was tied in a bag over a clump of violets, was fed daily, but ova failed to appear on the foliage. The butterfly was exceedingly restless, it seemed useless to keep her longer and on the 16th she was freed. The bag was torn open and it was a surprise

to find little, yellow, pointed eggs had been scattered over the end of the paper bag—in a moth-like manner—where you couldn't see when you peeped in. There were fifty-nine of them, stouter than *philodice* eggs, conical, flattened at the apex, with many longitudinal lines, joined by minute cross lines. On the 29th of May the eggs were turning gray and on the 31st the hairy, dirty-colored larvae, with dark heads, came out. At the end of June nearly all had grown and become pretty brown chrysalids trimmed with gilt spots and were pendant from the cover of the can or the stems of the violets. The first adult emerged on the second of July.

N. McMURRAY, Clearfield, Penna.

Entomological Literature

COMPILED BY E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published.

All continued papers, with few exceptions, are recorded only at their first installments.

Papers of systematic nature will be found in the paragraph beginning with (N). Those pertaining to Neotropical species only will be found in paragraphs beginning with (S). Those containing descriptions of new forms are preceded by an *.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

Papers published in the Entomological News are not listed.

4—Canadian Entomologist. **9**—The Entomologist. **10**—Proc. Ent. Soc. Washington. **12**—Journal of Economic Ent. **14**—Ent. Zeitschrift, Franfurt a. M. **15**—Insecutor Ins. Menstruus. **18**—Internationale Ent. Zeit., Guben. **21**—The Entomologist's Record. **33**—Bull. et Annal. Soc. Ent. Belgique. **50**—Proc. U. S. National Mus. **69**—Comptes Rendus, Acad. Sci., Paris. **70**—Bul. Ent. Pologne. **72**—Eos. Rev. Espanola, Ent. **74**—Acta Ent. Mus., Pragae. **75**—Annals and Mag. of Nat. History, London. **101**—Biol. Bulletin, Woods Hole, Mass. **130**—Ohio Jour. of Sciences. **140**—Oc. Pap., Mus. Zool., Univ. Michigan. **143**—Bul., Div. Nat. Hist. Surv., Urbana. **144**—Ann. Sci. Nat., Zool., Paris.

GENERAL.—Bibliographia Zoologica. Vol. xxxv, 530 pp. **Campbell, F. L.**—Insect toxology.—Science, lxiii, 45-6. **Coker, R. E.**—Fauna of Penikese island [Identification of the insects by various entomologists]. 1923.—**101**, 17-37. **Graves, P. P.**—Over collecting.—**9**, lviii, 297-8. **Hayward,**

K. J.—Miscellaneous notes from Argentina.—21, 151-4 (cont.). **Hunter, W. D.**—Obituary.—12, xviii, 844-8. **Keler, S.**—Ein versuch der anwendung mathematischer methoden auf die entomologische systematik.—70, iv, 149-96. **Kiefer, O.**—Jugend und entomologie.—14, xxxix, 125-6. **Richardson, R. E.**—Illinois River bottom fauna in 1923.—143, xv, 391-422. **Schuster, W.**—Blaublindheit der vogel und blaue schmetterlinge und kaefer.—18, xix, 241-2.

ANATOMY, PHYSIOLOGY, MEDICAL, ETC.—**Clare, M. R.**—Study of oxygen metabolism in Dros. melanogaster.—101, xlix, 440-60. **Grandori, R.**—Studi sulla blastocinesi degl insetti.—Rend. Atti, R. Acc. Naz. Lincei, 1925, ii, 449-55. **Pruthi, H. S.**—Moulting of insects.—Nature, cxvi, 938.

ARACHNIDA AND MYRIOPODA.—**Brazil e Vellard.**—Contribuicao ao estudo do veneno das aranhas.—Mem. Inst. de Butantan, Sao Paulo, ii, 5-78. **Ewing, H. E.**—Sulphur-impregnated clothing to protect against chiggers.—12, xviii, 827-9.

(N) **Mueller, A.**—Zur kenntnis der jugendformen einiger Opilioniden.—Senckenbergiana, vii, 210-24.

(S) ***Mello-Leito.**—Pequenas notas arachnologicas.—Bol. Mus. Nac., Rio de Janeiro, i, 455-63. ***Vellard, J.**—Um novo genero e duas especies novas de aranha do estado de S. Paulo.—Mem. Inst. de Butantan, Sao Paulo, ii, 79-84.

THE SMALLER ORDERS OF INSECTA.—(N) ***Cockerell, T. D. A.**—New fossil Inocellia (Neuroptera) from Florissant.—9, lviii, 295-7. ***Tillyard, R. J.**—(see under Hymenoptera).

(S) ***Cockerell, T. D. A.**—Trichoptera (see under Coleoptera). ***Gravier et Fage.**—Sur une nouvelle espece de Peripate du Chili (Opisthopatus costesi).—144, vii, 185-200. ***Laing, F.**—On a n.g. and sp. of Psocoptera from Br. Guiana.—9, lviii, 289-90.

ORTHOPTERA.—**Caudell, A. N.**—Pycnoscelus surinamensis; on its nymphs and the damage it does to rose bushes.—10, xxvii, 154-7.

(S) ***Vignon, P.**—Essai de classification du genre Typophyllum.—72, i, 248-81.

HEMIPTERA.—**Cutright, C. R.**—Aphids new to Ohio.—130, xxv, 313-4. **Torre-Bueno, J. R.**—On a small collection of Heteroptera from Br. Columbia.—4, lvii, 280.

(N) **Muir, F.**—On the genera Amblycotis and Bostaera. (Delphacidae).—**4,** lvii, 279.

(S) ***Bergroth, E.**—On some Neotropical Tingidae.—**33,** lxii (1922), 149-52.

LEPIDOPTERA.—Detwiler, J. D.—Further studies of the ventral prothoracic gland of notodontid caterpillars.—**4,** lvii, 266-71.

(N) **Barnes & Benjamin.**—Notes on the genus Obrima in the U. S. (Phalaenidae).—**10,** xxvii, 168. ***Dyar, H. G.**—Notes on some American Phycitinae (Pyralidae).—**15,** xii, 220-6.

(S) **Dyar, H. G.**—Note on the larva of Sabine hyperoche (Limacodidae).—**15,** xii, 218. ***Dyar, H. G.**—New corn and boll worm from Peru (Pyralidae).—**15,** xii, 219-20. ***Hering, M.**—Die gross-schmetterlinge der erde. Faun. Amer., Lief. 178-9. Fam. Dioptidae in part. ***Joicey & Talbot.**—Notes on some L., with descr. of new forms.—**75,** xvi, 633-53. **Krueger, R.**—Mesenopis albivitta. Papilio bogotanus. Perisama hazarma.—**18,** xix, 235; 242-3; 249. ***Krueger, R.**—Eine neue Catagramma.—**18,** xix, 250. ***May, E.**—Papilio kuhlmanni sp. n.—Bol. Mus. Nac., Rio de Janeiro, i, p. 405.

DIPTERA.—Crampton, G. C.—Evidences of relationship indicated by the thoracic sclerites of certain eriopterine tipuloid diptera.—**15,** xii, 197-213. **Hubault, E.**—Contribution a la biologie du genre Medeterus (Dolichopodidae).—**144,** vii, 133-42. **Mercier et Villeneuve.**—Contribution a etude de anatomie de la tete des dipteres cyclorhaphes. La ptilin et le muscle ptilino-pharyngien.—**69,** clxxxi, 882-4.

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(S) *Banks, N.—Psammocharidae from Panama—Bul. Mus. Comp. Zool., Cambridge, lxvii, 329-38.

SPECIAL NOTICES.

The Macrolepidoptera of the World. Fauna Amer., Pts. 169-70. These parts are finishing the family Arctiidae.

Opinions rendered by the International Commission on zoological nomenclature. (Smiths. Misc. Coll., lxxiii, No. 3. Opinions 82-90.) Includes the following of interest to entomologists: Suspension of rules for Musca Linn., 1758. Op. 83. The principle of the rule of homonyms is that any properly published identical name of later date is "stillborn and cannot be brought to life." Op. 87. Printer's proofsheets do not constitute publication. . . . Op. 88. The name of a species is not disqualified because the author included in his conception bodily parts of more than one species.

MANUAL OF INJURIOUS INSECTS, by GLENN W. HERRICK, Professor of Economic Entomology, Cornell University. Henry Holt and Company, New York.—This new work is dedicated to the founder of Cornell University, Ezra Cornell, who knew the value of such studies and their application to the farmer. The book is profusely illustrated, there being 458 figures. The typography is all that could be desired. The first chapter is devoted to the position, structure, and transformation, and subsequent chapters on losses caused by insects; as disseminators of plant and animal diseases; useful insects; the uses of various insecticides and spraying apparatus; followed by an account of the insects affecting the various kinds of plant life. A valuable feature is the references to the more important literature under each special heading. We would especially call attention to the little maps of the United States, showing the distribution of injurious species, which are interesting and useful. Prof. Herrick is an economic entomologist of wide experience and he has produced an admirable and useful addition to the works on injurious insects. H. SKINNER.

INSECTS AND DISEASE OF MAN, by CARROLL FOX, M. D., Surgeon, U. S. Public Health Service. Published by P. Blakiston's Son & Co., 1012 Walnut St., Philadelphia. Pages XII + 349. Figures 92. Price $4.00.

Dr. Carroll Fox, well known as an authority on the Siphonaptera, is to be congratulated on the way in which he has accomplished his purpose of gathering together "in a concise and practical way, the information necessary for a student taking up the study of medical entomology, or for the health officer working in the field of preventable diseases transmitted by arthropods." He has produced a book which will be found equally valuable in the class-room and in the field. Although the text devotes especial attention to the arthropods which transmit diseases of man in the United States, it by no means confines itself, either to forms of importance in human medicine or to those which occur in this country.

The subject matter is divided into two portions, Part I (230 pages) dealing with the arthropods themselves and Part II (98 pages) with the diseases which they transmit. In Part I, a short introductory chapter is followed by a detailed consideration of the disease-carriers among the Diptera, Siphonaptera, Anoplura, Hemiptera, Orthoptera and Acarina, and this division of the book comes to an end with a chapter on rodents of importance in connection with Bubonic Plague, and "A Few Notes on Technique."

In Part II we find first a well-written Introduction, which deals in a general way with such subjects as the relation of

arthropods to disease, modes of transmission, parasitism, etc. This is followed by chapters on Malaria, Yellow Fever, Dengue Fever, Filariasis, Pappataci Fever, Trypanosomiasis, Tularaemia, Plague, Typhus, Trench Fever, Relapsing Fever, Rocky Mountain Spotted Fever, and Tsutsugamushi Fever. The book concludes with a general index.

Control measures are, in general, treated in connection with the various diseases, but the discussion of means of eradicating fleas, lice, bugs and roaches accompanies the text dealing with these insects.

One of the most valuable features of the book is the space devoted to keys for the identification of disease-carrying arthropods. Some of the keys are original, but the majority are copied or adapted from authoritative publications. On the whole, the selection of keys has been very well done, although some improvement is still possible in this respect. It should be feasible, for example, to give a key to the fly larvae which cause myiasis that would be more valuable to the student than the one constituting Chapter XIV of the present work, which is taken without obvious alteration from Banks' paper of 1912. It is a pity, also, that after reprinting in full the latest keys to the subfamilies and genera of American Culicidae by Dyar and Shannon, time could not be taken to "adapt" Howard, Dyar and Knab's keys to the species of adult and larval Anophelines even to the extent of including *Anopheles barberi* (treated under *Coelodiazesis* by these authors) and correcting the names of certain species to conform with modern usage. I rather regret, too, that the splendid key to the genera of fleas of the world (pages 120-130) was included in a book of this type. This key itself is an excellent piece of work and will be of the greatest value to students of the Siphonaptera, but it is much more detailed and complete than is advisable for the ordinary student or sanitarian and occupies space which might well have been devoted to other purposes.

Of the 92 figures in the book, about three-quarters (68, to be exact) are original, being the work of Mr. L. H. Wilder, of the Hygienic Laboratory. These are all uniformly excellent, those of the fleas being particularly noteworthy. Of the remainder, 14 come from Stitt and the other 10 from the works of various authors. They, too, are good illustrations, although some of them do not come up to the standard set by Mr. Wilder. The figures copied from Stitt are reprinted word for word, including the legends, which was unwise, in a few cases. Thus number 8 of Fig. 45 (page 85) perpetuates the error made by Stitt in labelling a figure of the antenna of the tsetse fly, "*Glossina*, palps and arista," and in the legend for Fig. 50 (page 98), we meet with "*Sarcophaga*" *magnifica* instead of

Wohlfahrtia, and find a recognizable figure of the larva and adult of *Fannia* masquerading under the pseudonym of "*Anthomyia pluvialis.*" In this connection, also, it may be noted that the book contains rather more than the usual allowance of typographical errors, a point which will doubtless be corrected in future editions.

In spite of these minor criticisms, however, the book may be whole-heartedly recommended as the best of its kind yet published on this side of the Atlantic. It will be a real pleasure to the teacher of Medical Entomology to have a book like this for the use of his students: one which is at once comparatively low in price, especially adapted to American needs, and combining those features which are of value both in class-room and laboratory and in subsequent work in the field.

FRANCIS M. ROOT.

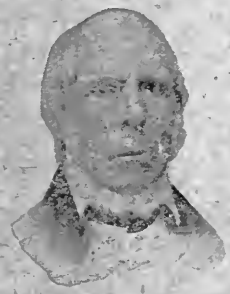
OBITUARY.

The daily papers and *Science* announce the sudden death of Professor HARRY ARTHUR GOSSARD, President of the American Association of Economic Entomologists for 1925, at Wooster, Ohio, on December 18 last. He was born at Ames, Iowa, February 7, 1868, received the degrees of Bachelor of Science (1889) and Master of Science (1892) from Iowa State College and was assistant entomologist in the Iowa Agricultural Experiment Station from 1890 to 1893. For the next six years he instructed in science in high schools and academies. In 1899 he became Entomologist of the Florida Experiment Station and professor of zoology, entomology and geology at the University of Florida. During this period he wrote Bulletin 67 of the Station on *The White Fly, Aleyrodes citri* (1903). In 1904 he was made Entomologist of the Ohio Experiment Station at Wooster, where he remained until his death. Since 1917 he had been non-resident professor of entomology of Ohio State University. The early volumes of the *Journal of Economic Entomology* contain his *Notes of the Season* and *The Catalpa Bud Maggot* (1908) and an interesting essay, *Relation of Insects to Human Welfare* (1909). Among the bulletins of the Ohio Station are his *The Catalpa Midge, Cecidomyia catalpae* (No. 197, 1908) and *Orchard Bark Beetles and Pinhole Borers* (No. 264, 1913).

MARCH, 1926

ENTOMOLOGICAL NEWS

Vol. XXXVII No. 3



JAMES RIDINGS
1803-1880

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PHILADELPHIA, PA.
THE ACADEMY OF NATURAL SCIENCES.
Logan Square

Entered at the Philadelphia, Pa., Post Office as Second Class Matter.
Acceptance for mailing at the special rate of postage prescribed for in Section 1103,
Act of October 3, 1917, authorized January 15, 1921.

ENTOMOLOGICAL NEWS

published monthly, excepting August and September, by The American Entomological Society.

Philip P. Calvert, Ph.D., Editor; E. T. Cresson, Jr., Associate Editor; Henry Skinner, M.D., Sc.D., Editor Emeritus.

Advisory Committee: Ezra T. Cresson, Philip Laurent, J. A. G. Rehn.

The subscription price per year of ten (10) numbers is as follows:

United States and possessions	$3.00
Canada, Central and South America	3.15
Foreign	3.25

Single copies 35 cents

ADVERTISING RATES: Full width of page. Payments in advance.

One issue,	1 in.,	$ 1.20,	2 in.,	$ 2.40,	half page,	$ 4.00,	full page, $ 8.00
Ten issues	"	11.00,	"	20.00,	"	35.00,	" 70.00

SUBSCRIPTIONS AND ADVERTISEMENTS. All remittances, and communications regarding subscriptions, non-receipt of the NEWS or of reprints, and requests for sample copies, should be addressed to Entomological News, 1900 Race St., Philadelphia, Pa.

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Communications on observations made in the course of your studies are solicited; also exhibits of any specimens you consider of interest.

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ENTOMOLOGICAL NEWS

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A Phylogenetic Study of the Thoracic Sclerites of the Psychodoid Diptera, with Remarks on the Interrelationships of the Nematocera.

By G. C. CRAMPTON, Mass. Agricultural College, Amherst, Mass.

(Continued from page 38.)

The Tanyderidae and such Psychodids as *Bruchomyia* are extremely primitive Diptera, and in many respects, the Psychodoidea are as near the type ancestral to the rest of the Diptera, as any known forms. On the other hand, none of the Psychodoidea of which we have any knowledge, has a meral region not completely fused with the lower portion of the epimeron in the mesothorax, and since the fused condition represents a considerable degree of specialization, this and other specializations (such as lack of ocelli etc.) preclude our regarding the Psychodoidea as the common stock from which the rest of the Diptera have sprung. The most that can be said of the Psychodoidea in this respect, is that they have retained as many ancestral characters as any Diptera have, and in making a "phylogenetic tree" of the Nematocera, such as that shown in Fig. 12, the lowest place might be assigned to the Psychodoidea.

The Tipuloidea, including the families Tipulidae and Limnobiidae—and possibly the Trichoceridae also, although the latter are extremely close to the Mycetophiloid family Anisopodidae—are likewise extremely primitive Diptera, and if the Trichoceridae be included among them, some have retained the ocelli lost in the Psychodoidea. The Tipuloidea however, are also specialized in many particulars (although some of them have retained the meron as a distinct sclerite still adherent to the middle coxa) and cannot be regarded as the common stock from which the rest of the Diptera were de-

rived. We are apparently justified in stating that the Protodiptera such as *Aristopsyche* represent as nearly as any known forms, the ancestral stock of the Diptera, and from this common stock, the first lines of development to branch off were the Psychodoid line (at whose base are such forms as *Macrochile*) and the Tipuloid line, at whose base are such forms as *Architipula*, etc. As Dr. Alexander points out, the Architipulidae (and the Cylindrotomine Tipuloiods) are annectant between the Limnobiine and Tipuline types, and he is inclined to regard the Limnobiidae as merely a subfamily of the Tipulidae. German Dipterists, however, generally recognize the family Limnobiidae, and there is considerable to be said in favor of the latter view.

The Trichoceridae are at the base of the line of development leading to the Anisopodidae and other "Mycetophiloid" types, and it is very difficult to determine whether the Trichoceridae are Tipuloids or "Mycetophiloids." Dr. Alexander tells me that the larvae of the Trichoceridae are remarkably similar to those of the Anisopodids, in being eucephalous and amphipneustic, and in this respect the Anisopodids and Trichocerids are quite different from the true Tipuloids, and are on the side of the "Mycetophiloids." I do not know where the Trichocerid line of development could have come off from any known Tipuloid or Psychodoid type, since the Trichocerids have well developed ocelli and other primitive features lacking in the Psychodoids and Tipuloids. The ancestors of the Trichocerids were apparently some form related to the Protodiptera, and at present this is all that we are justified in saying concerning their ancestry. In their general habitus, the Trichoceridae are Tipuloid, but they have so many features in common with the Anisopodidae that it might be preferable to group them in the same superorder with the Anisopodidae, which were undoubtedly descended from *Trichocera*-like ancestors.

The Anisopodidae are so closely connected with the "Mycetophiloids" such as *Mycetobia, Sciara,* etc., that it is necessary to include the Anisopodidae (the old family "Rhyphidae")

in whatever superfamily includes the Mycetophilidae. *Mycetobia* is anatomically annectant between the Anisopodids and the rest of the "Mycetophiloids" and Mr. Edwards believes that *Mycetobia* is actually an Anisopodid, while other Dipterists have claimed that *Mycetobia* is a Mycetophilid. Anatomically, there is no doubt of its annectant character, and because of the synthetic nature of *Mycetobia* I have no hesitancy in grouping the Anisopodidae in the same superfamily with the Mycetophilids. The adult Anisopodids are more primitive, anatomically, than any Mycetophilid,* so that they must be regarded as occupying a position at the base of the "Mycetophiloid" line of development; and, in fact, the adult Anisopodidae are anatomically astonishingly similar to what we know must have been the type ancestral to the rest of the Nematocerous lines of development presently to be discussed.

The Itonididae (Cecidomyidae) were undoubtedly descended from Mycetophilid-like ancestors, and hence should be grouped in the same superfamily with the Mycetophilids. Furthermore, such forms as *Plecia*, which is either a Bibionid, or is extremely close to the Bibionids, is anatomically just like *Hesperinus*,

* As every student of comparative anatomy knows full well, living things exhibit "heterospecialization (*i. e.*, they are not uniformly specialized in all particulars and may retain some rather primitive features, while they are much more highly specialized in other respects); and a group "B," for example, may retain a single feature in a more primitive condition than is true of the same feature in another group "A," which in general is much more primitive than group "B." This is well illustrated in the feature of respiration in the larvae of the Mycetophilid and Anisopodid groups, which have a common ancestry. Larval Mycetophilids, being peripneustic, are in this one respect more primitive than are the larval Anisopodids and Trichocerids, which are amphipneustic. In other respects, however, the Anisopodids and Trichocerids are much more primitive than the Mycetophilids are; consequently, it would be folly to assign to the Mycetophilids a lower position in the evolutionary scale, in deriving all of these forms from an ancestry from which the Anisopodids and Trichocerids have departed much less (in general) than the Mycetophilids have.

and both of these genera are extremely like *Pachyneura,* which Mr. Edwards thinks is an Anisopodid, and all of these genera are very like the Anisopodids *Olbiogaster* and *Lobogaster* in numerous anatomical details. These insects connect the Bibionids so closely with the Anisopodidae, and the Mycetophilids intergrade with the Anisopodidae so markedly, that there can be no doubt that the Bibionids and the Mycetophilids (with the Itonidids) were descended from Anisopodid-like ancestors; and I would unhesitatingly group together the Bibionids, Mycetophilids and Itonids in a single assemblage to which the superfamily designation Bibionoidea might be applied.* The only question in the matter is where to place the Trichoceridae, which are like the ancestors of the Anisopodids. The Anisopodids themselves are undoubtedly "Mycetophiloid" in character (*i. e.*, should be grouped among the Bibionoidea) but the Trichocerids have remained so like certain Limnophiline Tipuloidea in many respects, that it is extremely difficult to decide whether to place them with the Bibionoidea, next to the Anisopodidae, or to leave them with the Tipuloidea. As Dr. Alexander points out, the amphipneustic, eucephalous larvae of the Trichoceridae are remarkably like those of the Anisopodids, and they differ from the typical Tipuloid larvae, while the adult Trichocerids have ocelli, which are lacking in the Tipuloids and the typical Tipuloid "V-shaped" suture is practically wanting in them. Dr. Alexander, however, is inclined to regard the Trichocerids as true Tipuloidea, and the opinion of such an authority on the group Tipuloidea is worthy of the utmost consideration. My own inclination would be to group the Trichoceridae with the Anisopodidae in the superfamily

* There is considerable need of a group intermediate in rank between a superfamily and a suborder, to contain the superfamilies Mycetophiloidea and Bibionoidea, since these superfamilies, although extremely closely related, are nevertheless quite distinct. Since there is no such group of which I have any knowledge, I have "lumped" the superfamilies Mycetophiloidea and Bibionoidea into a single unwieldy "superfamily" Bibionoidea (*sensu lata*) in order to express the close relationship between the two.

Bibionoidea, and in any case, I would place the Anisopodidae in the superfamily Bibionoidea, irrespective of the Trichoceridae, leaving the ultimate disposition of the Trichocerids to be finally determined when a wider knowledge of the types connecting them with their nearest relatives has been gained.

The Simuliids, Thaumaleids (Orphnephilids), Chironomids, Dixids and Culicids could readily be grouped in a single assemblage or superfamily, the Culicoidea, whose line of development arose from the Anisopodid-like ancestors of the Bibionoidea, as is indicated in the diagram of the phylogenetic tree in Figure 12.

The origin and affinities of the Blepharocerids are still a mystery, and the Blepharocerids form such an isolated group, that it is preferable to consider them as constituting a distinct superfamily, the Blepharoceroidea. It is extremely probable that the Blepharocerids arose from ancestors allied to the Anisopodid-like common ancestors of the Culicoids and Bibionoids.

In brief, we may say that there were three main lines of development leading from ancestors like the Protodiptera, as is indicated in the "tree" shown in Figure 12. One of these lines of development (with *Macrochile* at its base) leads to the Psychodoids; another line (with *Architipula* at its base) leads to the Tipuloids; and a third line (with the Trichocerids at its base) leads to the Anisopodid-like forms in the group Bibionoidea. The Culicoidea were apparently derived from Bibionoid forms, and the Blepharocerids were probably derived from a similar source.

Since the Tipuloids and Psychodoids are the most primitive representatives of the Nematocera, they might be grouped together in an assemblage to which the old designation Polyneura, used in a new sense, might be applied—or if confusion would arise from this peculiar usage, they might be called Protonematocera, since they are the most primitive of the Nematocera. The rest of the Nematocera (*i. e.*, the Bibionoids, Culicoids and Blepharoceroids) might then be designated by the old term Oligoneura, used in a new sense—or if this unaccustomed usage of the term would give rise to confusion, they

might be called Eunematocera. This grouping, and the arranging of the Nematocerous families in natural assemblages expressing their phylogenetic development more accurately, seems preferable to the older arrangement which did not take into consideration the various interrelationships of the lines of descent of the Nematocerous families.

The Entomological Observations of John Esquemeling, Buccaneer, on the Island of Hispaniola in 1666.

By Harry B. Weiss, New Brunswick, New Jersey.

The firm of George Routledge and Sons, Ltd., of London, has recently reprinted as one of their *Broadway Translations,* the "Buccaneers of America, a true account of the most remarkable assaults committed of late years upon the coast of the West Indies by the buccaneers of Jamaica and Tortuga, both English and French, wherein are contained more especially the unparalleled exploits of Sir Henry Morgan, our English Jamaican hero, who sacked Porto Bello, burnt Panama, etc.," by John Esquemeling, "one of the Buccaneers who was present at these tragedies." In 1914, Esquemeling's account was published by Stokes under the title "Pirates of Panama or Buccaneers of America," edited and illustrated by G. A. Williams and very likely there have been other previous printings in this country, but the entomology in the account has remained in obscurity.

According to Mr. William Swan Stallybrass, the editor of the first account mentioned in these notes, Esquemeling's narrative was written originally in Dutch and published in Amsterdam in 1678, under the title "De Americaenische Zeerovers." In 1681 a Spanish translation appeared under the title "Piratas de la America" by Alonso de Buena-Maison, M.D., and this was followed by translations into other European languages. The *Broadway Translation* edition is a reprint of the first and second editions of the English translation printed in London in 1684.

Nothing appears in the standard encyclopedias about John

Esquemeling, but in the "Dictionary of Universal Biography" by Albert M. Hyamson (1916), Alex. Olivier Exquemelin anglicized as John Esquemeling is listed as a Flemish traveler, seaman and writer on travel (1645-1707). No mention is made of his activity as a pirate and one must turn to his book for a statement of his occupations and observations. The English translator wrote as follows about him. "I take him to be a Dutchman, or at least born in Flanders, notwithstanding that the Spanish translation represents him to be a native of the kingdom of France—his printing this history originally in Dutch, which doubtless must be his native tongue, who otherwise was but an illiterate man, together with the very sound of his name, convincing me thereunto."

According to his own account, he sailed from Havre de Grace, France, in the service of the West India Company of France, on May 2, 1666 and reached Tortuga, a small island on the north side of Hispaniola or Haiti on July 7 of the same year. After a brief description of some of the plants of this island and the quarrels between the French and the Spaniards for possession, Esquemeling tells how he was sold twice, once as a servant of the West India Company when they disposed of their holdings and again while sick, to a surgeon for 70 pieces-of-eight. Upon recovering he was given his liberty with the understanding that he was to pay his late master 100 pieces-of-eight when able to do so. Following this he joined "the wicked order of the Pirates, or Robbers at Sea" and continued with them until 1672. Previous to his recital dealing with their thieving and bloodthirsty activities, he describes some of the fruits, trees and animals found at Hispaniola and the following portion relating to insects is quoted on account of its general historic interest:

"As to the insects which this island produces, I shall only take notice of three sorts of flies, which excessively torment all human bodies, but more especially such as never before, or but a little while, were acquainted with these countries. The first sort of these flies is as big as our common horse-flies in Europe. And these, darting themselves upon men's bodies, there stick

and suck their blood till they can no longer fly. Their importunity obliges to make almost continual use of branches of trees wherewith to fan them away. The Spaniards in those parts call them mosquitos or gnats, but the French give them the name of *maranguines*. The second sort of these insects is no bigger than a grain of sand. These make no buzzing noise, as the preceding species does, for which reason it is less avoidable, as being able also through its smallness to penetrate the finest linen or cloth. The hunters are forced to anoint their faces with hog's-grease, thereby to defend themselves from the stings of these little animals. By night in their huts or cottages, they constantly for the same purpose burn the leaves of tobacco, without which smoke they were not able to rest. True it is that in the daytime they are not very troublesome, in case any wind be stirring, for this, though never so little, causes them to dissipate. The gnats of the third species exceed not the bigness of a grain of mustard. The colour is red. These sting not at all, but do bite so sharply upon the flesh as to create little ulcers therein. Whence it often comes that the face swells and is rendered hideous to the view, through this inconvenience. These are chiefly troublesome by day, even from the beginning of the morning until sun-setting, after which time they take up their rest, and permit human bodies to do the same. The Spaniards gave these insects the name of *rojados,* and the French that of *calarodes*.*

"The insects which the Spaniards call *cochinillas*, and the English glow-worms, are also to be found in these parts. They

* With the approval of Mr. Weiss, his article has been submitted to Dr. F. M. Root, of the Department of Medical Zoology, The Johns Hopkins University, who has studied the blood-sucking flies of certain of the West Indies, in the hope that he might be able to definitely identify Esquemeling's "three sorts of flies." Thanks to his kindness, the following is added from his letter, addressed to the editor:

"I have delayed my answer to your letter for several days in order to get the opinion of my former assistant, Dr. W. A. Hoffman, who has just returned from Haiti, where he has been working on the entomological side of a morbidity survey made by the International Health Board. His opinion is the same as my own, fortunately. We feel that the most probable identifications are as follows:

"Esquemeling's 'first sort' of flies probably refers to true mosquitoes, perhaps especially to the coastal species *Aedes taeniorhynchus* form

are very like unto such as we have in Europe, unless that they are somewhat bigger and longer than ours. They have two little specks on their heads, which by night give so much light that three or four of those animals, being together upon a tree, it is not discernible at a distance from a bright shining fire. I had on a certain time at once three of these *cochinillas* in my cottage, which there continued until past midnight, shining so brightly that without any other light I could easily read in any book, although of never so small a print. I attempted to bring some of these insects into Europe when I came from those parts, but as soon as they came into a colder climate they died by the way. They lost also their shining upon the change of air, even before their death. This shining is so great, according to what I have related, that the Spaniards with great reason may well call them from their luminous quality *moscas de fuego*, that is to say fire-flies.

"There be also in Hispaniola an excessive number of *grillones* or crickets. These are of extraordinary magnitude, if compared to ours, and so full of noise that they are ready to burst themselves with singing, if any person comes near them."

Notes on the Genus Parabombylius (Diptera).

By REGINALD H. PAINTER, Ohio State University, Columbus, Ohio.

The group to which the following species belong was first recorded when Coquillett referred the species *syndesmus* and *ater* to Rondani's genus *Thlipsogaster* (Trans. Am. Ent. Soc., 21, p. 108). In 1899, Williston (Psyche, p. 331) showed that these species do not belong to this genus but left the question of their generic status in abeyance. In *Biologia Centrali-*

niger, which is often very abundant and troublesome. His 'second sort' are evidently *Culicoides*, of which *C. furens* is the commonest coastal form throughout the Greater Antilles. The 'third species' is more difficult to identify, but the day-biting habits would indicate some species of *Simulium*, and Esquemeling's statement that 'they sting not at all, but do bite so sharply upon the flesh as to create little ulcers therein' might be his way of expressing the fact that the actual bite of *Simulium* is painless, but an ulcer-like lesion develops later."

FRANCIS M. ROOT.

Americana (Diptera Suppl., p. 286) the same author redescribed *Bombylius albopenicillatus* Bigot and referred this species and a new one *(dolorosus)* to this same group. In 1907 (N. Y. Ent. Soc. Jour., p. 1) he erected the genus *Parabombylius* for these four species with *ater* Coq. as genotype.

This genus is separated from *Bombylius* by having cell R5 narrowly open or closed in the margin of the wings, and by having a conspicuous patch of silvery scales between the base of the antennae and the eyes. All the species have several short, thin spines or bristles on the third joint of the antennae, which spines are lacking in most of the species of *Bombylius* known to me. They are present however in *fulvibasis* Macq., *validus* Lw., and possibly *lancifer* O. S. The species of *Parabombylius* are all small and the sexes often differ, sometimes quite remarkably.

Notes concerning a considerable extension of the known range of some of the species are given here, also descriptions of four new species. I am indebted to Prof. Jas. S. Hine and Mr. R. C. Shannon for loan of material. Also to Dr. Aldrich of the U. S. National Museum for a loan of cotypes of P. *ater* and *syndesmus* and other material for study.

Key to Species.

1. Ground color of tip of male abdomen and entire abdomen of female yellow ..... *syndesmus* Coq.
   Ground color of abdomen entirely black or very dark brown 2
2. Entire pile and tomentum of dorsum of abdomen and thorax unicolorous, orange or dark yellow ..... *ater* Coq.
   Pile and tomentum of dorsum of thorax or abdomen partly white or black 3
3. Pile and tomentum of dorsum of thorax and abdomen with no black intermixed ..... *subflavus* n. sp.
   Some black intermixed with pile and tomentum 4
4. Light colored pile of dorsum of thorax and abdomen partly white or yellow 5
   Light colored pile of dorsum of thorax and abdomen reddish orange or wanting 6
5. A stripe of short white pile above the base of the wing to the humerus 7

No such stripe present ..... *albopenicillatus* Bigot

6. No orange pile on abdomen ..... *dolorosus* Will
   Orange pile and tomentum present on abdomen *pulcher* n. sp.
7. Pile on face longer than first joint of antenna and on antennae also long, no patch of white scales on occiput. *vittatus* n. sp.
   Pile on face shorter than first joint of antennae and on antennae short, a patch of white scales on occiput. *maculosus* n. sp.

Parabombylius ater (Coq.)

Two females and one male taken at Brownwood, Texas; September 11 to 16 on Broomweed *(Gutierrezia texana)*. Two females and ten males taken near Abilene, Texas, September 14. These latter were all taken in in a patch of Broomweed less than four feet square. They seemed to be continually coming out of the center of the patch. Mr. Frank M. Hull has collected a number of specimens of this species near A. & M. College, Miss. They were hovering over hot red sand. There are also several specimens in the Ohio State University Collection from Vinton, Ohio, in June. Most of the specimens I have seen have a bright orange-colored pile instead of yellow as is the type. The exact shade of the specimens in the series is variable, however. The females are like the males except that there is less black pile on the venter.

Parabombylius albopenicillatus (Bigot)

One male taken April 30, on the west face of Mt. Barker, near Austin, Texas. It differs from the description in having a scattering of orange tomentum on the dorsum of abdomen and scutellum, and a few long yellow hairs among the black below the antennae. In my specimen there is a patch of yellow tomentum on either side between the characteristic white patch of the genus and the antennae.

There are two females in the collection of Mr. R. C. Shannon which agree with the description of this species. They are from Alto Pass, Illinois, July 29. All previous records are from Mexico.

Parabombylius dolorosus (Will.)

One female taken on Shoal Creek near 28th Street, Austin,

Texas, March 31, hovering over some water plants, may perhaps not be this species, although it differs only slightly. It lacks the white tomentum, as apparently did some of Williston's specimens; there are also no spots of tomentum on the sides of the abdomen, but those on the center, tho small, are strikingly prominent on the black background. These, with the orange-red tomentum on the scutellum, give this specimen a very characteristic appearance.

Parabombylius pulcher n. sp.

♀. Ground color opaque black, pleurae grayish, face with long black hairs and shorter, shining orange ones. Front orange tomentose with scattered, long, black hairs, more abundant on the ocellar tubercle. Occiput with bushy orange pile. Antennae black, first joint with long spiny hairs and with a few orange scales on the outside, second joint one half as long as the first, with shorter spines; third about equal to first two together, fusiform and slender, a scattered group of short spines towards its distal end. At the end of the third joint are three annuli, the last of which is light yellow. Mesonotum and scutellum with long black hair and scattered orange-red tomentum; mixed orange and black hair above the wings and on the pleurae, shorter and mostly orange below. Abdomen with scattered orange-red tomentum and long black hairs. Two small, but conspicuous, spots of yellow scales at the apex of the first segment, in the center below the tip of the scutellum; a patch of orange-red, stiff hairs on the sides of the first segment and on the dorsum of this segment for about one-fourth of the way across from each side; second and third segments with similar patches of hairs, but black on the basal half; fourth segment with shorter but similar hairs. Venter orange tomentose with long black hairs. Legs yellow, bases and under part of femora dark brown; spines black; underside of front femora with scattered, long, black hairs; the last joints of the tarsi dark brown; legs covered with yellow and black scales. Wings hyaline, basal half of cell R and cell C fumose, the former ending in a darker spot. Length 6 mm.

Holotype female collected at Austin, Texas, May 17, 1924, in my own collection.

Parabombylius subflavus n. sp.

♂. Ground color black, venter somewhat grayish; face with

long hairs, dark yellow on the lower part, brown and black above; a tuft of long black hairs above the ocellar tubercle. Occiput yellow pilose, a patch of silvery white scales opposite each humeral angle of the thorax. Antennae black, first two joints with long, stiff hairs, a few, short, scattered spines toward the end of the third; third joint about equal to the first two together, fusiform and slender with a distinct constriction near its base. At the end of the third joint are three annuli the last of which is light yellow. Most of the thorax and abdomen covered with whitish yellow pile. A patch of silvery scales in the center of abdominal segments, 2, 3, 4, 5 and 6; a tuft of blackish pile on the sides of segment 2; the pile at the bases of segments 3, 4 and 5 is more white than at the apex. On the venter there are a few, long, black hairs toward the apex; the pile on the coxae is mixed black and yellow. Legs yellow, coxae, tarsi, basal half of four front femora, basal fourth of hind femora, and tips of tarsi dark brown. Spines black, most of scales on legs yellow. Wings hyaline. Length 5.5 mm.

Holotype male, from Wilcox, Ariz., August 1 (A. K. Fisher), in the collection of the U. S. National Museum.

Parabombylius vittatus n. sp.

♀. Ground color black, face, front, and first joint of antennae with long, stiff, black pile. Front with appressed, orange-red, curly tomentum; occiput with orange-red tomentum, lighter below. Third joint of antennae longer than first two together, broader than either; second and third with short bristles; three annuli as in the other species. Thorax and scutellum orange-red tomentose and sparsely black pilose. A stripe of short white pile from the humeri to the bases of the wings is continued as a yellow stripe above the bases of the wings; two patches of similar white pile just back of the angles of the eyes on the mesonotum, a third in the middle just in front of the scutellum. Abdomen (greasy) is largely black tomentose, orange-red tomentose towards the apex with scattered, very long, black hairs here and on the scutellum. The pile on each side of the first segment is yellow, with appressed, white tomentum at the apex; similar tomentum occurs on the sides of the dorsum of segments 4 and 5 and in the center of 2, 3, 4 and 5. Venter, pleurae, and coxae entirely black tomentose and pilose. Legs a dark chocolate brown, ligther toward the tips. Wings hyaline, lightly tinged with brownish. Length 7.5 mm.

Holotype female from Filmore Canyon, Organ Mountains (alt. about 5700 ft.), New Mexico (Townsend), in the collection of U. S. National Museum.

Parabombylius maculosus n. sp.

♀. Ground color black, lighter beneath, face with short, stiff hairs, black with a few yellow ones intermixed; front orange tomentose with scattered, black hairs. The white scales occupy the entire area between the antennae and the eyes. Occiput yellow pilose, a patch of white scales opposite each humerus. First two joints of antennae with short, scattered, bristly hairs; third with a few shorter ones; third joint broader than first or second, longer than first two together, with three annuli, the third yellow. Thorax and scutellum with appressed, short, golden-yellow pile; a stripe of short, white pile above the bases of the wings between the humeri and post-alar callosity; a shorter, similar stripe opposite the dorsal angle of each eye; another short stripe in the center anterior to the base of the scutellum; scutellar spines yellow. Abdomen with appressed, yellow pile, white tomentum on the base of segment 1, on each side of the dorsum of segments 3 and 4 and the center of 6, a patch of black pile on the sides of segment 2; venter and pleurae yellow pilose, the latter lighter toward the front; coxae with a few black hairs. Legs yellow, base of femora, coxae and tarsi darker. Wings hyaline. Length 5 mm.

Holotype female from Tucson, Ariz., August 14, 1909 (A. K. Fisher), in the collection of the U. S. National Museum.

This may possibly be the female of *subflavus,* but since it differs greatly and since it comes from a quite widely separated locality, I have described it as distinct.

On the Genus Anomis (Lepid., Phalaenidae).

By Wm. Barnes & F. H. Benjamin, Decatur, Illinois.

Anomis Hbn.

Type *Anomis erosa* Hbn.

1821?, Hübner, Zutr. Exot. Schmett., II, 19, No. 144, ff. 287-288, *erosa* sole species and therefore type.

1823?, Hübner, Samml. Exot. Schmett., II, pl. 411, ff. 1-4, *exacta* sole species mentioned.

1825, Hübner, Verz. bek. Schmett., p. 249, mentions *exacta* and

erosa but gives no reference to *exacta* as if at the time of writing the Verzeichniss the name *exacta* was unpublished.
1874, Grote, Bull. Buff. Soc. N. S., II, 23, type designated *erosa.*
1895, Grote, Abh. Nat. Ver. Bremen, XIV, 100, type designated *erosa;* p. 122.

The genus *Anomis* presumably should be used in place of *Cosmophila* Bdv. *Gonitis* Gn., type *editrix* Gn., is probably synonymous. *Alabama* Grt., type *argillacea* Hbn., is closely allied and likely synonymous. Grote, 1895, Abh. Nat. Ver. Bremen, XIV, 122, has proven that his prior designation of *argillacea* as type of *Aletia* is not valid, the *Verzeichniss* having priority over the *Zuträge* as far as this genus is concerned. Hampson, 1905, Cat. Lep. Phal. B. M., V, 436, is apparently correct in designating *vitellina* as type of *Aletia,* a species belonging to the Hadeninae *(sensu Hampson).* Here it falls to the genus Hampson calls *Sideridis* (type *evidens* by Hampson, 1905, Cat. Lep. Phal. B. M., V, 436) but *Mythimna* Ochs. (type *albipuncta* by Duponchel, 1829, Hist. Nat. Lép. Fr., VII, (2), 71) will replace *Sideridis* Hbn. on our lists, with additional synonyms *Hyphilare* Hbn. (type *albipuncta* by Hampson, 1905, Cat. Lep. Phal. B. M., V, 436) and *Crocigrapha* Grt. (type *normani,* sole species). In place of *Mythimna* Ochs. on our lists *Cerastis* Ochs. (type *rubricosa* by Duponchel, 1829, Hist. Nat. Lép. Fr., VII, (2), 72) may be used. *Orthosia* Ochs. takes as type *instabilis* by Curtis, 1828, Br. Ent., I, 237, which, if Hübner's *Tentamen* be accepted, will fall as a synonym of *Graphiphora* Hbn. (type *gothica* sole species). This would take the place of *Monima* Hbn. as used by Hampson, replacing *Orthosia* of the Check List. If, however, the *Tentamen* is rejected, *Orthosia* may stand.

Anomis flava Fabr.
1775, Fabricius, Syst. Ent., p. 601, *Noctua.*

Mr. Tams has shown that *flava* Fabr. is apparently the oldest available name for the species with serrate male antennae; that it takes as synonyms *stigmatizans* Fabr. (1775, Syst. Ent., p. 601), *xanthindyma* Bdv. (1833, Lep. Mad., p. 94), *indica* Gn.

(1852, Noct., II, 396), *variolosa* Wlk., (1857, C. B. M., XI, 750), *edentata* Wlk., (1857, C. B. M., XI, 750), and presumably *aurantiaca* Prittwitz, (1867, Stett. ent. Zeit., XXVIII, 277), but that it is apparently unrepresented in the western hemisphere except by the race *fimbriago* Steph. (1829, Ill. Br. Ent., Haust., III, 67), which takes as synonym *serrata* B. & McD. (1913, Contr. N. H. Lep. N. A., II, (4), 169.).

A. flava and its synonyms should be intercalated on our lists so that *fimbriago* may be given its correct status.

Anomis erosa tingescens Dyar.

1913, Dyar, Ins. Insc. Menst., I, 103, *Cosmophila.*

1924, Tams, Trans. Ent. Soc. Lond., (1924), p. 22, *erosa, Cosmophila.*

Described from two females, Santiago, Cuba, (W. Schaus).

Mr. Tams sinks the name as a synonym of *erosa* Hbn., thus adding it to our lists.

Examination of Dr. Dyar's types in connection with the U. S. N. M. neotropical material indicates that they represent at least a valid race.

We know of no specimens from the United States so the name should not be added to our lists.

Anomis texana Riley.

1885, Riley, 4th Rept. U. S. Ent. Comm., p. 350; Notes, p. 120; biol., (pl. II, ff. 4-5-6), *Anomis.*

fuscostigma Ckll.

1885, Riley, 4th Rept. U. S. Ent. Comm., p. 350; Notes, p. 120; biol., (pl. II, f. 6 as *exacta*), *Anomis.*

1889, Cockerell, The Entomologist, (1889), p. 4, *texana* a, *Anomis.*

form **albostigma** Ckll.

1885, Riley, 4th Rept. U. S. Ent. omm., p. 350; Notes, p. 120; biol., (p. II, f. 6a as *exacta* var); *texana*, *Anomis.*

1889, Cockerell, The Entomologist, (1889) p. 4, *texana* b, *Anomis.*

Professor Cockerell applied the names *fuscostigma* and *albostigma* to the figures of Riley. Riley's notes (p. 120), indicate that when he gave the name *texana* to *exacta* Auct. & Riley nec. Hbn., that he considered the form with the dark

stigma typical of his species We therefore suggest the restriction of the name *texana* to forms similar to Riley's fig. 6, which will cause the name *fuscostigma* to fall into the synonymy. The name *albostigma* may be saved for the form with the white reniform.

Dr. Schaus has kindly supplied us with a specimen from Mexico similar to typical *texana*.

Anomis editrix Gn.

1852, Guenée, Spec. Gén., 41, Noct., II, 404, *Gonitis*.
1913, Dyar, Ins. Insc. Menst., I, 4, *edetrix* (!), *Gonitis*.

Described from Haiti.

We possess a single specimen from St. Petersburg, Florida, December, which was sent to Dr. Schaus and by him determined as *editrix*. The record is presumably authentic.

We might add that the Barnes Collection possesses two specimens of another species of *Anomis* labeled "Chokoloskee, Florida," but these may be dealers' material and we will not add another name to the lists because of uncertainty as to the authenticity of the labels.

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ENTOMOLOGICAL NEWS

PHILADELPHIA, PA., MARCH, 1926.

Proof-reading and the News.

For at least a decade, the second page of the cover of the NEWS has borne the announcement: "Proof will be sent to authors only when specially requested." This notice was originally inserted in the interest of more prompt publication, with the idea of saving time which might be lost in the mails, or in non-receipt of proof by authors away from their offices or residences. It appears that this notice has given rise, in some quarters at least, to the impression that the NEWS is disinclined to allow authors the opportunity of looking over proofs of their articles. We wish to dissipate this idea. We shall gladly send proof to every contributor who desires it, and who will mark his MS. to this effect when sending it in, or who will notify us of his wish on receiving from us the acceptance of his paper for publication. If delays occur in receipt by us of corrected proof, such delays will mean nothing more than the possible postponement of the article in question to a later number of the NEWS.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE

An Early Record of a Commercial Entomologist.

In "The Unfortunate Traveller or the Life of Jacke Wilton," by Thomas Nashe, printed in London in 1594, Jack Wilton, the clever rogue of the tale, tells about his visit to Rome in part as follows: "There was a poore fellowe during my remainder there, that for a newe tricke that hee had inuented of killing *Cymeses* and scorpions, had his montebanke banner hung vp on a high pillar, with an inscription about it longer than the king of Spaines stile. I thought these *Cymesses* lyke the Cimbrians, hadde beene some straunge Nation hee hadde brought vnder, and they were no more but thinges lyke sheepe-lice, which aliue haue the most venimous sting that maye bee, and beeing dead, doe stinke out of measure, Saint Austen compareth heretikes vnto them." In a later edition, the word "sheepe-lice" was replaced by "lice."

Thomas Nashe, who has been called the founder of the historical novel, was born in 1567, at Lowestoft, but nothing ap-

pears to be known about where and when he died. According to H. F. B. Brett-Smith, editor of a recent reprint of "The Unfortunate Traveller[1]," it is doubtful if Nashe had ever been out of England, but it is probable that he talked with travellers or obtained suggestions from his readings. In view of this there may or may not be a trace of fact in the statement quoted above. However this is unimportant and does not detract from the drollness of the account.

HARRY B. WEISS, New Brunswick, New Jersey.

Lepidoptera Added to the British Museum.

We note from *The Entomologist* that the collection of Hesperiidae formed at the Hill Museum, Witley, which amounted to more than 30,000 specimens, and included many types has been presented to the National Collection in the British Museum. Prior to this, during 1922, Mr. Joicey also handed over to the same collection the whole of his collections of the following families of moths: Notodontidae, Lasiocampidae, Limacodidae, Epiplemidae, Thyatiridae, Callidulidae, Drepanidae, Cossidae, Bombycidae, Megalopygidae, Uraniidae, Psychidae, Thyrididae and Arbelidae, consisting of 29,717 specimens, upwards of 300 types. An exchange of his collection of *Agrias* with the Castniidae in Madame Fournier's collection was made.

Ants as Vermin-Exterminators.

We read in the *Entomologist's Record* that in Northern Siberia there are immense areas of forests which are inhabited only by a few wandering Tungus, nomads, depending entirely upon the chase for their existence. They have a strange intolerance of vermin, a characteristic that may well be copied by many civilized peoples. They object to the presence of various parasitic insects in their primitive abodes, and have an original way of getting rid of them. About the end of September they collect an ants' nest and bring it into their huts. The ants quickly exterminate the vermin, and the intense winter frosts then soon cause the ants to disappear, so that these practical myrmecologists can enjoy the warmth of their primitive homes in peace.

Butterfly Show in Los Angeles, California.

The Fifth Annual Butterfly Show of the Lorquin Natural History Club of the Southwest Museum will be held during the month of February, 1926. The number of specimens to be exhibited is estimated at 11,000, loaned by fifteen members.

There will be displays of local (California) material, also

[1]The Unfortunate Traveller by Thomas Nashe, The Percy Reprints, No. 1, Oxford, Basil Blackwell, 1920.

collections of West Coast butterflies, exhibits of Exotic butterflies and displays of articles manufactured by commercial concerns.

A large showing of aberrant butterflies of the West Coast will be one of the many attractions.

Collections of moths will be shown, exotics, and also an especially fine collection of American Noctuidae.

The prizes will be in ribbon form, and there will be nine awards, the highest award being for the discovery of new species. CHARLES INGHAM, *Secretary.*

Hoplothrips major (Hood), a Correction (Thysanoptera)

In the papers referred to below, *Hoplothrips major* (Hood) should replace *Trichothrips ulmi* (Fab.).

Trichothrips ulmi (Fab.) in New Jersey (Bull. Brook. Ent. Soc. Vol. XVIII, No. 3, pp. 94-97, 1923).

Additional notes on Fungous Insects (Proc. Biol. Soc. Wash. Vol. 34, 1921, p. 170).

This correction is necessary in view of a recent letter from Dr. L. O. Howard (to whom specimens had been sent for identification) enclosing a communication from Prof. J. D. Hood (to whom they had been forwarded). Prof. Hood states that the species has likely been described from some other country. He has specimens collected in Japan and is inclined to believe that the species is the one described in 1840 as *Thrips fungi* Zetterstedt in Ins. Lapponica, p. 312. However, in the absence of authentic specimens of that species, Prof. Hood thinks that it would be best to call it *Hoplothrips major* (Hood), 1914. According to his letter it is very common in New York, Pennsylvania, New Jersey and Connecticut and appears to have been introduced into America. The two papers listed above deal with its common occurrence in fungi and under rotten bark in New Jersey.

HARRY B. WEISS, New Brunswick, New Jersey.

Coleoptera from Nevada and Arizona.

Mr. Morgan Hebard and Mr. James A. G. Rehn are most indefatigable collectors. While their search is chiefly for Orthoptera, many interesting species of other orders have been added to the collections of the Academy of Natural Sciences of Philadelphia through their efforts. The Hebard-Rehn Expedition of 1924, visiting little known areas in central Nevada and southern Arizona, was no exception in this respect. As a result of that two months' trip the Academy is richer by three hundred seventy-one (371) specimens of Coleoptera alone.

Among the more interesting species have been added: *Cratocera capitata* Chd., *Lytta cooperi* Lec., *Eleodes wickhami*

Horn, *Embaphion clongatum* Horn, *Ammodonus granosus* Fall, *Cymatodera comans* Wolc., *Esthesopus parcus* Horn, *Acmaeodera cuprina* Spin. (a bright green form, not cotypical with Jalapa specimens), *Acmaeodera opacula* Lec., *Acmaeodera alicia* Fall, *Metaleptus femoratus* Schff., *Crossidius ater* Lec. (a red variety which may be new), *Conotrachelus arizonicus* Schff., *Agrilus cuprcomaculatus* Duges.

Agrilus cuprcomaculatus Duges was taken in the Baboquivari Mountains, southern Arizona, and is the first record of this species occurring north of the Mexican border; the type was described from Tupataro; there is one example of this beautiful species labeled Tepic in the United States National Museum. FRANK R. MASON, Philadelphia, Penna.

On the New Arachnid Genus Tijuca, Mello-Leitao.

There has just come to my hands the May, 1925, number of the *Boletim do Museu Nacional do Rio de Janeiro* (Vol. I, No. 6), in which I am surprised to find a new genus of spiders of the family Zodariidæ described by Dr. Mello-Leitao under the name *Tijuca* (p. 461). *Tijuca*, the aboriginal name of the highest peak in the immediate vicinity of Rio de Janeiro, does possess a certain romantic significance, but it is not available for a lowly spider because Lesson (*Centurie Zoologique*, p. 30, pl. 6, 1830) appropriated it nearly a hundred years ago for a remarkably beautiful bird that was discovered in the same region. As I have had nothing to do with either the discovery or the diagnosis of the new spider, it is not my place to propose another generic name for it. That should be done, and done immediately, by Dr. Mello-Leitao, before the confusion has a chance to spread.

ERNEST G. HOLT, Carnegie Museum, Pittsburgh, Pa.

Entomological Literature

COMPILED BY E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted, but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published.

All continued papers, with few exceptions, are recorded only at their first installments.

Papers of systematic nature will be found in the paragraph beginning with (N). Those pertaining to Neotropical species only will be found in paragraphs beginning with (S). Those containing descriptions of new forms are preceded by an *.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

Papers published in the Entomological News are not listed.

1—Trans., The American Entomological Society. 4—Canadian Entomologist. 5—Psyche. 8—The Entomologist's Monthly Magazine. 9—The Entomologist. 10—Proc. Ent. Soc. Washington. 13—Journal of Entomology and Zoology, Claremont, Cal. 14—Ent. Zeitschrift, Frankfurt a. M. 17—Ent. Rundschau, Stuttgart. 18—Internationale Ent. Zeit., Guben. 22—Bulletin of Ent. Research, London. 24—Annales, Soc. Ent. de France. 33—Bull. et Annal. Soc. Ent. Belgique. 39—The Florida Entomologist. 45—Zeit. f. Wissenschftl. Insekentb., Berlin. 51—Notulae Ent., Helsingfors. 59—Encyclopedie Ent., Paris. 63—Deutsche Ent. Zeit., "Iris." 64—Zeit., Oesterr. Ent. Ver., Wien. 69—Comptes Rendus, Acad. Sci., Paris. 75—Annals and Mag. of Nat. History, London. 77—Comptes Rendus, Soc. Biologie, Paris. 89—Zool. Jahrbucher, Jena. 104—Zeit. f. Wissen. Zool., Leipzig. 107—Biologisches Zentralblatt. 108—Jour. Washington Acad. Sci. 111—Archiv. f. Naturg., Berlin. 119—Proc., Nat. Acad. Sci., Washington. 141—American Naturalist. 154—Zoolog. Anzeiger.

GENERAL.—Bergroth, E. E.—Obituary with portrait. **51,** v, 101-5. **Buckstone, A. W. W.**—Migration of Insects. **9,** 1926, 5-8. **Butler, E. A.**—Obituary with portrait. **8,** 1926, 24. **van Emden, F.**—Zur kenntnis der eizaehn der arthropoden, insbesondere der coleopteren. **104,** cxxvi, 622-54. **Forbes, S. A.**—The lake as a microcosm. Bul. Nat. Hist. Surv., Illinois, xv, 537-50. **Forbin, V.**—Comment on nourrit "Les infirmes" dans un jardin zoologique.—La Nature, 1925, 382-3. **Hayward, K. J.**—Mites on insects. **9,** 1926, 14. **Hunter, W. D.**—Obituary with portrait and bibliography. **10,** xxvii, 169-81. **Light, S. S.**—Fauna and flora of apple bark. **75,** xvii, 126-49. **Lutz, A.**—Adolpho Lutz: a leader in South American medicine and biology. By M. M. Metcalf—Sci. Month., 1926, 113-4. **McAtee, W. L.**—Policies relating to type specimens of insects. **10,** xxvii, 181-7. **Maulik, S.**—Study of taxonomic zoology.—Nature, cxvii, 82. **Meissner, O.**—Zur richtigen betonung der lateinischen namen. **14,** xxxix, 146-7 (cont.). **Meissner, O.**—Wellentod der insekten. **18,** xix, 307-8. **Morse, A. P.**—Some rarities from Essex County, Mass. **5,** xxxvii, 298. **Pierce, W. D.**—Principles and ntilization of climatic control of insects. Lectures in Appl. Ent., (1), Pt. 2, p. 81-113. **Roeber, J.**—Luft und inzucht. **17,** xlviii, 2-3. **Ruediger, E.**—Entomologie und zettelkatalog. **17,** xlviii, 3-4. **Uffeln, K.**—Industriemelanismus. **18,** xix, 301-5. **Weiss, H. B.**—Similarity of insect food habit types

on the Atlantic and western Arctic coasts of America. **141,** lx, 102-4. **Zur klaerung** der rassenfrage in der entomologie. **64,** x, 109-12.

ANATOMY, PHYSIOLOGY, MEDICAL, ETC.—Anderson, E. G.—Crossing over in a case of attached X-chromosome in Drosophila m.—Genetics, x, 403-17. **Bridges & Anderson**—Crossing over in the X-chromosome of triploid females of Drosophila.—Genetics, x, 418-41. **Demerec, M.**—Reddish—a frequently "mutating" character in Drosophila virilis. **119,** xii, 11-16. **Jeffrey & Hicks**—Evidence as to the cause of so-called mutations in drosophila.—Genetica, vii, 273-86. **Metz, C. W.**—Chromosome studies on Sciara (Diptera). **141,** lx, 42-56. **Muller, H. J.**—Regionally differential effect of X rays on crossing over in autosomes of Drosophila.—Genetics, x, 470-507. **Muller & Dippel**—Chromosome breakage by x-rays and the production of eggs from genetically male tissue in drosophila.—Brit. Jour. Exper. Biol., iii, 85-122. **Payne, N. M.**—Effect of environmental temperature upon insect freezing points.—Ecology, vii, 99-106. **Warren, E.**—Spermatogenesis in spiders and the chromosome hypothesis of heredity.—Nature, cxvii, 82-3.

ARACHNIDA AND MYRIOPODA.—Hayward, K. J.—Mites on insects. **9,** 1926, 14. **Kuekenthal & Krumbach.**—Handbuch der zoologie. iii. Tardigrada. Von F. Richters. pp. 1-68; Pentastomida. Von R. Heymons. pp. 69-128. **Millot, J.**—La secretion de la soie chez les araignees. **77,** xciv, 10-11. **Savory, T. H.**—Evolution in spiders. Sci. Progress, London, xx, 475-80. **Zebrowski, G.**—Preliminary report on the morphology of the American dog tick. **1,** li, 331-69.

(N) ***Chamberlin, R. V.**—New sp. of the lithobiid genus Nampabius from Tennessee. **4,** lvii, 291. ***Crosby & Bishop.**—A new gen. and two n. sps. of spiders collected by Bufo quercicus. **39,** ix, 33-6.

THE SMALLER ORDERS OF INSECTA.—Abbott, C. E.—Relative importance of vision and the chemical sense in Anax larvae. **5,** xxxvii, 315-8. **Johnson, C. W.**—Mantispa interrupta and M. brunnea in New England. **5,** xxxvii, 318. **Pulkkinen, A.**—Ueber die larven einiger odonaten. **51,** v, 111-14.

(N) ***Curran, C. H.**—Descr. of two insects found in imported food-stuffs. **4,** lvii, 292-3. ***Tillyard, R. J.**—Kansas

permian insects. VII. Order Mecoptera. Am. Journ. Sci., xi, 133-64.

(S) *Snyder, T. E.—New termites from Guatemala, Costa Rica and Colombia. 108, xvi, 18-28.

ORTHOPTERA.—Glasgow, R. D.—Specimen of Melanoplus differentialis with four ocelli. 5, xxxvii, 285-90. Hollande, C.—Les cellules a urates des Acridiens orthopteres et la genese de ces urates. 69, clxxxi, 1175-6. Iwanowa, S. A.—Zur frage ueber die spermatophorbefruchtung bei den Acridodea (Locusta migratoria). 154, lxv, 75-86. Rabaud, E.—Variation chromatique chez Mantis religiosa. 77, xciv, 36-7.

(N) *Hebard, M.—North American genus Inscudderia (Tettigoniidae, Phaneropterinae). 1, li, 321-30.

(S) *Hebard, M.—Dermaptera and Orthoptera from the state of Sinaloa, Mexico. II, Saltatorial Orthoptera. 1, li, 265-310.

HEMIPTERA.—Neiswander, C. R.—On the anatomy of the head and thorax in Ranatra. 1, li, 311-20. Teyrovsky, V.—Studie o larvach corixidi. (Etudes sur les larves des corixides.) Pub. Faculte Sci. Univ. Masaryk, Brno, 1925, Cis. 57, 13 pp.

(N) *Drake, C. J.—Concerning some Tingitidae from the gulf states. 39, ix, 36-9.

LEPIDOPTERA.—Bird, H.—New life histories in Papaipema No. 23. 4, lvii, 303-6. Clark, A. H.—Some unusual and interesting butterflies from eastern Massachusetts. 5, xxxvii, 293-8. Cook, W. C.—Some weather relations of the pale western cutworm (Porosagrotis orthogonia). A preliminary study. Ecology, vii, 37-47. Ochmann.—Ein kleiner beitrag zur experimentellen beeinflussung der herbstgeneration von Van. urticae. 18, xix, 257-60. Paillot, A.—Sur un vibrion parasite des chenilles de Pieris brassicae. 77, xciv, 67-9.

(N) *McDunnough, J.—Notes on some sps. of the genus Anarta. 4, lvii, 307-9. *Reuss, T.—Boloria reiffi. 18, xix, 279-80. Seamans, H. L.—Notes on the genus Copablepharon in Alberta. 4, lvii, 287-90.

(S) Cockerell, T. D. A.—Terias leuce in Argentina. 9, 1926, 11. *Ehrmann, G. A.—New sps. of exotic Papilionidae. 59, (B), III, vol. i, 88-92. *Hering, M.—The macrolepidoptera of the world. Fauna americana, Pt. 172, Fam. Dioptidae; beginning. *Hering & Hopp.—Eine sammelaus-

beute des W. Hopp aus dem Choco Kolumbiens. 63, xxxix, 181-207. **Kremky, J.**—Neotropische Danaididen in der sammlung des Polnischen Naturhist. Staatsm. in Warschau. An Zool. Mus. Polonici Hist. Nat., iv, 141-275. ***Le Cerf, F.**—Description de quelques Morphos. 59, (B), III, vol. i, 98-108. ***Lathy, P. L.**—Notes on the American Theclinae. On the identity of Catagramma idas. 75, xvii, 35-47; 48. ***Stichel, H.**—Beitrage zur kenntnis der Riodiniden fauna Suedamerikas. VI. 45, xx, 256-64.

DIPTERA.—Bischoff, W.—Die metamorphose der Liponeura decipiens var. minor (Blepharoceridae). 89, li, Syst., 329-74. **Edwards, F. W.**—Extraordinary mating-habits in a mosquito. 8, 1926, 23. **Schander & Meyer.**—Untersuchungen ueber die fritfliege. 111, 1924, A, 12, p. 12-87. **Senior-White R.**—Physical factors in mosquito ecology. 22, xvi, 187-248.

(N) ***Bequaert, J.**—Notes on Hippoboscidae. I. Lynchia Weyenbergh and Lynchia Speiser are not congeneric. 5, xxxii, 265-77. ***Cole, F. R.**—Notes on the diptera of Laguna Beach, Cal. 13, xvii, 55-59. **Curran, C. H.**—Some syrphid synonymy. 4, lvii, 307. ***Curran, C. H.**—(See under Smaller orders.) **Hendel, F.**—Neue uebersicht uber die bisher bekannt gewordenen gattungen der Lauxaniidae, nebst beschreibung neuer gattungen u. arten [new neotropical species described]. 59, (B), II, vol. ii, 103-12. ***Johnson, C. W.**—New sps. of diptera from N. Carolina and Florida. 5, xxxvii, 299-302. **Seguy, E.**—Sur les Lucilia et les Chrysomyia de Macquart et de Robineau-Desvoidy. II, 59, (B), III, vol. ii, 93-4. **Shannon, R. C.**—Note on the distribution and synonymy of a myiasis producing fly (Lucilia argyricephala). 10, xxvii, 196.

(S) ***Brues, C. T.**—Some myrmecophilous Phoridae from the Neotropical region. 5, xxxvii, 303-12. ***Curran, C. H.**—Descriptions of four new Neotropical Diptera. 1, li, 259-64.

COLEOPTERA.—Blair, K. G.—On the luminosity of Pyrophorus. 8, 1926, 11-15. **Chittenden, F. H.**—Historical notes on Brachyrhinus rugifrons. 4, lvii, 290-1. **Forbes, W. T. M.**—Second abdominal pleurite in the higher coleoptera. 5, xxxvii, 290-2. **Meissner, O.**—Rueckgang auch der kaeferfauna. 14, xxxix, 137.

(N) ***Fall, H. C.**—New coleoptera. XI. 4, lvii, 309-12. ***Glasgow, R. D.**—New Phyllophaga (Scarabaeidae). 4, lvii, 293-6.

(S) ***Achard, J.**—Notes sur les Plagiodera Amerique et

descriptions especes nouvelles. 24, xciv, 427-39. *Britten, H.—A new bromeliadicolous ptilid (Trichopterigid) beetle from Trinidad. 8, 1926, 10-11.

HYMENOPTERA.—Alpatov, W. W.—Ueber die verkleinerung der russellange der honigbiene vom sueden nach dem norden hin. 154, lxv, 103-111. Kroening, F.—Ueber die dressur der biene auf toene. 107, xlv, 496-507. Parker, J. B.—Notes on the nesting habits of Bembex comata. 10, xxvii, 189-95. Robertson, C.—Habits of the hibiscus bee, Emphor bombiformis. 5, xxxvii, 278-82. Sturtevant, A. H.—Notes on the ant fauna of oak galls in the Woods Hole region. 5, xxxvii, 313-4. Verlaine, L.—Sur la precarte des caracteres distinctifs des Vespa vulgaris et germanica et sa signification biologique. 33, lxv, 315-49.

(N) Gahan, A. B.—Interesting records of two little-known parasitic hymenoptera. 10, xxvii, 188. Meyer, R.—Zur bienengattung Sphecodes. 111, 1924, A, 12, p. 1-12. [Also neotropical.]

SPECIAL NOTICES.

British Hydracarina. By Soar & Williamson. Pub. by The Ray Society, London, 1925, 214 pp., pls. Altho this work treats of the British species, it should be of interest to American students on account of its monographic nature.

The North American Dragonflies of the Genus Somatochlora, by E. M. Walker. University of Toronto Studies, Biological Series No. 26. 1925. 8vo., 202 pages, 17 text figs., 35 pls.

In 1912 the same author put forth a notable work having a similar title, except that the generic name was *Aeshna;* it formed No. 11 of this same Biological Series; a notice of it appeared in the News for June, 1912, pages 283-6. During much of the intervening time Dr. Walker has been engaged upon the present work, for, like *Aeshna, Somatochlora,* the largest of the Corduliine genera, is more fully represented in species in the northern part of North America and his location in Toronto has enabled him to study these dragonflies more easily than students farther south.

The species of *Somatochlora,* as the name suggests, are, for the most part, green insects, especially of a metallic green on head and thorax, the eyes of a brilliant green above. Many of them, in the early days of adult life, "commonly fly at a considerable height, often 30 to 50 feet or more," so that "often it is hopeless to attempt their capture." "At other times one

may find an individual patrolling a small shady opening, partly surrounded by trees, and at such times they fly back and forth or around the space at an average height of about 4 or 5 feet and are then fairly easily captured." "Few of the species are easily obtained in settled districts; most of them are local even where the genus is well represented, and they are seldom abundant even in the immediate vicinity of their breeding places. They are shy denizens of the wilderness, being seen at their best in the northern coniferous forests and the mountains, and in consequence of the comparatively remote nature of their habitats our knowledge of their habits and early stages, as well as their taxonomy, has lagged behind that of other genera of Odonata." Those of us who have watched *Somatochlora* hopelessly overhead in the pine barrens of New Jersey, or have sought it along Indianan creeks, appreciate full well Dr. Walker's remarks on "the rarity of large series of Somatochlora in collections and the difficulties attending the field study of the species." Yet he has examined about 1300 specimens in his own and other museums.

Somatochlora comprises about 36 described species, 21 in North America, 16 in Eurasia; *S. sahlbergi* Trybom, 1889, from Siberia, regarded as identical with *S. walkeri* Kennedy, 1917, from Alaska, is common to the two continents. In North America, Fort Simpson on the Mackenzie River and the Kuskokwim River, Alaska, both at about 61° 40′ North Latitude, are the most northern localities yet observed for this genus, while a female of *S. filosa* has been taken east of Fort Meade, Florida. The genus is most richly represented in the Canadian life zone.

The treatment of the subject matter is similar to that in the author's *Aeshna*, although the order followed is not always the same. The general part of the present work occupies 37 pages, as compared with 54 in the former; special mention should be made of the description of the eggs and first seven larval instars of *S. kennedyi* and illustrated in plates xvii and xxv. The development, under laboratory conditions, was very slow: eggs collected in July, 1923, hatched in April, 1924; six or seven moults occurred up to September 29, after which and up to Jan. 9, 1925, no moults were recorded, although at this last date the nymphs were still in good condition. Details are reserved for future publication when the life history has been more fully worked out. Dr. Walker thinks at least three winters are passed in the course of the life cycle and that very probably in the far north, if not elsewhere, four years may be required.

"Southern species of *Somatochlora* tend to be more slender and more elongate than northern, somewhat less metallic, with a

scantier pubescence. . . . No definite geographical races appear in the material I have examined, unless the form described as *S. incurvata* is merely a large local southern race of *S. forcipata*."

Twenty-one species are recognized, two of them (*georgiana* and *whitehousei*) here described as new. Separate keys to the adult males, to the adult females and to the known nymphs (13 species) are given. The full specific descriptions occupy 136 pages; many of them are accompanied by a map of North America in the text showing the distribution of the species in question. Twelve pages contain the list of references.

The first four plates show dorsal and lateral views of the male appendages; apices of female abdomens follow in three more. The color patterns of the entire body for both sexes, in black and white halftones (not, alas, as in the beautiful colored figures of the *Aeshna* monograph!) fill pls. viii-xiv. Then come the genitalia of the second abdominal segment of the males (2 pls.), the early stages (9 pls.), reproductions of photographs of body and wings (8 pls.) and of two habitats (2 pls.).

Like its predecessor, this monograph has been well and carefully done and few works in odonatological literature equal it in the detailed information which it contains.

P. P. Calvert.

Doings of Societies.

The Third International Congress of Entomology, Zürich, 19th-26th July, 1925.

I. Resolution, Horn—Escherich—Nuttall.

The Section II for Systematics and Geographical Distribution having had under consideration the relation of Systematics to Applied Entomology wish to record the following observations and recommendations:

Observations. 1. An enormous expansion in Applied Entomology has recently taken place throughout the world. This has necessitated, as a first step, the exact determination of an immense number of insects. The result has been to show the utter inadequacy of the present means for undertaking such work.

2. While the existing organization of Applied Entomology is efficient in some countries (notably in the United States and Great Britain), the number of trained workers available in all countries is generally recognised as totally insufficient. Everywhere the systematic specialist is overburdened, and his load has now become an intolerable one.

3. Neither Systematic nor Applied Entomology has yet received due recognition in academic circles. Entomology has long been the Cinderella of the Sciences. Entomological work, especially Systematic Entomology, has been regarded as being definitely inferior in quality to work in other branches of Zoology. It is within the knowledge of the framers of this resolution that postgraduate students have been advised not to undertake research in Systematic Entomology on the ground that it led nowhere. At few, if any, European Universities is Systematic Entomology accepted as a qualification for a degree.

4. Such facts constitute a grave danger to science, both pure and applied, and, as a remedy for this state of affairs, the Section II proposes the following

RECOMMENDATIONS. A. With regard to Universities:

1. That the teaching of Systematic Entomology at Universities be adequately provided for by the establishment of chairs especially devoted thereto;

2. That meritorious systematic work should be regarded as qualifying candidates for ordinary and advanced degrees at Universities.

B. With regard to Museums:

3. That immediate steps should be taken to increase the number of entomological assistants, both systematic and technical, in Museums and that this should be done in a manner proportionate to the amount of specific work entailed;

4. That in the appointment of persons to administrative posts in Museums and like institutions due regard, inter alia, should be given to a candidate's experience in systematics.

C. With regard to Bibliographical Institutions:

5. That each country should have a central Bibliographical Institute (Library) for Entomology.

This Resolution, framed by W. Horn, K. Escherich and G. H. F. Nuttall, and in addition signed by C. Börner, J. Davidson, H. Eidmann, K. Eckstein, K. Jordan, R. Kleine, O. Morgenthaler, A. Schuberg, M. Schwartz, F. Stellwaag, J. Waterston and C. B. Williams, was unanimously agreed to at the General Meeting of the Congress on the 25th July.

II. Resolution proposed by the Section V. for Applied Entomology.

This Congress considers it essential that the problems underlying Applied Entomology should be studied, and desires to impress upon Governments and Institutions concerned with Applied Entomology that time must be devoted to Systematic Entomology and fundamental research such as Insect Physiology, Ecology and Pathology, since only by the study of these can insect control be placed on a sound basis.

This Resolution, signed by C. Bolivar Pieltain (Spain), C. Börner (Germany), J. Davidson (England), T. Bainbrigge Fletcher (India), L. O. Howard (U. S. A.), J. Jablonowski (Hungary), R. Stewart MacDougall (England), G. A. K. Marshall (England), J. M. Munro (England), O. Schneider-Orelli (Switzerland), F. Schoevers (Holland), F. Stellwaag (Germany), W. R. Thompson (U. S. A.), I. Trägardh (Sweden), F. W. Urich (Trinidad), C. B. Williams (Egypt) was unanimously agreed to at the General Meeting of the Congress on the 25th July.

Nomenclature.

The provisional committee, elected for the duration of the Congress, proposed and the Congress, in its General Meeting of 25th July, unanimously passed the following resolution:

The Congress considers it desirable to express the opinion

(1) that in future (i. e., from the time when the revised rules of nomenclature have become law) it shall be compulsory for the publication of a new genus to be accompanied by a description of the genus as well as by the citation of an already known species or by the description of a new one; and

(2) that in future a new name published must be accompanied by a description in words (or a reference to a former such description) also in the case of Lepidoptera.

Dr. J. Waterston proposed and the Meeting unanimously agreed that this Resolution be sent to all Editors of Entomological Journals.

OBITUARY.

The *Entomologist's Monthly Magazine* and *The Entomologist,* of London, for November last, contain obituary notices of Prof. Harold Maxwell Lefroy, whose death on October 14, 1925, as a result of exposure to insecticidal gases in his laboratory in London, attracted universal attention in the daily papers of the time. We summarize their accounts as follows: He was born January 20, 1877, at Itchell Manor, Crundall, Hants, England; educated at Marlborough School and at King's College, Cambridge, and at the latter, under the influence of Dr. David Sharp, specialized in entomology. From 1899 to 1903, he was Entomologist to the Imperial Department of Agriculture for the West Indies, and was stationed chiefly at Barbados. From 1903

to 1910, he was Imperial Entomologist for India, then returned to England. In 1912 he became Professor of Entomology in the Imperial College of Science at South Kensington, a position which he occupied at his death, and where he was largely occupied with researches into the life histories and the means of destruction of injurious insects. During the Great War he was called to the British army in Mesopotamia to deal with the house-fly problem, and later to Australia on account of the grain weevils. His chief publications are *Indian Insect Pests* (1906), *Indian Insect Life* (1910) and *A Manual of Entomology* (1923). A notice of the second of these will be found in the NEWS for February, 1910, page 91. The writer in the first magazine cited at the beginning of this notice links the name of Lefroy with that of Arthur Bacot as those of martyrs to the cause of entomological research in the service of man.

On January 30, 1926, GEORGE ALEXANDER EHRMAN died at his home, 2314 Sarah Street, Pittsburgh, in the sixty-fourth year of his age.

Mr. Ehrman was born February 2, 1862, not far from the residence, which he owned, and in which he had lived for the last thirty-six years of his life. In his boyhood he completed a course in the public schools of Pittsburgh and then began to earn his livelihood in a glass-factory. He became a very skillful workman and, being of an inventive turn, produced a number of devices, which came into general use in the manufacture of blown and pressed glass. He was long connected with the Macbeth-Evans Glass Company and the United States Glass Company of Pittsburgh. During the later years of his life he was employed in the Research Laboratory of the Mesta Machine Company at West Homestead, Pennsylvania.

Mr. Ehrman amassed a competence by energy and thrift and was able during most of the years of his later life to gratify his inborn love of natural history. He was particularly interested in entomology and especially in the Lepidoptera and Coleoptera. He likewise took an interest in ornithology. He was one of a group of young men in Pittsburgh, chiefly of German

descent, who in the final decade of the last century began to collect and study the insect-fauna of western Pennsylvania. He was one of the original members of the Entomological Society of Western Pennsylvania. Subsequently he became a member of a number of similar societies both in this country and in Europe.

At first Mr. Ehrman made extensive collections of the Lepidoptera and Coleoptera of western Pennsylvania; later he became attracted to the showier exotic forms, making a specialty of the genus *Papilio*. His collection, representing this genus, is very extensive. Not long before his death he informed the writer of these lines that he believed his collection to contain almost all of the species which have been attributed to this genus, as well as a great number of subspecific forms and aberrations. It is understood that his entire collection in pursuance of his wishes is to become the property of the Carnegie Museum.

Mr. Ehrman wrote a number of articles, which appeared from time to time in various entomological publications. In these he either described species and varieties, which he believed to be new to science, or recorded his observations upon habits or habitats. More than a dozen of his papers appeared in the earlier volumes of ENTOMOLOGICAL NEWS; others were published in *The Journal of the New York Entomological Society*, the *Canadian Entomologist*, and elsewhere. These articles, so far as the Lepidoptera are concerned, mainly relate to the genus *Papilio*, the genus *Catocala*, and the butterflies and moths of Liberia, from which country he received a good deal of interesting material. His papers of coleopterological content treat mainly the various species of the genus *Cychrus* and its allies, of which he brought together a considerable assemblage from all parts of the world.

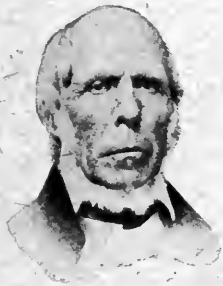
Mr. Ehrman was an industrious and enthusiastic worker, a genial companion, and a good story-teller, whose mirth-provoking tales of life in a glass-factory will long be remembered by his friends. He never was married. He is survived by a brother, Mr. Robert Ehrman, and two sisters, Mrs. Elizabeth Fritz, of Pittsburgh, and Mrs. Kate Roessler, of Terre Haute, Indiana.

W. J. HOLLAND.

APRIL, 1926

ENTOMOLOGICAL NEWS

Vol. XXXVII No. 4



JAMES RIDINGS
1803-1880

CONTENTS

PHILADELPHIA, PA.
THE ACADEMY OF NATURAL SCIENCES,
Logan Square

Entered at the Philadelphia, Pa., Post Office as Second Class Matter.
Acceptance for mailing at the special rate of postage prescribed for in Section 1103, Act of October 3, 1917, authorized January 15, 1921.

ENTOMOLOGICAL NEWS

published monthly, excepting August and September, by The American Entomological Society.

Philip P. Calvert, Ph.D., Editor; E. T. Cresson, Jr., Associate Editor; Henry Skinner, M.D., Sc.D., Editor Emeritus.

Advisory Committee: Ezra T. Cresson, Philip Laurent, J. A. G. Rehn.

The subscription price per year of ten (10) numbers is as follows:

United States and possessions . .	$3.00
Canada, Central and South America .	3.15
Foreign	3.25

Single copies 35 cents

ADVERTISING RATES: Full width of page. Payments in advance.
One issue, 1 in., $ 1.20, 2 in., $ 2.40, half page, $ 4.00, full page,, $ 8.00
Ten issues " 11.00, " 20.00, " 35.00, " 70.00

SUBSCRIPTIONS AND ADVERTISEMENTS. All remittances, and communications regarding subscriptions, non-receipt of the NEWS or of reprints, and requests for sample copies, should be addressed to **Entomological News, 1900 Race St., Philadelphia, Pa.**

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STATED MEETINGS

Of The American Entomological Society will be held at 7.30 o'clock P. M., on the fourth Thursdays of each month, excepting June, July, August, November and December, and on the third Thursdays of November and December.

Communications on observations made in the course of your studies are solicited; also exhibits of any specimens you consider of interest.

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ENTOMOLOGICAL NEWS

VOL. XXXVII APRIL, 1926 No. 4

The Butterflies of Avon, Connecticut (Lepid., Rhopalocera).

By ROSWELL C. WILLIAMS, Jr., Philadelphia, Pennsylvania.

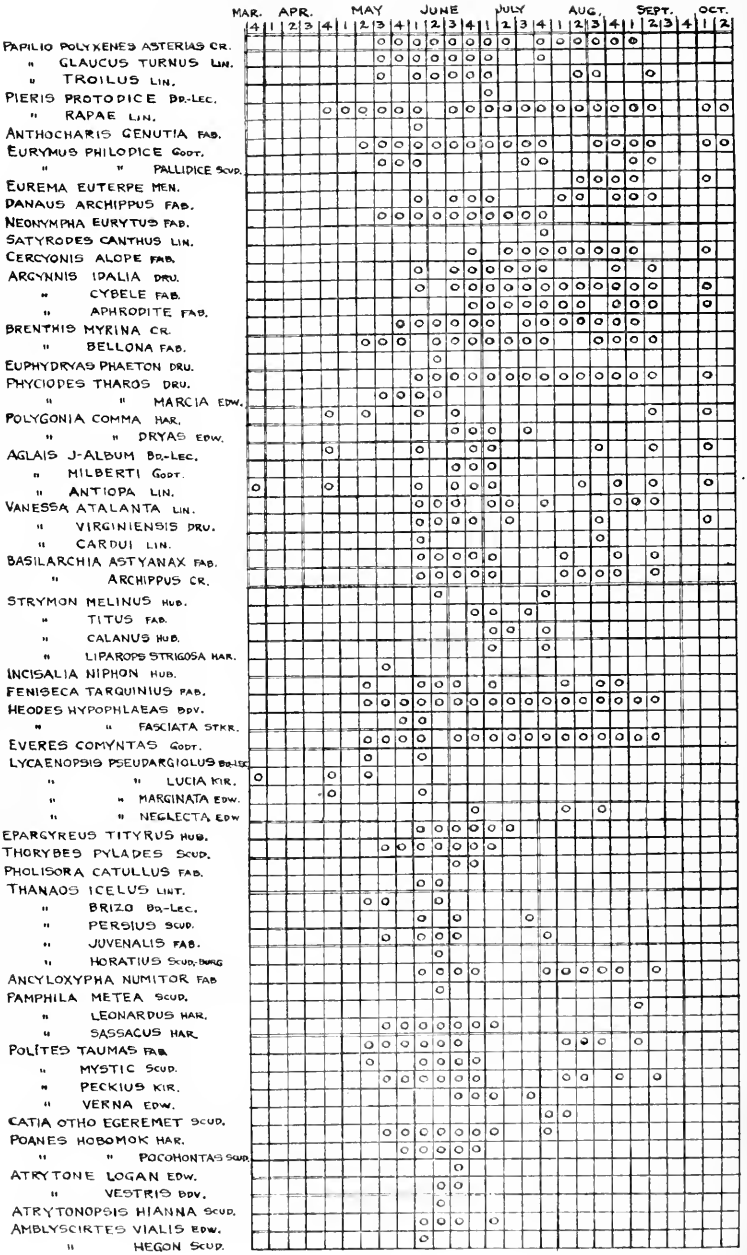
During the years 1902 to 1914 I spent from two to four week-ends each season in my Mother's home in Avon, Connecticut, collecting and observing the butterflies that were flying in that locality, and I publish herewith a list of the species captured and their time of appearance as observed by me during that period. I was in Avon at one time or another throughout the season with exception of the last two weeks in September.

The house is on the side of a hill known as Talcott Mountain and at an elevation of about three hundred feet, the top of the mountain having an elevation of about seven hundred and fifty feet. The collecting was all done within a mile's radius of my Mother's home. Avon is eight miles west of Hartford and seven miles north of Farmington, Connecticut. While this list probably does not include all of the species that may be found there, it is, at any rate, a definite record of actual captures. Some of the insects were only seen once. *Anthocharis genutia* is represented by a single female, which was caught on the front porch. The most northern previous record that I am familiar with is New Haven, Connecticut, as recorded by Mr. Scudder. *Satyrodes canthus* was only observed once, but there were several individuals flying.

Picris protodice was not observed until 1911, and then it appeared to be somewhat abundant. A small, swampy lot of a few acres back of the house, having an abundant growth of wild flowers, would sometimes be fairly alive with the Argynnids and *idalia* was always abundant.

The accompanying list shows the distribution of the species for each of the four weeks of each month.

The nomenclature used is that of the Barnes & McDunnough list, except for some changes I have made in the names of the Hesperiidae.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4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2
PAPILIO POLYXENES ASTERIAS CR.
" GLAUCUS TURNUS LIN.
" TROILUS LIN.
PIERIS PROTODICE BD.-LEC.
" RAPAE LIN.
ANTHOCHARIS GENUTIA FAB.
EURYMUS PHILODICE GODT.
" " PALLIDICE SCUD.
EUREMA EUTERPE MEN.
DANAUS ARCHIPPUS FAB.
NEONYMPHA EURYTUS FAB.
SATYRODES CANTHUS LIN.
CERCYONIS ALOPE FAB.
ARGYNNIS IDALIA DRU.
" CYBELE FAB.
" APHRODITE FAB.
BRENTHIS MYRINA CR.
" BELLONA FAB.
EUPHYDRYAS PHAETON DRU.
PHYCIODES THAROS DRU.
" " MARCIA EDW.
POLYGONIA COMMA HAR.
" " DRYAS EDW.
AGLAIS J-ALBUM BD.-LEC.
" MILBERTI GODT.
" ANTIOPA LIN.
VANESSA ATALANTA LIN.
" VIRGINIENSIS DRU.
" CARDUI LIN.
BASILARCHIA ASTYANAX FAB.
" ARCHIPPUS CR.
STRYMON MELINUS HUB.
" TITUS FAB.
" CALANUS HUB.
" LIPAROPS STRIGOSA HAR.
INCISALIA NIPHON HUB.
FENISECA TARQUINIUS FAB.
HEODES HYPOPHLAEAS BDV.
" " FASCIATA STKR.
EVERES COMYNTAS GODT.
LYCAENOPSIS PSEUDARGIOLUS BD.-LEC.
" " LUCIA KIR.
" " MARGINATA EDW.
" " NEGLECTA EDW.
EPARGYREUS TITYRUS HUB.
THORYBES PYLADES SCUD.
PHOLISORA CATULLUS FAB.
THANAOS ICELUS LINT.
" BRIZO BD.-LEC.
" PERSIUS SCUD.
" JUVENALIS FAB.
" HORATIUS SCUD.-BURG
ANCYLOXYPHA NUMITOR FAB
PAMPHILA METEA SCUD.
" LEONARDUS HAR.
" SASSACUS HAR.
POLITES TAUMAS FAB.
" MYSTIC SCUD.
" PECKIUS KIR.
" VERNA EDW.
CATIA OTHO EGEREMET SCUD.
POANES HOBOMOK HAR.
" " POCOHONTAS SCUD.
ATRYTONE LOGAN EDW.
" VESTRIS BDV.
ATRYTONOPSIS HIANNA SCUD.
AMBLYSCIRTES VIALIS EDW.
" HEGON SCUD.

Landmarks in the History of the Study of Insect Hibernation.

By NELLIE M. PAYNE, University of Minnesota.

It is a far cry from the simple observations of an Aristotle that insects do hibernate to the refined measurements of the Danish physiologist, Krogh, on the rate of metabolism during hibernation. This tiny portion of the great field of physiology has already yielded varied and interesting results.

The first landmark in the history of the study of insect hibernation is the work of Aristotle. He knew that insects hibernated in a state of torpor.

The Roman period and the dark ages of science we pass by to come upon the work of Réaumur and Huber. These workers deserve a high rank among the pioneers in experimental and observational entomology. It is surprising to see how modern, how accurate, and how ingenious were the methods used by these workers, the former nearly two hundred years ago. The observations of Réaumur and Huber on the hibernation of bees stand out with amazing force and freshness. Réaumur also did the first quantitative experiment to determine the exact degree of low temperature which insects can endure and still live. His material was larvae found in wood. His method was to place these larvae in thin glass tubes in freezing mixtures of marine salt and water. He recorded the temperature of the freezing mixture by means of the thermometer which he, himself, had lately invented. Réaumur is known to biologists as a lover of pure science and often thought to be a scholarly recluse. Yet a careful study of his life shows that he was a busy man of affairs. He held the offices which today would be the equivalent of the National Research Council Chairmanship, the Secretaryships of Commerce and of the Interior, besides managing his own large estates.

The next workers along the path are Englishmen, Kirby and Spence (1818). They devote a chapter of thirty-five pages to a study of insect torpidity and insect hibernation. They ascribe the hibernation of insects to a provision of the allwise Creator against a time of want. Not content with mere

philosophizing these authors perform some experiments on the hibernation of bees. They also sum up the work of preceding authors.

The next significant landmark is the work of Vaudoner (1827) on the lethargy of caterpillars. Vaudoner emphasized the periodicty of hibernation. He was one of the first workers to state clearly that insects could go into a state of hibernation when the temperature was still high and the food supply was plentiful. The work of Vaudoner has been overlooked by many later biologists but is suggestive of the possibility of experimentation along many lines relating to lethargy and hibernation.

Along with the advance in experimentation in the acquiring of knowledge comes the invention and perfection of instruments of precision. Nobili and Melloni (1833-4) were the first workers to use the thermocouple method to determine the temperature of insects. This instrument had been devised by Seebeck about ten years previous.

One of our own countrymen, Scudder (1887), deserves to stand as a landmark in this smaller field of insect study under consideration as he does in the larger fields of paleontology and taxonomy. His treatise on insect hibernation and insect lethargy forms the subject of two excursus in his *Butterflies of the Eastern United States and Canada.*

The next outstanding worker is Bachmetjew. He summarized the literature of the preceding workers, made extensive additions of his own and analyzed the data thus obtained to make one coherent theory of the vital temperature minimum of insects. He used the thermocouple method to determine the freezing point of insects. He published his results from 1898 to 1901, this last date marking the publication of his monumental work, *Experimentelle entomologische Studien vom physicalisch-chemischen Standpunkt aus,* Band. I. We can say monumental, although the volume contains but one hundred and sixty pages. The new viewpoint that is expressed in the title so clearly, that no one can fail to grasp the import, is the quality that makes this book outstanding. Quantitative physicochemical entomology was now possible.

Krogh in Denmark forms another outstanding worker. His use of insect material in the study of quantitative physiology demonstrates a few of the great possibilities present in the investigation of insect material. Krogh's (1914) measurements of rate of metabolism at low temperatures and during hibernation are an expression of the quantitative study of hibernation, which has already yielded varied and interesting results.

Only a few of those who have contributed to the study of hibernation have here been mentioned, and only those who lay in the direct line of development as near as that line can be ascertained today. To the workers of today in the new field of insect hibernation, it may be well to point out that there were earnest investigators two hundred years ago in this same field. To these pioneers we must give credit and also learn something at least from their worthy efforts.

Migrations of the Long-Beaked Butterfly, Libythea bachmani Kirtland (Lepid. : Libytheidae).[1]

By D. C. Parman, Assistant Entomologist, Bureau of Entomology, United States Department of Agriculture.

Since the establishment of the laboratory at Uvalde, Texas, in the fall of 1913 by the United States Bureau of Entomology, the Long-beaked Butterfly has frequently been observed. It is thought that a brief record of these observations may be of value to those interested in the study of insect behavior. No general flights of the long-beaked butterflies were noted until the summer of 1916; a few small flights occurred during the summer of 1917 and a few specimens were seen in 1918, but no flights of consequence were observed that year. A considerable number of these butterflies appeared in migration during the summer of 1921, but all of these flights were very small compared with the flights of 1916.

It has not been possible to correlate the climatic conditions of the two years with the flights. The summer of 1916 was com-

[1]Approved for publication by the chief of the Bureau of Entomology, United States Department of Agriculture.

paratively rainy and rather cool, whereas the summer of 1921 was relatively hot and dry. The migrations observed during both years took place in the month of August, always after rains, which were generally light as compared to other rains of the season. Butterflies have been observed in large numbers during other years in the bottoms along the streams and in low valleys, but apparently no migrations took place. The number of butterflies which took part in the migrations of 1916 is almost unbelievable.

The amount of rainfall in inches for the period during which the writer has been stationed at Uvalde was as follows: for 1914, 21.18; 1915, 13.65; 1916, 33.34; 1917, 11.80; 1918, 12.00; 1919, 38.52; 1920, 18.24; 1921, 17.86; 1922, 20.95; 1923, 29.84; 1924, 15.68.

The precipitation by days during the months from May to September of the two years when large migrations occurred was as follows, in inches:

1916. May 1 .28, 2 .22, 18 .28, 20 (trace), 21 .77, total 1.55. June 15 .58, 16 .05, 30 .09, total .72. July 5 .5, 9 1.77, 14 .68, 21 .4, 23 .37, 27 .6, 28 .92, 30 .15, 31 .51, total 6.20. August 1 1.3, 6 (trace), 7 .4, 16, 17 (trace each), 19 3.1, 21 .4, 24 (trace), 28 2.0, total 7.20. September 1 3.01, 2 2.01, 13 .35, 14 .25, total 5.62.

1921. May 1 2.4, 10 (trace), 11 .3, 15 .8, 16 .06, 17 1.68, total 5.22. June 3 .2, 8 (trace), 10 .05, 12 .5, 13 1.73, 14 .4, 15 .04, total 2.92. July 6 (trace), 7 .42, 8 .22, 11 .3, 30 .22, total 1.16. August 28 .19, 29 .1, total .29 September 8 .33, 9 .61, 11 .02, 29 .24, total 1.20.

Migrations of 1916

During the early part of the summer and early fall of 1916, large numbers of many species of Lepidoptera were present in the vicinity of Uvalde. Butterflies were by far the most conspicuous and were probably the most abundant. The roadsides were lined with them and reports were received of automobile radiators becoming clogged with them to the extent of stopping the air circulation sufficiently to cause the engine to overheat. The writer took many mutilated specimens from radia-

tors, but never observed a radiator with a sufficient number on it to interfere seriously with cooling. *Libythea bachmani* was probably the predominating species, but several others were almost as abundant and were more noticeable in the roads; *L. bachmani* kept more to the heavy growths of grasses, weeds and timber, and in low moist places it was the only species observed to make definite migratory flights.

The first migration occurred August 1; the last, August 28. Many individuals were observed before and after the above dates. A single one was found November 10, about 4 p. m. in the warm sun on the west side of the insectary in a semi-stupor, but was fresh in appearance and unmutilated. This was the last observed during the fall. It was found dead on the ground the next morning.

The flights always took place in the afternoon and generally from 4 p. m. to 6 p. m. The largest flights occurred after rains which fell on the previous day or night. A few individuals were observed to pass nearly every day during August and the first days of September, but in most cases these flights could not be considered as general migrations, for the travel was broken and at times out of the general course. The movements were in a general easterly direction. At times they deviated slightly to the north or south, more often to the south. The prevailing wind during August was from the southeast. The migrations never took place when there was more than a moderate breeze and then the divergence was to the north. During calm afternoons the movement was decidedly to the southeast. When there was any decided air movement the butterflies flew low. No migration was observed when there were heavy clouds or the least precipitation.

The insects moved almost in a straight line and seemingly without effort on calm days at a speed of from 10 to 15 miles per hour, as was judged on several occasions by driving with the flight in an automobile. The movement would slow as the air movement increased. If an individual was disturbed and thrown behind any natural obstruction, it would fly about in an indefinite way until it finally came in contact with the regular

stream and would then proceed with it. When a migrant was flying low enough to encounter natural obstructions it would keep the same general course and move over the object from 6 to not more than 24 inches from it. On calm days, individuals were observed as high in the air as the unaided eye could detect (from 125 to 150 feet).

The number of butterflies in the flights was small at first, but increased until the last flights would literally fill the air. The following excepts are from notes made on the days of the most extensive migrations:

Aug. 1: A large number of butterflies is flying southeast just above the natural obstructions up to as far into the air as the natural eye can detect. Specimens taken by climbing to top of house. Flight began about 5:30 p. m.; none flying at sundown.

Aug. 2: No specimens observed flying this morning. A few are flying at 6 p. m.

Aug. 8: While driving west of town observed butterflies migrating east in about double the numbers of the first flight. They are coming from the cane fields at 4 p. m.

Aug. 9: Thousands of the long-beaks are coming from the cane fields four miles west of town, where they were apparently feeding on the blooms of the cane heads. Many of the cane heads were entirely covered. Heavy migrations east were observed at 5:30 p. m.

Aug. 10: A few long-beaks began passing the laboratory close to the ground, headed in a northeasterly direction. A light breeze was blowing from the southeast. The breeze is stronger at 3 p. m. and the flight has stopped.

Aug. 17: A few of the long-beaks have been observed in flight during nearly all of the still evenings of late, but this afternoon the air is full at 4 o'clock. This is the largest flight observed and at times the sky is almost hidden. All are passing to the east. At 5 p. m. a strong breeze came up from the east and the flight stopped.

Aug. 25: While driving to Uvalde from a point 20 miles away, observed many long-beaks to be flying east between 3 and 5 p. m.

Aug. 28: About 3 p. m. a flight toward the east began. A

light breeze was blowing from the east. The butterflies were flying close to the ground and followed very closely over obstructions. At 5:30 the wind had become calm, the butterflies had arisen in the air as high as could be seen, the lower ones just above the buildings. The flight increased until the air was full at 6 p. m. and lasted 30 minutes. 6:45: not a specimen can be seen.

Migrations of 1921

On July 30 at the laboratory, a few individuals were trying to fly against a strong breeze from the southeast; 2 p. m. they flew close to the ground and many alighted on mesquite trees in the back yard. Nothing was observed on July 31, but on August 1, at the laboratory, the long-beaks were migrating in moderate numbers to the east against a moderate breeze from the southeast. Five miles north of town they were flying in greater numbers than at Uvalde, which was a considerable flight. On August 2, only an occasional adult was migrating to the east.

No more migrations were observed during the year at the laboratory, but Mr. A. P. Nicholson, instructor in Sydney University, Sydney, Australia, who was visiting in Uvalde and making a study of the insect fauna, made the following observation on August 27 and 28:

About three miles north of Concan, on August 27, a large number of butterflies, probably the long-beak, was observed flying steadily in the same direction. As near as I can judge, the direction of the flight was south by east, as it was inclined a little more to the east than the direction of the road. The insects were flying at a fair height, on the average about 20 or 30 feet from the ground. The flight was observed from about 5 to 6 o'clock, and on proceeding south along the road, I continued to observe the insects for two or three miles. There had been heavy rains during the day and the flight was observed to have commenced a short time after the weather had cleared.

On August 28, about 6:30 p. m., the insects were again observed but in small numbers. This was at a point about three miles northwest of Uvalde. Again the insects were flying in a general southeasterly direction.

Although a few specimens of *Libythea* have been seen each

year from 1922 to 1924, inclusive, no migrations have been observed at Uvalde since 1921.

Food Habits

Celtis sp. is given as the food plant of *Libythea bachmani*. This tree is not uncommon in this district, but no case of defoliation has been observed.

The adults have been found on several sweets: Aphis honey, fruits, sugars and flowers. They apparently prefer the sorghum flowers to anything else. In many sorghum fields they have been observed in large numbers; at times in 1916 there was scarcely a flowering head that did not have from 1 to 10 of them on it.

Notes on a Migration of the Snout Butterfly (Lepid., Libytheidae).

By Robert K. Fletcher, College Station, Texas.

On September 23d, 1925, there passed through College Station, Texas, a great migration of the Snout Butterfly, *Libythea bachmanni* Kirt. The butterflies were proceeding southward at an estimated speed of eight miles an hour. The wind was blowing from the south at an estimated rate of from three to five miles an hour. The day was warm, 97 degrees F., with bright sunshine. The greatest number of individuals passed through between 2 P. M. and 6 P. M.

There were thousands of butterflies and the most striking features were the manner and steadiness of their flight. The great majority were flying within three feet of the ground. An obstruction in their path, say a board fence or small house, would hardly cause them to perceptibly pause, before they flew over or around it. If one were missed with the net it might swing to one side but the southward flight would be immediately resumed. The migration passed with the steady persistance of a deep-flowing stream.

About twelve hours later a "norther" struck College Station. The temperature dropped to 65 degrees F. while the wind changed to the north and increased to twenty miles an hour.

Did these butterflies migrate because of this "norther"? Were they fleeing southward before it? In other words were they started upon their migration by a drop in temperature probably accompanied by an increase in wind velocity? I do not think so. First, they passed through here about twelve hours ahead of the "norther." Second, how could they have gained so much time on the "norther" with its wind velocity of twenty miles an hour? This is supposing, of course, that the increased cold, which might be considered to have initiated their migration, was accompanied by a wind of this velocity. Third, why did they continue on their way after they had gained twelve hours and against a south wind?

Dr. Alvin R. Cahn, of the University of Illinois, in an article upon the Migration of Animals, (American Naturalist, Nov.-Dec. 1925), offers as an explanation of this phenomenon: "Physiological changes going on within the body, mainly the sex organs." Cannot the southward migration of these butterflies be better explained in this way than by assigning it either to instinct or to an immediate response to a single stimulus?

Dr. L. O. Howard kindly had the species determined for me.

A New Parasitic Bee from Colorado (Hymen.: Coelioxynae).

By T. D. A. Cockerell and Chas. H. Hicks, University of Colorado, Boulder, Colorado.

Holcopasites haematurus sp. n.

♂.—Length, little over 7 millimeters; head and thorax black, with appressed white pubescence; region about antennae covered with rather long, white hairs; head and thorax densely coarsely punctured but shining between punctures; labrum black, not carinate, proximal part, at least, covered with long, white pile; mandibles simple, proximal quarter black, distal quarter castaneous; joint 3 of antennae as long as 4+5; antennae black, scape curved and rather coarsely punctured; maxillary palpi 5-jointed, long and slender, proximal joint about as long as two distal joints, second and third slightly longer than last two; labial palpi 4-jointed, first joint much longer than second; tongue long and pointed at tip.

Scutellum conspicuously but obtusely bilobed; mesopleurae bulging, truncate anteriorly and posteriorly; tegulae castaneous;

wings dusky, especially on apical margins; stigma and nervures black; basal nervure meeting nervulus; first cubital cell nearly twice as large as second; second broad, receiving recurrent nervures very near base and apex; legs black; tibial spurs pale red.

First four segments of abdomen entirely red; fifth red with large, round, black spot in the middle; apical segments black; first segment with two widely separated patches of white hair on basal portion and a little on lateral margins; segments 2—5 with basal and lateral patches of white hair; venter with narrow white hair bands; apical plate parallel sided, broadly rounded at apex.

In Crawford's key this species runs nearest to *H. illinoiensis* Robertson, but is larger, with the abdomen brighter red and the apical plate black (red in *H. illinoiensis*). The position of the recurrent nervures is quite different from that of *H. stevensi* Crawford.

Boulder, Colorado, June 21, 1925, at White Rocks (Chas. H. Hicks); on the flowers of a boraginaceous plant. Type in Cockerell collection.

In 1878 Cresson described *Philoremus fulviventris*, collected by Hy. Edwards in California. Ashmead in 1899 made this the type of a peculiar American genus, *Neopasites*. Crawford in 1916 added a second species, *N. cressoni*, also from California. However Ashmead also separated a genus *Holcopasites*, without including any named species. The form he had in hand, to which he had given a manuscript name, proved to be the *Philoremus illinoiensis* of Robertson. For a number of years it was held that this *Holcopasites* could not be separated from *Neopasites*, so that several species were catalogued under the latter name. But Crawford, having access to specimens of the true *Neopasites*, was able to find good distinguishing characters, and accordingly revived *Holcopasites* for all the species except the two cited above. The generic name is really to be credited to Crawford, who (Ins. Ins. Mens. III, 1925, pp. 123-124) first cited a species, and gave a table for the separation of the known forms. Today we know nine species of *Holcopasites*, including the one described above. *Neopasites camia* Ckll. becomes *Holcopasites camia*. The species occur from Washington, D. C., to Texas and Colorado, and north to Alberta.

Remarks on Hesperia freija Warren (Lepid.: Rhopalocera).

By E. L. Bell, Flushing, New York.

Under the title "A New European Skipper," Mr. B. C. S. Warren described *Hesperia freija* in the *Transactions of the Entomological Society of London*, parts 1-2, pages lvi-lvii, 1924, and figured it on Plate B, figures 1 to 5; in his paper Mr. Warren states that the species is found "in Colorado at an altitude of 13,000 feet; Labrador and other parts of N. America; and in the extreme north of Europe."

As the title of this paper does not indicate the occurrence of the species in North America, it might well escape notice, and it will therefore be of interest to students of North American Hesperidæ to know of this addition to the described species of our fauna. *Freija* is similar to *centaureae* Rambur and probably confused with it in collections containing Canadian or western specimens. Mr. Warren, however, points out that

H. freija is readily distinguished from *centaureae* by the complete row of white spots between the median band and the white marginal band on the underside of the hind-wings, and their characteristic arched shape. These spots are only very rarely all present in *centaureae* and always of quite irregular formation. Also by the want of the tooth-like white spot, projecting from the outer margin of the hind-wing in *centaureae*, along both sides of nervure 5. This tooth-like projection is never present in *freija*. Further, *freija* is a smaller insect than *centaureae*, and in shape its wings are usually much more elongated than the wings of the latter insect.

Mr. Warren also states that the genitalia of *freija* are distinct from those of *centaureae;* and that Prof. Reverdin figured the genitalia of *freija* as those of *centaureae* in his "Revision of the Genus Hesperia," plate 402, figure 5023.

In response to my inquiry in regard to the type material of *freija*, Mr. Warren has written me that the type specimens of *freija* are a male from Labrador in the collection of Prof. Reverdin, and a female from Lapland in his own collection; his other American records are from specimens in the British

Museum from "Colorado; Alberta; Labrador; Colorado, Bullion Mountains, 13,000 feet." The European *freija*, he states, is confined to Lapland.

In the writer's collection there has been for some time, a female specimen collected on the top of Pikes Peak, Colorado, on June 28th, 1922, by Mr. George P. Engelhardt, of Brooklyn, N. Y., and during the early part of 1925, a few, somewhat worn, males and females were received from Mr. E. J. Oslar, who collected them on Ouray Peak, Colorado, in August; all of these specimens, it was noted, differed from specimens of *centaureae* taken in New Jersey; shortly after the receipt of the Ouray Peak specimens, Mr. Warren's paper came to the writer's notice and a comparison of the specimens with the figures of *freija* left little doubt that they were that species, though some of them showed slight variation in maculation from the figures and all averaged somewhat larger than the New Jersey specimens of *centaureae*, not smaller, as stated in Mr. Warren's paper. However, the writer has no specimens of either species from Europe or Labrador, and their relative size may be different when comparison is made with specimens from other localities.

Specimens from Ouray Peak were sent to Mr. Warren, and he has very kindly made a genitalic examination of the males and pronounces them to be *freija*, though he says that they are not so distinctly marked as his type specimen. It would, of course, be expected that, in view of the widely separated localities from which they came, some variation would be found.

Ceratina dupla (Hym.: Ceratinidae).

Is the little bee, *Ceratina dupla*, like the poor—and the crows? Do we always have it with us? It is among the last to fly in the fall; in midwinter I have seen these small carpenter bees, head down, deep in sumac borings. I should think it would get tired, standing there, waiting for April and the willow blossoms. No wonder they come in crowds to the very first spring flowers, they have been ready for them so long. Specimens have been taken in April, May, July, August, September—doubtless they are present also in June. N. McMURRAY, Clearfield, Penna.

Key to the Known Adult Trombiculas (Adults of Chiggers) of the New World with Descriptions of Two New Species (Acarina, Trombidoidea).

By H. E. Ewing, Bureau of Entomology, United States Department of Agriculture.

In the past but three adults of chiggers (adult Trombiculas) have been known from the New World. The first to be discovered was *Trombicula coarctata Berlese*. This species was described in 1888 and is known to occur in Paraguay and Argentina. The next adult described was *Trombicula splendens* Ewing, which was taken in a tamarack swamp near Portage, Wisconsin, on September 2, 1909, by the writer. The third adult was described by the writer in 1920 as *Trombicula cinnabaris* from specimens taken at East Falls Church, Virginia, and North Beach, Maryland, during the summer of 1919. The larva of this third species has since been reared. It proved to be the common North American chigger, *Trombicula irritans* Riley.

In this paper two more adult Trombiculas are described, one from Peru and one from Panama. These new species are both very large, each being fully twice as long as our common North American chigger.

Members of the genus *Trombicula* may be recognized from all other harvest mites (Trombidiidae) in their adult state by having a deep constriction of the body slightly in front of the middle. They are found in moist soil or in moist organic accumulations, especially in tropical or subtropical woods.

Trombicula alleei, new species.

Color of preserved alcoholic specimen, a brownish cinnibar. Palpi slender, extending almost to the tips of first femora: thumb of palpus only very slightly swollen and scarcely surpassing the claw; distal segment with rather weak but strongly curved palpal claw and on its inside a comb of three, subequal, approximate spines. Eyes large and conspicuous with strongly curved corneas, situated above first coxae and far in front of the pseudostigmatic area. Pseudostigmatic area conspicuous, posterior lobes touching on median line and oval; pseudo-

stigmata small, situated almost on the lateral margins of pseudostigmatic area; pseudostigmatic organs very slender, flagelliform. Setae of body medium, longer on the shoulders and posterior margin. They are colored and provided with conspicuous barbs for about four-fifths of their length, but the barbs toward the tip are smaller.

First pair of legs much the longest, second and third pairs subequal and slightly shorter than the fourth pair. Tarsus I slightly curved, slightly swollen, and very slightly longer than tibia I; tibia I longer than patella I; patella I and femur I subequal; tarsus II and tarsus III each almost one and one-half times as long as tibia II and tibia III, respectively; tarsus IV considerably longer than tibia IV; tibia IV but very slightly longer than patella IV.

Length, 2.5 mm.; width, 1.4 mm.

Type locality.—Barro Colorado Island, Panama, Canal Zone.

Type.—Cat. No. 953, U. S. N. M.

Described from a single specimen taken on Barro Colorado Island, Panama, Canal Zone, by Professor W. C. Allee, of the University of Chicago. This large species is quite different from any adult *Trombicula* heretofore known from America. It is similar, however, to the second species to be described as new in this paper, from which it is differentiated particularly in the nature of the body setae as indicated in the appended key to the known Trombiculas of the New World.

Trombicula peruviana, new species.

Color of preserved specimen a light brownish orange. Palpi slender, reaching to about the tips of first femora; palpal thumb slender, not swollen, and slightly surpassing the palpal claw; penultimate segment very slender and bearing at its free end the rather small palpal claw which is slightly over one-half as long as the segment bearing it. In addition to the palpal claw, the penultimate segment bears on its inside a comb of three long, approximate spines, the middle of which is larger than the other two. Eyes projecting, with strongly curved corneas and situated far in front of the pseudostigmatic area. Pseudostigmatic area large, posterior lobes oval, approximate to median line; pseudostigmata situated near the lateral margin of pseudostigmatic area; pseudostigmatic organs, very slender, flagelliform and with a few pectinations. Setae of body very long, especially on the shoulders and posterior margin; barbed conspicuously for about two-thirds their length, but the tips almost bare.

First pair of legs much longer than the others; tarsus I slightly swollen, almost straight and about one-fourth longer than tibia I; tibia I clearly longer than patella I; patella I and femur I subequal. Tarsus II and tarsus III about one and one-fourth times longer than tibia II and tibia III, respectively. Tarsus IV not swollen, considerably longer than tibia IV, and tibia IV considerably longer than patella IV.

Length, 2.5 mm.; width, 1.5 mm.

Type Locality.—Peru. *Type.*—Cat. No. 954, U. S. N. M.

Described from a single adult collected in Peru, June, 1920, ("El Campaniento, Col. Perene"). This specimen was sent to the United States National Museum from Cornell University, by Professor Cyrus R. Crosby. *T. peruviana*, new species, differs from *T. alleei*, new species, particularly in the nature of the body setae, as has been stated.

Key to the Known Adult Trombiculas of the New World.

A. Eyes present and well developed; setae of body but slightly longer on the posterior margin than on the shoulders, and colored.

B. Eyes with strongly convex corneas and situated far in front of base of dorsal groove; length of adults over 2 mm.

C. Setae of body shorter and distinctly barbed to the tips, those on the shoulders about half as long as femur I.....*T. alleei*, new species.

CC. Setae of body longer and indistinctly barbed toward the tips, those on the shoulders about as long as femur I...*T. peruviana*, new species.

BB. Eyes with corneas less convex and situated approximate, laterally, to the expanded base of dorsal groove; length of adults about 1 mm.

T. irritans (Riley).

AA. Eyes vestigial or absent; setae of body usually considerably longer on the posterior margin than on the shoulders.

B. Posterior lobes of pseudostigmatic area smaller, more or less angulate and situated immediately behind the pseudostigmata; body setae not thinner at their tips than elsewhere....*T. coarctata* Berlese.

BB. Posterior lobes of pseudostigmatic area larger, rounded, and not situated behind the pseudostigmata; body setae thinner at their tips than elsewhere. .....*T. splendens* Ewing.

A New Acmaeodera from Nevada Infesting Purshia (Col.: Buprestidae).

By W. S. Fisher, U. S. Bureau of Entomology.

Acmaeodera purshiae, new species.

Rather broadly elongate, broadly rounded in front, more strongly attenuate posteriorly, and moderately convex above (nearly straight below and strongly arcuate above when viewed in profile), strongly aeneous above and beneath, with a feebly brownish tinge, and each elytron ornated as follows: a small round yellow spot at humeral angle, a larger rounded yellow spot at base near scutellum, a broad irregular transverse fascia at basal fourth, a slightly oblique fascia at middle, a similar fascia at apical fourth, and a small oblique fascia at apical sixth, which extends narrowly along the lateral margin to apex, all the fasciae extending from the lateral margin to the first or second stria, the anterior two yellow with the median part red, while the posterior two have the external part red and the internal area yellow.

Head nearly flat, with a short longitudinal carina on the occiput; surface densely and coarsely punctate, the punctures round, rather deep, more closely placed on the front, and from the center of each arises a long, fine, erect hair, the intervals smooth and moderately shining; epistoma broadly and deeply angularly emarginate in front, forming a broadly rounded lobe on each side of the emargination; antennae serrate from the fifth joint.

Pronotum strongly transverse, and moderately convex, one and three-fourths times as wide as long, slightly narrower in front than behind, widest just behind the middle, with a broad impression on each side in front of the posterior angles, and a broad, obsolete one in front of the scutellum; sides feebly arcuately rounded, not flattened, and the margins only visible anteriorly from above; anterior margin feebly arcuately emarginate, with a slightly angulated median lobe; base transversely truncate; surface rather densely and coarsely punctate, the punctures rather small and widely separated on the disk, but becoming much larger and more or less confluent toward the sides, and rather densely clothed with very long, fine, erect hairs, the intervals smooth and shining.

Elytra moderately convex anteriorly, and feebly flattened on disk toward apex, only slightly wider than pronotum at base, and rectangular at the humeral angles; sides nearly parallel to middle, where they are slightly arcuately expanded, then

strongly arcuately attenuate to the tips, which are conjointly arcuately rounded, with the lateral margins coarsely serrate posteriorly; humeri strongly developed; surface striato-punctate, the striae not impressed on the disk, but becoming deeply impressed toward the apex and sides, with the punctures coarse and distinctly separated in the discal striae, but more or less confluent at the sides, the intervals flat, and from two to three times as wide as the striae on disk (the sutural intervals not expanded anteriorly), with a single row of widely separated punctures from each of which arises a very long, erect, inconspicuous hair.

Abdomen beneath sparsely and not very coarsely punctate on the basal segment, the punctures becoming coarser and more numerous on the apical segments, moderately clothed with long, semierect, cinereous hairs, and the intervals smooth and shining; last segment acutely rounded at apex, with a distinct subapical carina. Prosternum rather densely and coarsely punctate; anterior margin with a distinct tooth on each side of the middle; prosternal process convex, and the sides parallel to behind the coxal cavities, twice as wide as the cavities, and broadly rounded at apex.

Length, 7-8 mm.; width, 2.5-3 mm.

Type locality.—Reno, Nevada.

Type and *paratype.*—Cat. No. 28323, United States National Museum.

Described from two specimens. The type was cut from a cell in a dead twig of *Purshia tridentata*, January 4, 1923, on the slope of Mount Rose, five miles southwest of Reno, Nevada, at an altitude of 5,000 to 6,000 feet, by H. S. Barber, and the paratype was reared June 27, 1923, from dead branches of the same plant collected at the type locality by Mr. Barber. This plant is locally called "Buck Brush" and is very abundant on the hills around Reno. Many of the plants show considerable work of this beetle, as well as that of various other species of borers.

This species belongs to the *sinuatae* group as designated by Fall (Jour. N. Y. Ent. Soc., Vol. 7, 1899, p. 5), and in his table of this group runs to *fenyesi* Fall, from which it differs in having the elytra ornated with distinct transverse yellow and red fasciae.

ENTOMOLOGICAL NEWS

PHILADELPHIA, PA., APRIL, 1926.

The Need for Systematic Entomologists.

In the News for March, page 93, we published some observations and recommendations of the International Congress of Entomology held at Zürich last July to the effect that present means are inadequate for the exact determination of the immense number of insects of which Applied Entomology must take cognizance; everywhere the systematic specialist is overburdened and his load has become intolerable; neither Systematic nor Applied Entomology has yet received due recognition in academic circles; that the teaching of Systematic Entomology at Universities be adequately provided for by the establishment of chairs especially devoted thereto; that meritorious systematic work should be regarded as qualifying candidates for ordinary and advanced degrees at Universities; that immediate steps should be taken to increase the number of entomological assistants, both systematic and technical, in Museums and that this should be done in a manner proportionate to the amount of specific work entailed.

In his address on "The Smithsonian Institution, its Function and its Future" delivered before the American Association for the Advancement of Science, Jan. 1, 1926, and published in *Science* for Feb. 5, Dr. Austin H. Clark said (p. 153):

"It is the duty of the Bureau of Entomology to protect us from the ravages of insect pests. But work in economic entomology requires as a starting point an accurate identification of the insect to be studied. . . . The accurate identification of an insect is by no means a simple matter. In the first place there are more than six hundred thousand different kinds of insects known . . . new kinds are being described at the rate of about six thousand every year. . . . Unless one happens to be an expert in the particular group concerned it is almost hopeless to attempt to trace out [a given insect] . . . Many insects, sometimes of widely different habits, are so very similar that it is practically impossible to distinguish them without an actual comparison by an expert with specimens in a reference collection. . . We can see from all this that economic entomology must have the services of a staff of competent men

trained to note the differences between the various kinds of insects. The Smithsonian proposes to aid in maintaining such a staff of workers in pure research. As a natural corollary to this work, the Smithsonian will publish monographs in which the widely scattered information will be presented as the basis for efficient advance.

The entomologists clearly recognize the existence of a shortage of systematists and the necessity for supplying the demand. Can those having the power to meet this need be made to see the present difficulties of the situation and provide a living wage for each of those human beings who are willing and desirous of devoting themselves to insect taxonomy?

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE

Personal Mention.

Science for Feb. 12, 1926, stated that Prof. G. F. Ferris, of the department of entomology of Stanford University, has returned to the University with a collection of plants and insects from Tres Marias, a group of islands off the west coast of Mexico, and that

Dr. Raymond C. Shannon, of the U. S. Bureau of Entomology, left for Buenos Aires on Jan. 30, where he is going to study the mosquitoes of the region under the auspices of the Argentine government.

Mr. Chas. T. Greene, of the U. S. Bureau of Entomology, has gone to Panama to make a special study of the fruit flies and particularly *Anastrepha*. He expects to be there for about three months.

"Butterflies of California."

The work which is in process of publication under this title bears promise of issuance in about three months. When completed, it will contain over sixty full page colored plates and numerous half tone figures. Fifty-one of these color plates are now completed. Sets of these plates which included Nos. 2 to 38 were distributed to important Libraries, Museums, and specialists in the United States and Canada, and the individual plates, as far as published, are on sale at the Dawson Book Shop, 627 So. Grand Avenue, Los Angeles.

Dr. John Adams Comstock, the author, who has for six years been the Director of the Southwest Museum has resigned from

that position and reentered the practice of medicine. He will retain the post of Honorary Curator of Entomology, and his numerous other scientific connections, and thus have more time at his disposal to devote to the study of the lepidoptera. Mr. Charles L. Haskell succeeds Dr. Comstock as Director of the Southwest Museum.

Cocoon Spinning (Hymen.: Parasitica).

Last August (1924), a big luna larva broke out in parasites and it was pleasing to watch the tiny things spin cocoons. The head of the translucent, whitish grub makes a break in the green skin of its host, pushes through, and, moving from side to side, gradually works its way out.

The caudal end of the little creature rests on the big worm, the body bends over and the spinneret begins to work: the cocoon being started at the lower end. The head moves up a certain distance and a strand of silk comes out, the head goes down and the loop is fastened. The process reminds one of pulling taffy. From side to side the weaving goes on until it extends up well above the spinner's head, like a netted wall standing up in front of the worm. One larva seemed to make six loops each way and another turned after every ninth loop. When spinning this coat there is a certain degree of regularity: each loop seems to be of the same length—but they are not joined to the preceding row very exactly and it looks like a curly mass of white rather than a network when completed.

At the summit the insect makes a few circles, making the loops completely around one way, then turning the head and making them completely around the other way. It thrusts its head through this circle, crawls in and down until its head reaches the place where the spinning was begun. Its back is now covered with the dainty, fuzzy tangle of threads. For an instant the larva is standing on its head, but is apt to drop over, so the bare venter is next the back of the luna. The larva stoops over, resumes spinning and makes the second side of the outer part of the cocoon in precisely the same manner as the first, only fastening the rows on the sides to the other portion each time before it turns.

Next a few little stitches are made at the end and a few short stitches down to or below the center: a long stitch is drawn up to the top. Again little stitches go down and one long one comes up. The one-half is gone over in this fashion, then the larva turns around and weaves at the other end in the same way. By this time it is getting pretty well tied up

in a cage and it is not easy for the eye to follow its movements. But to see how the small ichneumon wove the outer coat crosswise, joining it lengthwise and the next coat it wove lengthwise, joining it across the middle, was interesting.

The old luna must be a patient creature as it hangs for days while fifty or more of these active worms come through its skin and weave their nests. If the luna would shake a bit, they would all tumble off, for after the spinning is started they are never closely attached to the host. This big worm is covered with wounds, some of them soon get black, perhaps it feels too sick to be anything but quiet.

N. McMURRAY, Clearfield, Pennsylvania.

Occurrence of Morellia podagrica Lw. in North America. (Dip.: Muscidae).

On June 27, 1924, I collected a male of the above European species at Marshfield, Oregon; and on July 25 I collected a male and a female at Summit Station, Montana, at the south edge of Glacier National Park, altitude 5200 feet.

After identifying the species, being impressed by the wide distance between the two localities, it occurred to me to examine the western material of the common nearctic *Morellia micans* Mcq. in the National Museum (now including my own western material), to see if the species had not been previously collected, and not noticed. However, I found no mixture of *podagrica* in the collection; the three specimens mentioned are all I know from North America, and it will have to pass as a coincidence that I found it twice on a single western trip after collecting in the West for the greater part of the last thirty years.

The genus *Morellia* has been discussed and tabulated by Malloch in *Annals and Magazine of Natural History*, 1923, 520. From *Pyrellia* it differs in having no ventral bristle on the middle tibia. Our two nearctic species (there are several neotropical) differ in the male by such striking characters that they are very easily separated. In *micans* the male middle tibia is thickened apically, warped so as to be concave lengthwise behind, and has on its outer edge a row of delicate dense upright cilia, longer near the base; the hind tarsus has on the upper surface a row of upright hairs about twice as long as the thickness of the segments. In *podagrica*, a noticeably larger species, the tip of the middle femur has a tuft of stout bristles situated on a swelling; the middle tibia is slender at the extreme base, then suddenly expanded into a hump on the outer side at one-sixth its length, which bears numerous small

spiny hairs turned backward. The hump gradually diminishes toward the tip of the tibia, and there are some short, erect, spiny hairs all along the outer edge. The hind tarsus does not have striking hairs above.

The females are not easily separated. I identified my Montana specimen from collecting it with the male and not getting males of *micans* at the same time. I have seen but one European female, which is extremely like that of our abundant *micans*. *Podagrica* was described by Loew in Wiener Ent. Monatsschrift, 1, 45, 1852, as a *Cyrtoneura*.

J. M. ALDRICH,
U. S. National Museum, Washington, D. C.

Entomological Literature

COMPILED BY E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published.

All continued papers, with few exceptions, are recorded only at their first installments.

Papers of systematic nature will be found in the paragraph beginning with (N). Those pertaining to Neotropical species only will be found in paragraphs beginning with (S). Those containing descriptions of new forms are preceded by an *.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

Papers published in the Entomological News are not listed.

4—Canadian Entomologist. **6**—Journal, New York Ent. Soc. **7**—Annals, Entomological Society of America. **10**—Proc., Ent. Soc. Washington. **19**—Bull., Brooklyn Ent. Soc. **55**—The Pan-Pacific Entomologist. **77**—Comptes Rendus, Soc. Biologie, Paris. **78**—Bull. Biol. France et de la Belgique. **108**—Jour. Washington Acad. Sci. **111**—Archiv f. Naturg., Berlin. **133**—Jour. Experimental Zool. **135**—Quart. Jour. Microscop. Sci. **154**—Zoolog. Anzeiger.

GENERAL.—Baerg, W. J.—Effect of the venom of some supposedly poisonous arthropods of the canal zone.—**7**, xviii, 471-8. **Casey, T. L.**—Obituary by F. E. Blaisdell.—**55**, ii, 93-1. **Cushman, R. A.**—Location of individual hosts versus systematic relation of host species as a determining factor in parasitic attack.—**10**, xxviii, 5-6. **Herms, W. S.**—Entomological observations on Fannings and Washington Islands,

together with general biological notes.—55, ii, 49-54. **Rohwer, Baker & Ball.**—Entomological taxonomy: its aims and failures.—108, xvii, 53-67. **Weiss, H. B.**—The insects of the Panchatanatra.—6, xxxiii, 223.

ANATOMY, PHYSIOLOGY, MEDICAL, ETC.—Gatenby, J. B.—Spermatogenesis in spiders and the chromosome hypothesis of heredity.—Nature, cvii, 233-4. **Hilton, W. A.**—Some remarks on the peripheral nervous system of insects.—7, xviii, 537-42. **Pagden, H. T.**—Parthenogenesis in Methoca ichneumonides.—Nature, cxvii, 199. **Sokolska, J.**—Les heterochromosomes pendant la spermatogenese de araignee domestique (Tegenaria domestica).—Bul. Intern. Acad. Polon. Sci. et Let., 1925, (B), 477-91. **Weber, H.**—Das problem der gliederung des insektenthorax.—154, lxv, 233-48.

ARACHNIDA AND MYRIOPODA.—Barrows, W. M.—Modification and development of the arachnid palpal claw, with especial reference to spiders.—7, xviii, 483-525. **Larson, A. O.**—Further notes on human sufferings caused by mites, Pediculoides ventricosus.—55, ii, 93-5. **Millot, J.**—Contribution a histophysiologie des araneides.—78, Suppl., viii, 238 pp. **Pavlovsky, E. N.**—Studies on the organization and development of scorpions. V. The lungs.—135, lxx, 135-46. **Turchini et Millot.**—Sur la fluorescence en lumiere ultraparaviolette filtree (lumiere de Wood) des glandes sericigenes et de certains elements figures du sang des araignees.—77, xciv, 171-73.

(N) ***Chamberlin R. V.**—Notes on some centipeds and arachnids from the Carlsbad cave of New Mexico.—10, millipeds from Utah.—55, ii, 55-63. ***Crosby, C. R.**—Some xxviii, 1-5.

THE SMALLER ORDERS OF INSECTA.—Handschin, E.—Subterrane collembolengesellschaften.—111, 1925, A, 1, p. 119-38. **Wachter, S.**—Hatching of the eggs of Peripsocus californicus.—55, ii, 87-9.

(N) ***Ferris, G. F.**—The mallophagan family Menoponidae.—Parasitology, xviii, 1-3.

(S) ***Snyder, T. E.**—Five new termites from Panama and Costa Rica.—10, xxviii, 7-16.

ORTHOPTERA.—Davis, W. T.—Grasshopper Melanoplus differentialis on Staten Island, N. Y.—19, xx, 199. **Kloska, T.**—Das haemolymphsystem in kopfe von Blatta

orientalis.—Bul. Intern. Acad. Polon. Sci. et Let., 1924, (B), 461-67. **Kuhl, W.**—Die variabilitat der abdomenalen koerperanhange bei Forficula auricularia.—**154**, Suppl., 1, p. 145-52. **Weiss, H. B.**—Cockroaches for tetanus and indigestion.—**6**, xxxiii, 232.

HEMIPTERA.—Abbott, C. E.—Associative memory in the larvae of Anax junius.—**7**, xviii, 533-6. **Beamer, R. H.**—Notes on the oviposition of some Kansas cicadas.—**7**, xviii, 479-82. **Morrison, H.**—Scale insects.—Sci. Month., 1926, 243-46. **Weiss, H. B.**—Distributional records of Comstock's mealy bug in N. J.—**6**, xxxiii, 237.

(N) **Ferris, G. F.**—Observations on the Chermidae.—**4**, lviii, 13-20. ***Gillette & Palmer.**—Two n. sps. of the genus Lachnus.—**7**, xviii, 526-32. ***Knight, H. H.**—New Rhinacloa and three new sps. of Lepidopsallus (Miridae).—**19**, xx, 225-8. ***Teague, M. M.**—Review of the genus Aclerda (Coccidoidea).—**7**, xviii, 432-44.

(S) ***Metcalf & Bruner.**—Membracidae of Cuba.— **19**, xx, 203-214.

LEPIDOPTERA.—Barber, G. W.—Observations on the response of adults of the European corn borer to light in egg laying.—**7**, xviii, 419-31. **Bell, E. L.**—Hylephila phylaeus.—**19**, xx, 231. **Gerould, J. H.**—Inheritance of olive-green and blue-green, variations appearing in the life-cycle of a butterfly, Colias philodice.—**133**, xliii, 413-28. **Hamlin, J. C.**—Note on opuntia insects.—**55**, ii, 54. **Harrison & Garrett.**—Induction of melanism in the lepidoptera and its subsequent inheritance.—Proc. R. Soc. London, (B), xcix, 241-63. **Learned, E. T.**—Notes on the early stages of Estigmene prima (Arctiidae).—**4**, lviii, 1-2. **Rogers, W. P.**—Note on Pieris rapae and Brephos infans.—**19**, xx, 228. **Wood, W. C.**—Hints on mounting lepidoptera.—**19**, xx, 229-31.

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SPECIAL NOTICES.

Report of the international conference of phytopathology and economic entomology. Holland, 1923. This report of 290 pp. is of special interest to economic entomologists, but the following papers therein are among those which may be of interest to others: Contribution a l'étude de la famille "Aphididae Pass." Par L. Gaumont; Die anatomischen und mikrochemischen veraenderungen des kartoffelleptoms. Von Dr. von Brehmer. (The report contains for the most part papers on potato pests.)

Concerning the Habits of Insects. By F. Balfour-Browne, M. A., etc., Lecturer in Zoology (Entomology) in the University of Cambridge. Cambridge at the University Press 1925. 7¼ x 5 inches, pp. x, 169, 9 pls., 2 maps, 4 text figs., 6s. net.

"This book is the outcome of a course of lectures 'adapted to a juvenile auditory' delivered at the Royal Institution during the Christmas holidays 1924. Its object is not so much to describe the life histories of various insects as to explain how these life histories were worked out, in the hope that others may be encouraged to do similar work." The methods employed and the histories studied are based very largely on the author's own researches, which have been published in various scientific journals. It would have added much to the usefulness of the present well-written and entertaining volume if references to the places of publication of these researches had been given. In Lecture I, Insect Collecting and What it may lead to, dealing with the general and local distribution of aquatic beetles in the British Isles, the author has sketched his own entomological biography and how he was led to study problems of insect communities and of geographical distribution. Lecture II, The

Habits of Bees and Wasps, is suggestive of methods for rearing, observing and experimenting with a few of the attractive solitary species. Lecture III, The Habits of Caterpillars, is literally strung upon threads of their silk, tracing the development of shelters made by caterpillars which herd together from a mere carpet, then as a general web spread indefinitely over the food material and then as a definite fixed home. The author was, we believe, the first to publish the complete life-history of any dragonfly from egg to imago (Proc. Zool. Soc. London, 1909, pp. 253-285). It is very appropriate, therefore, that Lecture IV is on The Habits of the Dragonfly, wherein the main outlines of his findings are retold, with additions and comparisons from other sources, and with, as in the other lectures, suggestions as to problems still to be elucidated.

Mr. Balfour-Browne also first worked out the complete life history of *Dytiscus lapponicus* and so The Habits of the Water Beetle forms the subject matter of Lecture V, including also *Hydrophilus piceus*, *Hydrous caraboides* and *Donacia*. Emphasis is laid on the fact that "as in the case of the dragonflies, differences in structure and habit may occur in closely related forms, differences which frequently appear to be so trivial and yet which mean a great deal to the insects themselves in the way that they fit into the communities to which they belong."

"It may well be asked by some of those who have listened to the earlier lectures of this course, What is the use of all the work which has been described? And I can answer without any feeling of shame that, so far as I know, the work is of no use whatever and that my only object in undertaking it was that I was curious and wanted to know how the insects lived.

"I believe that there is still an ancient Physical or Mathematical Society which, at its annual banquet, drinks the following toast: 'Here's to the Society; let no one ever do anything that is of any use to anybody.' This sounds a very selfish, unchristian wish but it is the true scientific attitude—to do the work for the work's sake and never mind whether or not it is going to be useful.

"But a large amount of work done for its own sake turns out to be of use and, although we seldom recognise what we owe to the humble naturalist, he has contributed largely to our health and comfort."

In these paragraphs Lecture VI, The Habits of Insects and the Work of Man, opens and it continues with illustrations of the last sentence quoted which are much more familiar to us in America than many of the relations described in the preceding lectures—insects of importance in agriculture, the mosquito

and malaria and yellow fever, Havana and Panama, parasitic insects and the balance of nature.

Although originated for a "juvenile auditory", the book has not been "written down" and no adult need scorn its style or its contents. The insects described, although British, are not viewed from any local standpoint but interpreted in a broad, biological way. The summary and the quotations given above justify the belief, we hope, that this is "a different kind of book" and one which is well worth reading.

P. P. CALVERT.

OBITUARY.

EDWARD ALBERT BUTLER, author of *A Biology of the British Hemiptera-Heteroptera*, "a landmark in the progress of the ecological study of the Hemiptera and destined to become a classic of the subject," died at Clapham, England, November 20, 1925. He was born at Alton, Hants, March 17, 1845. From 1865 to 1919 he taught, or was vice-principal, in schools in Hastings and Tollington, London. His interest in the Hemiptera was due to the suggestion of Edward Saunders, after whose death in 1910 he became the foremost authority on British Heteroptera. His interest lay entirely in biology and life histories, not at all on the systematic side. His collections have been acquired by the British Museum of Natural History. A portrait accompanies an obituary notice in the *Entomologists' Monthly Magazine* for Jan., 1926, and another notice is in the same month's *Entomologist*.

The death of DR. SIGMUND EXNER in Vienna, on February 6, was announced in *Science* for February 26. According to *Who's Who in Science International* 1913, he was born in 1846, educated at Vienna and Heidelberg, professor of physiology in the University of Vienna and was a Hofrath and an Obersanitätsrath. To entomologists he was well known for his work *Die Physiologie der facettirten Augen von Krebsen und Insekten*, Wien, F. Deuticke, 1891. Some of his earlier papers on vision by compound eyes are listed in Packard's *Textbook of Entomology* p. 263. The frontispiece of his book of 1891 is an

actual photographic print of the imago of a window and a church steeple seen through it, as obtained by a camera and a microscope attached to the lenses and crystalline cones of an eye of *Hydrophilus*. He distinguished between appositional and superpositional images formed by compound eyes of insects in day and at night respectively, and gave figures showing the different positions occupied by the pigment in these two kinds of eyes.

In the NEWS for July, 1925, p. 224, the death of Prof. G. B. GRASSI was recorded. From an address delivered in his honor by Prof. F. Silvestri* we summarize his career as follows. Grassi was born in Rovellasca, Province of Como, March 27, 1854, was educated in schools at Saronno and Como, at the Universities of Pavia under Golgi, Messina under Kleinenberg, Heidelberg under Gegenbaur and Bütschli and Wurzburg under Semper. In the autumn of 1883 he was made professor of zoology, anatomy and comparative physiology in the University of Catania and in 1895 he was called to that of Rome. From his earliest studies on intestinal worms he proceeded to those on protozoa (especially of termites), on the misdeeds of the flies (Malefizi delle Mosche 1883) as carriers of eggs of worms and of spores of fungi, on the embryology of the bee, the morphology and phylogeny of the Arthropods, the biology of Termites, on the connection of malaria with *Anopheles*, the life history of *Phlebotomus*, on *Phylloxera* in Italy, as well as important researches on Chaetognaths, the development of the vertebral column and of marine eels. From 1908 on he was a member of the Italian Senate.

In his study of the embryology of the bee he made use of the method of sections, then relatively new, and asserted the bipolar origin of the endoderm, from an anterior and a posterior plate in opposition to the views then held of its origin from yolk cells. Between 1884 and 1889 he made a complete study of the Thysanura, leading to the conclusion that they are the most primitive insects, of *Scolopendrella* and of the arachnid which he discovered and described as *Koenenia*

* Onoranze a Battista Grassi Discorso del Prof. Filippo Silvestri. Roma Tipografia del Senato 1925. 47pp.

mirabilis. For his work with the aid of Sandias, on the constitution and development of the society of termites, together with his studies on the Muraenoid eels, he was awarded the Darwin gold medal of the Royal Society of London. He believed himself to have shown that the neoteinic or complemental royalties of Termites become such in consequence of a special diet to which they are subjected by the workers. In 1898-1900, he gave especial attention to the malarial problem, showing that all the Italian species of *Anopheles* (but not of *Culex*, *Phlebotomus* or *Mycterotypus*) propagate malaria and followed the entire cycle of development of *Plasmodium* in *Anopheles claviger*, finding it to be identical with that described by Ross for *Proteosoma*. His results of this period are summed up in his *Studi di uno zoologo sulla malaria* (1900), followed by a second, enlarged edition in 1901, which appeared also in German. In 1917 he returned to the malaria problem on which he continued to publish to the time of his death, on May 5, 1925.

John L. Healy of Chicago, Illinois, passed away very suddenly on January 22, 1926. He was born at Bolton, Vermont, May 12, 1864, but spent his youth at Belleville, Illinois, removing to Chicago in 1882.

He was an enthusiastic collector of Lepidoptera from boyhood and often recounted his experiences in Belleville. His present collection was started about 1891. Mr. Healy formerly had many correspondents but, owing to ill health, his activities lapsed for a time, although he always kept in touch with local collectors. During the last three or four years, when his health improved somewhat, he devoted considerable time to his own collection. A year or two ago he transferred it to the Chicago Academy of Sciences reserving the right to work with it at will and it now passes into the hands of the Academy without qualification. He was one of the organizers of the Chicago Entomological Society in 1899, and at the time of his death was its presiding officer. He will be missed by the local Entomologists for a long time to come.

He left surviving him his wife and two children, both married.

Alex. K. Wyatt.

MAY, 1926

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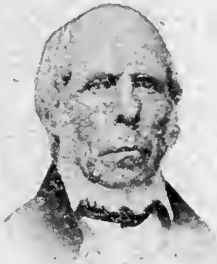

JAMES RIDINGS
1803-1880

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PHILADELPHIA, PA.
THE ACADEMY OF NATURAL SCIENCES.
Logan Square

Entered at the Philadelphia, Pa., Post Office as Second Class Matter.
Acceptance for mailing at the special rate of postage prescribed for in Section 1103,
Act of October 3, 1917, authorized January 15, 1921.

ENTOMOLOGICAL NEWS

published monthly, excepting August and September, by The American Entomological Society.

Philip P. Calvert, Ph.D., Editor; E. T. Cresson, Jr., Associate Editor; Henry Skinner, M.D., Sc.D., Editor Emeritus.

Advisory Committee: Ezra T. Cresson, Philip Laurent, J. A. G. Rehn.

The subscription price per year of ten (10) numbers is as follows:

United States and possessions	$3.00
Canada, Central and South America	3.15
Foreign	3.25

Single copies 35 cents

ADVERTISING RATES: Full width of page. Payments in advance.
One issue, 1 in., $ 1.20, 2 in., $ 2.40, half page, $ 4.00, full page,, $ 8.00
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Of The American Entomological Society will be held at 7.30 o'clock P. M., on the fourth Thursday of each month, excepting June, July, August, November and December, and on the third Thursday of November and December.

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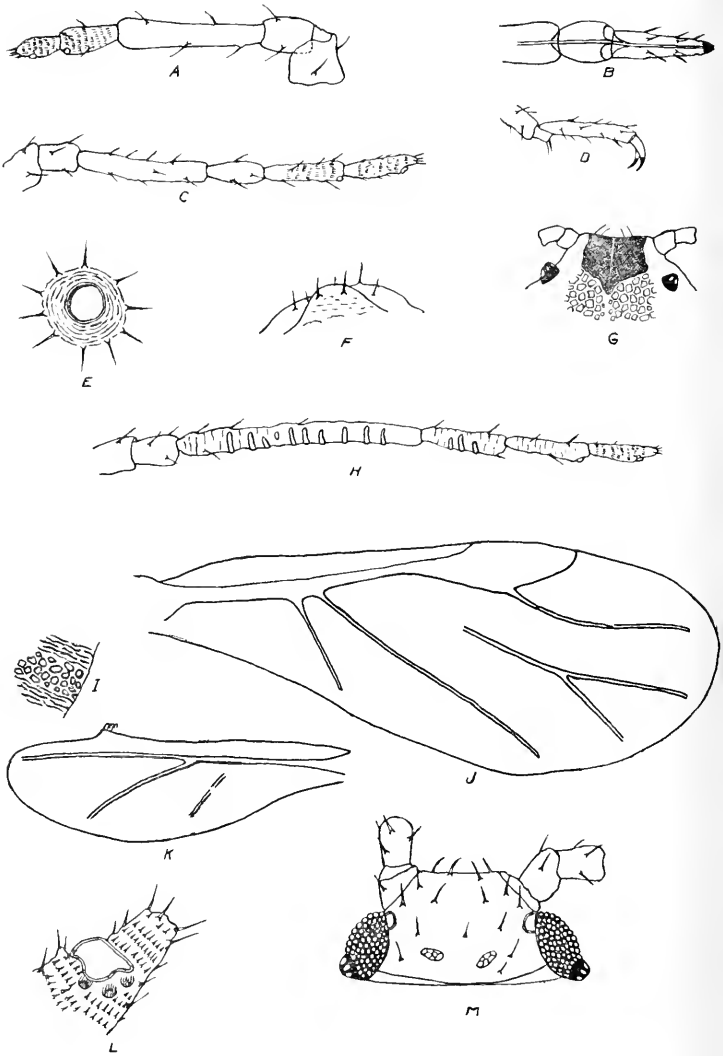

GEORGIA GILLETTEI N. SP.—MAXSON AND HOTTES.

ENTOMOLOGICAL NEWS

VOL. XXXVII MAY, 1926 No. 5

A New Tribe and a New Species in the Subfamily Pemphiginae (Homop.: Aphididae).

A. C. MAXSON & F. C. HOTTES, University of Minnesota.

(Plate V.)

In 1911, Wilson (1) erected the genus *Georgia* for *ulmi* a new species of aphid from the elm. Baker (2) placed *Georgia* in the tribe Eriosomatini. The senior author (3) following Baker also placed this genus in the tribe Eriosomatini. Later, after having examined Wilson's type and material from Iowa, representing an undescribed species of *Georgia*, it became apparent that this genus did not belong in the tribe Eriosomatini. Neither did it fit in any other tribe of the subfamily Pemphiginae. Therefore, a new tribe has been erected for the accommodation of *Georgia* including Wilson's *ulmi* and the species described as new in this paper.

GEORGIINI *new tribe.*

This tribe differs from Eriosomatini, to which it is closely related, in having all generations produced on one host; in having the sexuals produced by the 3rd generation which has been produced in the pseudo-gall formed by the stem mother; in the venation of the hind wing; and in the structure of the antennae and wax pores.

Characters: Antennae of fundatrix five-segmented. Cornicles slightly raised rings. Wax pores composed of irregularly shaped areas and bands; made up of many small several-sided facets. Rudimentary gonapophyses wanting. Fundatrigenia apterous. Antennae six-segmented. Wax pores similar in structure to those of the fundatrix. Cornicles as in fundatrix. Rudimentary gonapophyses wanting. Sexuparae alate; Antennae six-segmented; secondary sensoria weakly developed, not encircling the segments. Fore wing with *M* usually once forked, sometimes simple. Hind wing with *M* well developed; *Cu* absent or obsolete over part of its length. Cornicles as in the fundatrigenia. Rudimentary gonapophyses absent.

Georgia gillettei n. sp.

The type material was collected by Prof. J. E. Guthrie, June 18, 1924 on *Ulmus americana*, at Ames, Iowa. It was also collected by the junior author on the same host on May 24, 1924, May 30, 1924, and June 6, 1924. At these times it was quite common in the vicinity of Ames. Numerous attempts were made during the spring and summer of 1925 to collect more material but without success.

This species works on the under side of the leaves causing them to curl, thus forming a pseudo-gall within which the aphids may be found in large numbers. The leaves at the terminal ends of the branches seem to be preferred.

Description. Fundatrix: General color greenish-blue which is somewhat softened by the presence of a down-like pulverulence which covers the head, thorax and abdomen. Antennae yellowish-brown. Legs yellowish-brown. Antennae five-segmented. (Fig. A) Segments IV and V bear transverse rows of small, dark tubercles each terminating in a short spine. Permanent sensoria at the distal end of IV and at base of spur without fringe of cilia. Wax pores on base of head, segments of the thorax and segments I to VIII of the abdomen, composed of many small, several-sided facets; not bordered by chitinous ring. Those on segments VII and VIII of the abdomen form an unbroken band reaching the lateral margins of the abdomen. On the remaining segments of the abdomen and the thorax, these bands are broken into more or less irregularly formed areas, four to a segment. The wax pores on the lateral margins of the prothorax are much larger than the two dorsal ones. The latter are usually bordered in front by dark, more or less crescent-shaped spots. Two large wax pores are present on the base of head (Fig. G) nearly meeting at center line. Cornicles slightly raised rings, weakly developed, indistinct.

Beginning a short distance above the buccal lobe and extending over the front there is a dark, olive-brown area. This area begins narrowing a short distance back of the base of the head. Frequently this narrow portion is forked. In either case it separates the two wax pores on the base of the head. Eye tubercles dark brown. Beak, subgenital plate, anal plate and cauda, brown.

Measurements: Body 2.6mm long, 1.7mm wide. Relative lengths: Antennal segments; I, 4.5; II, 4.0; III, 12.0; IV, 4.5;

V, 3.5. Beak reaching 2nd coxae; terminal segment equal to or longer than hind tarsi. Front femur, 14; tibia, 18; tarsus, 5: Center femur, 15; tibia, 22; tarsus, 6: Hind femur, 19; tibia, 26.5; tarsus, 6.5.

Fundatrigenia: Apparently the young of the stem mother are all apterous. These apterous, viviparous females (fundatrigenia) give birth to the sexuparae.

General color greenish-blue. Head, thorax and abdomen clothed with down-like pulverulence. Antennae (Fig. C) six-segmented; no secondary sensoria, segments bearing several bristle like hairs. Permanent sensoria on V and VI without fringe of cilia. Cornicles (Fig. E) raised rings; distinct; on slightly raised cones surrounded by a circle of bristles on small tubercles. Beak reaching to the third coxae. Cauda broadly rounded. (Fig. F) Wax pores on thoracic segments and segments I to VII of the abdomen. Those on the abdominal segments VII and VIII form a continuous band reaching lateral margins. On other segments of the abdomen and the thorax the wax pores are more or less irregular in form. Four to a segment. Eyes three-faceted.

Measurements: Length of body, 1.2mm; width, .7mm. Relative lengths: Antennal segments, I, 3.0; II, 3.25; III, 10.5; IV, 4.5; V, 6.5; VI, 5.5. Front femur, 15.5; tibia, 18.0; tarsus, 6.0; Middle femur, 17.5; tibia, 24.5; tarsus, 6.75: Hind femur, 20; tibia, 24.5; tarsus, 7.5.

Sexupara: General color: head greenish-brown, lightly pulverulent; eyes brownish-black; antennae yellowish-brown. Thorax greenish-brown, lightly pulverulent. Legs yellowish-brown, tarsi slightly dusky. Abdomen greenish-blue, rather pulverulent. Antennae (Fig. H) six-segmented. Segments III, IV, V, and VI with slightly raised secondary sensoria; not distinctly annular. Sensoria not encircling the segments, some not as long as the diameter of the joint; frequently short oval. Number of secondary sensoria; III, 9-16; IV, 3-5; V, 0-4; VI, 0-1. Segments V and VI with well developed, permanent sensoria, membrane raised, constricted at the base. Two or three small sensoria (Fig. L) near large permanent one on VI; membrane raised at center forming a small cone. VI with transverse rows of very short bristles. V indistinctly imbricate. Beak (Fig. B) reaching 3rd coxae; apical joint longer than the hind tarsus (Fig. D) exclusive of claws. Wing venation variable. M of fore wing normally once forked; occasionally M of one or both wings simple. Fork of *M* usually short. Distance from tip of wing to fork rarely over two-thirds of that to base of stigmal vein. Hind wing with *M* present; *Cu*

wanting or obsolete through a portion of its length. Cornicles, raised rings on slightly raised cones surrounded by a circle of bristles on small tubercles. Cauda broadly rounded. Wax pores on abdomen (Fig. I) composed of many several-sided facets not surrounded by chitinous ring; on the seventh and eighth segments consisting of a continuous band reaching the lateral margins of the segments and covering nearly their whole length. Other segments with bands broken into four or more areas of irregular shape. There is a small wax pore on the inner posterior margin of the lateral lobes of the mesothorax, not visible in many specimens. Prothorax with two large dorsal pores nearly meeting at the middle of the segment. Lateral pores, if present, indistinct. There is a small oval wax pore on either side of the median line at the base of the head (Fig. M). In many specimens these are very indistinct, possibly wanting in some.

Measurements: Body 1.56mm long; .69mm wide. Relative lengths: Antennal segments; I, 3.0; II, 3.5; III, 18.0; IV, 6.0; V, 6.5; VI, 5.0. Front femur, 22; tibia, 27; tarsus, 7: Middle femur, 19; tibia, 30; tarsus, 8: Hind femur, 24; tibia, 37; tarsus, 9. Apical joint of beak, 9.25. Fore wing, 100 long; 36 wide: Hind wing, 60 long, 16 wide.

Holotype Sexupara, collected June 18, 1924, at Ames, Iowa, by J. E. Guthrie; in the collection of the junior author.

Comparison of *Georgia ulmi* and *G. gillettei:*

ulmi	*gillettei*
IV of antennae longer than V.	IV of antennae equal to or shorter than V.
Secondary sensoria on V, 3 to 5, most common number, 3 to 4.	Secondary sensoria on V, 0 to 4, most common number 1 to 2.
Terminal joint of beak distinctly shorter than hind tarsi.	Terminal joint of beak equal to or longer than hind tarsi.
Hind wind with Cu wanting.	Hind wing with Cu wanting or obsolete through a portion of its length.

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Hemipterous Family Aphididae. United States Department of Agriculture Bulletin No. 826, p. 67.

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EXPLANATION OF PLATE V.

Fig. A. Antenna of Fundatrix
" B. Beak of Sexupara
" C. Antenna of Fundatrigenia
" D. Hind tarsus of Sexupara
" E. Cornicle of Fundatrigenia
" F. Cauda of Fundatrigenia
" G. Head of Fundatrix
" H. Antenna of Sexupara
" I. Portion of wax pore plate of Sexupara
" J. Hind wing of Sexupara
" K. Fore wing of Sexupara
" L. Tip of antennal joint IV Sexupara
" M. Head of Sexupara

Entomological Experiences in South America.

(The following are extracts from a letter to the Editor with footnotes added on correcting proof.)

You may be interested to hear about our travels, and like to extract a news item for the ENTOMOLOGICAL NEWS. We had a day and a half at Rio de Janeiro on the way down, and visited the Instituto Oswaldo Cruz where Dr. C. Chagas showed us all over the place, and explained the truly wonderful work they are doing. I made notes, and hope to write an account of the visit at some later date.[1]

When we got to Buenos Aires, July 4, 1925, it was raining hard, and very chilly. There was no collecting to be done, but we were there a week, and later for a few days, and greatly enjoyed meeting the local naturalists. Holmberg, well known for his studies of bees and other things, was extremely cordial, and is still actively interested in Entomology, though in

[1]This was done, and appeared in *Nature*, Dec. 26.

poor health. He expects to write a full account of the Argentine *Cerceris*, and also to write more on *Coelioxys*. At the Buenos Aires Museum I met Bréthes, and at the Dept. of Agriculture C. A. Lizer and E. E. Blanchard. Lizer works on Coccidæ and has a lot of interesting species to describe. The country is especially rich in *Ceroplastes*.

I also went to La Plata and visited Carlos Bruch, who has the most beautifully arranged collection of Coleoptera I think I ever saw. He also works on ants. He has prepared a monograph of certain of the South American Tenebrionidæ, with very many beautiful photographic illustrations. The British Museum sent him materials, which he has made good use of. Unfortunately it appears that at present there are no funds for publication. Dr. Bruch also has a very remarkable series of myrmecophiles from nests of *Eciton*.

Leaving Buenos Aires after a week we went north to the Province of Jujuy, where we were most hospitably entertained at the Leach Estates at San Pedro de Jujuy. We had to go on mules to the locality for fossil insects at Sunchal, in the Santa Barbara Mountains, east of San Pedro. We had a small tent loaned by the Standard Oil geologists and spent several days in the vicinity of the fossil beds. Sunchal consists of a single miserable ranch, but the surrounding country is very fine and interesting, with enormous trees and flocks of green parrots, but no monkeys, to our regret. It is nearly on the tropic, yet it was cold, and almost half the time we were in a sort of Scotch mist. We were greatly persecuted by *Leptus* mites and ticks—but there were no mosquitoes. In fact, insect life was almost wholly dormant, though I picked up a half frozen *Terias*. A few beetles, etc., could be obtained under stones, and I got a single species of Coccid which I think is new.[2] We had no trouble in finding the fossil bed, which is a greenish shale with a conchoidal fracture. It is a very important and easily recognized formation in this part of the country, and as the age was somewhat in dispute we are glad to be able to establish without question that it is fresh

[2]It proves to be *Alichtensia attenuata* Hempel, previously known from Brazil.

water tertiary. Later studies may place it more definitely. It was a dramatic moment when my wife pulled out a piece of shale on which were the first fossil representatives of Orthoptera (a grasshopper leg), Heteroptera and Fulgoridea ever found in South America. I got representatives of Gryllidæ and Forficulidæ. The mass of the collection consists of beetle elytra, of which we must have many species. The general run of things suggests the upper Eocene, but it may be more recent. When I got back to Buenos Aires I left at the Museum there, and also at La Plata, directions for finding these deposits, and have hopes that the Argentine workers will continue the investigation, which will certainly continue to give important results, as at the Florissant. It is the only locality for Tertiary insects we know of in South America, except that two flies in Amber from Colombia may be of Tertiary age. At San Pedro de Jujuy I caught the *only* bee I got in Argentine, a species of *Chloralictus* just like those of the United States. It may be *Halictus (C) paramorio*, or *Janicorum*, or new.[3] I found the Coccid *Chrysomphalus aonidum* quite a pest at San Pedro. There was apparently no mealy bug on the sugar cane but they have a moth borer, I presume *Diatraea*.

After returning to Buenos Aires for a few days, we left for Mendoza, going almost direct west to the foot of the Andes. Here we spent a few days, and examined the Rhaetic beds at Minas do Petroleo, where Wieland discovered the first fossil insects ever found in South America, namely a fine Homopteron (described as a Tipulid) and a Dipteron.[4] The fossil plants of this locality were truly magnificent, but all our efforts to find insects failed. It would probably be necessary to work for a long time to get any. Mr. D. O. King, of Mendoza, a very keen geologist, accompanied us, and now that he knows the horizon we hope that he will make some discoveries.

We crossed the Andes to Valparaiso, enjoying the wonderful and beautiful scenery, and took the "Santa Ana" for Mollendo, Peru. We collected a little on the hill above Val-

[3]It proved new.

[4]This is small and obscure. Tillyard thinks it cannot be Dipterous.

paraiso, but got little of interest and although there were many flowers, no bees were flying. On August 7, we had a few hours at Antofagasta, Chile. One of the passengers remarked that there were no insects to be had there, except fleas. I headed cheerfully for the mountain slopes back of the town, sure that I should find something. I thought I knew deserts, but never had I seen such a one, not a green thing anywhere, except in one place a single young seedling of Mesembryanthemum. It might have been the surface of the moon. With assiduous search I got one Thysanuran, very pale, under a rock, and a single Tineid moth.[5] In a very desert place at Mollendo I later got another Thysanuran; they seem to be able to live where hardly anything else will. Were the first insects, in Silurian or Devonian times, similar to these in character and habits, and hence never possibly to be found as fossils? In the town at Antofagasta, is a small irrigated area with cultivated plants, and on the edge of this I got some Tenebrionids, probably local species.

These extreme desert conditions prevail along the coast of northern Chile, but eventually there appears a sand hill and strand vegetation, so that off Ilo, the first place in Peru, I caught a considerable series of moths at the ship's lights. They were not at all tropical in aspect but consisted of Agrotids, a Pterophorid, a Deilephila and some Geometrids, quite after the fashion of the sand hill fauna in Europe.

Arriving at Mollendo, we left the boat to pick up the next one ("Santa Elisa") two weeks later. We took tickets for Cuzco and after spending a night at Arequipa, went on to Juliaca near Lake Titicaca. But, unfortunately, I was very ill from soroche, or mountain sickness, when we got to altitudes of 13,000 to 14,000 feet, and so we had to return to Arequipa from Juliaca and it took me several days to recover at Arequipa (7550 ft.). Fortunately we found very good quarters at the Wagner Hotel, and every one was extremely kind. We had wondered whether, as the feeling runs so high on the Arica question, there would appear any feeling of

[5]A species of *Gnorimoschema*, as I learn from Mr. Busck.

hostility to us as Americans, but we were treated with the greatest kindness and courtesy everywhere. As soon as I was able to get about, we took a street car to Tingo, where there is good collecting gound, and on the first trip got nine species of bees, including a small Hylaeid obtained by my wife, which may prove to represent a new genus.[6]

We called on Dr. Escomel, the one naturalist of the town, a very enthusiastic and learned man. He is a very busy physician and does Entomology only as a hobby—but he knows his insects well, and has made many discoveries.* On the very morning of the day we first saw him, I had collected *Anthophora escomeli* Bréthes at Tingo, and had been severely bitten by the pretty little *Simulium escomeli* Roubaud. He had made a special study of the genus *Pseudomeloe* in Peru, being interested because it seems that the Incas used them in a medicinal way, as Europeans do *Cantharis (Lytta)*. Dr. Escomel had described several new species of *Pseudomeloe* and reviewed those already known, but going out to Tia Baya, beyond Tingo, we were fortunate enough to find another new species, which he had never seen, in numbers. It seems to be confined to a particular species of plant, on which we found it again at Yura.[7] The fauna about Arequipa is a desert one, with distinct Chilean elements, as seen by the appearance of some of the bees, but whether any of the species are identical with those of Chile I could not tell in the field. A very fine *Ptiloglossa* was common, and at flowers of *Opuntia* were many examples of a jet black *Lithurgus*.[8] Other genera obtained were *Thygater, Anthidium, Megachile* (several species), *Camptopoeum, Centris, Colletes*, various Halictines, etc. Dr. Escomel showed us what he had, and gave me a number of insects, but evidently the fauna is very limited, for we had captured a large propor-

[6]It forms a very remarkable new genus, with Australian affinities.

[*Dr. Escomel is the author of an *Essai sur la Parasitologie d'Arequipa (Perou) et de ses environs* in the *Bulletin de la Société de Pathologie exotique* of Paris, Vol. XVII, pp. 906-925, 1924, an abstract of which is given in the *Review of Applied Entomology*, XIII, Series B, p. 35, for March, 1925.—Editor.]

[7]It has been described and will be published by Dr. Escomel. It lives on *Coldenia parviflora*.

[8]Both proved new.

tion of the species obtained in years by Dr. Escomel. It seems for instance that there is only one local mosquito, only one Tabanid, and of butterflies only *Dione, Pyrameis,* a Pierid, a few skippers, and Escomel had one Papilio of cresphontes type, doubtless coming in since the days of cultivation. The Sphingids seem to consist of a *Deilephila* (common) and *Phlegethontius.* I saw only one species of grasshopper.[9] We brought back a fair lot of things, however, and with those furnished (and others promised) by Dr. Escomel, it will eventually be possible to get a fair idea of the insect fauna of this locality,—very interesting for comparison with our own Arizona and New Mexico deserts. One remarkable feature is the absence of ants. I could not find any outside the cultivated area. Also, I did not see a single mutillid.

Leaving Arequipa for the coast, we pass though a broad belt of utter, lifeless desert, but in the lowest slopes (1,000-2,000 ft.) is a flora which makes the hillsides green, and owes its existence to the sea fogs. I could see bright flowers here and there from the train, and they were not the same as those of the Arequipa desert. This zone we were unable to explore but it would be of very great interest to investigate its fauna and flora.

Since we got on the "Santa Elisa," there was little opportunity for collecting. A short stop at Pisco produced a *Deiopeia,* a male mosquito,[10] and a few other things in the herbage around a patch of cotton. At Callao we merely went on to Lima, and saw that city, without reaching any collecting ground.

I had an hour on the coast of northern Peru, at Paita, and we got several bees.[11] The black *Megachile (M. piurensis)* which Townsend discovered at Piura, and which I described from the male, was found at Paita in both sexes. Later we came through the Panama Canal, and at Balboa I met Zetek.

THEO. D. A. COCKERELL.

[9] A *Trimerotropis,* determined by Rehn.
[10] *Ædes scapularis* Rondani, determined by Dyar.
[11] Four were new.

Types of North American Lepidoptera in the Natural History Museum, Vienna.

By WM. BARNES & F. H. BENJAMIN, Decatur, Illinois.

Dr. H. Zerny has kindly furnished us with a list of the types of North American Lepidoptera in his charge. This we publish just as received from Dr. Zerny, believing it will be of interest to others besides ourselves.

We note two of Huebner's types listed, and hope that any other authors knowing of the whereabouts of other Huebner types will publish upon them.

Verzeichnis der Typen nordamerikanischer Lepidopteren im Naturhistorischen Museum in Wien.

1. *Papilio americus Koll.* 1 ♂ Neu- Granada (Sulkowsky).
2. *Terias ingrata Feld.* 3 ♂♂ Potrero, Mexico (Hedemann).
3. *Eresia archesilea Feld.* 1 ♂ 2 ♀♀ Cordoba, Mexico (Hedemann).
4. *Leucochitonea pastor Feld.* 1 ♂ Lerma, Mexico (Hedemann), 1 ♂ Ypanema (S. Paulo, Brasilien) (Natterer).
5. *Leucochitonea pulverulenta Feld.* 2 ♂♂ Orizaba, Mexico (Hedemann).
6. *Noctua aprica Hb.* (Acontia aprica Tr.) 1 ♂ ex coll. Mazzola.
7. *Sarothripa nilotica Rghfr.* 1 ♂ 1 ♀ Ramleh bei Alexandrien (Hornig 1881).
8. *Euclidia aquamarina Feld. & Rghfr.* 1 ♂ Californien (ex coll. Lederer).
9. *Siculodes fratercula Pagenst.* 1 ♂ Californien (ex coll. Lederer).
10. *Homophysa fulminalis Led.* 1 ♂ 1 ♀ (ex coll. Fichtel).
11. *Scybalista restionalis Led.* 1 ♀ Brasilien (Natterer).
12. *Pilocrocis ramentalis Led.* 1 ♂ (Patria ignota).
13. *Dichogama Redtenbacheri Led.* 1 ♂ (ex coll. Paryss), 1 ♀ (ex coll. Stentz).
14. *Botys obscuralis Led.* 1 ♂ 1 ♀ (ex coll. Fichtel).
15. *Botys fluctuosalis Led.* 1 ♂ (ex coll. Fichtel).
16. *Terastia subjectalis Led.* 1 ♂ (patria ignota).
17. *Crocidophora pustuliferalis Led.* 2 ♂♂ (ex coll. Fichtel).
18. *Crocidophora tuberculalis Led.* 1 ♂ Tennessee (Poeppig).
19. *Botys mancalis Led.* 1 ♂ (ex coll. Fichtel), 4 ♀♀ Tennessee (Poeppig).
20. *Botys oblunalis Led.* 1 ♂ (ex coll. Fichtel).
21. *Botys humilalis Led.* 1 ♂ (ex coll. Fichtel).

22. *Botys intricatalis Led.* 1 ♂ 1 ♀ (ex coll. Fichtel).
23. *Cindaphia incensalis Led.* 1 ♀ Brasilien (Schott), 1 ♀ Ypanema (S. Paulo, Brasilien) (Natterer).
24. *Botys pertextalis Led.* 2 ♂♂ Tennessee (Poeppig).
25. *Botys subjectalis Led.* 1 ♂ (Patria ignota).
26. *Botys inconcinnalis Led.* 1 ♂ 1 ♀ (ex coll. Fichtel).
27. *Botys futilalis Led.* 1 ♂ (Patria ignota).
28. *Botys singularis Led.* 2 ♂♂ (ex coll. Fichtel).
29. *Botys proceralis Led.* 1 ♂ (ex coll. Fichtel).
30. *Pyralis rubricalis Hb.* 1 ♀ (ex coll. Podevin).
31. *Botys similalis Led.* 2 ♂♂ (ex coll. Fichtel).
32. *Parapoynx cretacealis Led.* 1 ♀ (ex coll. Fichtel).
33. *Hydrocampa genialis Led.* 1 ♂ Tennessee (Poeppig), 1 ♂ 1 ♀ (ex coll. Fichtel).
34. *Omphalocera cariosa Led.* 1 ♂ Ypanema (S. Paulo, Brasilien) (Natterer).
35. *Prionopteryx achatina Z.* 1 ♀ (ex coll. Fichtel).
36. *Crambus pexellus Z.* 1 ♂ (Cotype) (ex coll. Fichtel).
37. *Crambus macropterellus Z.* 1 ♀ Nordamerika (Baron Lederer).
38. *Crambus saltuellus Z.* 1 ♂ (ex coll. Fichtel) (syn. striatellus Fenn).
39. *Crambus exsiccatus Z.* 1 ♂ Nordamerika (Baron Lederer).
40. *Crambus terminellus Z.* 1 ♂ (Cotype) Nordamerika= elegans Clem.[1]
41. *Crambus polyactinellus Z.* 1 ♀ (ex coll. Fichtel).
42. *Crambus chalybirostris Z.* 1 ♂ (ex coll. Pareyss).
43. *Hemimatia scortealis Led.* 1 ♂ 3 ♀♀ (ex coll. Fichtel).
44. *Salebria turpidella Rag.* 1 ♂ (patria ignota).
45. *Nephopteryx annulosella Rag.* 1 ♀ Texas (Boll 1876).
46. *Homocosoma texanella Rag.* 1 ♂ 1 ♀ Texas (Boll 1876).
47. *Euzophera ferruginella Rag.* 1 ♀ Texas (Boll 1876).

Thysanoptera Collecting Kit.

Mr. Dudley Moulton, Horticultural Commissioner of the County of San Francisco, has prepared and is sending to entomologists interested in collecting Thrips, a small "Thysanoptera Collecting Kit", containing vials, alcohol, a brush and memorandum sheets. Those interested in this order should find one of these kits a valuable aid in his collecting paraphernalia. (Pan-Pacific Ent.)

[1] This name has been omitted from the Barnes & McDunnough Check List.

A New Predaceous Midge on Roses (Dipt.: Cecidomyiidae).

By E. P. Felt, Albany, New York.

The small midge described below was reared in August, 1925, by Miss Grace H. Griswold of the Department of Entomology, Cornell University. The species attracted notice because of its spinning cocoons upon the leaves. This insect is very probably predaceous, the larvae possibly subsisting upon red mites or other small forms occurring upon the rose. It is related to *Felticlla americana* Felt from which it is easily distinguished by a number of structural characters.

Feltiella ithacae n. sp.

♂.—Length .8 mm. Antennae one-fourth longer than the body, rather thickly haired, pale yellowish, 14 segments, the 5th with stems each with a length 2½ and 3½ times their diameters, respectively. Palpi, the first segment quadrate, the second ½ longer than the first and the 3rd and 4th probably longer than the second and nearly equal. Mesonotum fuscous yellowish, the submedian lines and scutellum yellowish, post-scutellum fuscous yellowish, abdomen yellowish transparent. Genitalia slightly fuscous, wings hyaline, halteres yellowish basally, fuscous apically, legs fuscous yellowish, the pulvilli as long as the strongly curved claws, those of the anterior and mid-legs unidentate. Genitalia, basal clasp segment rather long, moderately stout, terminal clasp segment long, slender. Dorsal plate short, deeply and triangularly emarginate, the lobes broadly rounded; ventral plate short, broadly rounded, sparsely setose apically.

♀.—Length 1.2 mm. Antennae about half the length of the body, rather thickly haired, fuscous yellowish, 14 segments, the 5th with a stem about one-fourth the length of the cylindrical basal enlargement, the latter with a length about 2½ times its diameter. Terminal segment somewhat produced with a length 3 times its diameter, the apex narrowly rounded. Palpi, first segment short, irregular, the second with a length about 3 times its diameter, the third twice the length of the 2nd and the 4th as long as the 3rd. Mesonotum dark brown, scutellum yellowish, post-scutellum and abdomen fuscous yellowish; ovipositor short, the lobes slender with a length 3 times the width. Other characters practically as in the male.

Colors from alcoholic specimens.

Type Cecid. A3360, N. Y. State Museum.

Two New Spider Mites (Tetranychidae) from Death Valley, California (Acarina).

By H. E. Ewing, U. S. Bureau of Entomology.

That temperatures much above 100° F. are frequently fatal to plant-feeding arthropods is well known. It is of special interest, therefore, to report two new species of thriving plant-feeding mites from the Death Valley of California. The mites were taken in the month of August, 1925, at Furnace Creek Ranch, by Mr. Bruce Drummond and transmitted to the Bureau of Entomology by Walter T. Swingle, of the Bureau of Plant Industry. In transmitting the specimens Mr. Swingle states:

"I would not be surprised if this would turn out to be an interesting new species and undoubtedly this mite must be able to withstand extraordinary heat conditions, since Weather Bureau recording thermometers show the temperature to go as high as 134° F. in the shade at Furnace Creek Ranch. Mr. Drummond reports that the temperature went up to 124° F. on July 17 and that a dozen or more birds that tried to fly dropped dead on the ground."

Tetranychus thermophilus, new species.

♀.—Bright red; shape typical for the genus. Palpi shorter than femur I, stout. Palpal claw medium, strongly curved. Thumb broader than long, yet slightly surpassing the palpal claw; finger of thumb (terminal spine) as broad as long and evenly rounded distally; dorsal pectinate spine equal to the finger in length. Mandibular plate evenly rounded in front; chelicerae very slender, yet about typical for the genus. Abdomen stout; setae moderate, simple. Legs of moderate length, but clothed with large setae, those on the posterior tibiae being the longest. Tenent hairs of tarsi of moderate length, with a flattened knob at tip of each, inner two considerably longer than the outer two. Tarsal claw six-cleft, the two inner prongs close together and apparently stouter than the others; prongs of claw exceedingly fine toward tip and about as long as the outer tenent hairs. Length, 0.57 mm.; width, 0.32 mm.

♂.—About half as large as female, yellowish to orange. Dorsal palpal spine very sharp and situated on conspicuous tubercle. Tarsal claw I over half as long as tenent hairs, two-cleft to base with one of the elements a little smaller and differently curved from the other; tarsal claw II same as I; tarsal claws III and IV similar to those of female, but prongs shorter. Penis short, stout; without basilar lobe and without terminal

barb; inner lobe straight, as in *telarius;* shaft twice as stout as inner lobe and terminated with a sharply downcurved and somewhat procurved hook which is drawn to a very fine point. Lenth, 0.37 mm.; width, 0.16 mm.

Type locality.—Death Valley, California.

Type slide.—Cat. No. 957, U.S.N.M.

Described chiefly from male and female on type slide, but in part from several specimens. All material taken at Furnace Creek Ranch, Death Valley, California, August 20, 1925, on greasewood, *Covillia* sp., by Mr. Bruce Drummond. The female of this species is similar to red representatives of *Tetranychus telarius* Linneus. The males have the tarsal claws of legs I and II similar to those of *Tetranychus borealis* Ewing, but the genital armature is of an entirely different type from that of any described species of the genus.

Petrobia drummondi, new species.

General appearance similar to *Bryobia;* color yellowish brown. Palpi very long, almost as long as femur I; segment I twice as long as broad; segment II almost twice as long as broad; thumb very small; claw rudimentary. Mandibular plate large, long, broadest at the middle and rounded in front; notch wanting. The chelicerae arise almost at the front margin of the mandibular plate and extend backward for about two-thirds the length of the same, then bend downward and forward. Dorsal surface of body sparsely clothed with stout, pectinate, slightly curved, and in some instances slightly clavate, setae; four of these on the posterior margin are conspicuous. Anterior legs much longer than the others; patella over one-half as long as femur; tibia slightly longer than patella; tarsus equal to tibia. Legs II and III equal and shorter than IV. Femur of leg IV slightly enlarged. Length, 0.39 mm.; width, 0.23 mm.

Type locality.—Death Valley, California.

Type (Holotype).—Cat. No. 958, U.S.N.M.

A single specimen included with those of *Tetranychus thermophilus,* new species, hence collection data the same as for that species. This species, which is the fourth to be reported for the genus *Petrobia (Tetranychina),* in North America, is nearest *P. tritici* (Ewing). It differs from *P. tritici* in having shorter front legs, much longer (over twice as long) palpi, and larger and stouter dorsal setae.

Teaching Elementary Entomology in the United States and Canada.

By Paul Knight, University of Maryland.

This paper is the result of a survey the author conducted while at the University of Illinois, in the spring of 1925. There has arisen recently a lively interest in the improvement of teaching methods in entomology, and this paper will help to bring out a number of points regarding the elementary course.

The first step was to conduct a survey among the colleges and universities where entomology is taught. This paper will summarize the results of a questionnaire sent out, with no attempt at drawing conclusions. This questionnaire had several faults which will be brought out later, but will give teachers of their chosen subject an idea of some of the things that are taking place at present.

On the whole the results were quite satisfactory, as shown by the extreme interest taken by a number of very well known entomologists. Fifty of these questionnaires were sent out, distributed as widely as possible over the country. In less than a month thirty-nine replies were returned, most of them showing thoughtful consideration. It was very gratifying to note that invariably the most careful consideration was from the stronger departments, and those neglecting to answer were, with few exceptions, minor departments. Only one indicated the opinion that the undertaking was not worth while. Nine of the replies were accompanied by letters giving much additional information. Four valuable replies were received from Canadian institutions.

Interest was evinced by such remarks as these: "I am very much interested in this subject"; "I should like to hear from you when you have correlated your replies and results"; "I believe the subject is an important one"; "My colleagues and I have been very much interested in your recent questionnaire." These and many others came from men who have the respect of entomologists throughout the country.

Following are the questions and the results compiled from them:

Question 1. Is entomology a separate department or is it in the zoology department?

Of the total number reporting there was seventeen separate departments, five departments combined with zoology, and one biology department. The University of California has the department of entomology combined with that of parasitology.

Question 2. Do conditions in college entomology as you know them need improvement? How would you improve conditions?

Not all answered this question, but nineteen stated definitely that conditions need improvement, and only three stated to the contrary. Three were indifferent, with such answers as "We prosper," "To a degree," "No more than the other sciences." The second part of the question gave room for much individual expression, and showed a varying degree of opinion as to present conditions. They can be summed up in these groups: emphasizing equipment, emphasizing fundamentals, standardization, better pre-requisites, popularization of the subject, covering of less material, more teachers, suitable text, good laboratory guide, more time in class, emphasis on the quality of teaching, separate department, emphasis on the collection, getting away from cut and dried formalities. There seemed to be quite a reaction towards the popularization of the subject.

Question 3. Is entomology a particularly difficult subject to teach?

Most entomologists consider their subject easy to teach, shown by the fact that twenty-six men stated to this effect. Three men considered it difficult at least in a measure. Others were indifferent to the question. "The tremendous number of species, their small size, and the fact that most of the teaching must be done in the dormant season" make entomology difficult to present. This is the statement of Professor C. L. Metcalf. "Principal difficulty the selection of material from a great mass of available data," Professor P. S. Welch. Professor H. M. Parshley thinks a principal difficulty is getting the students acquainted with a sufficient number of insects.

Question 4. How many semesters or quarters does the elementary course cover? How much credit is given?

This question showed a great variety of answers, ranging from one quarter of two credits, to two semesters of four credits each. The replies showed the one semester, three credit course most popular. Professor M. H. Swenk was offering the most complete course of any reported.

Question 5. Is the time you have sufficient for such a course? If not, what is the most desirable length of time?

Twenty-five stated that their time was not sufficient, while eleven answered in the affirmative. Some did not answer. The opinion as to the most desirable length of time varied considerably, but in every case where the allotted time was too short there was an indication to this effect.

Question 6. Can the elementary course be technical in character and still have strong economic emphasis?

This question seems to be causing considerable discussion among teachers of entomology at present, and the questionnaire indicated a strong reaction towards a practical first course, with the view of motivating the student's interest before taking him into the more technical phases. Twenty-four indicated that the elementary course could be economic, while only ten stated to the contrary. Every answer to this question was emphatic. A number of important departments have changed recently from a technical to a practical first course, and are enthusiastic with the results. Others have been using this method for a few years, evidently with success.

Question 7. From what angle is your elementary course approached, morphological, systematic, or economic?

The replies to this question showed a serious omission from the questionnaire, namely that of the biological, physiological, and ecological phases of the subject, as these are becoming more recognized every day as fundamental parts of our science. The emphasis in the courses reported was varied, and consisted of a variety of combinations. The economic emphasis, and a combination of the systematic and economic included over half the courses reported, while five more said all three of these points were emphasized. Only one course was mainly systematic and one morphological. Whatever was left out the tendency was to include the economic. Four men definitely

called attention to the omission of the phases previously mentioned, showing clearly that these are becoming taught more than ever. Professor A. C. Kinsey has a very unique course in that it is 40 per cent. insect behavior, with considerable time devoted to insect ecology. The other phases receive a smaller but balanced attention. His course is primarily a cultural one, and very likely in his case a decided improvement over the older type of course as his department does not train agricultural students. Professor Swenk devotes several class periods to the history of entomology.

Question 8. Do you take up economic insects by their systematic or their economic classification?

Evidently each way has its merits, as the teachers were equally divided in their opinion. Five more stated that they used both, four used neither, and one varied from one year to the next. The economic classification held the most favor with those teaching a practical first course.

Question 9. Do you study one or two insect pests of a crop in detail or more in a general way?

Of those reporting on the question, thirteen studied a few important pests of certain crops, and seven studied more in a general way. Two more used both, two used the latter in subordination to the former, and one studied the most important pest in each family. Only six did not use either, and these were in the more classical courses, where it probably would be unwise to spend much time on the agricultural phases.

Question 10. What is your basic text?

From the thirty-five reports on this question the results were naturally varied. Comstock's new edition headed the list with eight adoptions. Fernald's Applied Entomology is next, with seven, Sanderson and Peairs' Insect Pests four, and Folsom's Entomology three. Each of the following were reported once: Lutz's Fieldbook, Sanderson and Jackson's Elementary Entomology, Sanderson and Peairs' School Entomology, O'Kane's Injurious Insects. Five combinations were noted, in which Comstock, Folsom, and Sanderson and Peairs figured most. Two original unpublished texts were reported.

Question 11. Do you make much use of laboratory and class outlines?

Out of thirty-three replies to this question twenty-six were using outlines considerably, and only four were not using them, while three were using them only slightly. One man indicated a recent reaction against outlines for laboratory and class use.

Question 12. Do you make much use of library facilities?

Many answering this question seemed to think it was too obvious, evinced by such remarks as "I should think this would go without saying"; "How can you otherwise do adequate teaching?"; "Yes, naturally." However, of the thirty-two replies twelve indicated that there were reasons why they could not use the library to any extent in a beginning course. The main reason given was lack of time.

Question 13. This called for the filling out of a tabular form concerning the time allotted to the various divisions of the course, and the type of teaching materials used for the same. No doubt the criticisms leveled at this were justified. As previously stated there were several serious omissions. It was also too fixed and arbitrary, making it difficult for many to adjust the subject matter of their course to it. A progressive course is naturally varied from year to year.

In spite of these difficulties eleven men filled it out quite completely, and nine more partially. Nine more could not fill it out for the reasons stated above. Their tabulation showed the emphasis about the same as given in question 7. It also showed that there is much teaching material being used to facilitate the lecture and laboratory presentation. Many indicated that the collection and the field trip were becoming one of their most important means of teaching, and the tendency away from the formal lecture was noticeable.

Question 14. If any of this material is published do you wish your name used?

Nineteen men were willing for their names to be used, four unwilling, and nine indifferent. If the data are ever published in their entirety use will be made of the opinions of many of these men. The following aided me materially in this work: J. J. Davis, D. M. DeLong, C. L. Fluke, L. Haseman, A. C. Kinsey, W. Lochhead, C. L. Metcalf, R. A. Muttkowski, H. M. Parshley, W. A. Riley, J. M. Robinson, H. C. Severin, E. W. Stafford, M. H. Swenk, E. C. VanDyke, P. S. Welch.

A Dipterological Tour in Europe.

By RAYMOND C. and ELNORA S. SHANNON, Washington, D. C.

A brief account is here given of a trip to Europe, from June 10 to September 10, 1925, during which the writers visited a number of the principal dipterological centers.

Our first stop was at the Museum d'Histoire Naturelle, Paris, where we met Mons. E. Séguy, an excellent Dipterist and artist. He is at present occupied with an illustrated encyclopedia of the Diptera of France. An examination was made of the Muscidae (old sense) in the collections of Macquart, Meigen, and Pandellé and the remaining material of the Robineau-Desvoidy collection. Among other Diptera one species was noted in the modern collection which is of particular interest, *Camposella insignata* Cole (Quito?), the second specimen known of this remarkable species of Cyrtidae.

We had a very delightful visit of several days with Professor and Madame Hervé-Bazin at their beautiful chateau, Le Patys, at Segré. They possess one of the very neatest collections of insects we have ever seen, which includes many Chinese Diptera collected by themselves. We transacted an exchange of Syrphidae and were given the loan of their entire collection of Calliphoridae. The well-wooded grounds surrounding their chateau also afforded us excellent collecting.

Turin, Italy, proved to be very rich dipterologically. We visited Professor Mario Bezzi, who has perhaps the most complete privately owned collection of Diptera in the world, and he was very generous in the exchange we transacted. At his suggestion we made a trip to Mont Cenis in the Italian Alps, once the favorite collecting grounds of the dipterist Meigen. The Museum in Turin houses the collection of Bellardi's Mexican Diptera which contains a number of type specimens described by Bellardi and Giglio Tos. Professor Borelli, in charge of the collection of insects, very kindly afforded us facilities for examining the types, which are in very fair condition.

At Florence, Italy, we obtained permission from the Museum

authorities to examine the Rondani collection of Diptera, which is likewise in a fair state of preservation.

Our next point of entomological interest was at the home of Theodor Becker in Liegnitz, Germany. Herr Becker is now 85 years of age, but is healthy and active and is at present engaged in work upon the Ephydridae. He possesses an admirable collection of European and Asiatic Diptera, practically all of which he has collected himself.

We made an entomological excursion to Mezimesté, Czecho-Slovakia (formerly Halbstadt, on the northern border of Hungary), an old favorite collecting ground of Dr. E. A. Schwarz. Here we found one of the most curious species of acalyptrate Diptera, *Amphipogon spectrum* Wahlberg, of the family Sepsidae (determined by T. Becker).

Time did not permit other entomological visits in Germany, and we returned to Paris, finished our investigations at the Museum and left for London.

We were kindly received at the British Museum of Natural History by Major E. E. Austen who granted permission to examine the collection of Diptera, including the Walker types, Bigot's types of Syrphidae and the Biologia Centrali-Americana material. About 200 species named by Walker under "*Musca*" (some probably *nomina nuda)* were examined and the proper generic location in many cases was ascertained. Mr. F. W. Edwards showed us the collection of Culicidae and was very liberal with information.

Mr. Edwards took us for a visit to Cambridge where we met Dr. D. D. Keilin and Dr. I. M. Puri (student of Simuliidae) who showed us through the new Cambridge building of Parasitology. We spent the week end at Mr. Edwards's home and occupied ourselves on Sunday by collecting.

Nearly three weeks were spent in London. During this time we were surprised by the visits of Professor J. S. Hine, Dr. C. H. Kennedy and Professor O. A. Johannsen who were likewise bent on examining types at the British Museum. We also met Mr. E. Brunetti, and Mr. A. J. Engel Terzi, the artist of many beautiful illustrations of Diptera.

We left Europe with nearly a thousand exchanged specimens, more than a thousand collected specimens and about fifteen hundred loaned specimens, the latter including some undescribed material from the abundant collections of Wallace (from the Malay Archipelago), Bates (from the Amazon) and Darwin (from Patagonia).

We wish to thank very heartily all of the above named gentlemen and Madame Hervé-Bazin and Mrs. Edwards, as well as Dr. Laura Gambetti and Signorina Giulia Goss, both of Turin, Italy, for the very courteous and kindly attention that they showed us.

A list of the collections that were examined is appended.

Museum d'Histoire Naturelle, Paris, France.

Meigen collection. Mostly European Diptera including many type specimens. Condition fair.

Macquart collection. A cosmopolitan collection containing numerous types in fair to poor condition.

Robineau-Desvoidy collection. Largely destroyed but a number of the types remain in identifiable condition.

Pandellé collection. An important collection consisting mostly of French Diptera in very good condition.

Modern collection. Very extensive, containing material from all parts of the world and largely worked up by Surcouf and Séguy.

A number of minor collections, such as the Diptera collection of Dufour, are still held intact.

Collection of Hervé-Bazin, (Prof. J. Herve-Bazin, Segré, Maine et Loire, France.)

An excellent collection of Diptera, mostly of the Old World. Contains many types of Oriental and African Syrphidae.

Museo Storia Natural, Turin, Italy.

Bellardi collection of Mexican Diptera. Contains types described by Bellardi and Giglio Tos, practically all in a fair state of preservation.

Collection of Bezzi. (Prof. Mario Bezzi, Via Pio Quinto 3, Turin, Italy.)

A remarkably complete collection from all parts of the world with numerous types in many families.

Royal Zoological Museum, Florence, Italy.
Rondani collection. A rather limited but important collection, chiefly European, in a fair state of preservation.

Collection of Becker (Herr Theodor Becker, Wissenburgerstrasse 13, Liegnitz, Germany.)
A fine collection of European and Asiatic Diptera with many types.

British Museum of Natural History, London, England.
Contains a number of very important collections of Diptera, the most noted of which are the Walker collection, the Bigot types of Syrphidae and Tabanidae, the Biologia Centrali-Americana material and a very extensive modern collection of Diptera from all parts of the world.

A New and Inexpensive Lining for Insect Boxes.

Cork or compressed cork in sheets has long been used for lining the bottom of insect cases, but it is rather expensive and generally has to be pieced together. Compressed turf or peat has also been employed. In the West where the Yucca plant stock is available, its pith is sometimes used for this purpose by first being thoroughly dried and then sawed into desirable slabs, but these slabs never make a smooth looking job in the bottom of one's boxes.

Recently a compressed cane-fibre-board material under the trade name of celotex has been put on the market. It is not made as an entomological product but is used by the building trade people as a substitute for interior wall-board in place of lath and plaster. It originally comes in big sheets, 3/8 inch thick, by 4 feet wide, by various sizes up to 12 feet in length. Almost any lumber yard or building supply company has it for sale at less than 3 cents a square foot sawed to customers' desired size. Insect pins when pushed into it never pull or "grab" when being extracted and yet they hold firm. This is an advantage over cork which is also more expensive. The material saws up easily, lies rigidly flat in the bottom of a box, is insect proof, very light in weight and takes thick glued paper readily. I have used celotex for several years and prefer it to any other lining. Also when mailing specimens of pinned insects, it makes a good bottom for the segar boxes. The Celotex Co., 645 No. Michigan Ave., Chicago, Ill., will undoubtedly be glad to send samples to anyone interested enough to write in for them.

J. D. Gunder, Pasadena, Calif.

ENTOMOLOGICAL NEWS

PHILADELPHIA, PA., MAY, 1926.

Anniversary Congratulations to Vienna.

Years ago, when, as a high school boy, we first frequented the rooms occupied by the American Entomological Society, then on the first floor of the building of the Academy of Natural Sciences of Philadelphia, we saw in the library a row of thick volumes whose titles were sure to be imprinted on a youngster's memory: *Verhandlungen der kaiserlich-königlichen zoologisch-botanischen Gesellschaft in Wien.*

Later, as our studies of dragonflies led us to the world's literature on those insects, we came to know some of the *Verhandlungen* for the papers of Friedrich Moritz Brauer which they contain.

Still later, March 7, 1896, thanks to the kindness of Dr. Anton Handlirsch, we were admitted to the library of the Gesellschaft itself, small, dark rooms on the third floor of Wollzeile Strasse 12, in Vienna, and spent nearly two hours examining some books which we had not been able to find at Berlin.

Having, then, these personal points of contact with this famous society which, as noticed elsewhere in this issue of the NEWS, will soon celebrate the seventy-fifth anniversary of its foundation, we are especially glad to offer the congratulations and best wishes of the NEWS and of The American Entomological Society to our Corresponding Gesellschaft on this happy occasion.

75th Anniversary, Zoological-Botanical Society.

The Zoologisch-Botanische Gesellschaft in Vienna plans to celebrate its seventy-five anniversary on May 12, 1926, and is inviting the participation of scientific societies, academies and institutes, especially those with which it has had scientific relations, in the ceremonies. These will consist of a meeting at 11 A. M. in the great hall of the University, presided over by Dr. Anton Handlirsch, the well known entomologist, author of *Die Fossilen Insekten* and of the taxonomic volume of Schröder's *Handbuch der Entomologie*. After greetings from various sources, Prof. Dr. Richard Wettstein will deliver an address on "Seventy Five Years of Biology." At 7.30 p. m. a banquet will be held in the hotel "Zum Silbernen Brunnen."

Personal Mention.

Dr. R. J. TILLYARD, Chief of the Biological Dept., Cawthron Institute, Nelson, New Zealand, expects to be away from the Institute from February to November, 1926, on a visit to America and Europe. Mail to reach him from April 15 to end of September should be addressed: care of The High Commissioner for New Zealand, New Zealand House Strand, London, W. C. 2., England.

A Generic Correction (Lepidoptera).

Asterocampa Rober. Logotype *Apatura celtis* Bdv. & Lec. 1916. Rober, in Seitz, Macrolep. (2), V, p. 549.

Celtiphaga B. & Linds. Orthotype *Apatura celtis* Bdv. & Lec. 1922. Barnes and Lindsey, Ann. Ent. Soc. Am. XV, p. 92.

Apparently Barnes and Lindsey, in their investigation of our generic names, overlooked Rober's action pointed out above. As Rober failed to designate a type for his new name, I select *celtis* Bdv. & Lec. in an endeavor to simplify this generic muddle as much as possible.

D. M. BATES, Ft. Lauderdale, Florida.

Notes on the Prey of Asilidae (Dipt.).

Asilidae are in general supposed to capture their prey while in flight. The following notes, though some of them do not necessarily conflict with the general habits of the family, add interesting variations to the known methods of feeding.

Psilocurus nudiusculus Loew.—A male of this species was captured near Brownwood, Texas, June 29th, with an immature Lycosid impaled on its proboscis. The Asilid was found on several occasions resting on the low branches of cone flowers *(Ratibida columnaris)* which skirt a dusty roadside where these robberflies closely match the color of the half dead, dusty leaves. A female feeding on the Cercopid, *Clastoptera xanthocephala* Gerun., was taken at Austin, Texas.

Erax barbatus Fab.—At Magnolia Beach, near Port Lavaca, Texas, on July 13th, I took a female of this species with a jumping spider as its prey. The arachnid was an adult male of the southern variety of *Pellenes agilis* Bks. The same morning I took a male, *Erax barbatus,* as the prey of another Asilid, the male of *Deromyia symmacha* Loew. (?). Both of these latter species were plentiful on the shell beach.

Thus on two different occasions, spiders have been taken as the food of robberflies, but in both cases the insects were those that hunt their prey near the ground. Both the spiders have the

habit of ballooning and one of jumping so that they might have been seized in the air as is the ordinary prey of the Asilidae. I am indebted to Dr. W. M. Barrows for the identification of the spiders and to Dr. Herbert Osborn for the Cercopid.

REGINALD H. PAINTER, Ohio State University.

Entomological Literature

COMPILED BY E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published.

All continued papers, with few exceptions, are recorded only at their first installments.

Papers of systematic nature will be found in the paragraph beginning with (N). Those pertaining to Neotropical species only will be found in paragraphs beginning with (S). Those containing descriptions of new forms are preceded by an *.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

Papers published in the Entomological News are not listed.

4—Canadian Entomologist. **5**—Psyche. **8**—The Entomologist's Monthly Magazine. **9**—The Entomologist. **10**—Proc., Ent. Soc. Washington. **14**—Ent. Zeitschrift, Frankfurt a. M. **17**—Ent. Rundschau, Stuttgart. **18**—Internationale Ent. Zeit., Guben. **25**—Bull., Soc. Ent. France. **26**—Ent. Anzeiger, Wien. **28**—Ent. Tidskrift, Upsala. **33**—Bull. et Annal. Soc. Ent. Belgique. **45**—Zeit. f. Wissenschftl. Insekentb., Berlin. **48**—Wiener Entomol. Zeitung. **49**—Ent. Mitteilungen, Berlin. **50**—Proc. U. S. National Mus. **75**—Annals and Mag. of Nat. History, London. **79**—Koleopterolog. Rundschau, Wien. **89**—Zool. Jahrbucher, Jena. **104**—Zeit. f. Wissen. Zool., Leipzig. **105**—Proc., Biol. Soc. Washington. **107**—Biologisches Zentralblatt. **130**—Ohio Jour. of Sciences. **135**—Quart. Jour. Microscop. Sci. **142**—Arch. Zool. Exper. et Gen., Paris. **149**—Ann. Trop. Med. & Parasit., Liverpool.

GENERAL.—Heinrich, R.—Zur richtigen betonung der harte zeiten.—**49**, xv, 1-6. **Jost, H.**—Ueberziehen der auslaglateinischen namen.—**14**, xxxix, 167-8. **Horn, W.**—Ueber en bei sammlungskästen.—**14**, xxxix, 179-80. **Kieffer, J. J.**—Obituary—**8**, lxii, 44. **Lundblad, O.**—En utmärkt preparationsmethod för mikroarthropoder.—**28**, xlvi, 1-6. **McDunnough, J. H.**—The Canadian national collection of insects.—

Can. Field-Nat., xl, 36-40. **Meissner, O.**—Bemerkung über die betonung der latein. namen.—**14,** xxxix, 180. **Nomenclature.** A resolution passed at the Third International Congress of Entomology, regarding the requirements to publishing new generic names.—**9,** lix, 41-2. **Raffray, A.**—Memorie e note, [portrait]—Atti Pont. Ac. Sci., N. Lincei, lxxvii, 72-5. **Scheerpeltz, O.**—Das legen von profilschnitten als methode zur auffindung von terrikolen insekten.—**79,** xii, 10-15. **Schroder, C.**—Handbuch der entomologie. Bd. II, pp. 1-160. Biologie. **Seamans, H. L.**—A simple insect rearing cage.—**4,** lviii, 27-8. **Seitz, A.**—Nach zehn jahren.—**17,** xliii, 5-8. **Study, E.**—Ueber einige mimetische fliegen.—**89,** xlii, Allg. Zool., 421-7. **Theobald, F. V.**—Biographical note with portrait.—149, xx, p. iii. **Weese, A. O.**—"Supertidal" animal communities in the Puget Sound Region.—Univ. Okla. Bul., v, 95-7. **Weiss & West.**—The insects and plants of a strip of New Jersey coast.—**5,** xxxii, 231-43.

ANATOMY, PHYSIOLOGY, MEDICAL, ETC.—Bowen, R. H.—A suggestion concerning the interpretation of Prof. Voinov's "appareil spherulaire."—**142,** lxv, 1-4. **Cleveland, L. R.**—Symbiosis among animals with special reference to termites and their intestinal flagellates.—Quart. Rev. Biology, i, 51-60. **Craft, W. A.**—Linkage relations in animals.—Univ. Okla. Bul., v, 97-99. **Eastham, L.**—Peristalsis in the malpighian tubules of diptera, preliminary account: with note on the elimination of calcium carbonate. —**135,** lxix, 385-98. **Hasebroek,**—Industriemelanismus.—**18,** xix, 330-32. **Heymons, R.**—Ueber eischalensprenger und den vorgang des schluepfens aus der eischale bei den insekten.—**107,** xlvi, 51-63. **Meissner, O.**—Industriemelanismus? —**18,** xix, 339-40. **Muller, H. J.**—Induced crossing-over variation in the X-chromosome of Drosophila.—Am. Nat., lx, 192-5. **Richards & Robson.**—The species problem and evolution.—Nature, cxvii, 345-7 (cont.) **Snodgrass, R. E.**—Morphology of insect sense organs and the sensory nervous system.—Smiths. Miss. Coll., lxxvii, No. 8.

ARACHNIDA AND MYRIOPODA.—Smith & Young. —Distribution of spiders as correlated with environmental factors.—Univ. Okla. Bull., 90-1.

(N) ***Chamberlin, R. V.**—Two new American chilopods.—**105,** xxxix, 9-10.

(S) ***Leitao, M.**—Polyxenidas do Brasil.—Bol. Mus. Nac. R. d. Janeiro, ii, 51-62.

THE SMALLER ORDERS OF INSECTA.—Annand, P. N.—Thysanoptera and the pollination of flowers.—Am. Nat., lx, 177-82.

(N) Lestage, J. A.—Notes trichopterologiques. IX. Etude du groupe Psychomyidien et catalogue systematique des genres et especes decrits depuis, 1907 (in Genera Insectorum). Pt. 1.—33, lvx, 363-86. Snyder, T. E.—Races or subspecies in Reticulitermes.—105, xxxviii, 1-6. *Walker, E. M.—The N. American dragonflies of the genus Somatochlora.—Univ. Toronto, Biol. Ser., No. 26. 202pp.

(S) *Brues, C. T.—Notes on Neotropical Onychophora—5, xxxii, 159-65. *Snyder, T. E.—Change of name in Isoptera.—10, xxviii, 51.

ORTHOPTERA.—Crampton, G. C.—External anatomy of the head and abdomen of the roach Periplaneta americana.—5, xxxii, 195-226. Eisentraut, M.—Die spermatogonialen teilungen bei Acridiern mit besonderer berücksichtigung der über kreuzungsfiguren.—104, cxxvii, 141-83.

(N) Salfi, M.—Osservazioni sulla ecologia di alcune specie di Locustidae e Phasgonuridae.—Bol. Soc. Nat., Napoli, xxxvi, 129-52.

HEMIPTERA.—Mueller, G.—Ueber einige missbildungen bein heteropterern.—45, xxi, 10-22. Richards, O. W.—An American aphid new to the British list (Melanoxantherium bicolor).—9, lix, 40. Tillyard, R. J.—(see under Diptera.)

(N) DeLong, D. M.—Type and venation of wings as factors in separating certain deltocephaloid genera (Jassidae).—130, xxvi, 42-8. Stoner, D.—Pentatomoidea from western Canada.—4, lviii, 28-30.

(S) *Horvath, G.—Wissenschaftliche ergebn. der schwed. entomolog. reise des A. Roman in Amazonas. Tingitidae.—28, xlvi, 219-20 *Osborn, H.—Neotropical Homoptera of the Carnegie Museum. Subfamily Cicadellinae.—Ann. Carnegie Mus., xvi, 155-238.

LEPIDOPTERA.—Cockayne, E. A.—Notodonta dromedarius in inverted position in pupal case.—9, lix, 39. Durken, B.—Färbungsvariation der kohlweisslingspuppen (Pieris brassicae) aus normaler umgebung und nach einwirkung farbigen lichtes, in quantitativer darstellung.—Mem. Pont. Ac. Sci., N. Lincei, (2), vii, 251-73. Hanstrom, B.—

Comparison between the brains of the newly hatched larva and the imago of Pieris brassicae.—28, xlvi, 41-52. **Meder, O.**—Ueber die kennzeichnung von weisslingen zwecks erfassung ihrer wanderungen.—18, xix, 325-30. **Metzner, A.**—Feinde gespannter schmetterlinge.—26, vi, 25-6. **Torka, V.**—Der kümmel als nährpflanze des schwalbenschwanzes.—18, xix, 337-9.

(N) ***Braun, A. F.**—New microlepidoptera from Alberta and Manitoba.—4, lviii, 46-50. **Crumb, S. E.**—Nearctic budworms of the lepidopterous genus Heliothis.—50, lxviii, Art. 16. **von Dalla Torre et Strand.**—Lepidopterorum catalogus Pars 31: Aegeriidae. **van Ecke, R.**—Lepidopterorum catalogus. Pars 32: Cochlidionidae (Limacodidae). ***Heinrich, C.**—A new Coleophora from New York.—10, xxviii, 52. ***Heinrich, C.**—Revision of the N. American moths of the subfamilies Laspeyresiinae and Olethreutinae.—Bul. U. S. N. M., 132, 216pp. **de Joannis, J.**—Sur la synonymie de quelques du genre Psara. (Pyralidae).—25, 1925, 286-90.

(S) ***Meyrick, E.**—Exotic microlepidoptera. Vol. 3, pp. 161-256. **Michael, O.**—Ueber einige uebergangsformen von Agrias phalcidon zu Hewitsonius.—14, xxxix, 161-2 (Cont.) ***Niepelt, W.**—Eine neue Heliconius-form von Bolivia.—18, xix, 337. **Study, E.**—Die gattung Tithorea und ihre nachahmer.—89, xlii, Allg. Zool., 428-40. ***Tams, W. H. T.**—A new sp. of the genus Dalcera from Peru (Dalceridae).—9, lix, 35.

DIPTERA.—Hefley, H. M.—Parasite of the larva of the tomato worm moth: Protoparce quinquemaculatus.—Univ. Okla. Bull., v, 77-80. **Wagner, W.**—Bau und funktion des atmungs-systems der kriebelmueckenlarven.—89, xlii, Allg. Zool., 441-86. **Tillyard, R. J.**—The rhaetic "crane-flies" from So. America not diptera but Homoptera.—Am. Jour. Sci., 265-72.

(N) ***Bromley, S. W.**—The bremus resembling Mallophorae of the southwestern U. S. (Asilidae).—5, xxxii, 190-4. **Cockerell, T. D. A.**—The eocene fossil fly Eophlebomyia.—5, xxxii, 229-30. **Johannsen, C. A.**—Notes on Walker's types of No. American Mycetophilidae.—4, lviii, 51-2. **Van Duzee, M. C.**—New sps. of No. American Dolichopodidae.—5, xxxii, 178-89.

(S) ***Lengersdorf, F.**—Ueber die gattung Euricrium. (Lestremiinae).—48, xlii, 92-4. **Pinto, C.**—Estudos sobre

siphonapteros ou "pulgas," "Stenopsylla cunhai" n. sp.—Bol. Inst. Brasileiro de Sci., i, No. 3, p. 3-7.

COLEOPTERA.—Brauer, A.—Further notes on the oviposition of Bruchus and the orientation of the embryo in the egg during development.—Univ. Okla. Bull., v, 74-6. **Chittenden, F. H.**—Notes on the behavior of Cotinis nitida and its bird enemies.—**105,** xxxviii, 15-18. **Lewis, H. C.**—Alimentary canal of Passalus.—**130,** xxvi, 11-24. **Mjoberg, E.**—The mystery of the so-called "trilobite larvae" or "Perty's larvae" definitely solved.—**5,** xxxii, 119-58. **Zanon, V.**—Apparato boccale della "Epicometis squalida" coleottero lannoso agli ortaggi a Bengasi.—Atti Pont. Ac. Sci., N. Lincei, lxxvii, 46-52.

(N) **Brown, W. J.**—Notes on the Oklahoma species of Onthophagus.—Univ. Okla. Bul., v, 99-101. **Raffray, A.**—Etude sur la distribution geographique des coleopteres de la famille des Pselaphides.—Mem. Pont. Ac. Sci. N. Lincei, (2), vii, 1-158. **Wallis, J. B.**—Status of Gyrinus piceolus.—**4,** lviii, 50.

(S) ***Benderitter, E.**—Rutelides nouveaux de Colombie.—**25,** 1925, 246-9. ***Bowditch, F. C.**—Notes on Galerucinae in my collection.—**5,** xxxii, 244-64. ***Luederwaldt, H.**—Novas especies do genero Pinotus (Coprinae).—Bol. Mus. Nac. R. d. Janeiro, ii, 67-9. ***Mann, W. M.**—Guests of Eciton hamatum collected by W. H. Wheeler.—**5,** xxxii, 166-77. ***Thery, A.**—Descriptions de nouvelles especes de Buprestides.—An. Mus. Civ. St. Nat. Giacomo Doria, li, 109-13.

HYMENOPTERA.—Cushman, R. A.—Address of the retiring president: Some types of parasitism among the Ichneumonidae. **10,** xxviii, 25-51. **Hicks, C. H.**—A gynandromorphic bee of the genus Dianthidium.—Am. Nat., lx, 199-200. **Parkar, G. H.**—Weight of vegetation transported by tropical fungus ants.—**5,** xxxii, 227-8.

(N) ***Bradley, J. C.**—Two n. sps. of Chelogynus from New York state (Dryinidae.—**105,** xxxix, 7-8. ***Cushman, R. A.**—Ten new No. American ichneumon flies.—**50,** lxvii, Art. 23. ***Malloch, J. R.**—Systematic notes on and descriptions of N. Am. wasps of the subfamily Brachycistiinae.—**50,** lxviii, Art. 3

(S) ***Cockerell, T. D. A.**—The black bees of Peru.—**9,** lix, 28-9. ***Cockerell, T. D. A.**—Descriptions and records of bees.—CVIII.—**75,** xvii, 214-26.

SPECIAL NOTICES.

Lambillionea. This is the new title of the Revue Mensuelle de Societe Entomologique Namuroise, beginning with Annee 26 (1926).

Synopsis des Curculionides de Madagascar. Par. A. Hustace (Bul. Acad. Malgache (Ser. Nov.), vii, 1924, 582pp. This extensive work does not figure any species. Its taxonomy may interest students of this family of Coleoptera.

R. Torres Rojas. Estudios Entomologicos Lepidopteros (Divulgacion cientifico-literaria) Cartago. 1925 Imp. Trejos Hermanos San José, C[osta] R[ica]. 72 pp. Laminas I-III. With the colaboration of Señores M. Vincenzi, A. G. M. Gillott and C. H. Lankester, Señor Torres Rojas has brought together in this little volume brief essays on the Lepidoptera under such titles as Floating Powder [of wing scales], Wings, Legs of a Butterfly, Luminous Heads, Life of the Lepidoptera (including Invasions of Butterflies in Costa Rica by Mr. Gillott), Means of Protection, Injuries and Usefulness, Costa Rican Entomology by Mr. Lankester. A noteworthy feature is the three plates which figure, in black and white half tone, 46 species of Rhopalocera (lam. i, ii) and 34 species of Heterocera (lam. iii) frequently found in Costa Rica. The explanation of the plates gives briefly the colors of each species, so that the photographic figures, although but one-sixth natural size, should enable one to identify them readily. To an entomologist visiting Costa Rica this pamphlet should be very useful, even though he know but little Spanish.

P. P. Calvert.

OBITUARY.

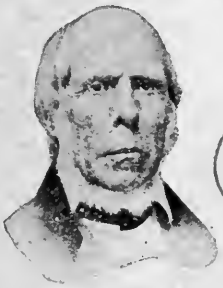
Lewis

~~Louis~~ Bartholomew Woodruff, known for his work on Odonata, Membracidae and Coleoptera, born in New York City, January 1, 1868, died at Torrington, Connecticut, November 27, 1925. An obituary notice and a list of his publications on insects are contained in the *Journal of the New York Entomological Society* for March, 1926. He bequeathed $10,000 to the New York Society, the income from which is to be used by it in furthering the publication of papers on entomology.

JUNE, 1926

ENTOMOLOGICAL NEWS

Vol. XXXVII No. 6



JAMES RIDINGS
1803–1880

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PHILADELPHIA, PA.
THE ACADEMY OF NATURAL SCIENCES,
Logan Square

Entered at the Philadelphia, Pa., Post Office as Second Class Matter.
Acceptance for mailing at the special rate of postage prescribed for in Section 1103,
Act of October 3, 1917, authorized January 15, 1921.

ENTOMOLOGICAL NEWS

published monthly, excepting August and September, by The American Entomological Society.

Philip P. Calvert, Ph.D., Editor; E. T. Cresson, Jr., Associate Editor; Henry Skinner, M.D., Sc.D., Editor Emeritus.

Advisory Committee: Ezra T. Cresson, Philip Laurent, J. A. G. Rehn.

The subscription price per year of ten (10) numbers is as follows:

United States and possessions	$3.00
Canada, Central and South America	3.15
Foreign	3.25

Single copies 35 cents

ADVERTISING RATES: Full width of page. Payments in advance.
One issue, 1 in., $ 1.20, 2 in., $ 2.40, half page, $ 4.00, full page,, $ 8.00
Ten issues " 11.00, " 20.00, " 35.00, " 70.00

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STATED MEETINGS

Of The American Entomological Society will be held at 7.30 o'clock P. M., on the fourth Thursday of each month, excepting June, July, August, November and December, and on the third Thursday of November and December.

Communications on observations made in the course of your studies are solicited; also exhibits of any specimens you consider of interest.

The printer of the NEWS will furnish reprints of articles over and above the twenty-five given free at the following rates: One or two pages, twenty-five copies, 35 cents; three or four pages, twenty-five copies, 70 cents; five to eight pages, twenty-five copies, $1.40; nine to twelve pages, twenty-five copies, $2.00; each half-tone plate, twenty-five copies, 30 cents; each plate of line cuts, twenty-five copies, 25 cents; greater numbers of copies will be at the corresponding multiples of these rates.

EZRA TOWNSEND CRESSON (DECEMBER, 1895).

ENTOMOLOGICAL NEWS

VOL. XXXVII JUNE, 1926 No. 6

EZRA TOWNSEND CRESSON.

(Portrait, Plate VI.)

EZRA TOWNSEND CRESSON died on April 19, 1926, in his eighty-eighth year, at the residence of his son, E. T. Cresson, Jr., at Swarthmore, Pennsylvania.

With James Ridings and George Newman, he founded The Entomological Society of Philadelphia in February, 1859 (name changed to The American Entomological Society in 1867). Of this Society he served as Recording Secretary one year (1859), as Corresponding Secretary, sixteen years (1859-1874), as Curator, eight years (1866-1874), as Editor of the *Transactions*, forty-two years (1871-1912), as Treasurer, fifty years (1874-1924).

In 1861 he began a series of catalogues, synopses and monographs of the Hymenoptera of North America, numbering sixty-five papers by 1882, and summarized in a comprehensive *Synopsis of the Families and Genera of the Hymenoptera of America north of Mexico* [together with a Catalogue of the described species, and Bibliography], published in 1887.

From August, 1865, to October, 1866, he edited *The Practical Entomologist,* "A Monthly Bulletin of the Entomological Society of Philadelphia for gratuitous distribution among Farmers and Agriculturists," the first journal devoted to Economic Entomology published in the United States.

He headed the Publication Committee of The American Entomological Society which, on November 28, 1889, recommended the establishment of *Entomological News.* For thirty-seven years his name has appeared on the cover of this journal as one of its Advisory Committee.

On February 15, 1909, the Society celebrated the fiftieth anniversary of its foundation and adopted a resolution containing, *inter alia,* these words: "It especially rejoices in the presence tonight of one of the three founders of the Society, Mr. E. T.

Cresson, who from the very first has continuously exerted himself in its interests, ... and with his own hands set type for its publications, besides composing long series of entomological memoirs, principally upon the Hymenoptera, which have given to him and to the Society an honorable distinction, both at home and abroad. To many a younger student he has kindly given his aid, his advice and his example. He has encouraged and furthered the progress of entomology in the United States far beyond the limits of his home by his activity as author and by his gift of his most important, valuable and extensive collection of Hymenoptera to this Society. Thankful for all his unceasing labors, this Society now places upon its records, in his presence, its deep appreciation of his services and extends to him its best wishes for many additional years of life and happiness in that field of science which he has cultivated so long and so well."

Those who were associated with him in this Society, in the conduct of its *Transactions* and of the *News,* recalling his unselfish devotion, his amiable and gentle character, can not but feel a sense of deep loss in his departure from among us.

Ezra Townsend Cresson, son of Warder and Elizabeth (Townsend) Cresson, was born June 18, 1838, at Byberry, Bucks County, Pennsylvania. Ever reticent of his personal history he left few memoranda of his early life, even to his family. The active interest of Dr. Thomas B. Wilson in the Entomological Society of Philadelphia led to some financial connection of Ezra Cresson with that philanthropist, terminated by the latter's death in March, 1865. Cresson entered the employ of the Franklin Fire Insurance Company of Philadelphia in 1869. In October, 1878, he was elected its Secretary, a position which he held until his resignation on February 16, 1910, for reasons of health. In 1859, he married Mary Ann Ridings, daughter of his co-founder of the Entomological Society, and had four sons and one daughter, two of whom, George Bringhurst Cresson (died October 18, 1919) and Ezra Townsend Cresson, Jr., have also taken an active interest in entomology.

The first number of the *Memoirs* of the American Entomo-

logical Society (1916) consists of a paper by Ezra Townsend Cresson, entitled *The Cresson Types of Hymenoptera*, giving an alphabetical list, under each family, of the species described by him, with reference to the original description, sex, number of the type-specimen, as recorded in the catalogue of types in the collection of the society, locality and condition of the specimens as found during the winter of 1913-14. It is there stated that types of 2737 species are enumerated. Following it is a list of the author's entomological writings "arranged in chronological order and numbered consecutively, to enable the student to locate the papers in which the types are described."

Method and order were among the most marked characteristics of Ezra T. Cresson and this paper of 1916 furnishes an almost complete guide and index to his original work on the insects he studied so faithfully.

Further details of his entomological labors are reserved for publication in the society's *Transactions*. Any one having letters from him which would add to the value and interest thereof are requested to lend them to the Editor of the NEWS for copy or extract. Such will be returned promptly.

Some New Miridae from the Eastern United States.

By W. S. BLATCHLEY, Indianapolis, Indiana.

During the continuation of the work on my Manual of Heteroptera I have found in my collection of Miridae, or among those sent me for examination, a number of species which are apparently new to science. Of these six are named and characterized in the present paper. Unless otherwise stated the types are in my private collection.

Subfamily CAPSINAE.

Paracalocoris novellus sp. nov.

Elongate-oval. Dark fuscous-brown to black; head with a vague pale spot each side of base of vertex; eyes brown with a pale curved line behind and beneath; pronotum fuscous or blackish with a wide median orange-red cross-bar, this widened on sides to cover side margins behind the collar and with median ray projected backward, the latter sometimes

reaching on to scutellum and dividing the black of basal half of pronotum into two large spots; concavities behind calli present but without black spots; scutellum either wholly dark or orange-red with dark side margins; elytra wholly black, the membrane fuscous; legs black or fuscous, the basal halves of femora sometimes orange-red; tarsi fuscous-brown or paler; antennae black with apical segment dull white, the basal segment sometimes with an orange base.

Joint 1 of antennae about as long as pronotum, thickly clothed with long, forward-inclined, bristle-like hairs; 2 nearly twice as long as 1, 3 slightly shorter and distinctly stouter than 4. Pronotum and elytra thinly clothed with very fine, grayish, appressed hairs. Hind tibiae with scattered hairs which in no way obscure the spines. Length to tip of membrane, 7.5-8 mm.

Dunedin, Bassenger and Lake Wales, Florida, February 27-April 19. Nine examples beaten from foliage of oak and bay along the margins and paths of dense moist hammocks. Easily known from all described North American species by the pale fourth antennal, lack of discal black spots and peculiar markings of pronotum. *Type,* a female, taken at Dunedin, Florida, April 10, 1922.

The only species of *Paracalocoris* of which I can find definite mention from Florida is *externus* (H. S.), which Walker (1873, 91) records from St. John's Bluff and which Van Duzee places as a variety of *scrupeus*. McAtee does not include it in his recent Monograph and doubts its being a member of the genus.

Polymerus clandestinus sp. nov.

Elongate, subparallel. General color above fuscous-black; head with tylus shining black; cheeks, lorae, a spot on middle of vertex and another near each eye, dull yellow; pronotum fuscous-black, the collar, edges of side margins, area in front and each side of calli and a backward projecting ray between them, dull yellow; tip of scutellum yellowish; outer half of clavus and basal fourth of corium usually more or less dull yellow; embolium, anal ridge, outer apical angle of corium and tip of cuneus also yellowish; membrane a uniform translucent fuscous, feebly iridescent, the veins yellow; legs dull greenish-yellow; hind femora with two rows of small, vague, brownish dots on outer face and usually a brownish ring near

apex, sometimes in great part fuscous-brown; tips of tarsi and beak fuscous; under surface dull yellow, the pleura and side margins of ventrals more or less fuscous. Joint 1 of antennae yellow, fuscous near base and apex, three-fourths as long as basal width of vertex; 2 yellow, the apical fourth black, three and one-half times longer than 1; 3 fuscous, yellow at base, one-third longer than 4, the two united two-thirds the length of 2. Upper surface sparsely clothed with deciduous, appressed, scale-like, yellow hairs, these usually condensed to form small patches on clavus and corium. Pronotum of the usual form for the genus, the calli small but distinct; disk very finely rugose, with minute punctures between rugae. Scutellum finely transversely rugose. Clavus and corium very finely punctuate. Beak reaching hind coxae. Length 3.5—3.8 mm.

Royal Palm Park, Canal Point and Fort Myers, Florida, March 4—April 8; swept in some numbers from low herbage growing in moist mucky places. Allied to *P. basalis* (Reut.), but smaller, more parallel, without reddish marks, the second joint of antennae much more slender and a brighter yellow, the pale markings of pronotum distinctive. *Type* a female taken at Royal Palm Park, Fla., March 30, 1925.

Subfamily Orthotylinae.

Pilophorus brimleyi sp. nov.

Elongate, constricted behind the middle. Head, pronotum and scutellum dark blackish-brown, shining; clavus with inner basal third and apical half velvety black; remainder, consisting of an inverse wedge-shaped spot on outer basal third, which extends back and broadens between the two velvety ones, covered with a bluish bloom; corium without a trace of the usual sub-basal whitish cross-bar of the genus, the one on apical third present but short, not reaching claval suture and enclosed by a small bluish area, narrow basal half and a broad cross-bar just behind the white one velvety black, area behind the velvety bar and the entire cuneus steel-gray; membrane dusky-translucent, the cells and a spot behind tip of cuneus darker; femora dark brown, shining, knees and tips of coxae yellowish, tibiae and tarsi pale brown; pleura dark brown, ventrals shining black.

Joint 1 of antennae brown, paler at base and tip, slightly shorter than width of base of vertex; 2 brownish-yellow,

darker toward apex, gradually thickened from the base, four times as long as 1; 3 dull yellow, minutely pubescent, two-fifths as long as 2; 4 missing. Pronotum campanulate, basal portion strongly and evenly convex, little longer, but much wider and higher than front one, minutely granulate or subalutaceous. Scutellum small, moderately convex. Elytra strongly constricted, the basal half of corium less than half the width of apical third. Hind tibiae, male, almost twice as long as femora, very slender, slightly flattened, feebly curved. Length 6 mm.

Type, a male in the collection of the Division of Entomology, State Department of Agriculture, Raleigh, North Carolina. Taken at Windsor, North Carolina, July 7, 1925. Named in honor of C. S. Brimley, of Raleigh, who has done much to increase our knowledge of the insects of his State, and who has furnished many specimens to aid my work on Heteroptera. It differs from all described forms of the genus in having but one whitish cross-bar on corium, in the form of the bluish bloom-covered spot on clavus, in the distinctly bell-shaped pronotum and very narrow basal half of corium.

Subfamily Bryocorinae.

Pycnoderes convexicollis sp. nov.

♂—Elongate-oval. Head in great part fuscous, the cheeks and a stripe each side of vertex dull yellow; pronotum and scutellum shining black with a faint brassy tinge, very sparsely pubescent with fine prostrate hairs; elytra opaque with a bluish bloom covering most of the surface, cuneus, a large oblong spot near base of embolium and a smaller oval one near its apex pale yellow; apical half of membrane dusky yellow, its veins and a spot at base dark brown; femora dark brown to blackish, paler at base, tibiae pale brown, yellowish toward tips, coxae and tarsi pale yellow, claws fuscous; under surface black, sterna coarsely punctate, ventrals shining, almost smooth, minutely pubescent.

Joints 1 and 2 of antennae pale yellow, 1 three-fourths as long as width of vertex, 2 nearly three times as long as 1, 3 and 4 dusky, subequal in length, each about as long as 2. Pronotum with sides and base subequal in length; calli larger and much more prominent with median groove of basal half deeper and lateral impressions better defined than in either of our other eastern species; hind margin almost straight,

feebly notched at middle; embolium slightly narrower with margin less curved than in *dilatatus* and with only a trace of the transverse rugae of that species; membrane surpassing abdomen by two-thirds its length.

♀—Shorter and more broadly oval than male; color much the same. Gibbosity of pronotum higher, with median groove distinctly deeper, the sides and base more abruptly declivent and lateral impressions better defined. Elytra distinctly shorter; embolium slightly wider and more reflexed, its margin more strongly curved; membrane surpassing abdomen by less than one-third its length. Length, ♂ 3.5—3.8 mm.; ♀ 3—3.2 mm.

Marion, Putnam, Knox and Posey counties, Indiana, April 26—September 19; swept in numbers from low herbage in dense upland woods and in thickets along the banks of streams. *Type*, a male taken in Putnam Co., Indiana, August 9, 1925.

Our three eastern species of *Pycnoderes* may be separated by the following:

Key to Eastern Species of Pycnoderes.

a. Legs pale yellow, the apical third of hind femora alone darker; second joint of antennae subequal in length to width of head; veins of membrane not distinctly darker than the disk.

b. Embolium with a distinct apical or subapical pale spot; costal margin of elytra feebly curved; pronotum thickly pubescent; length 3.2 mm. QUADRIMACULATUS Guerin

bb. Embolium with subapical pale spot very small or wanting; costal margin of elytra strongly curved; pronotum with pubescence scarcely evident; length 3.5—4 mm. DILATATUS Reuter

aa. All the femora in great part or wholly blackish-brown, tibiae pale brown; second joint of antennae distinctly longer than width of head across eyes; veins of membrane dark brown. CONVEXICOLLIS sp. nov.

Sixenotus albicornis sp. nov.

Closely allied to *insignis* Reut. Form more elongate and subparallel. Head and pronotum shining black, devoid of the subaeneous tinge of *insignis*. Elytra dark piceous-brown, opaque, subtranslucent, minutely pubescent. Antennae and legs a uniform very pale yellow or milky white; membrane with cells dark fuscous, apical half dull white, veins blackish.

Pronotum relatively longer and narrower in front than in *insignis*, its disk more distinctly obliquely strigose with rows of punctures between the strigae, the punctures coarser and less dense than in *insignis*. Length 3.3—3.5 mm.

Palmdale, Moore Haven, Royal Palm Park, Everglades and Dunedin, Florida, November 19—April 23. Hibernates beneath boards and between basal leaves of sedges and in spring swept from herbage along the margins of wet hammocks. *Type* a male from Dunedin, Fla., taken March 28, 1921.

Sixenotus gracilis sp. nov.

Oblong-oval. Head, pronotum, scutellum and under surface black, distinctly bronzed; joints 1 and 2 of antennae, embolium and legs yellow, cuneus, membrane and dilated apex of embolium white; veins of membrane and joints 3 and 4 of antennae fuscous-brown.

Eyes larger and vertex narrower than in our other three species. Joint 1 of antennae relatively stout, cylindrical, three-fifths the length of 2; 3 and 4 more slender than in *insignis*, subequal, each slightly longer than 2. Pronotum with basal lobe narrower, more convex, more finely and densely punctate than in either of the others, the basal margin broadly rounded or subtruncate. Elytra and ventrals sparsely clothed with minute golden yellow hairs. Length 2.4—2.6 mm.

Fort Myers and Hillsboro Canal, Florida, March 4—24. The type was sifted from the debris on the mucky bottom of an extinct wet weather pond at Fort Myers. Easily known by its small size and pale embolium and cuneus. *Type*, a female taken at Fort Myers, Fla., March 4, 1921.

The four eastern species of *Sixenotus* are separated as follows:

Key to Eastern Species of Sixenotus

a. Antennae and legs not wholly black; elytra very finely and indistinctly pubescent.

b. Cuneus and embolium black; basal joint of antennae distinctly shorter than width of vertex; larger and more robust; length 3.3—3.5 mm.

c. Antennae in part black or fuscous; legs dull yellow more or less tinged with fuscous; middle and hind tibiae with two vague-brown annuli..... INSIGNIS Reut.

cc. Antennae and legs wholly milky white or very pale yellow, tarsal claws alone darker.
ALBICORNIS sp. nov.

bb. Cuneus white, embolium pale yellow; basal joint of antennae slightly longer than width of vertex; smaller and more slender, length 2.4—2.6 mm.
GRACILIS sp. nov.

aa. Antennae and legs wholly black; elytra coarsely and distinctly pubescent; length 2.8—3 mm.
TENEBROSUS Distant

Observations on the Life-Histories of Two Species of Praying Mantis (Orthopt. : Mantidae).

By MARY DIDLAKE, Lexington, Kentucky.

(Plates VII, VIII.)

Two species, the common *Stagmomantis carolina* and a big Chinese species, *Paratenodera sinensis*, have been reared in the laboratory of the Department of Entomology and Botany, of the Kentucky Agricultural Experiment Station, and carried through several generations in as many successive years.

The egg-mass of the foreign species was found May 8, 1917, on a shrub in the nursery of Wood, Stubbs & Co., Louisville, Kentucky, and brought to our laboratory by Mr. H. R. Niswonger. The shrub had been received either in a European shipment or one from the Eastern States, where this insect has been recorded as having been established.

It was found possible to rear the species from time of hatching until maturity as described below, molting, mating, egg-laying, regeneration of injured limbs and antennae being easily observed.

REARING.

Eggs taken from twigs out-of-doors, or laid in the laboratory were placed outside all winter. When they began to hatch, in May or June, individuals were isolated in homeopathic vials, tightly stoppered. These vials were handled in wooden vial racks holding about a dozen. In each vial a strip of filter paper furnished a support to which the baby mantis could cling.

About the third molt the vials became rather close quarters

and the insects were transferred to four-ounce wide-mouthed bottles with cork stoppers and a strip of cardboard to stand upon, individuals still being kept separate. Before the last molt they were given still larger accommodations, either quart specimen jars or 6-inch Stender dishes.

Feeding.

As is well known, the Praying Mantids are preying insects and are classed as beneficial because they eat plant lice, caterpillars and various other enemies of vegetation. They are, furthermore, cannibals, and from infancy devour each other with relish. When hungry they ate readily almost every insect species that came their way, the only invariable requirement was that the food be served "alive and kicking." Tiny leaf-hoppers, *Drosophila, Meromyza,* minute "looping" caterpillars, etc., collected in a sweep net and distributed to each vial furnished most acceptable food. Bigger leaf-hoppers, larger flies and caterpillars, and young grasshoppers became suitable food as the mantids increased in size. After the third molt, mantids could capture house-flies, and never seemed to tire of the diet. Quantities of these were caught in wire traps placed outside a laboratory window, baited with banana.

Full grown adults if hungry ate almost any living thing, spiders, hairy caterpillars, (*Datana, Apatela*), furry moths, bad-smelling stink bugs, hard-bodied wasps (*Vespa*), huge cock-roaches and grasshoppers as large as themselves. Some individuals which survived late in the season when other insects grew scarce, relished fat chestnut worms, meal worms, etc.

They seemed never to kill other insects except for food. When not hungry a mantis might be annoyed for hours by a fly, and make no effort to kill it just to be rid of it. Again, a small mantis was so hungry that it snatched a leaf-hopper in one fore-limb and a pomace fly in the other and took a bite alternately from the right and from the left.

In captivity it is certainly the rule, with rare exceptions, for the adult female to devour the smaller male, leaving only his wings, antennae, spiny legs and horny jaws. Perhaps in nature he more often has a chance to escape.

Molts.

As young mantids hatched, one could always find the exuviae or envelopes left suspended from the openings of the egg-mass; but I have not counted this as a molt. Mantids were never observed to eat their cast skins, as do katydids and various other insects. The following figures are averages from 39 males and 41 females reared from eggs to maturity:

Males of the common southern mantis (*Stagmomantis carolina*) commonly molted six times, only 15½% of those carried through having seven molts. The average time elapsing between molts was 15 days before the first molt, 10 days to the second molt, 9 to the third, 10 to the fourth, 12 to the fifth, 18 to the sixth and 18 to the seventh molt; the shortest time between any two molts was 5 days and the longest 31 days. The average time for full development was about 77½ days, the shortest period recorded being 66 days and the longest, 99.

Females commonly molted seven times, only 17% completing development with six molts. The average time between molts was 15 days before the first molt, 9½ days to the second molt, 8 to the third, 9 to the fourth, 9½ to the fifth, 14 to the sixth and 17½ to the seventh. The shortest time between any two molts was 6 days and the longest 26. The average time from hatching to adult emergence was 79 days, the shortest period being 69 days and the longest 91.

The following figures are averages from 17 males and 14 females reared from eggs to maturity:

Both sexes of the Chinese mantis (*Paratenodera sinensis*) commonly molted seven times, occasional individuals requiring eight molts. Of the *males* 76½% molted seven times, the average time between molts was 11 days to the first molt, 10 to second, 8½ to the third, 8 to the fourth, 10 to the fifth, 12 to the sixth, 17 to the seventh and 19 to the eighth; the shortest time between any two molts was 6 days and the longest 21. The average time for full development was 77 days, the quickest individual requiring 67 days and the slowest 87 days.

Of the *females* over 85% molted only seven times. The

average time between molts was 12 days to the first molt, 10½ to the second, 7½ to the third, 8 to the fourth, 10 to the fifth, 11 to the sixth, 19 to the seventh and 17 to the eighth molt; the shortest time between molts was 6 days and the longest 32 days. The average number of days to adult emergence was 78, the shortest being 67 and the longest 91 days.

Variation in Size.

Variation in size of growing mantids of the same age was such that one individual might be as large after the fourth molt as another of the same sex and species, after the fifth molt. Mantids just hatched measured 8 to 10 mm. with a slowly graduated increase at each molt until adults of the common species reached a length of 50 to 56 mm., and the Chinese species adult measured 80 to 84 mm. Females were larger, stronger asd more robust than males.

The antennae increase in length and in number of joints at each molt after the first, our common species starting with antennae 4 mm. long and consisting of 35 joints; the adult female has antennae 13 mm. long with about 75 joints and the male 25 mm. long with 88 joints. *Paratenodera* when hatched has antennae 7 mm. long of about 49 joints and antennae of adult female measure 26 mm. and have 148 joints; those of adult males, 35 mm. long with 158 joints.

It was difficult to estimate the exact number of joints as a few near the base became more or less fused and impossible to distinguish.

Only in the last two molts before the adult condition does the number of joints in the antennae of males and females show much difference, and then the structure also becomes clearly differentiated, the antennae of the male being longer, much stouter at base, and under the microscope showing a more elaborately pitted and ciliated surface.

Color.

When hatched all mantids looked alike, having a glossy surface of a tan or brown color, with a few dark spots on the legs. The young *Paratenodera* showed a lighter tan stripe

along each side of the thorax. In all of those observed none was green at first.

Before the first molt some appeared lighter brown and even had a slightly greenish hue. After this molt quite a number were green and tan, the legs being usually more or less green. After the second and third molts a few individuals were often vividly green, but those reared in the laboratory invariably lost the green color before maturity. Young, green individuals caught out-of-doors and kept subsequently in the house always became tan and brown. Out-of-doors, bright green adult females seemed rather more common than brown ones.

Sex Differences in Young Mantids

When first hatched it seemed impossible to distinguish male from female, but often after the first molt, and with certainty after the second, one could make out the sex by a study of the ventral abdominal segments. The little vials and motionless positions of the young made this observation easy on the living specimens.

At first there are visible dorsally, ten segments, and ventrally, eight. Adult males show these same numbers; adult females have the ten recognizable segments dorsally, but only *six* ventral ones. Young males invariably show straight ventral lines of division between each of the eight segments. But with females, after the first molt, the sixth and seventh segments (two next the tip) appear slightly notched. After the second molt the notch on the sixth is deeper and it begins to lap over the seventh. As growth proceeds, the seventh and eighth segments become much modified and disappear behind the sixth, telescoping into it, so that by the fourth or fifth molt the now deeply cleft sixth segment appears the terminal one, underlying four dorsal segments; whereas in the young of both sexes and in the adult male the terminal ventral segment underlies two dorsal ones. (See figures A-F, Plate VII.)

Eggs.

Normally, I think eggs would be laid about two weeks after mating, though the time observed varied from two days to

three weeks. In several instances as many as five lots of eggs were produced by one female *Stagmomantis carolina*, at intervals of 10 days to two weeks apart, the last lots being small and imperfect. With both species, two or three batches of eggs seem quite commonly deposited by one mantis.

The egg-mass of *Paratenodera* is much larger than that of our common species, measuring about 2x2x2 cm., while the latter is 2 cm. long, 1 cm. broad and .75 cm. thick. Nearly all those laid by *Paratenodera* in the laboratory seemed incomplete and not so large as the original one found out-of-doors, but produced abundant young ones the following spring. The eggs are much more numerous in each mass, and instead of being in straight rows are arranged in a sort of fan-shaped series about a central stem or axis.

Although numerous young of *Paratenodera sinensis* were liberated on the Experiment Station Ground and elsewhere, only one adult has thus far been observed and no egg-masses have been found out-of-doors.

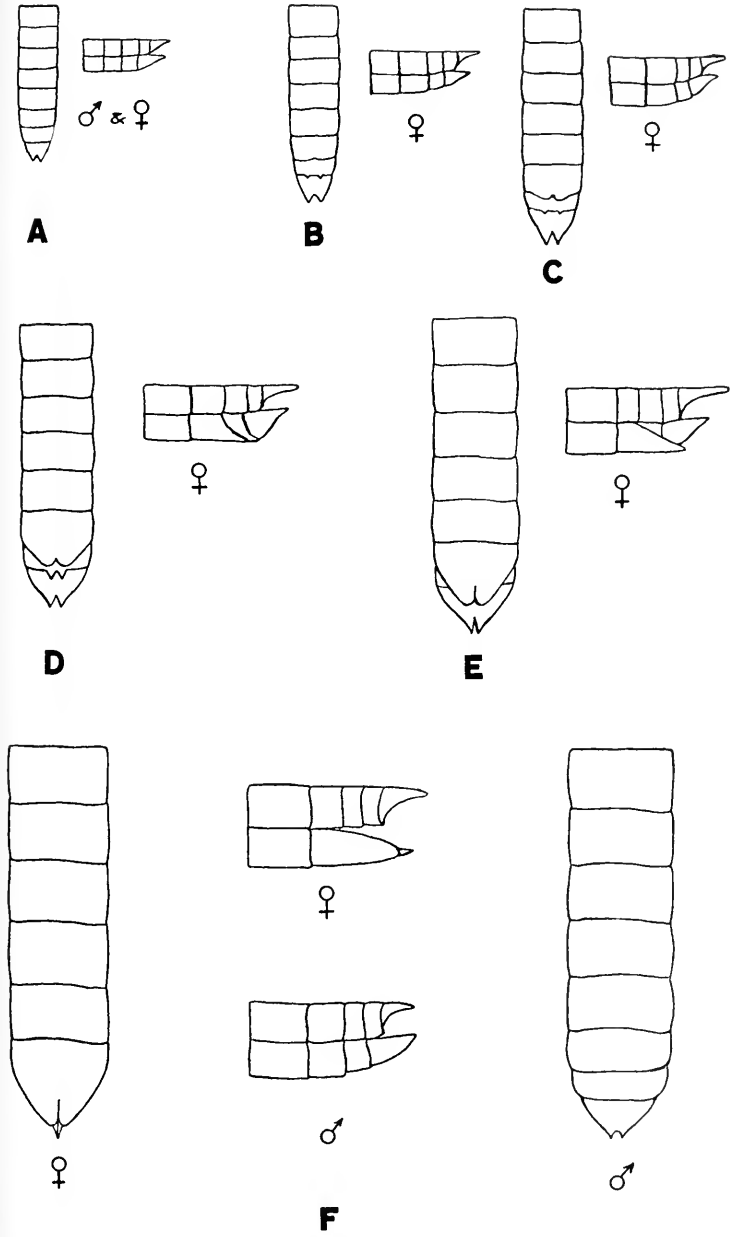
EXPLANATION OF PLATE VII.

Figs. A-F. Changes in Ventral Abdominal Segments of Young Mantids Distinguishing Female and Male; also Side Views of Tip of Abdomen. *A*. Before first molt Both Male and Female Show 8 segments. Terminal Ventral One Underlying 2 Dorsal Ones. *B*. Female after first Molt. Sixth and Seventh Segments Slightly Notched. *C*. Female after second Molt. Notches More Apparent. *D*. Female after third Molt. Seventh and eighth Segments Beginning to Disappear behind Notched sixth One. *E*. Female after fourth Molt. Sixth Segment More Deeply Cleft and Extending Further. *F*. Female and Male after fifth Molt. Female with Only 6 Ventral Segments, Tip Underlying 4 Dorsal Ones. Male 8 Segments as at First. Drawn by Virginia Anderson.

PLATE VIII.

Common Mantids Just Hatching and Young Ones Detached from Egg-Mass before the Legs are Ready for Use. Enlarged. Photographed by E. C. Vaughn.

Both plates are of *Stagmomantis carolina*.



CHANGES IN VENTRAL ABDOMINAL SEGMENTS OF YOUNG STAGMOMANTIS CAROLINA—DIDLAKE.

STAGMOMANTIS CAROLINA, HATCHING AND AFTER HATCHING—DIDLAKE.

Thomas Lincoln Casey as a Coleopterist.

By Melville H. Hatch,[1] University of Michigan, Ann Arbor, Mich.

Thomas Lincoln Casey was born on February 19, 1857, at West Point, New York, the son of Gen. Thomas Lincoln Casey and Emma Weir, and grandson of Major Gen. Silas Casey. Predestined in this fashion for the army, it is with no surprise that we find him receiving his commission as First Lieutenant twenty-two years later (1879), and eventually rising to the rank of Colonel (1909). The chronological table at the conclusion of this paper outlines the principal events of his career.

Casey took up the study of Coleoptera as a hobby. He inherited sufficient means, not only to render him financially independent, but to purchase specimens and literature in large quantities and to publish the results of his investigations privately, when such appeared desirable. His not overly onerous duties in the army allowed him the time for collecting and the study of his specimens. By 1884, the year of his first published work, he had undoubtedly assembled a collection of considerable proportions.

A Revision of the Cucujidae of America North of Mexico (84*:69-112) published in the Transactions of the American Entomological Society for 1884, and submitted for publication on November 9 of the previous year, apparently constitutes Casey's first published work. He was closely associated with Leconte and Horn in the course of its preparation, and it represents the spirit of those authors at its best. Keys, moderately long descriptions (10 to 20 lines), figures of nearly all the species, are all similar to those found in Horn's papers. Thirteen new specimens are described out of a total of fifty-eight.

The same year however, Casey published privately three papers of an entirely other tenor: two *Contributions to the*

[1]Contribution from the Zoölogical Laboratory of the University of Michigan.

* Throughout the present paper reference is made to Casey's publications as listed by Leng (1920, p. 375-376) and supplemented by him in 1925 (p. 100) by the use of two numerals to indicate the year followed by a semicolon and an indication of the page or pages.

Descriptive and Systematic Coleopterology of North America (84: 1-60; 84: 61-198) and a *Revision of the Stenini of America North of Mexico* (84: 1-206). No less than 300 species, a large pecentage from uniques, are described as new in these papers, 148 of these Stenini, out of a total of 171 species of that tribe. In the first place, Casey insisted on replacing the handlens of Leconte and the earlier entomologists with the modern biobjective binocular microscope. He was always much interested in securing accuracy of measurement and eliminating the personal equation as far as possible (98: 116-7). He points out, for instance, the tendency of Leconte constantly to exaggerate his dimensions. Furthermore, "It has been my aim," he wrote (84:61) "not only to describe the species, but to make a separate study of each." This resulted in descriptions averaging about three-fourths of a page or fifty lines long, and revealed a mass of unsuspected differences to which Casey gave specific value.

The reason for their private publication was undoubtedly, in part, because no current entomological journal would accept them. Indeed, with the exception of the years 1898-1900, when certain of his papers appeared in the Journal of the New York Entomological Society, those of Casey's major contributions that were not published privately, appeared in the publications of various academies of science (California, 1885-87; New York, 1888-1897; St. Louis, 1905-1906; and Washington, 1907-1909). This was undoubtedly largely because of the greater facilities for the publication of extended memoirs offered by the academies. One may suggest, however, that the radical nature of the work played some part.

The basis of Casey's specific discrimination was an increased attention to details of habitus and sculpture. The time had arrived when coleopterists looked with increasing suspicion upon differences founded upon color or color pattern. Differences in proportion and sculpture were regarded as more significant. Casey took up with this tendency and carried it toward its logical conclusion, until at the time of his death he had published 8621 pages describing almost as many Nearctic

species as all other coleopterists together. His collection is said to have numbered 15,000 species.

The pamphlets met with immediate opposition. John B. Smith (Ent. Amer. 1885, Vol. I—58-59) found it "impossible to say a word of praise." The "descriptions are aggravating, for their minuteness of detail . . . and . . . are individual, and not characteristic of species." The binocular microscope that he used showed him too much! Smith concluded with the surmise that he would live to regret the early effort, a prediction that was only very partially fulfilled (89:325). In the same year, Horn (1885:108-113) indicated a considerable number of the species as synonyms. But opposition of this character did not continue. There lacked men of the temperament to contest the new species one by one, as they were announced. There gathered, instead, a general mistrust of the whole work.

One of Casey's leading characteristics was that he did not regret. Granting his premises about the nature of specific differences, there was nothing to regret,—for all attest to the extreme accuracy and honesty of his work. Very rarely, he admitted that he described a synonym as in the case of *Harpalus viridiaeneus* Beauv. and its variants (89: 325). But oftener, his restudy of old material led him to reject his previous determination and describe the specimen as new or break up the series of his original species into several.

In 1888 (88:18) Casey published a criticism of some of the tables in Leconte and Horn's *Classification of the Coleoptera of North America*. The cudgels were immediately taken up by John Hamilton (1888, p. 78), who suggested that Casey try constructing some tables of his own. The succeeding years constituted Casey's answer. But analysis, rather than synthesis, was always his dominant interest. His tables are usually to species, less frequently to genera and tribes, only very rarely to the primary family divisions and never to groups above the family. In the light of the relationship of Casey's work to Leconte and Horn's *Classification of the Coleoptera of North America* such a procedure is understood. Despite his criticism of this work, Casey accepted it as his point of departure, and

apparently never went so far as to regard the erection of an entirely new edifice a necessity. Casey ranged over the entire coleopterous series to such an extent that his failure to work with the aquatic families, Elateridae and Chrysomelidae is as noteworthy as his great amount of attention to Carabidae, Staphylinidae, Tenebrionidae, Cerambycidae and Curculionidae. Among the families he monographed for North America north of Mexico are Scydmaenidae, Anthicidae, Dermestidae, Byrrhidae, Cucujidae, Cryptophagidae, Phalacridae, Coccinellidae, Alleculidae and Cisidae, and the subfamilies Rutelinae, Dynastinae and Cetoniinae among the Scarabaeidae. Hamilton would have triumphed, indeed, could he have lived to see Casey admit his inability to construct a dichotomous table to the thirteen tribes of Brazilian Barinae (22:3). Casey gave but scant interest and equal praise to such work as Batchley's *Coleoptera of Indiana* (11:199).

Casey's first work, despite its radical character, conformed to traditional channels in so far as he availed himself of the collections of institutions (as the National Museum, and the Leconte collection at the Museum of Comparative Zoology) and other scientists (Leconte, Horn, Schwarz). As late as 1890 he acknowledges such aid (90:307), and numerous of his earlier types were in these collections. In succeeding years, however, he ceased from this custom, and come to confine himself entirely to his own collection, which was amassed largely by purchase. Among the more important of these purchases seem to have been, the cabinet of Dr. G. M. Levette of Indianapolis, purchased in 1890 (90:501), and an extensive collection of Brazilian Barinae purchased from Herbert H. Smith about 1893. Among the American collectors from whom he obtained specimens by purchase or otherwise may be mentioned Wickham, Fall, Manee, Knaus, Blatchley, and Frost.

He came to play a lone hand. He never consulted the other American collections, and often regrets his inability to study a particular species because his collectors had been unable to find it, when types may have been in existence in Philadelphia or Boston. In place of the types, he interpreted the published descriptions with the greatest strictness, and the least failure

of the specimen at hand to correspond at all points with the written description justified its recognition as a new species. For instance, he once remarked (05:21) that his failure to secure H. H. Smith's collection of Brazilian Staphylinidae was one of the greatest disappointments of his scientific career. Their presence in the Carnegie Museum rendered them utterly unavailable for his purposes! He displayed little willingness to coöperate in the production of such a work as Blatchley's *Coleoptera of Indiana* (1910, p. 5), though his help is acknowledged in connection with Blatchley and Leng's *Rhynchophora* (1916, p. 6).

The limitations involved in Casey's procedure in assembling his collection, together with the exhaustiveness of the study to which he subjected his specimens, resulted in a difficulty of a special nature that accompanies the use of his monographic revisions. Even the most extensive use of collections, from all parts of the country, so splendidly exemplified by certain of the work of Schaeffer, Leng, Fall and others, resulted in the most unfortunate geographic gaps. Casey's procedure, involving only such material as he could purchase, and ignoring the accumulated collections, left much more serious gaps. The extreme significance that he attached to the most minute variation rendered it probable that his taxonomic units were often of limited geographic range. The result was that a disproportionately small portion of the total variational range of the group—in the light of his criteria—was represented, and the chance rendered almost a certainty that specimens from numerous of the localities unrepresented in Casey's collection were as worthy of description as new as those that Casey himself recognized. Casey himself, undoubtedly felt this, and attributed it to the undeveloped condition of his science. But it is a point that must be remembered in the use of his keys.

Another departure made by Casey in much of his monographic work, especially his later studies, was the practice of including mention of as many exotic genera and tribes as his material permitted. In this way he tended to break away from the provincialism that is still one of the outstanding traits of American coleopterology.

(To be continued)

Conocephalus nigropleurus (Bruner) in Pennsylvania (Orthoptera).

By Henry Fox, Associate Entomologist, Fruit Insect Investigations, Bureau of Entomology, United States Department of Agriculture.*

During the summer of 1925 the writer had the privilege of examining a series of collections of Orthoptera made on Montgomery Island, in the Susquehanna River, at Milton, Northumberland County, Pennsylvania. These collections were made at the writer's suggestion by Mr. R. L. Coffin, a member of the staff of the Japanese Beetle Laboratory. Mr. Coffin, during the summer, was in charge of a party of Government scouts engaged in the work of keeping Montgomery Island and the surrounding country under surveillance because of the possibility of Japanese beetle infestation, a few of these insects having been taken on the island by one of the Government scouts the year before. The Orthoptera taken on the island were gathered primarily to get seasonal data for comparison with similar data from southern New Jersey.

With a single exception, all the species represented in the collections are forms common to, and generally known to occur in, all parts of Pennsylvania, but in the material sent in I was surprised to find a few examples of the handsome black-sided grasshopper, *Conocephalus nigropleurus* (Bruner), a species hitherto unrecorded from the State and not previously known farther east than Ithaca, New York. The discovery of this species in north-central Pennsylvania is another instance of how persistent local collecting will often reveal the presence of an unsuspected form far beyond the supposed limits of its range.

According to information supplied by Mr. Coffin, the species was taken in only a very limited area, in a sort of slough along one side of the island. During high water this is overflowed, but at the time the collections were made it was overgrown with a variety of grasses and weeds together with clumps of low willows and patches of tall ragweed (*Ambrosia trifida*).

* Publication authorized by the Secretary of Agriculture.

The species was represented in the collections by the following material:

Montgomery Island, West Milton, Pa., VII 13, 1925, 1 juv. ♂, 5th instar; VII 20, 1925, 1 ♀; VII 28, 1925, 1♂. (R. L. Coffin, collector.)

Other species of Orthoptera collected at the same locality are the following:

Arphia xanthoptera (Burm.), VIII 10, 1 juv. ♂, 4th instar.
Encoptolophus sordidus (Burm.), VII 6, juvs., VIII 10, juvs.
Dissosteira carolina (Linn.), VII 6, juvs.; VII 13, 1 ♂ 2 ♀, 2 juvs.; VII 20, many adults and juvs.; VIII 10, 2 ♀, 1 juv.; VIII 17, 1 ♂, 3 ♀; VIII 24, 1 ♂, 1 juv. ♀.
Melanoplus mexicanus atlanis (Riley), VI 30, 2 ♂, 1 ♀; VII 6, 2 ♀; VII 13, 1♀.
Melanoplus femur-rubrum (DeG.), VI 30, juvs.; VII 6, juvs.; VII 13, juvs.; VII 15, juvs.; VII 20, juvs.; VIII 10, 6 ♂, 2 ♀, many juvs.; VIII 17, 11 ♂, 8 ♀, numerous juvs.; VIII 24, 11 ♂, 11 ♀; many juvs.
Melanoplus bivittatus (Say), VI 30, juvs.; VII 6, 1 ♂; VII 13, 3 ♂; 5 ♀; VII 20, adults, nymphs; VIII 10, 1 ♂, 2 ♀, 1 juv.; VIII 17, 1 ♀; VIII 24, 3 ♂, 2 ♀.
Phaneroptera furcata (Bruner), VII 15, 1 juv.
Orchelimum vulgare (Harr.), VII 6, juv.; VII 13, juv.; VII 17, 1 ♂, 1 ♀; VIII 24, 2 ♂.
Orchelimum gladiator (Bruner), VI 30, 1 juv. ♂, 5th instar.
Conocephalus fasciatus (DeG.), VII 6, juvs.; VII 13, 1 juv.; VII 15, juvs.; VII 20, 2 juvs.; VIII 10, 2 ♀, 2 juvs.; VIII 17, 2 ♂, 3 ♀; VIII 24, 2 ♂, 6 ♀.
Conocephalus brevipennis (Scudd.), VIII 10, 1 ♂; VIII 17, 1 ♂, 2 ♀; VIII 24, 1 ♂, 3 ♀ (1 ♀ macropterous).

Personal Mention.

An oil painting of William Lochhead, emeritus professor of entomology and zoology in Macdonald College of McGill University, Montreal, was unveiled on March 17 by Sir Arthur Currie, vice-chancellor and principal of the university. The portrait was painted by Mr. G. Horne Russell, president of the Royal Canadian Academy, on subscription of a large number of Prof. Lochhead's colleagues, former pupils and other friends. —(*Science*, March 26, 1926.)

ENTOMOLOGICAL NEWS

PHILADELPHIA, PA., JUNE, 1926.

Collecting Homoptera in Mexico.

G. F. FERRIS, Assistant Professor of Zoology at Stanford University, who has been traveling during the past year in Mexico expects to arrive home about the first of June. As was announced in *Entomological News* of last July (p. 209) he originally planned to accompany a geological party sailing on a private yacht to Mexico and South America. Unfortunately the boat was sunk in a collision only a few days before the party was due to leave and he was compelled to reorganize his plans.

He consequently went to Mazatlan, on the west coast of Mexico by train. He spent some time about Mazatlan, San Blas and Tepic and also visited the Tres Marias Islands, about sixty miles off the coast, which are occupied only by a Mexican penal colony. Also some time was spent about Manzanillo and Colima and in an attempt to ascend the Volcano of Colima. The attempt was frustrated, however, by heavy and entirely unseasonable rains and snows.

From Colima he proceeded on foot with two burros to carry his equipment and accompanied by a Mexican boy to Acapulco, a distance of about four hundred and fifty miles through the mountains, five weeks being spent on this trip. After a stay of three weeks in the vicinity of Acapulco, he went by steamer to Salina Cruz and then visited and collected about that port, Puerto Mexico on the east coast and several other points on the Isthmus of Tehuantepec. His last collecting will be in the region about Mexico City.

His principal purpose was the collecting of material in the Coccidae and in this group a very extensive collection was obtained. From field observations alone it is impossible to judge with any exactness as to the richness of the collection, but it is known to contain a large number of unusual forms and, unless there proves to be an entirely unsuspected amount of duplication, it may be roughly estimated that it numbers in the neighborhood of three hundred and fifty species. Nearly all of these are from wild hosts, as no special attempt was made to obtain material from cultivated trees and shrubs.

In addition to the Coccidae there is a small collection of Aphids, for the Aphid fauna appears to be extremely poor, but of much importance for practically nothing has been known of this family in Mexico. Of the species it can at present be said

only that no evidence appears of the presence of any special and peculiar tropical fauna.

There was also obtained a very interesting collection of Chermids (Psyllids), this being especially valuable as in the majority of cases both nymphs and adults were secured. It includes a number of gall-making forms and undoubtedly most of the species are undescribed.

An incidental collection of Aleyrodids and some small amount of material in certain other groups was also secured. No attempt was made to gather general collections. The collections are the private property of Professor Ferris but it is expected that they will eventually be deposited in the entomological collections of the newly organized Museum of Biology at Stanford. With the addition of this material the value of the collection of Coccidae now contained in that Museum and already probably the second largest in the world will be very materially increased.

Professor Ferris reports an extremely enjoyable year, entirely devoid of unpleasant incidents of any sort and even of illness although wild and unfrequented, and in part very unhealthy, portions of the country were visited.

Entomological Literature

COMPILED BY E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published.

All continued papers, with few exceptions, are recorded only at their first installments.

Papers of systematic nature will be found in the paragraph beginning with (N). Those pertaining to Neotropical species only will be found in paragraphs beginning with (S). Those containing descriptions of new forms are preceded by an *.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

Papers published in the Entomological News are not listed.

5—Psyche. **8**—The Entomologist's Monthly Magazine. **9**—The Entomologist. **13**—Journal of Entomology and Zoology, Claremont, Cal. **14**—Ent. Zeitschrift, Frankfurt, a. M. **15**—Insecutor Ins. Menstruus. **17**—Ent. Rundschau, Stuttgart. **18**—Internationale Ent. Zeit., Guben. **20**—Societas Entomologica, Stuttgart. **22**—Bulletin of Ent. Research, London. **24**—Annales, Soc. Ent de France. **26**—Ent. Anzeiger, Wien. **33**—Bull. et Annal. Soc. Ent. Belgique. **36**—Trans., Ent. Soc., London. **39**—The Florida Entomologist. **47**—Neue Beitr. z. Syst. Insektenkunde. **56**—Konowia, Wien. **59**—Encyclopedie Ent., Paris. **68**—Science.

69—Comptes Rendus, Acad. Sci., Paris. 71—Novitates Zoologicae. 75—Annals and Mag. of Nat. History, London. 77—Comptes Rendus, Soc. Biologie, Paris. 89—Zool. Jahrbucher, Jena. 101—Biol. Bulletin, Woods Hole, Mass. 103—Proc., Zool. Soc., London. 104—Zeit. f. Wissen. Zool., Leipzig. 107—Biologisches Zentralblatt. 116—Ann. of Applied Biology. 117—Proc., Linnean Soc., N. S. Wales. 120—Ann., Naturh. Mus., Wien. 133—Jour. Experimental Zool. 153—Bull., Mus. Nat. Hist. Naturelle, Paris. 154—Zoolog. Anzeiger.

GENERAL.—Bequaert, J.—Insects and man in tropical America.—Natural History, xxvi, 133-46. **Bergroth E. E.**—Obituary.—8, 1926, 63-7. **Cockayne, E. A.**—Teratological specimens in the Hope Dept. of Zool. in the Oxford Univ. Mus.—36, 1925, 395-402. **Ebert, H.**—Entomologie und zettelkatalog—17, xliii, 10. **Hancock, G. L. R.**—Winter entomological visit to Central Brazil.—9, lix, 49-52. **Howard, L. O.**—Great economic waste.—Natural History, xxvi, 124-32. **Karny, H. H.**—Zur nomenklaturfrage.—Treubia, Buitzenzorg, vi, 442-9, 1925. **Lutz, F. E.**—Taking nature lore to the public. Friendly insects. Insects sounds.—Natural History, xxvi, 111-24; 147-51; 206-213. **Mutchler & Lutz.**—Principal orders of insects.—Natural History, xxvi, 164. **Roeher, A.**—Ueber das wesen der färbung und des geruchs.—26, vi, 41-44. **Savin, W. M.**—Some residents of a brook.—Natural History, xxvi, 184-90. **Wardle & Buckle.**—Principles of insect control.—Pub. Univ. Manchester, Biol. Ser. No. 3, 295 pp.

ANATOMY, PHYSIOLOGY, MEDICAL, ETC.—Kopec, S.—Is the insect metamorphosis influenced by thyriod feeding?—101, 1, 339-54. **Payne, N. M.**—Freezing and survival of insects at low temperatures.—Quart. Rev. Biol., i, 270-82. **Van Herk, A. H.**—Les insectes voient-ils des couleurs? Contr. a la question par des experiences faites sur Scatophaga stercoraria.—Arch. Neerl. Phys. de Homme et Animaux, x, 510-41. **Weber, H.**—Das problem der gliederung des insektenthorax.—154, lxvi, 9-31; 115-32.

ARACHNIDA AND MYRIOPODA.—du Buisson, M.—Recherches sur la circulation sanguine et la ventilation pulmonaire chez les scorpions.—Bul. Sci., Ac. R. Belg., xi, 666-80. **Gottlieb, K.**—Ueber das gehirn des scorpions.—104, cxxvii, 185-243. **Brown, B.**—Another luminous spider.—68, lxiii, 383. **Jawlowski, H.**—Ueber die funktionen des zentralnervensystems des Lithobius forficatus [Polish].—Trav. Soc. Sci. Let., Wilno, i, 57-72, 2924. **Petrunkevitch, A.**—Value of instinct as a taxonomic character in spiders.—101, 1, 427-32.

(S) *Hirst, S.—On some new genera and species of Arachnida [one sp. from Gorgona Id.]. 103, 1925, 1271-80. *Petrunkevitch, A.—Spiders from the Virgin Islands. Tr. Conn. Ac. Arts & Sci., xxviii, 21-78. *Stanley, A.—On the parasitic mites of the suborder Prostigmata (Trombidioidea) found on lizards [one sp. cited from Texas].—Jour. Linn. Soc. London, Zool., xxxvi, 173-200.

THE SMALLER ORDERS OF INSECTA.—Abbott, C. E.—Death feigning in Anax junius and Aeschna sp. 5, xxxiii, 8-10. Calvert, P. P.—Relations of a late autumnal dragonfly (Odonata) to temperature.—Ecology vii, 185-90. Willem, V.—Notes ethologiques sur divers Collemboles. —Bul. Sci., Ac. R. Belg., xi, 617-36.

(N) *Snyder, T. E.—Notes on termites from Arizona with descriptions of two n. sps.—Univ. Cal. Pub., Zool., xxviii, 389-97. *Tillyard, R. J.—Kansas permian insects. The order Copeognatha.—Am. Jour. Sci., xi, 315-39. *Watson, J. R.—New Thysanoptera from Florida and Key to No. Am. sps. of Chicothrips. 39, ix, 58-60.

(S) *Watson, J. R.—Two new Thysanoptera from Cuba. —39, ix, 53-5.

ORTHOPTERA.—Abbott, R. L.—Contributions to the physiology of digestion in the Australian roach.—133, xliv, 219-53. Murray, M. R.—Secretion in the amitotic cells of the cricket egg follicle.—101, 1, 210-34. Pospelov, V. P.—Influence of temperature on the maturation and general health of Locusta migratoria.—22, xvi, 363-7. Toumanoff, K.—L'action combinee de l'obscurite et la temperature sur la melanogenese chez Dixippus morosus.—77, xciv, 565-6.

HEMIPTERA.—Ackerman, L.—Physiological basis of wing production in the grain aphid.—133, xliv, 1-61. Gimingham, C. T.—On the presence of an egg-burster in Aphididae.—36, 1925, 585-90. Janisch, R.—Lebenweise und systematik der "schwarzen blattläuse."—Arb. Biol. Reichs. f. Landu. Forstw., Berlin, xiv, 291-366. Mahdihassan, S.—Early recognition of sex among lac insects.—Jour. Indian Inst. Sci., ix a, 1-24. Poisson, R.—Les elements cytoplasmiques figures et leur evolution au cours de la spermatogenese chez Notonecta maculata.—77, xciv, 562-4. Smith, K. M.—Comparative study of the feeding methods of certain hemiptera.—116, xiii, 109-39.

(N) Drake, C. J.—North Am. Tingitidae described by Stal.—An. Carnegie Mus., xvi, 375-80. Stichel, W.—Die systematische stellung der gattung Myodocha.—56, iv, 392-8.

(S) *Hungerford, H. B.—Some Notonecta from South

America.—**5**, xxxiii, 11-15. ***Larrousse, F.**—Descr. de deux especes nouv. du genre Triatoma.—Am. Parasit. Hum. et Comp., iv, 136-9. ***Osborn, H.**—Neotropical Homoptera...Report upon the collections in the subfamily Cicadellinae with descriptions of n. sps.—An. Carnegie Mus., xvi, 155-248.

LEPIDOPTERA.—Clark, A. H.—Notes on the odors of some New England butterflies.—**5**, xxxiii, 1-5. **Deutsch, A.**—Ueber lauterzeugung bei schmetterlingen.—**26**, 33-5, **Foester, E.**—Frische Luft und feuchtigkeit, ein haupterfordernis zu erfolgreicher raupenzucht.—**17**, xliii, 9. **Harrison & Peacock.**—On parthenogenesis originating in lepidopterous crosses.—Trans. N. H. Soc. Northumb., Durham & Newcas.-upon-Tyne, vi, 201-17. **Kellogg, V.**—Color dust of the butterfly.—Natural History, xxvi, 152-8. **Mjoberg, E.**—Strange way in which the vishnu moth (Trabala vishnu) deposits her eggs in the shape of larvae.—**5**, xxxiii, 6-7. **Patch, E. M.**—Adventures of Ctenucha—a meadow caterpillar.—Natural History, xxvi, 200-13. **Philpott, A.**—Labial palpi of Trichophysetis cretacea and Argyria amoenalis.—**177**, 1, 381-2. **Prueffer, J.**—La phénomene d'allechement des males par des femelles cher Lymantria dispar. [Polish]—Trav. Soc. Sci. Let., Wilno, i, 138-45. **Tschirwinsky, P.**—Einige optische beobachtungen an den schuppen der schmetterlinge.—**89**, xlviii, Anat., 1-18. **Watson & Lutz.**—Our common butterflies.—Natural History, xxvi, 165-83.

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SPECIAL NOTICES

La plaga de la langosta en Mexico. Publicado por el departamento de informacion y propanganda. Junta Nacional Directora de la Campana Contra la Langosta, Veracruz. This publication, of small octavo size, 179 pp., ill., contains general information about the migratory locust and its ravages in Mexico.

Applied Entomology. An Introductory Text-Book of Insects in their Relation to Man. By H. T. Fernald. Second Edition. McGraw Book Co., Inc., New York. 395 pp. $3.50.

The first edition of this book appeared in 1921 and was reviewed in the News, vol. xxxii, p. 285. The second edition shows very little change in contents, so we will refer the reader to our earlier review, confining the present note to the additional matter incorporated, of which the following may be mentoned: The Mexican Bean Beetle and the Oriental Fruit Moth are among the additional pests included. Mention is made of the discovery in Florida of a member of the new order Zoraptera; and additional facts concerning leaf hoppers and lepidopterous borers are given. "The chapter on Hymenoptera has been considerably rearranged to bring it more nearly into agreement with the order followed by Comstock in the new edition of his Introduction to Entomology. . . . . a chapter has been added, dealing with injurious animals more or less related to insects with which the entomologist is expected to cope," such as ticks, spiders and mites. E. T. Cresson, Jr.

Doings of Societies.

The American Entomological Society.

Meeting of December 17, 1925, in the hall of the Academy of Natural Sciences of Philadelphia. Dr. Skinner presiding. Thirteen members and visitors were present.

The meeting was opened to nominations of officers and committees. Dr. Skinner and Dr. Calvert were nominated for president, in succession, but both declined the nomination. Other nominations were made to be voted on at the January meeting.

Mr. F. M. Jones made a short communication on a future publication of his on Psychid moths.

Dr. Skinner made a few remarks on the Satyrinae and illustrated with mounted specimens.

Meeting of January 28, 1926, in the same hall. Dr. Skinner presiding. Fourteen members and visitors were present.

The annual reports of the Recording Secretary and the Librarian were read. Mr. Cresson, Jr., read an informal report of the Treasurer, which was referred to the Finance Committee for audit. Mr. Rehn read the report of the Publication Committee and a supplementary report of a later meeting of the same committee. The report of the Committee on Collecting Trips was read with a program of trips for the 1926 season.

A motion made by Mr. Cresson, Jr., that "until further notice, meetings be held on the fourth Thursday of January, February, March, April, May, September and October, and on the third Thursday of November and December," was passed.

A motion was made and passed: "It is suggested that at the meetings to be held in February, April, September and November of this year, only business of an important nature be presented, these meetings to be considered as meetings during which members and visitors may consult the collections and library under the supervision of the responsible officers and their representatives."

Dr. Henry Skinner was elected to honorary membership. Mrs. C. Reed Carey was elected a resident member. The following nominees, of the December meeting, were elected unanimously for 1926: R. C. Williams, *President;* P. Laurent, *Vice-President;* J. A. G. Rehn, *Corresponding Secretary;* R. J. Tiltherington, *Recording Secretary;* E. T. Cresson, Jr., *Treasurer;* E. T. Cresson, Jr., *Librarian;* W. J. Coxey, *Curator.*

Finance Committee—H. Skinner, M. Hebard, W. J. Coxey.

Publication Committee—J. A. G. Rehn, P. P. Calvert, H. Skinner.

Library Committee— F. M. Jones, F. R. Mason, W. J. Coxey.

A motion by Mr. Hornig, giving Dr. Skinner and Dr. Calvert a vote of thanks for past services was approved. Mr. Rehn moved that honorary members receive publications of the Society free of charge; approved.

Meeting of February 25, 1926, in the same hall. Mr. Williams presiding. Eight members and one visitor were present.

The meeting was adjourned and given over to identification of specimens and consultation of the library by members.

R. J. TITHERINGTON, *Recording Secretary.*

Kansas Entomological Society.

The second annual meeting of the Kansas Entomological Society was held on April 24th, at Lawrence, Kansas. The program consisted of informal talks on the entomological problems under way in the state. Officers selected for the ensuing year are Dr. R. C. Smith, president, and R. H. Beamer, secretary.

OBITUARY.

DR. ERNST EVALD BERGROTH.

The eminent Finnish Entomologist, Dr. Ernst Evald Bergroth, passed away on the 22nd of November, 1925, in his 68th year. He was born in Jakobstadt, April 1st, 1857, and very early developed an abiding interest in natural history. He entered the University of Helsingsfors when 17 years of age, taking a course in mathematics and natural sciences. In 1879, shortly before concluding this course, he changed to medicine. From Helsingsfors he went to Stockholm to finish his studies and there received his diploma to practice in 1886 and in that same year was married. All during this period, both at Helsingsfors and at Stockholm, he kept up his interest and study of natural history. While at Helsingsfors Dr. Bergroth came in close contact with the celebrated Hemipterist, Dr. O. M. Reuter, whose scholarly attainments were a great inspiration to him. At Stockholm he had the opportunity to study the extensive collections of Hemiptera which were the basis of Stal's classic work. Although Dr. Bergroth did not at first confine himself strictly to the Hemiptera, it must have

been largely these two influences in his life which later naturally inclined him in that direction. After receiving his diploma he practiced medicine in Finland from 1887 to 1905, first as Community Doctor at Tammela and later as Chief Doctor in Tammerfors. He was very highly regarded as a physician in his native country; but his international reputation was established not by virtue of his profession but because of his scholarly contributions to the knowledge of the Hemiptera of the world.

Dr. Bergroth lived in the United States from 1905 to 1911, going first to Seattle, Washington, where he remained for a few months and then to Duluth, Minnesota, where he practiced medicine during 1906 and 1907. Later, until 1911, he lived in Fitchburg, Massachusetts, from which place he returned to resume practice in his native country. While in the United States he apparently made no extensive collections of Hemiptera but he did visit most of the prominent museums, borrowing and studying material which formed the basis of a number of his later papers.

He was an excellent linguist, speaking and writing a number of languages with equal facility, and it was this great linguistic ability which helped him to gain such a wide knowledge of entomological literature. After his sojourn in the United States he became so adept in the use of English that most of his later papers were written in that language. His mastery of tongues also gave him wide opportunities for publication in the entomological magazines in various countries of Europe. It was a wonderful achievement that, leading such a busy professional life, he could find the time to contribute so much to the knowledge of the Hemiptera of the world. Altogether from the appearance of his first scientific paper in 1878 up to 1925 he had contributed over 300 articles, most of which are devoted to Hemiptera. He did not find the time to write extensive monographs, as did other professional Entomologists, but all his papers are of great importance to the student; for they contain, besides the descriptions of new species, running comments and criticisms which add greatly to the value of his articles.

It is said that he possessed no extensive collection but availed himself of the rich store of specimens in various museums. In addition to this much material passed through his hands from collectors all over the world. The Hemipterists in the United States have always been much impressed by the wide grasp of his knowledge of the subject. His papers as they came along at frequent intervals, some five or six a year, were examined with great interest. His wonderful memory of systematized facts, his keen analysis of salient points and his clear, fluent method of expression make his papers most interesting and valuable reading to the systematist. He was quick to detect superficial, careless work and it was typical of the man that he could not tolerate such, his criticisms being often quite caustic. How many of us were accustomed to refer to him some question of doubt; how many of us were encouraged along the way by his helpful correspondence!

Though by his passing the Entomological world has been deprived of these helpful personal contacts, it has been left richer in inspiration to research by the example of his life.

H. G. Barber.

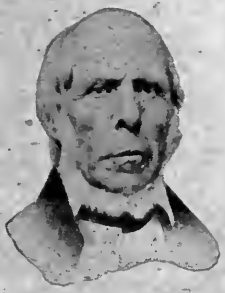
Science for April 2, 1926, announces the death of Benjamin Pickman Mann, on March 22, at Washington, D. C., where he had been an examiner in the United States Patent Office since 1887. He was born at West Newton, Massachusetts, April 30, 1848, received the A. B. from Harvard in 1870, was government entomologist in Brazil, 1870-71; consulting economic entomologist, 1872-81; assistant entomologist and assistant in the division of entomology, U. S. Department of Agriculture, 1881-1886; the first editor of *Psyche* (1874-85), and President in 1883 of the Cambridge Entomological Club, of which he was one of the foundation members, January 9, 1874. A prominent feature of the early volumes of *Psyche* was the "Bibliographical Record," compiled by Mann, who devoted himself especially to this side of entomology.

Dr. Henry Skinner died in the Polyclinic Hospital, Philadelphia, on Saturday, May 29, after a short illness. A fuller notice will appear later.

JULY, 1926

ENTOMOLOGICAL NEWS

Vol. XXXVII No. 7



JAMES RIDINGS
1803–1880

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PHILADELPHIA, PA.
THE ACADEMY OF NATURAL SCIENCES,
Logan Square

Entered at the Philadelphia, Pa., Post Office as Second Class Matter.
Acceptance for mailing at the special rate of postage prescribed for in Section 1103,
Act of October 3, 1917, authorized January 15, 1921.

ENTOMOLOGICAL NEWS

published monthly, excepting August and September, by The American Entomological Society.

Philip P. Calvert, Ph.D., Editor. E. T. Cresson, Jr., Associate Editor. Henry Skinner, M.D., Sc.D., Editor Emeritus.

Advisory Committee: Ezra T. Cresson, Philip Laurent, J. A. G. Rehn.

The subscription price per year of ten (10) numbers is as follows:

United States and possessions	$3.00
Canada, Central and South America	3.15
Foreign	3.25

Single copies 35 cents.

ADVERTISING RATES. Full width of page. Payments in advance.

One issue, 1 in., $ 1.20,	2 in., $ 2.40,	half page, $ 4.00,	full page,	$ 8.00
Ten issues, " 11.00,	" 20.00,	35.00,	"	70.00

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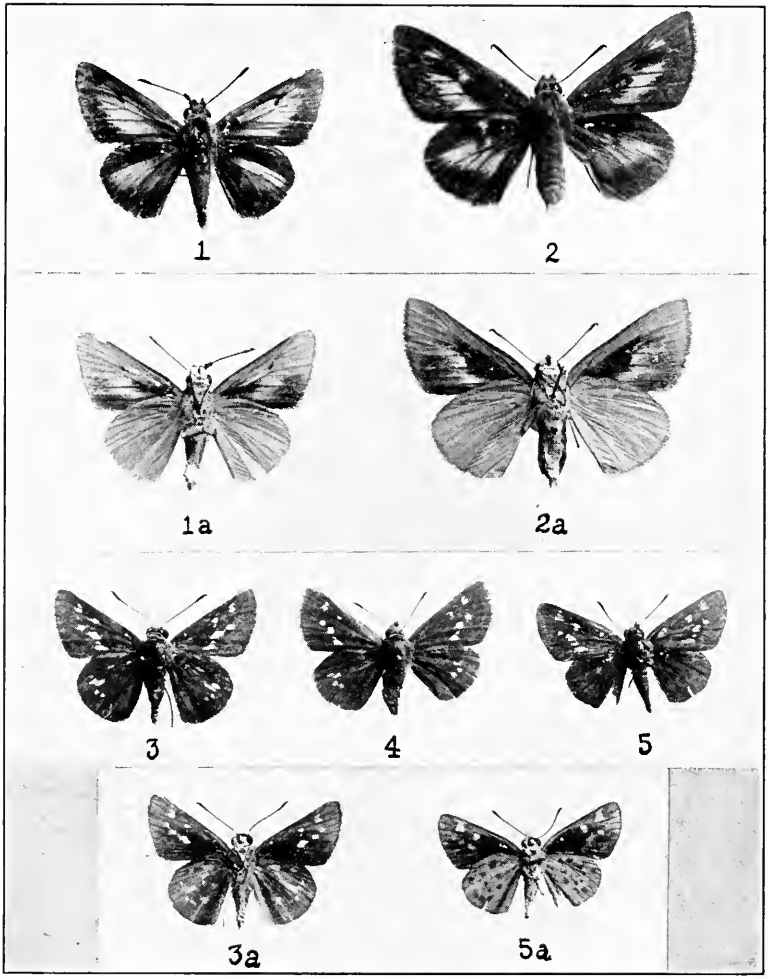
Owing to increased cost of labor and materials, no illustrations will be published in the NEWS for the present, except where authors furnish the necessary blocks, or pay in advance the cost of making blocks and pay for the cost of printing plates. Information as to the cost will be furnished in each case on application to the Editor. Blocks furnished or paid for by authors will, of course, be returned to authors after publication, if desired.

STATED MEETINGS

Of the American Entomological Society will be held at 7:30 o'clock P. M., on the fourth Thursday of each month, excepting June, July, August, November and December, and on the third Thursday of November and December.

Communications on observations made in the course of your studies are solicited, also exhibits of any specimens you consider of interest.

The printer of the NEWS will furnish reprints of articles over and above the twenty-five given free at the following rates: One or two pages, twenty-five copies, 35 cents; three or four pages, twenty-five copies, 75 cents; five to eight pages, twenty-five copies, $1.10; nine to twelve pages, twenty-five copies, $2.00; each half-tone plate, twenty-five copies, 50 cents; each plate of line cuts, twenty-five copies, 25 cents; greater numbers of copies will be at the corresponding multiples of these rates.



PROBLEMA BULENTA 1, 1A ♂, 2, 2A ♀; AMBLYSCIRTES CAROLINA 5, 5A ♀, A. CAROLINA REVERSA 3, 3A ♂, 4 ♀.—JONES.

ENTOMOLOGICAL NEWS

VOL. XXXVII JULY, 1926 No. 7

The Rediscovery of "Hesperia bulenta" Bdl.-Lec., with Notes on other Species (Lepid. Hesperiidae).

By FRANK MORTON JONES, Wilmington, Delaware.

(Plate IX.)

One of the puzzles handed down from the earlier days of North American lepidopterology has been the identity of "Hesperia bulenta" (Bdl.-Lec., Lep. Am. Sept., plate 67, 1833, with figures of the male, female, under surface of the female, the larva and the pupa, all reproduced without text description from drawings by Abbot). Do these figures represent a species improperly accredited to our fauna? Are they poor drawings of a species more familiar to us under another and later name? Or does such an insect exist, presumedly in coastal Georgia, but not rediscovered since Abbot's time?

In the subsequent literature, the name has been variously treated: from Smith's two lists (1891-1903) it is omitted; similarly from Skinner's Catalogue (1898) and Supplement (1904), and from Dyar's List (1902); Edwards (1872) lists it as a valid species, accrediting it to "Gulf States"; in his Catalogue of 1877 he refers his own species, *palatka*, to the synonymy under *bulenta;* and in his revised Catalogue of 1884 he restores *palatka* and lists *bulenta* among species omitted for want of authentication; Strecker (1878) lists "*pilatka*" Edw. as a synonym of *bulenta* Bdl.-Lec.; Scudder (1871) lists *bulenta* among species he has been unable to examine or determine, and in 1889 he refers *bulenta* Streck. to *palatka* Edw., but states that *bulenta* Bdl.-Lec. is not the same insect; Barnes & McDunnough (1917) place *bulenta* Bdl.-Lec., with a query, under *byssus* Edw. (if identical, *bulenta* would have priority); and Lindsey (1921) says he follows McDunnough in placing *bulenta* "tentatively as a synonym of *byssus*"; Skinner & Williams (1924) dissent from previous identifications and from the relegation of the name to the synonymy, and list *bulenta*

as a species not available for study but included in their genus *Problema*, with *byssus* Edw. the genotype. We have then, Edwards, Scudder, Skinner & Williams, in their final references, agreeing that *bulenta* Bdl.-Lec. must be distinct from our recognized allied species.

In July, 1925, the writer made a collecting trip through coastal Virginia and North Carolina, with Wilmington, North Carolina, as his southern limit; at this point, crossing the ferry, which at frequent intervals connects the city with the two-mile causeway through the swamps (old rice lands) to the west, he found here a most favorable collecting place, especially for the *Hesperiidae;* the embanked roadway offered firm footing, the broad ditches on either side were choked with a luxuriant and varied flora; here and there, abundant blooms of *Pontederia* attracted the larger skippers, among which *viator* Edw. and an unrecognized species of similar size were frequently noted; at this date (July 28), both species had been flying for some time and were no longer in prime condition; five specimens (two males, three females) of the second species were captured in the course of the morning, and many others were seen, out of reach.

At Dr. Skinner's suggestion, these insects, which do not belong to any of our recognized species, were compared with the Boisduval-Leconte plate of *bulenta,* by which comparison it becomes apparent that they most probably represent the true *bulenta*—certainly are much nearer it than are either *byssus* or *palatka.* By Lindsey's keys they fall to the genus *Atrytone* Scud.; in their genitalic structure (Text fig. 6) they are close to, but abundantly distinct from, *byssus* Edw., thus confirming the rather remarkable prevision of Skinner & Williams in assigning this species, with *byssus,* to their genus *Problema;* the following description and the accompanying illustrations (Plate IX) should simplify future recognition of the species.

Problema bulenta Bdl.-Lec.

♂.—Head and collar above and patagia, golden brown; the thorax posteriorly and the abdomen more greenish; beneath paler and duller, the palpi, collar, and abdomen almost white;

third joint of palpi black; antennae dark above, pale beneath, annulate, the apiculus ferruginous.

Wings above clear yellow, marked and bordered with blackish brown; the dark basal markings of *byssus* are here represented by a narrow shade following the cubitus to the origin of Cu_2, by the darkening of the sub-costal and radial veins, and by a few scattered dark scales; the end of the cell is conspicuously marked on the yellow ground by a narrow lunate bar of even width, which merges at its upper end with a dash extending basally along the radius and diffusely to the costa, whence distally it joins the dark border of the outer margin; the anal vein, and thence to the inner margin, is dark, and this area is overlaid basally with yellow hairs; the dark outer margin widens at the apex, and from opposite the cell regularly to the anal angle, with short dentations between the veins and with a faint diffuse shade of scattered scales connecting it with the discal lunule; fringes concolorous with the dark border.

The secondaries have the costa broadly darkened; the dark border of the outer margin is narrowest opposite the cell, thence widening to the anal angle and continuing along the inner margin, which basally is overlaid with yellow hairs; the cell is included in the yellow ground, a few dark scales at its distal end indicating a discal bar; the cubitus and its branches, especially Cu_2, are narrowly darkened on the yellow ground; fringes dull yellow.

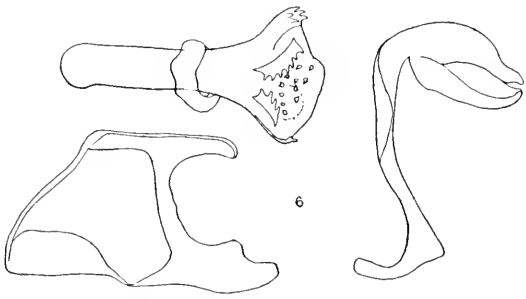
Beneath, both primaries and secondaries are yellow, the secondaries without marks; the primaries are deeper in color basally, paler and duller apically; the end of the cell is marked with a bar, less conspicuously than above; the base of the wing is densely black, this marking not reaching the costa, but filling the base of the cell, following the cubitus to the origin of Cu_1, the inner margin broadly to the anal vein, and the outer margin more diffusely to Cu_1, with scattered dark scales on the pale ground between Cu_2 and the anal vein; fringes of both wings pale dull yellow. Expanse 33 mm.

♀.—Similiar to the ♂ in ground color, but with the dark areas expanded and the veins darkened; the discal bar of primaries becomes part of a broad shade which extends distally to partial fusion with the outer border; the basal shade widens to include the base of the cell, and the whole costal area is darkened and basally overlaid with ferruginous.

The secondaries have a broad bar closing the cell and in contact with the costal border; and the darkening of the cubitus and its branches splits up the yellow area. Beneath, the secondaries are bright clear yellow, without marks; the primaries

show more tendency toward ferruginous, and the black basal area fills the cell; the diffusely blackened area of the outer margin below Cu_1 is broader than in the ♂, and between this and the densely black basal area the ground pales to almost white. Expanse 40 mm.

The ♂ insect here described as *bulenta* agrees with the Bdl.-Lec. plate in the absence of a sex-mark (*palatka* ♂ has a black sex-mark, a character too conspicuous to have been overlooked even by a careless draughtsman), in its narrow lunate discal marking, and in its almost clear yellow basal area (*byssus* ♂ has a broad diffuse bar at the end of the cell, and is widely darkened basally); in both sexes, insect and plate are in such detailed agreement that little doubt of their identity remains; the most obvious difference, the conspicuous division, on the plate, of the yellow marking of the secondaries of the ♂, may readily be due to exaggeration by the copyist of the normally darkened Cu_2.



Genitalia of Problema bulenta ♂.

The ♂ from which the drawing of the genitalia was made (with the micro slide), and the ♀ illustrated on Plate IX, have been deposited in the Academy of Natural Sciences, Philadelphia; the other ♂ whose capture is recorded, at the American Museum of Natural History, New York; a ♀, in the Barnes Collection at Decatur; the remaining ♀ in the collection of the author.

On the trip referred to above, in company with Mr. Henry Bird, the writer visited the Great Dismal Swamp area of eastern Virginia. Making Suffolk, Va., our headquarters (July 22 to

26), we found ready access to the swamp, on foot, along the embankment of the Jericho Ditch and also along the ramifications of a logging railroad which enters the swamp from its western margin a few miles further south. Open areas abounded in blooming *Clethra,* which with other flowers attracted the *Hesperiidae* in some abundance; among our interesting captures were bright fresh specimens of *Amblyscirtes textor* Hbn., several newly emerged males (no females) of *Poanes yehl* Skinner (extending the known range of the species, its identity confirmed by a study of the genitalia), and specimens which we at the time referred to *Amblyscirtes* (*Epiphyes* Dyar) *carolina* Skinner. In comparing this latter series with the type material of *carolina* it became apparent that while they seem in full agreement structurally and in the markings of the upper surface, the under surface of secondaries shows such decided divergence that their identity is seriously questionable. The type description of *carolina* reads, "Underside: ******* Inferiors brownish yellow, distinctly spotted with dark brown dots"; the Great Dismal Swamp insects reverse this character, having the ground color of secondaries, beneath, dark with the spots pale; nor do the spots of the two forms seem to be identical in position. Further investigation shows that these differences are neither sexual nor seasonal, and that the doubtful form is by no means confined to the Great Dismal Swamp region. Mr. R. C. Williams, Jr. finds no significant genitalic differences, but considers this condition inconclusive of specific identity. With this uncertainty of status, the new form is described as

Amblyscirtes carolina reversa n. var.

♂ and ♀.—Differing from typical *carolina* in coloration of under surface of secondaries, which in *reversa* are russet brown in ground color, more or less overlaid, especially along the veins, with yellow scales, and with a variable number of yellow spots; when the maximum number of spots is present, these show arrangement in two roughly semi-circular rows, the inner (at basal quarter of the wing) consisting of four, the outer (intervenular, beyond the middle) of seven spots.

Variation in the amount of yellow powdering indicates the

possibility that typical *carolina* may result from a preponderance of yellow suffusion, leaving the dark ground in the form of scattered spots.

Holotype ♂, allotype ♀, in Academy of Natural Sciences, Philadelphia; paratype ♂ and ♀, American Museum of Natural History, New York; paratype ♂ in collection of E. L. Bell; all of these from type locality, Suffolk, Virginia, July 22-24, 1925. Paratype ♂, Southern Pines, North Carolina, VII.28.1911, in the Barnes collection; four paratypes retained in the collection of the author, 1 ♂, 1 ♀ of type locality and date; 1 ♂, Summerville, South Carolina, IV.20.1907; 1 ♀, Southern Pines, North Carolina, VII.28.1911.

EXPLANATION OF PLATE IX.

Problema bulenta Bdl.-Lec., 1, 1a, male; 2, 2a, female.
Amblyscirtes carolina Skinner, 5, 5a, female (paratype).
Amblyscirtes carolina reversa Jones, 3, 3a, male; 4, female.

Thomas Lincoln Casey as a Coleopterist.

By MELVILLE H. HATCH,[1] University of Michigan, Ann Arbor, Mich.

(Continued from page 179.)

Furthermore, Casey had little regard or interest for the bibliographical aspect of his subject. In one connection (20:3) he purposely refrained from considering previous work, since he "preferred to work out as nearly as possible an original scheme, which by comparison with the others, will furnish additional coordinated data to aid future students in this very difficult subject" (the American Platyninae). He was criticized in Germany for such omission, and replied that he was too much concerned with the study of nature to spend much time in learning what others have written before him (08:163-165). This attitude was the more remarkable in that he had assembled a coleopterological library of unusual completeness.

Several of the more important attacks on his procedure may be mentioned. Walther Horn, in his review of Casey's activity

[1] Contribution from the Zoölogical Laboratory of the University of Michigan.

in the Cicindelidae in the Genera Insectorum in 1915 (pp. 369-70, 443), expresses his opinion in no uncertain terms. Out of 99 new names, 50 of them proposed by Casey as species, he finds 86 superfluous, and the remaining thirteen are no more than races. Of 19 new forms described in 1914, 11 of them as species, he says that three-fourths are local races and the remainder synonyms. Out of about 150 names proposed in Buprestidae in 1909, exactly six are retained as valid in Leng's *Catalogue* (1920:177-181), the work being that of A. S. Nicolay, W. J. Chamberlain and Leng himself. Out of 34 names proposed in 1912 in *Orthosoma* and *Prionus,* Leng retains four as valid (1920:266). Casey naturally resented these attacks, especially where the men responsible had not seen his types. He insisted that no adequate estimate of his activities was possible without reference to his material, and intimated his willingness to have his types consulted (08:393).

His interests were all in the direction of analysis. A species for him was an extremely limited group admitting little or no variation. He took evolution seriously. He decried as attacks on the inviolability of the binomial nomenclature the tendency of such scientists as Walther Horn in Cicindelidae and Hans Roeschke in Cychrini to form trinomial and quadrinomial names (08:38-41). He was not at all in sympathy with the tendency of these authors to regard a species as a group of organisms extending over a considerable area and involving numerous subspecies and varieties, each in its turn including a considerable range of individual variation. This was loose thinking. These groups were for him subgenera. Casey would have said that he could not be sure of the alleged relationship and that, until he was, the only thing he was justified in doing was to describe the several "taxonomic units" as so many entities. Casey is never impressed by the nearness of a relationship. For him a species is "not at all closely related" to any other species or "extremely isolated."

The same principle that he applied to species he applied to genera. Here, especially in such groups as the Pterostichini and Platynini, his criterion seems to have been an habitudinal one, as opposed to the more structural ones, involving definite

variations of mouth-parts or some such structure. *Bembidion* (369 species) and *Harpalus* (117 species) bear witness to the fact that large genera in themselves were not objectionable to him. In the last analysis, a genus was a matter of personal opinion (85:335).

Casey's position on matters of nomenclature may be summed up as follows: (1) The necessity for adequate descriptions. Types at best, will hardly outlast more than a few centuries, a description "printed in unalterable carbon, . . . will endure for unlimited time, if not in its original shape, at least in . . . photolithographic reproduction" (89:323). The value of figures he recognized, but except in his first paper he never overcame the technical difficulties connected with their preparation. Casey looked forward to the time, several centuries hence, when even his descriptions would be regarded as utterly inadequate, when the absolute and not merely the relative measurement of every portion of the exoskeleton of even the most minute specimens, would be required. (2) The inviolability of the generic name: In whatever form it was first proposed, regardless of good or bad philology or other errors of transcription, provided only that it was pronounceable, in that form it must be retained (example, *Bembidion*, *Monochamus*). (3) The inadvisability of trinomials and polynomials, at least until detailed investigation gives proof of the affinity of the forms. (4) The admissibility of specific or other descriptions, regardless of the language in which they are written.

Casey must be regarded as a prophet of the infinite complexity of taxonomic coleopterology. He started out with the certainty that he could describe species. He described for forty years, and was on the verge of intellectual bankruptcy when he died. He had begun to see things that he could not describe. The failure to provide keys to the tribes of Barinae (22:3) and the statement in the introduction to his last work (24:1), that in certain cases "a mere description, however carefully drawn up, often fails to afford certainty of identification, it being necessary to make direct comparison with types," can be interpreted in no other way. Casey was a prophet, but whether true or false, the future only will disclose—a future of

which he was not unmindful and of whose verdict he was entirely unafraid.

With the utmost concern for posterity, his collection and library were left to the National Museum in Washington. There a special room was provided for their reception, which Mrs. Casey, who survived her husband, generously equipped with two binocular microscopes and adorned with a portrait in oil of the famous coleopterist. There future students may continue the study of the problems in which Casey was so deeply interested.

In writing the above the author has drawn freely from Leng's (1925) and Schwarz and Mann's (1925) obituary notices. It should be pointed out that the present study is based entirely on published material, and it is entirely possible that a study of correspondence and other original documents would necessitate a modification of portions of this paper.

CHRONOLOGY.

Year	Age	
1857		Born, West Point, N. Y. (Feb. 19).
1874-75	17-18	Sheffield Scientific School.
1875-79	18-22	West Point.
1879	22	Second Lieutenant (June 13).
1881	24	First Lieutenant (June 17).
1882-83	25-26	Assistant Astronomer with Transit of Venus Expedition to Cape of Good Hope.
1883	26	Death of Leconte (Nov. 15). Publication of Leconte and Horn: *Class. of Col. of No. Amer.*
1884	27	First publications: Cucujidae, Contributions, Stenini. Residence in Philadelphia.
1885	28	Henshaw: *List of Col. of Amer. No. of Mex.*
1885-86	28-29	In California, published in Cal. Ac. Sci. (1885-87).
1886	29	On Greer County Commission, Texas.
1888	31	Captain (July 23); residence in Newport, R. I.
1888-93	31-36	Residence in New York.
1889-97	32-40	*Coleopterological Notices.* I-VII. (N. Y. Acad. Sci.)
1890	33	Purchase of Levette Cabinet.
1895	38	Third Supplement to Henshaw's list.
1895-99	38-42	Residence in Virginia (Norfolk, Fort Monroe).

1897	40	Death of George H. Horn (Nov. 24).
1898	41	Married Laura Welsh of Philadelphia (June 1); Major (July 5); stationed at Hampton Roads, Va.
1898-1900	41-43	Published in Jr. N. Y. Ent. Soc. (Cisidae, Coccinellidae, Dermestidae, etc.)
1901	44	Residence at Vicksburg, Miss.
1902-06	45-49	Mississippi River Commission, residence apparently at St. Louis.
1905-06	48-49	Published in Trans. Acad. Sci. St. Louis (Staphylinidae).
1906	49	Lieutenant Colonel (Sept. 26).
1906-10	49-53	Member and engineering secretary of Light House Board.
1907	50	Residence at Washington, D. C., after this year.
1907-09	50-52	Published in Wash. Acad. Sci. (Tenebrionidae, Buprestidae).
1909	52	Colonel (Sept. 21).
1910	53	Blatchley: *Coleoptera of Indiana.*
1910-24	53-67	*Memoirs on the Coleoptera I-XI.*
1912	55	Retired (Mar. 1).
1916	59	Blatchley and Leng: *Rhynchophora of N. E. Amer.*
1920	63	Leng: *Catalogue of Coleoptera of America North of Mexico.*
1925	67	Died, Washington, D. C. (Feb. 3).

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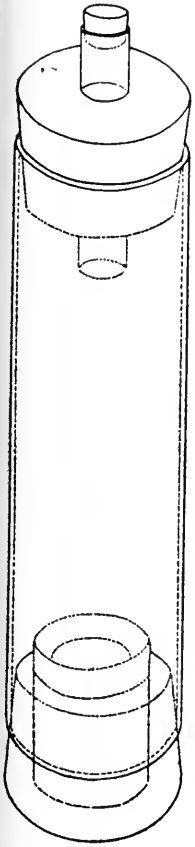
A Killing Bottle for Collecting Small Active Insects.[1]

By Z. P. Metcalf, Raleigh, North Carolina.

The usual method of collecting small active insects, such as leaf hoppers, etc., is to collect them with a strong bag and to take them from the bag by means of small cyanide vials which are held in the hand with the mouth of the vial closed by the thumb, until the insect has settled to the bottom. In this way these active insects may be collected rather rapidly. The chief limitation of this method is that one must wait until the insect has settled to the bottom of the vial or become quiescent before he can remove his thumb to scoop up another specimen. On account of this delay valuable specimens will often be lost. The limitations of this method were especially noticeable in some work the writer is doing on the ecological distribution of common leaf hoppers in our mountain pastures. In this work it is desirable to secure all the specimens collected on definite areas. But by the usual method, large numbers of leaf hoppers would escape from the beating bag before they could be collected in the cyanide vial. We tried the method of placing the whole bag in a large killing bottle and waiting until the insects were killed and then sorting out the leaf hoppers. But this method was slow and the labor of sorting out the dead leaf hoppers from the weed seeds and other trash was very tedious. Finally we designed the killing tube shown in the attached cut which has proved very effective. It consists of a piece of glass tubing about four inches long by an inch in diameter. One



[1] Published with the approval of the Director of the North Carolina Agricultural Experiment Station as paper number 9 of the Journal Series.

end is closed by a cork stopper of suitable size which carries a small vial containing cyanide. The other end is closed by another cork stopper which is pierced by a glass tube of sufficient diameter to allow the largest specimen to pass and just long enough to project beyond the cork stopper at either end. This small tube is closed by a small stopper to prevent the escape of the cyanide fumes when the tube is not in use. In use the insects are scooped up by means of the smaller tube as rapidly as possible. Usually they will pass through the tube with a single leap. Hence the necessity of having the tube as short as possible. Once they have entered the larger tube there is practically no chance of their escape even though the smaller tube is open.

The cyanide may be placed in a small vial as recommended above, or it may simply be packed around the cork and covered by pieces of cardboard cut slightly larger than the tube and pressed down firmly. Tubes, in our experience, are more desirable than vials because both stoppers may be easily removed and the old cyanide taken out, the tube cleaned and new cyanide inserted.

The writer believes that this same method may be used to advantage in collecting other small insects, especially those that are very active. Hence he thinks it is worth passing on for the benefit of others.

In South America.

Mr. A. F. Porter wrote from La Paz, Bolivia, on March 18: "I am spending a few days in the capital of Bolivia after a day at Cuzco, looking over the Inca ruins, and crossing Lake Titicaca. The snow caps about this city, some of which are over 22,000 feet elevation, are very beautiful. Was out to the Museum to-day and also saw an interesting private collection. Will leave for Lima, Peru, last of week and here my real collecting will begin."

Notes on Cerambycidae with Descriptions of New Species (Coleop.).

By A. B. CHAMPLAIN and J. N. KNULL,* Penna. Bureau of Plant Industry, Harrisburg, Pennsylvania.

The following new forms and notes have accumulated, and are presented herewith.

PARAOPSIMUS New Genus.

Head slightly impressed between antennae, mandibles with tooth near apex, eyes divided, antennae extending beyond apices of elytra, scape reaching little beyond front margin of prothorax. Thorax widest in middle, with a lateral, acute, turned-up tubercle just back of middle, another near base on each side, hind margin emarginate in the arc of a circle, emargination filled with thin corneous plate. Elytra wider than thorax at base, sides nearly parallel, rounding in apical third to separately rounded apices. Prosternum extremely narrow between front coxae, femora clavate, first joint of hind tarsus longer than following joints united.

Genotype *Paraopsimus bidentatus* new species.

This genus is proposed for a species which does not fit either *Opsimus* Thoms. or *Dicentrus* Lec. It differs from *Opsimus* Thoms. by having two lateral spines on the thorax, and from *Dicentrus* Lec. by the clavate femora, length of antennal joints and antennae, the first joint not being as long as the two following joints.

This genus should be placed in the *Saphanini* between *Opsimus* Thoms. and *Dicentrus* Lec.

Paraopsimus bidentatus new species.

Brunneous above and below, ochraceous pubescence sparse, ventral surface shining, nearly void of pubescence. Head sparsely punctate on front, vertex slightly rugose, punctures sparse; antennae reaching beyond the end of elytra in female, second joint shorter than third, third and fourth joints about equal in length, fifth longer, following joints decreasing in length.

Thorax wider than long, convex constricted at apex and at base, sides widened to back of middle, strongly constricted to

* Authors names arranged alphabetically.

base, tubercles as stated above, surface granulate, center slightly depressed, transverse depression at base. Scutellum as wide as long, rounded posteriorly. Elytra with sides nearly parallel, rounding in apical third to separately rounded apices, surface finely granulate, two faint costae on each elytron, surface sparsely covered with very fine ochraceous pubescence, longer hairs irregularly placed. Ventral surface of thorax slightly transversely strigose, abdomen sparsely punctate. Length 12.5 mm.; width 2.5 mm.

Type a female in authors' collection, labeled Subalpine Region, A. L. Lovett, and probably from the State of Oregon.

Strangalia abdominalis Hald.—This species was reared from the sapwood of a dead standing bald cypress (*Taxodium distichum*) collected at Cape Henry, Virginia.

Leptostylus bahamicus Fisher—Adults of this recently described West Indian species were collected at Paradise Key, Florida, April 4 and April 10. (Determinations through the kindness of Mr. W. S. Fisher.)

Ataxia brunneus new species.

Resembling *Ataxia hubbardi* Fisher in size and form, covered above and below with recumbent ochraceous pubescence, intermixed with cinerous on ventral surface, semi-erect hairs arising from the irregular punctures.

Head coarsely punctured, concave between antennae tubercles, eyes coarsely granulate, antennae not extending to end of elytra in female, annulated, cinereous recumbent pubescence on all but first two joints, long hairs scattered irregularly over joints, first joint with slight trace of cicatrix at apex.

Thorax wider than long, widest at base, constricted anteriorly, sides arcuate from base to apex, an acute tubercle in middle on each side, disk irregularly densely punctured. Scutellum triangular, rounded posteriorly. Elytra about two and one-half times as long as wide, wider than thorax at base, sides nearly parallel, rounded anteriorly to separately rounded apices, disk irregularly deeply punctured, punctures larger and more numerous toward base. Mesosternum with groove more prominent posteriorly.

Abdomen irregularly lightly punctured, last ventral truncate at tip, broad concave depression at apex, legs covered with cinereous and ochraceous pubescence. Length 12.5 mm.; width 4 mm.

Type a female labeled northern Illinois, in the collection of the authors.

This species resembles *Ataxia hubbardi* Fisher very closely, but can easily be separated by the punctures of the elytra being finer and by the color of the pubescence on the dorsal surface.

We are indebted to Mr. W. S. Fisher for comparing the specimen with the type of *Ataxia hubbardi* Fisher.

The "Ponderable" Substance of Aphids (Homop.).

By GLENN W. HERRICK, Cornell University, Ithaca, New York.

The number of species of living insects is very great. A late authority says that there are 470,000 species of insects now known and it is estimated that the total number now living is probably more than two millions. To visualize the number of known species it may suffice to say that if the mere names of these insects were printed in two columns to a page with 45 names in each column they would fill ten volumes of 500 pages each and there would be 20,000 names left over. This enormous number of living animals must find food and find it in abundance if they are to maintain themselves on the earth. A consideration, however, of the number, only, of species of insects on the earth does not convey the full significance of the real situation concerning these tiny animals and their relation to man. A fuller realization of the role of insects on the earth will be grasped when one considers the number of individuals that may arise in any one of the existing species.

Many years ago Huxley estimated that in the course of ten generations, supposing all of the individuals to survive, the progeny of a single aphid would "contain more ponderable substance than 500 millions of stout men; that is, more than the whole population of China." It has been of considerable interest in the light of some detailed investigations of the biology of certain aphids, especially the common cabbage aphid (*Brevicoryne brassicae*), to ponder a bit over this estimate of Huxley's.

In a study of the life cycle of the cabbage aphid the insect was carried through a period of slightly more than one year (Mar. 31, 1910, to Apr. 6, 1911) and, in that time was found

to produce thirty generations with an average of 12 2/5 days for each generation. It was also determined that each female, on the average produced 41+ young. From March 31 to August 15 there were twelve full generations and by October 2, sixteen generations had been produced. To obtain an approximate idea of the total number of individuals, had all of them lived, present on October 2, it is but necessary to solve a simple arithmetical problem in geometrical progression in which the first term is 1, the ratio is 41, and the number of terms is 16, to find the sum of the series. We need not go far with this problem for it will be seen, at once, that 41 raised to the 16th power will produce a number that will reach many periods to the left. It will be worth while, however, to determine, roughly, the ponderable substance of the cabbage aphids that might be present at the end of the 12th generation by the middle of August, if all of the progeny were to survive. Here, again, we have a simple problem expressed by the formula $\frac{1 \times 41^{12}-1}{41-1}$, a solution of which indicates that, at the end of twelve generations if all lived, there would be 564,087,257,509,154,652 aphids present, supposing room could be found for them. What, then will be the ponderable substance of that number of aphids? In other words, how much will 564-odd quadrillion cabbage aphids weigh?

With these queries running in mind I selected four, average, viviparous, agamic females of the cabbage aphid and taking them over to my colleague in chemistry asked him to weigh them on his very accurate balance. Three of the aphids were placed in the pan of the balance and the weights were carefully adjusted when the chemist said "drop on the other one." I did so and for the moment, I was as much interested in the cunning and deftness of the hand of man in devising and fashioning an instrument so sensitive and delicately accurate, as I was in the capacity of an aphid to reproduce itself. The fourth apid, at once became an elephant. The balance responded with fearful vigor and I caught my breath. The long slender pointer raced through its arc and appeared sure to swing out into space and never return; but it did return and a little delicate adjust-

ment showed that the four aphids weighed just 5.6 milligrams, an average of 1.4 milligrams each.

A simple multiplication demonstrates then, that 564-odd quadrillion aphids present on August fifteenth would actually weigh 789-odd quadrillion milligrams which, by reduction, gives 789,722,160,512,816 grams. If now we consider roughly that 30 grams equal an ounce avoirdupois we find the weight of the aphids to be 26,324,072,017,093 ounces and a further division by 16 gives 1,645,254,501,068 pounds which reduced to tons gives us the staggering number of 822-odd million tons of ponderable substance in the progeny of one stem-mother cabbage aphid born on the last day of March, provided they all survive and are present on the fifteenth day of the following August. In the face of the foregoing figures the estimate of Mr. Huxley pales into insignificance, for 500,000,000 stout men, if they averaged 200 pounds each, would weigh altogether but a mere bagatelle of 50,000,000 tons. Moreover, the cabbage aphid, in the temperate latitude of New York State, has a comparatively slow reproductive capacity. If we consider the melon and cotton aphid *(Aphis gossypii)* and its reproductive capacity as determined in Texas, we shall find that the average number of young produced by a single female is 84.4, and that the number of generations in a year exceeds those of the cabbage aphid. The melon and cotton aphid at this rate in ten generations would far outstrip the estimate of Huxley, as anyone who has a taste for the multiplication table can determine in a few minutes. The common "green-bug" or spring grain aphid *(Toxoptera graminum)*, each viviparous, agamic female of which, produces an average of 59.8 young would also greatly exceed Huxley's estimate.

Do our figures seem fanciful? We must admit they do. Do they indicate a probable situation? Certainly not one that has ever happened so far as we know. Is there a possibility of such a thing taking place? The life history of aphids, their rate of reproduction, and infested fields of wheat, melons, and cabbages that we have seen certainly indicate tremendous possibilities in the direction of the figures we have given. Who, then, shall eventually inhabit the earth, man or insect? I am not

particularly pessimistic about the answer and whenever I begin to think of these matters I always recall what one of my colleagues has said; "If you want to hear that the world is going to the bow-wows just listen to an economic entomologist talk", and, at once, I return to sanity.

Notes on the Habits of Formica dakotensis specularis (Emery) (Hym.: Formicidae).

By C. E. Abbott, B.A., Elgin, Illinois.

In May, 1925, east of the city of Madison, I discovered a few colonies of *Formica dakotensis specularis*. The nest which most engaged my attention was located on the side of an embankment, and varied in height from two to eighteen inches. It was about a foot in diameter, and contained a central core, about twelve inches deep, of loose sticks and similar materials. When the loose material was removed, the remaining portions of the nest were seen to consist of earth much perforated by tunnels.

A number of the adult workers, larvae, and pupae were transferred to an artificial nest. Although the queen was not included, this fragment of the original colony prospered for nearly a month, and during this time frequent notes were taken on the behavior of the insects.

They would not eat much pastry, but were quite fond of apple, the buccal pellets of which could be seen near the feeding place or on their dumping grounds. Flies and cockroaches placed in the nest were killed and eaten. The ants pursued the intruders, bit off their appendages, and gradually consumed all but the harder chitinous parts.

The ants cast all such waste materials out of the nest or placed it in definite spots. When they were first moved into their new quarters, they took with them a number of sticks approximately 5 cm. long. Later they threw these into the moat that surrounded the nest. They finally put all their trash into one of the larger depressions of the nest. Sticks, solid bits of toweling, buccal pellets, and the hard parts of insects, not to mention dead members of the colony, found their way to this kitchen midden. The bits of toweling referred to were

taken from strips that supported the glass over the nest. The emmets had a way of detaching separate threads, pulling these apart to form a downy mass, and covering their larvae with this soft material.

The sense of smell is well developed in *F. dakotensis specularis*. When a number of pupae were taken from the nest and placed with some bits of wood resembling them in size and shape, the ants did not hesitate to carry the former back to the nest. The sticks, which I had purposely handled with my fingers, were attacked and deserted. The breath was sufficiently offensive to the insects, to bring them out in great numbers. If the face was near the nest at such times, a stinging sensation and the odor of formic acid were evident. The introduction of the breath into the nest through a glass tube threw them into a state of great excitement. They rushed about with waving antennae and open jaws; they attempted to bite the tubing; some carried away the pupae that were nearest the tube. Sticks soaked in methyl salicylate or pyridine were sedulously avoided.

Ordinarily fond of honey, the insects refused to eat some which contained strychnine. Some tried time after time to eat it, but the presence of the drug evidently prevented them from so doing. The drug was very evident to human end-organs.

F. dakotensis specularis seemed very sensitive to shock. A slight jarring of the nest threw them into a panic.

These ants carried their pupae from white, blue, or green light into complete darkness. They do not react to red. They appear to see objects at some distance. This is especially evident when their behavior is compared with that of *Camponotus pennsylvanicus*, which is aware of intruders in its nest chiefly by smell, and will snap savagely at their trails. *F. dakotensis specularis* will perceive an enemy at a distance of several centimeters. These ants fasten their jaws to an object with a steady grip. While thus engaged they often double the gaster under the thorax.

A small species of mite, which was not identified, was found in the nest. Some were attached to the legs of the ants, while others were wandering freely about.

Frank Cowan and His "History of Insects."

By Harry B. Weiss, New Brunswick, New Jersey.

It is doubtful, in these days of esoteric entomology, if many entomologists are familiar with Cowan's "Curious Facts in the History of Insects, including Spiders and Scorpions" published by J. B. Lippincott & Co., in 1865. To the erudite it may seem fanciful and jejune, but to those who desire to see insects in their historical settings, Cowan's book will prove to be interesting and diverting.

It is actually a collection of statements ransacked from the writings of Greek, Roman and later authors dealing with early beliefs and superstitions about insects. Books of travel, history, poetry and suppletive works in great number yielded their entomology to Cowan's industry. Such historical settings are not scientific facts as we understand them today, or even as they were understood in 1865, and although some of the assertions quoted may have been true, others are obviously absurd. Cowan makes it plain in the preface to his book, that he is not concerned with the natural history of insects or with the actuality of the facts that he presents, but that he is dealing for the most part with the averments of various writers.

The arrangements of his material by orders and families of insects has a particular appeal to one with some knowledge of entomology, making it possible to locate immediately, the myths about an insect or family, and does not detract from the enjoyment of the non-entomological reader. Cowan's book appeared eleven years after Jaeger's "Life of North American Insects" and both were written apparently for the general reader. Cowan's being notably free from periphrasis and technical abracadabra and bringing together as it does, a mass of insect mythology is the more valuable of the two and furnishes a sort of early historical background for the study of entomology.

The author was born in Greensburg, Pennsylvania, December

11, 1844. His father Edgar Cowan was United States senator from the same state, having been elected in 1861 by the people's party and serving until 1867. Frank Cowan studied at Mount Pleasant and Jefferson colleges but did not graduate from either. In 1862 he became secretary of the senate committee on patents, of which his father was chairman and during the vacations of congress, read law with his father, being admitted to the bar in 1865.

It was during the winter of 1863-64, when having the use of the Congressional Library at Washington, he began at the age of nineteen, the compilation of his "History of Insects." Glover was the entomological expert at Washington at this time and his early writings were published in the Reports of the United States Commission on Patents. It is doubtful if Cowan received any help from Glover during the compilation of his book. No mention is made of Glover in the preface where Cowan discharges his obligations to other persons. In 1866 Cowan became one of the secretaries of President Johnson. In 1867 he began the study of medicine in the Georgetown medical college and received his degree in 1869. Thus he lived, worked and studied in Washington at a time when Andrew Johnson was occupied with post-war reconstruction, constant conflict with the Senate and his impeachment by the House of Representatives. Later Cowan wrote under the titles, "The Personnel of the United States Senate at the Close of the War of 1861-65," and "Reminiscences of Andrew Johnson."

From 1869 until 1872 he practised medicine in Greensburg and then became editor and proprietor of an industrial journal known as "Frank Cowan's Paper," which continued to 1875. In 1878 he was district attorney of his county and in 1880-81 made a tour of the world, entering Corea in advance of treaties between that and other countries and making an ethnological collection as well as sending to the United States government, information about the exports and imports of Corea. In 1882

he resumed the practice of law and in 1884-85 made a second tour of the world. In 1895-96 he was general superintendent of the Westmoreland Hospital and for some years previous to his death in 1905 devoted his time to fruit-growing and writing.

His versatility is shown by his authorship of various pamphlets and magazine articles dealing with medical, historical, anthropological and evolutionary subjects, by his musical compositions, poems, the work on insects referred to above and the following list of books which does not aim at completeness. It is recorded that one of his articles "The Hvidsaerk Inscription at the Falls of the Potomac" (1866) was a deception, which although instantly explained, found its way into European books of reference. "Zomara, a Romance of Spain" (Pittsburgh, Pa., 1873); "Southwestern Pennsylvania in Song and Story," with as appendix of Battle Ballads (Greensburg, Pa., 1878); "An American Story Book, short studies from life in Southwestern Pennsylvania" (Greensburg, Pa., 1881); "The City of the Royal Palm and other Poems" (Rio de Janeiro, 1884); "A Visit in Verse to Halemaumau" (Honolulu, 1885); "Fact and Fancy in New Zealand." "The Terraces of Rotomohana: a Poem," etc. (Auckland, N. Z., 1885); "Australia, a Charcoal Sketch" (Greensburg, Pa., 1886); "Dictionary of Proverbial Phrases Relating to the Sea."

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Grateful acknowledgement is herewith made for the help received from the State Library at Trenton, New Jersey, the Rutgers College Library and Mr. George L. Walters of Philadelphia, who furnished me with notes referring to such of Cowan's publications as were to be found in several Philadelphia libraries, including that of the Pennsylvania Historical Society.

ENTOMOLOGICAL NEWS

PHILADELPHIA, PA., JULY, 1926.

Henry Skinner.

The two men to whose exertions the early years and successes of ENTOMOLOGICAL NEWS were due have passed away within six weeks of each other. In last month's issue we recounted our debt to Ezra Townsend Cresson. Now we sorrowfully try to realize the departure from this life of Henry Skinner. He was not the first editor of the NEWS, but he assumed its direction two months after its first appearance and continued as its pilot until December 15, 1910, when after nearly twenty-one years, he was relieved at his own request. For an additional period of sixteen years, as Editor Emeritus, his assistance has always been available.

We plan to publish an account of his life and work in the next (October) number of the NEWS.

Changes of Addresses.

C. L. Frankenfield, Box 85, Keego Harbor, Mich.
Arthur B. Wells, Alicia, Saginaw Co., Mich.
Ernest J. Oslar, 4189 Julian St., Denver, Colo.
J. W. McBurney, Industrial Bldg., Bur. of Standards, Washington, D. C.
Clarence O. Bare, Box 1182, Plant City, Fla.
James G. Needham, 6 Needham Place, Ithaca, N. Y.

Personal Mention.

Prof. T. D. A. Cockerell is president of the Southwestern Division of the American Association for the Advancement of Science.

Dr. A. L. Melander has resigned from the Department of Zoology and Entomology of the Washington State College to accept a position at the College of the City of New York.

May I ask you to announce in one of the forthcoming issues of ENTOMOLOGICAL NEWS, that I have left today (May 15, 1926) for England, as a member of the Harvard African Expedition. We expect to be absent from the States for about a year. The party is under the leadership of Professor R. P. Strong, Head of the Department of Tropical Medicine of Harvard Medical School. There are eight members in all. The Expedition will carry on medical and biological investigations, in Liberia and in the Belgian Congo. JOS. BEQUAERT.

Entomological Literature

COMPILED BY E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published.

All continued papers, with few exceptions, are recorded only at their first installments.

Papers of systematic nature will be found in the paragraph beginning with (N). Those pertaining to Neotropical species only will be found in paragraphs beginning with (S). Those containing descriptions of new forms are preceded by an *.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

Papers published in the Entomological News are not listed.

1—Trans., American Ent. Soc., Philadelphia. **4**—Canadian Ent., Guelph. **5**—Psyche, Cambridge, Mass. **6**—Jour., New York Ent. Soc., New York. **7**—Ann., Ent. Soc. America, Columbus, Ohio. **8**—Ent. Monthly Mag., London. **9**—Entomologist, London. **10**—Proc., Ent. Soc., Washington. **11**—Deutsche Ent. Zeitschrift, Berlin. **12**—Jour. of Economic Ent. **15**—Insecutor Inscitiae Menstruus, Washington. **17**—Ent. Rundschau, Stuttgart. **18**—Intern. Ent. Zeitschrift, Guben. **19**—Bull., Brooklyn Ent. Soc. **20**—Societas Entomologica, Stuttgart. **26**—Ent. Anzeiger, Wien. **36**—Trans., Ent. Soc. London. **50**—Proc., U. S. National Museum. **55**—Pan-Pacific Ent., San Francisco. **59**—Encyclopedie Entomologie, Paris. **60**—Stettiner Ent. Zeitung. **61**—Proc., California Acad. Sci. **69**—Comptes R., Acad. Sci. Paris. **72**—EOS, Rev. Espanola Ent., Madrid. **75**—Ann. & Mag. of Nat. Hist., London. **77**—Comptes R., Soc. Biologie, Paris. **104**—Zeit. f. Wissens. Zool., Leipzig. **107**—Biologisches Zentralblatt. **111**—Archiv f. Naturgeschichte, Berlin. **113**—Jour. Agric. Research, Washington.

126—Revista Chilena Hist. Nat. 130—Ohio Jour. Sciences, Columbus. 135—Quarterly Jour. Microscopic Sci. 137—Archiv f. Zoologi, Stockholm. 141—Amer. Naturalist. 142—Archiv Zool. Experm. et Generale, Paris. 154—Zool. Anzeiger, Leipzig.

GENERAL.—Bateson, W.—The evolution of the colours and patterns of cuckoos' eggs and its relation to that of insect resemblances, such as mimicry.—36, 1925, p. xcvi-civ. **Bergroth, E. E.**—Obituary notice.—19, xxi, 15-17. **Brethes, J.**—Sur quelques insectes de San Jose de Maipo.—126, xxix, 34-5. ***Cockerell, T. D. A.**—Tertiary fossil insects from Argentina.—Am. Jour. Sci., xi, 500-4. **Edelsten, H. M.**—Weather conditions affecting collecting by light.—9, lix, 147-8. **Emery, C.**—Obituary notice by A. Forel.—Bul. Soc. Vaud. Sc. Nat., lvi, 23-4. **Felt, E. P.**—The physical basis of insect drift.—Nature, London, cxvii, 754-5. **Felt & Bishop.**—Science and scientific names.—141, lx, 275-81. **Hamlin, J. C.**—Biological notes on important opuntia insects of the U. S.—55, ii, 97. **Harrison, L.**—Ectoparasitic insects and Pacific problems. [Abstract]—Proc. Pan-Pacific Sci. Cong., ii, p. 1584-5. **Herms, W. B.**—Effects of parasitism on the host and on the parasite.—12, xix, 316-25. **Howard, L. O.**—Parasitic element of natural control of injurious insects and its control by man.—12, xix, 271-82. **Huard, V. A.**—Du role des insectes dans la nature.—Le Naturl. Can., lii, 251-6 (cont.) **Jones, D. W.**—Some notes on the technic of handling parasites.—12, xix, 311-16. **Krausse, A.**—Ewonal, ein neues einbettungsmittel.—18, xx, 33-4. **McAtee, W. L.**—Insect taxonomy: preserving a sense of proportion.—10, xxviii, 68-70. **May, E.**—Die tier und der winter.—Ber. Senck. Naturf. Ges., lvi, 1-7. **Onel, A.**—Insectos que se fingen muertos.—126, xxix, 303-4. **Ruediger, E.**—Der Rückgang der insektenwelt.—17, xliii, 17-18. **Ruediger, E.**—Entomologie und zettelkatalog.—17, xliii, 15. **Schulze, Kuekenthal, Heider, Kuhlgatz.**—Nomenclator animalium generum et subgenerum.—Preuss. Akad. Wissens. zu Berlin, i, Lief. 1; A-Anaj. **Shelford, V. E.**—Methods for the experimental study of the relations of insects to weather.—12, xix, 251-61. **Weiss, H. B.**—Samuel Purchas and his "Theatre of political flying insects."—6, xxxiv, 71-7. **Woodruff, L. B.**—Obituary notice with bibliography.—6, xxxiv, 23-5.

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ARACHNIDA AND MYRIOPODA.—**Barbier et Stillmunkes.**—Syncope adrenalinochloroformique et envenimations (Venins de vipere et de scorpion).—**77,** xciv, 1063-4. **Emerton, J. H.**—Spiders eating snakes.—**5,** xxxiii, 60. **Joseph, H. C.**—Moeurs des araignees.—**126,** xxix, 154-160. **L. M.**—Araignees venimeuses du Brasil.—La Nature, 1926, 158-60. **Merle, R.**—Araignees hissant des coquilles.—La Nature, Paris, 1926, 239-40. **Nath, V.**—Origin of yolk in the eggs of spiders.—Nature, London, cxvii, 693. **Paviovsky & Zarin.**—On the structure and ferments of the digestive organs of scorpions.—**135,** lxx, 221-61. **Simon, E.**—El aracnologo E. Simon. Por C. E. Porter.—**126,** xxix, 230-1.

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THE SMALLER ORDERS OF INSECTA.—**Kemmer, N. A.**—Larva termitovorax.—**137,** xvii A, n. 29, 15pp. **Kennedy, C. H.**—Nymph of Ephemera guttulata with notes on the species.—**4,** lviii, 61-3. **Macnamara, C.**—Drumming of stoneflies (Plecoptera).—**4,** lviii, 53-4. **Smith, R. C.**—Life history and habits of Eremochrysa punctinervis. —**19,** xxi, 48-52.

(N) ***Mason, A. C.**—Two n. sps. of thrips from California.—**55,** ii, 155-7.

(S) ***Navas, L.**—Crisopidos neotropicos. Insectos neotropicos.—**126,** xxix, 8-13; 305-13. **Snyder, T. E.**—Termites collected on the Mulford Biol. Expl. to the Amazon basin, 1921-22.—**50,** lxviii, Art. 14.

ORTHOPTERA.—**Caudell, A. N.**—Melanoplus borealis in New York state (Acrididae).—**10,** xxviii, 70. **Davis, W. T.**—Annotated list of the Dermaptera and Orthoptera collected in mid-summer at Wingina, Va., and vicinity.—**6,** xxxiv, 27-41. **Ford, N.**—On the behavior of Grylloblatta.— **4,** lviii, 66-70. **Morse, A. P.**—Two vagrant grasshoppers and a moth.—**5,** xxxiii, 53. **Worthington, E. B.**—Life-cycle of Forficula auricularia.—**9,** lix, 138-42.

(N) **Hebard, M.**—Key to the N. A. genera of the Acridinae which occur north of Mexico.—**1,** lii, 47-59.

(S) ***Werner, F.**—Species novae Mantidarum ex Mus. Brasiliensi.—**20,** xli, 17-18.

HEMIPTERA.—**Bare, C. O.**—Life histories of some Kansas "backswimmers."—**7,** xix, 93-101. **DeLong, D. M.** —Food plant and habitat notes on some N. Amer. sps. of Phlepsius.—**130,** xxvi, 69-72. **Esaki, T.**—Biological note on the pterygopolymorphism of Aradus.—**19,** xxi, 29-31. **Hamlin, J. C.**—(see under General). **Hoffman, W. H.**—Observaciones sobre el desarrollo de las reduviidas.—**126,** xxix, 185-8. **Hoke, S.**—Preliminary paper on the wing-venation of the hemiptera (Heteroptera).—**7,** xix, 13-34. **Lawson, P. B.**—Some "biting" leafhoppers.—**7,** xix, 73-4. **McAtee & Malloch.**—Further on annectant bugs.—**19,** xxi, 43-7. **Muir, F.**—Reconsideration of some points in the morphology of the head of homoptera.—**7,** xix, 67-73. **Oestlund & Hottes.**—Chapter in the life history of Mordwilkoja vagabundus (Aphididae).—**7,** xix, 75-81. **Poisson, R.**—Anisops producta (Notonectidae) observations sur son anatomie et sa biologie.—**142,** lxvi, 181-208. **Torre-Bueno, J. R.**—Fur-

ther records on Heteroptera from Mass.—19, xxi, 53-5. **Whittiker, O.**—Records of hemiptera from Br. Columbia. —4, lviii, 63.

(N) ***Barber, H. G.**—New Geocoris from Illinois.—19, xxi, 38-9. ***DeLong, D. M.**—Three n. sps. of Cicadellidae previously confused with related sps. II. The genus Lonatura.—1, lii, 89-102. **Doering, K. C.**—A new sp. of Clastoptera (Cercopidae).—7, xix, 85-7. ***Glendenning, R.**—Some new aphids from Br. Columbia.—4, lviii, 95-8. ***Goding, F. W.**—New genera and species of Membracidae. [new sps.: 1, U. S.; 9, S. A.]—1, lii, 103-110. ***Knight, H. H.**—Capsus simulans and Labops burmeisteri recognized from the Nearctic region (Miridae).—4, lviii, 59-60. ***Knight, H. H.**—Descriptions of seven n. sps. of Pilophorus (Miridae).—19, xxi, 18-26. ***Knight, H. H.**—Description of a new Renodaeus from Texas (Miridae).—19, xxi, 56-7. ***Metcalf & Bruner.**—A correction [for Brachycentrus].—19, xxi, 28. ***Tillyard, R. J.**—Kansas permian insects. Pt. 9. The order Hemiptera.—Am. Jour. Sci., xi, 381-95.

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LEPIDOPTERA.—Baylis, H. A.—Colour-production in L.: a further note.—9, lix, 124-6. **Bell, E. L.**—Three rare butterflies from Long Island, N. Y.—19, xxi, 26. **Cook, W. C.**—Methods of collecting moths.—4, lviii, 105-8. **Engelhardt, G. P.**—Periodical swarming of Celerio lineata in Ecuador.—19, xxi, 27-8. **Eyer, J. R.**—Morphological significance of the juxta in the male genitalia of L.—19, xxi, 32-7. **Hamlin, J. C.**—(see under General). **Harrison, J. W. H.**—Miscellaneous observations on the induction, incidence and inheritance of melanism in the L.—9, lix, 121-3. **Iucci, C.**—La capacita di sviluppo dell'uovo, vergine o fecondato, nei bachi da seta (Bombyx mori).—Bol. Istit. Zool. Univ. Roma, iii, 86-99. **Lenz, F.**—Ueber die ursachen des misslingens von raupenzuchten.—18, xx, 30-2. **Morse, A. P.**—(see under Orthoptera). **Porritt, G. T.**—Induction of melanism in the lepidoptera and its subsequent inheritance.—8, lxii, 107-11. **Roeher, A.**—Ueber lauterzeugung bei schmetterlingen.—26, vi, 51. **Rogers, D. P.**—Early butterflies.—19, xxi, 42. **Tschirwinsky, P.**—Gibt es ein gleichgewicht der farben bei schmetterlingen?—107, xlvi, 229-31. **Vignon, P.**—Le papillon qui feconde les yuccas.—La Nature, Paris, 1926, 255-6.

(N) **Barnes & Benjamin.**—Resumé of the works of J. Hübner in regard to the nomenclature employed therein. —**10,** xxviii, 86-92. ***Barnes & Benjamin.**—Notes and new species (Phalaenidae). Two new western Phalaenidae.—**55,** ii, 106-110; 111-12. ***Blackmore, E. H.**—Two new geometers from Br. Columbia.—**4,** lviii, 100-3. ***Dyar, H. G.**—A new moth of the eudryas group from N. Mexico.—**15,** xiv, '95-6. **Engelhardt, G. P.**—A correction [to paper on Aegeriidae].—**19,** xxi, 14. ***Jones, F. M.**—Our largest psychid, Oiketicus dendrokomos.—**1,** lii, 1-6. **McDunnough, J.**—Notes on the sps. of the genus Xanthotype.—**4,** lviii, 119-21. **Poling, O. C.**—Notes on rare and little known sps. of N. A. lepidoptera.—**4,** lviii, 79-81. **Reuss, T.**—Systematischer überblick der Druadinae mit einigen neubeschreibungen.—**11,** 1926, 65-70. **Seitz, A.**—Das system der schmetterlinge.—**17,** xliii, 15-16 (Cont.).

(S) ***Dyar, H. G.**—Notes on some S. A. Cochlidiidae.—**15,** xiv, 73-95. ***Giacomelli, E.**—Descripcion de dos nuevas formas de Saturniadae del genero Dysdaemonia de la Prcia. de la Rioja. Sobre una forma de Dione vanillae.—**126,** xxix, 151-3; 228-9. ***Lathy, P. L.**—New sps. and forms of the genus Euselasia in the Joicey collection.—**9,** lix, 143-6. ***Neustetter, H.**—Beschreibung und besprechung neuer und wenig gekannter Heliconius formen.—**18,** xx, 34-40. **Reed, C. S.**—Catalogo de los esfingidos de Chile.—**126,** xxix, 300-2. ***Roeber, J.**—Neue tropische falter.—**17,** xliii, 13. ***Williams, R. C.**—Studies in the Neotropical Hesperioidea.—**1,** lii, 61-88.

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1926, p. 49-52. **Sergent et Rougebief**—De antagonisme entre les drosophiles et les moisissures.—**69,** clxxxii, 1238-9. **Twinn, C. R.**—Notes on the mosquitoes of the Ottawa district.—**4,** lviii, 108-11. **Zuercher, L.**—Halmfliegen und massenansammlungen von solchen.—Mitt. Aargau. Naturf. Ges., xvii, 70-9.

(N) **Aldrich, J. M.**—Notes on the metallic green tachinids allied to Gymnochaeta, with keys. . . —**15, xiv,** 51-8. ***Aldrich, J. M.**—Notes on muscoid flies with retracted hind crossvein, with key and several new genera and sps.—**1,** lii, 7-28. ***Alexander, C. P.**—Undescribed sps. of Dicranoptycha from eastern N. A. (Tipulidae).—**5,** xxxiii, 54-59. ***Banks, N.**—Descriptions of a few new American D.—**5,** xxxiii, 42-4. ***Curran, C. H.**—New Nearctic D. mostly from Canada.—**4,** lviii, 81-89. **Curran, C. H.**—Notes on Wiedemann's types of Syrphidae.—**4,** lviii, 111-15. ***Curran, C. H.**—Partial synopsis of American sps. of Volucella with notes on Wiedemann's types. [n. sps. descr. only from C. & S. Amer.].—**7,** xix, 50-66. ***Johannsen, O. A.**—Genus Trichotanupus (Chironomidae).—**4,** lviii, 99-100. ***VanDuzee, M. C.**—A new Dolichopodid genus with descr. of five n. sps.—**1,** lii, 39-46. ***VanDuzee, M. C.**—Further new Dolichopodidae in the Can. Nat. Coll.—**4,** lviii, 56-9. ***VanDuzee, M. C.**—New sps. of N. A. Dolichopodidae.—**5, xxxiii,** 45-52. ***VanDuzee, M. C.**—Genus Thinophilus in N. America. (Dolichopodidae).—**7,** xix, 35-49. ***Walley, G. S.**—New Canadian Chironomidae.—**4,** lviii, 64-5.

(S) **Aldrich, J. M.**—A new gen. of Helomyzidae from Chile with key to genera [of the world].—**15,** xiv, 96-102. ***Aldrich, J. M.**—(see under above paragraph). ***Bezzi, M.**—New genus and species of borborid flies from South America.—**50,** lxviii, Art. 20. ***Brethes, J.**—(see under General, also under Coleoptera). **Hicken, C. M.**—Las algas del genero "Chara" y los mosquitos genero "Anopheles."—Darwiniana, Buenos Aires, i, 79-85. **Ruiz, F.**—Voracidad de los asilidos.—**126,** xxix, 220-4. ***Seguy, E.**—Especes nouvelles du genre Mesembrinella.—**59,** Ser. B, Dipt., ii, 195-6.

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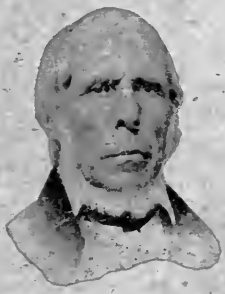
SPECIAL NOTICES.—Catalogue of the Indian insects. Calcutta. This publication is edited by a standing committee of entomologists appointed by the Entomological Meetings held in India. Ten parts have been issued. These contain a systematic arrangement of the genera and species, with bibliography and distributional data of the following families: Acrydidae, Culicidae, Bombyliidae, Trypetidae, Nitidulidae, Staphylinidae, Lasiocampidae, Amatidae, Zygaenidae, and Stephanidae. It should prove of value to students of these groups.

The Henry Skinner Memorial Number

OCTOBER, 1926

ENTOMOLOGICAL NEWS

Vol. XXXVII No. 8



JAMES RIDINGS
1803-1880

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PHILADELPHIA, PA.
THE ACADEMY OF NATURAL SCIENCES,
Logan Square

Entered at the Philadelphia, Pa., Post Office as Second Class Matter.
Acceptance for mailing at the special rate of postage prescribed for in Section 1103, Act of October 3, 1917, authorized January 15, 1921.

ENTOMOLOGICAL NEWS

published monthly, **excepting August and September**, by The American Entomological Society.

Philip P. Calvert, Ph.D., Editor; E. T. Cresson, Jr., Associate Editor; Henry Skinner, M.D., Sc.D., Editor Emeritus.

Advisory Committee: Ezra T. Cresson, Philip Laurent, J. A. G. Rehn.

The subscription price per year of ten (10) numbers is as follows:

United States and possessions . .	$3.00
Canada, Central and South America .	3.15
Foreign	3.25

Single copies 35 cents

ADVERTISING RATES: Full width of page. Payments in advance.
One issue, 1 in., $ 1.20, 2 in., $ 2.40, half page, $ 4.00, full page,, $ 8.00
Ten issues " 11.00, " 20.00, " 35.00, " 70.00

SUBSCRIPTIONS AND ADVERTISEMENTS. All remittances, and communications regarding subscriptions, non-receipt of the NEWS or of reprints, and requests for sample copies, should be addressed to **Entomological News, 1900 Race St., Philadelphia, Pa.**

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Of The American Entomological Society will be held at 7.30 o'clock P. M., on the fourth Thursday of each month, excepting June, July, August, November and December, and on the third Thursday of November and December.

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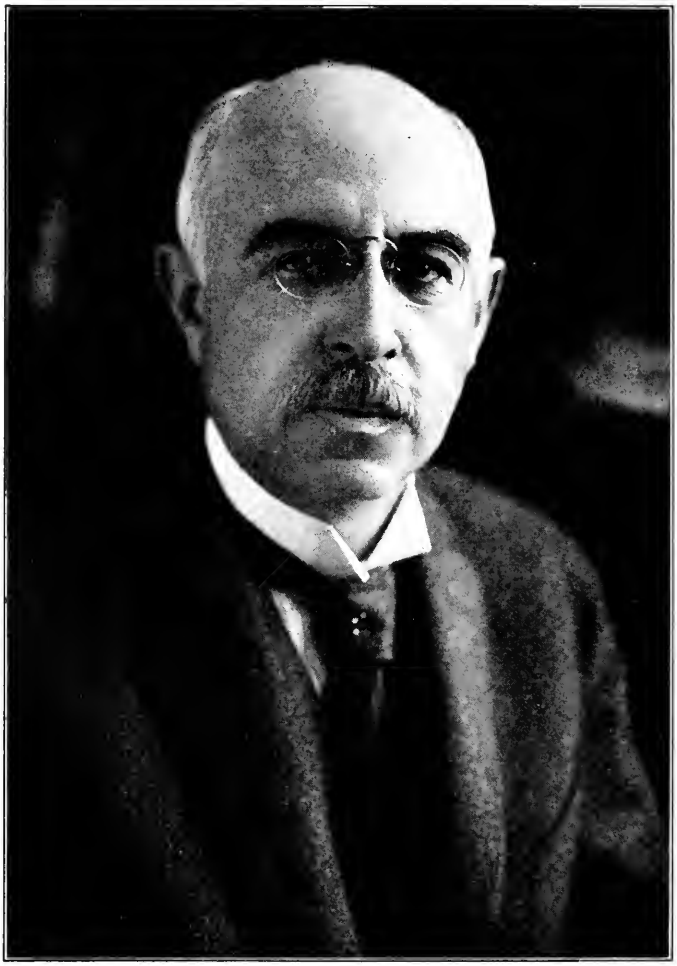

HENRY SKINNER (MARCH 26, 1919)

ENTOMOLOGICAL NEWS

VOL. XXXVII OCTOBER, 1926 No. 8

The Entomological Work of Henry Skinner.

(Portrait, Plate X.)

Dr. Henry Skinner, editor of ENTOMOLOGICAL NEWS from March, 1890, to December 15, 1910, died on May 29, 1926, as has already been announced in these pages.

While his contributions to knowledge of those "frail creatures of the air," the butterflies, have been many and valuable, his chief service to Entomology has unquestionably been in and through his editorship of this monthly. His humor and his incisiveness, even caustic at times, gave it a characteristic tone which was appreciated far and wide. The early numbers contained no editorials labeled as such, but, beginning with Volume III, No. 5, for May, 1892, there is a specific entry "Editorial" in the monthly table of "Contents" and the custom thus established has persisted to this present writing, although not without some interruptions. His editorial for November, 1892, "The News Family" (iii: 228)*, gives an interesting glimpse of the division of labor connected with the production of the journal, while that for September of the same year amusingly enumerates the editor's trials with contributors' manuscripts.

A constantly repeated wish to improve the quality of the journal and to increase its size so as to accommodate the rising tide of papers offered for publication, runs through many of his monthly utterances. This necessarily depended on an increase of subscribers (ii: 119). A characteristic note is that of March, 1898: "Instead of having a subscription list of 550 it should be twice that many and we could then make the NEWS a journal of which to be proud" (ix: 68). In May,

*As some may wish fuller data on Dr. Skinner's work or life, references to the sources of many of the statements here made are given in parentheses. Where merely volume and page numbers are given, ENTOMOLOGICAL NEWS is to be understood; Trans. refers to the Transactions of the American Entomological Society; Proc. to the Proceedings of the Academy of Natural Sciences of Philadelphia.

1907, he could proudly write: "In the last number issued [April] we had fifty-two pages and six full page plates" (xviii: 213). The editorial for November, 1909, reads:

"When this journal was commenced in 1890 we charged one dollar for it and the volume for that year consisted of 168 pages and no illustrations. The subscribers were pleased with our efforts and gladly paid the dollar for 16 pages per month and no illustrations. Not being published for gain but in the interest of entomology and entomologists all income was put into an increased number of pages and illustrations, the magazine being really a mutual affair for the benefit of its patrons. In our efforts to publish the papers that came to us we have steadily increased the number of pages and illustrations.

1890.....	168 pages.....	no plates
1905.....	344 pages.....	11 plates
1906.....	404 pages.....	15 plates
1907.....	458 pages.....	17 plates
1908.....	500 pages.....	25 plates

We have therefore been giving more for the money than any entomological journal in the world. We can't go on and improve as we would like and the time has arrived to decide whether to maintain the old price or increase it. At the old price of one dollar we would be compelled to refuse papers and many illustrations and on mature consideration decided to increase the subscription price to two dollars a year. We are doing this in the interest of those persons wishing an avenue of publication for short papers and also in an effort to get papers into print in as short a time as possible. It should also be remembered that at present many more papers are illustrated and for that reason the expense of publication is infinitely greater. It will also enable us to continue to publish the doings of a number of entomological societies throughout the country." (xx: 395-6.)

The volume for 1908 was the climax in point of size; never since has the NEWS quite attained those dimensions. This constant upbuilding of the journal is, we believe, Dr. Skinner's greatest contribution to entomology. When we consider the time and energy which he gave to this task—not only the editorial work but, since December, 1896 (vii: 306), supervision of the finances and distribution of the journal, we can understand the exclamations of the entomologists (xx: 435-6) which greeted his editorial last quoted.

Not merely the size of the NEWS but also the character of the illustrations in it and in entomological publications in general received much of his attention. As a lepidopterist, to whom pattern and coloring count for so much, it was natural that he should strongly advocate the use of the half-tone (ii: 101-2 and elsewhere) when it was still a new process and of the three-color when it came within the range of possibility (xi: 435).

His ideal of an entomological journal as he expressed it in June, 1891, was:

"One that covers the whole field and each number should contain matter that will please all its readers. The dry scientific article should have a place along with that of a more popular and lighter vein. A journal, any number of which is made up largely of a dry synopsis of a single family in an order, is of value to only a few readers, and the large remainder are disappointed and obliged to wait another month in hopes of finding something more tempting. The subscribers are made up of the professional entomologist, the systematist, the lover of nature in general, the amateur entomologist, those interested in entomology in general, those interested in a single order, the student and the beginner, and the scope of a journal should be such and the paging sufficient in each number to supply readable matter for all" (ii: 119).

On these lines he conducted the NEWS and the contents of the magazine ranged from notes on the genitalia of gynandromorphous Macrolepidoptera to verse on the old man in the tree Who was horribly bored by a bee. With this ideal and the financial limitations he was not always able to satisfy a "former subscriber" who wrote: "if you could give only one plate a month figuring Noctuids not in Holland's Moth Book, especially moths of the eastern United States, it would be a great help to we [*sic*] amateurs who have no State collection or others to help us identify our specimens" (xxi: 182). A different problem with subscribers was that presented by the figures on the cover of the NEWS, but a humorous defense of one of these, *Quisnam sexcaudatus* (xiii: 54-5) will be fully appreciated only by those to whom the paper covers of that volume are accessible.

But his editorials were not confined to appeals for assistance in improving the journal. Many of them urged the necessity of bettering entomological technique; the careful preparation of specimens, the use of proper pins and especially the careful labeling of material (vi: 152; vii: 94, 120, 136; viii: 171; xxvii: 85; xxxi: 202). The humor of the man is shown by a remark:

"We may also say, in passing, that we have coined a new word, 'Sloppydoptera,' which has reference to specimens captured with a baseball bat or temporarily loaned to the new baby as playthings before being 'sent out'" (xiii: 17).

Repose on roses rarely exists in reality and it is not surprising that even the satisfaction which the NEWS brought to him did not outweigh the time and labor which it cost, nor that he should desire greater freedom for research in entomology. He laid down his editorship December 15, 1910, by his own desire, and was immediately elected Editor Emeritus (xxii: 1-2).

Dr. Skinner's collecting of insects naturally began in Philadelphia and its vicinity, and near by localities like Cape May, New Jersey (i: 6-9), were soon visited. In July, 1892, he and Philip Laurent, now the member of the American Entomological Society of longest standing, sought insects in Mitchell County, North Carolina (iv: 21, 80-82), and in Maine in the summer of 1895 (vi: 272). He turned south again in the following year, to eastern Tennessee and western North Carolina (vii: 254). In 1899, with Laurent and A. J. Snyder, he collected in Utah and Colorado (x: 286, 303; xi: 363; xvi: 99-105; xxiv: 450). In 1900 he was in the Adirondacks (xi: 612), and in 1901 at Beulah, New Mexico (xii: 255), his collection furnishing a considerable list of species in many orders for the Academy in Philadelphia (Trans. xxix: 35-117). A brief trip in the Orange Mountains of New Jersey, with Messrs. Kearfott and Daecke, for *Pyrgus centaurcae,* was taken in the spring of 1904 (xv: 256). In 1905 he secured many specimens in Carr Canyon, Huachuca Mountains, Arizona, with C. R. Biedermann (xvi: 275; Proc. 1905: 926). Harvey's and Ganoga Lakes, Pennsylvania, attracted him

along with Messrs. Lister, Kearfott and the two Wenzels in June, 1906 (xvii: 264-5). In 1907 he was in Canada—Manitoba, Saskatchewan and Alberta—with Dr. James Fletcher (Can. Ent. xl: 14, 220; Proc. 1907: 574). He collected in the White Mountains of New Hampshire in 1913 (xxiv: 479 and Proc. 1913: 706) and in 1918 (xxx: 48 and Proc. 1918: 351); in Cuba in February, 1914, as the guest of Dr. C. T. Ramsden (xxv: 110 and Proc. 1914: 656) and in Colorado, Utah and Wyoming, with Mr. R. A. Leussler in 1920 (xxxi: 227; xxxii: 95; Ann. Rept. Ac. Nat. Sci. 1921: 30-38).

Like many field naturalists, his own entomological collection embraced at first insects of all orders, but some of these, other than Lepidoptera, were disposed of as early as 1890. Still later he limited himself to the Rhopalocera. On an interleaved page between pages vi and vii of his own copy of his *Synonymic Catalogue of the North American Rhopalocera* of 1898 is written in his own hand: "Collection of North American Butterflies belonging to Henry Skinner. Contains about 645 species and 5758 specimens in the arranged collection. There are about 5000 duplicates, spread and in papers. Exotic collection of about 2000 specimens in a walnut cabinet with 40 drawers." The date of this note is unknown. In 1908 his collection of American butterflies, then "numbering over 10,000 specimens," was purchased by the Academy of Natural Sciences of Philadelphia.

Dr. Skinner's original work deals chiefly with the butterflies, the Rhopalocera. His first published note (1882), of but eighteen lines, gives means of distinguishing the male from the female of *Argynnis idalia* by their respective modes of flight and notes the greater concealment practised by the female; the author's name, for perhaps the only time, appears as Harry Skinner. A verbal communication to the Academy in the following year (1883) recorded his observation of *Argynnis cybele* dropping her eggs from a height of one foot on to the food plant, violets, below; it was subsequently quoted by Dr. Scudder and evoked some discussion. Not until 1889 did he publish descriptions of new species—*Anartia dominica* from Hayti and *Myscelia streckeri* from Lower California.

His *Impressions Received from a Study of our North American Rhopalocera* (1896) is one of his most general papers. After quoting a familiar definition of species he continues:

"A species based on the morphological part of our definition I hold to be purely tentative (as we must apply the physiological part of the definition before we can be absolutely sure we have a valid species, but unfortunately it is only seldom, or after the lapse of much time that specific value is capable of such proof). Now my idea is that instead of relying to too great an extent on morphological definitions we could fix the value of those modifications by analogy or comparative value" (p. 108).

After referring to causes producing variation in Lepidoptera, a long quotation from A. H. Swinton's *Insect Variety* is given with the object of applying Swinton's conclusions to North American Lepidoptera. Going through the North American Rhopalocera he lists the species of each genus with regard to their "comparative value."

His paper on Antigeny in Lepidoptera (1913) is a useful summary of the differences, chiefly in color, between the two sexes of our butterflies.

Still another general paper was that on *Mimicry in Boreal American Rhopalocera* (1912), called forth by Prof. E. B. Poulton's address to the Entomological Society of America at Baltimore in December, 1908, on this subject. After discussing the question in some detail, Dr. Skinner took "the view that there is not enough evidence to substantiate the hypothesis of mimicry in North American butterflies."

Without detailing his work any further, since a good idea of it may be gained by examining the accompanying bibliography compiled by Mr. Cresson, we may remark that it was especially to the knowledge of the family Hesperidae, skippers, that he has contributed. His paper of 1895, on the Boreal American species of *Pamphila*, shows him actively at work on them.

As his energies were released from the editing of the NEWS, he took up the study of the male genitalia of the genus *Thanaos* where it had been left by Scudder and Burgess in 1870, and produced his paper of 1914. The culmination was reached

in the six papers by him and Mr. Roswell C. Williams, Jr., on *The Male Genitalia of the Hesperidae of North America* 1922-24.

To beginners in entomology Dr. Skinner was very kind and helpful and when his death was formally announced at the following meeting of the American Entomological Society, the younger members spoke appreciatively of the assistance which they had received from him.

His participation in entomological and other scienitfic societies was active. He became a member of the Academy of Natural Sciences of Philadelphia April 26, 1881, and at its meetings he made some of his earliest communications on Lepidoptera. He was elected custodian of the Entomological Section of the Academy, December 8, 1884, and December 14, 1885 (Trans. xi: p. xli; xii, p. xxiv), having become a member of the Section November 10, 1882 (Trans. x: p. xiv). After an interval of several years he again became Conservator, rather than Custodian, of the Section in 1890 and so continued until the abolition of the sections in 1924. He was also an Assistant to the Curators, Special Curator and Curator of the Department of Insects (the title varied from time to time), but in charge of that department from 1890 until his death, and Curator of the American Entomological Society from 1885 to 1887, 1890 to 1916, in which year the latter body placed its collections on deposit with the Academy. He devised a frame for holding Schmitt boxes in a sheet tin case, which was speedily adopted for the Academy's insects (xv: 178). The Academy placed him on its Committees on Publication (chairman for some years) and on Instruction and Lectures and on its Council (1907 on) and chose him a Vice President in 1918. For many years he gave public lectures on entomological topics in the Ludwick Institute course at the Academy.

By reason of the close relations between the Academy and the American Entomological Society, he entered the membership of the latter on March 9, 1883, through the former. He served as Recording Secretary of the Society 1898-1915, as President 1916-1925 and was made an Honorary Member in 1926.

As early as 1892 (iii: 93-94) he proposed a national association of entomologists. When the idea, if not his own plan, was realized by the formation of the Entomological Society of America, he was elected both a fellow and a vice president at its initial meeting in New York City, December 28, 1906 (xviii: 62) and presided at its Boston meeting August 22, 1907 (xviii: 369). The next year, at Baltimore, December 31, he became President (xx : 94) and again presided at the Boston meeting of December 30 and 31, 1909 (xxi: 92).

When international entomological congresses were suggested, he was made Chairman of the committee for the United States (xx: 368). In 1910 he attended the first Congress at Brussels, where he was President of the Section on Nomenclature and read a paper on *One Hundred Years of Entomology in the United States* (xxi: 364, 379, 381; xxii: 48). From Brussels he went on to the Eighth International Congress of Zoology at Graz (xxi: 477). On October 1, 1910, he was made a member of the permanent committee of the entomological congresses. Two years later, with his family, he was at the Second Entomological Congress at Oxford, where he was vice president of the Section on Evolution, Bionomics and Mimicry, August 6, 1912 (xxiii: 375, 382).

From March, 1913, on he was a member of the International Commission of Zoological Nomenclature (xxiv: 328). A member of the American Association of Economic Entomologists since June 23, 1900, he was a Vice President in 1903. He was a Fellow of the American Association for the Advancement of Science and served as Secretary of the Council in 1915 and as General Secretary in 1916. He was one of the founders of the Geographical Club (later Geographical Society) of Philadelphia in 1891. He was elected a member of the Sociedad Cubana de Historia Natural "Felipe Poey" in 1919 and of the American Philosophical Society in 1922. The University of Pittsburgh conferred the honorary degree of doctor of science upon him June 14, 1911.

He was Philadelphia born, March 27, 1861; the son of William S. and Sarah (Irvin) Skinner. He attended the public schools and was graduated from Rugby Academy in 1879.

From the University of Pennsylvania he received the degrees of B.S. in 1881 and M.D. in 1884. He was assistant to Dr. Wm. Goodell in the practice of gynaecology from 1884 to 1900. His medical work also brought him on professional visits to the inmates of the Eastern Penitentiary, in the built-up portion of his native city, and gave rise to his curious note on a collection of 18 species of insects made by a prisoner within a yard 14 x 17 feet enclosed by stone walls 11½ feet high (i: 19-20). From 1900 on he abandoned medicine completely for entomology, although his training naturally caused him to take much interest in the insect carriage of human diseases, as that subject developed.

In 1886 he married Celia Angela Beck of Philadelphia who, with a daughter, Marian, now Mrs. Harvey Madera, and a son, Henry, survive him.

Until after the death of his parents, he resided in the parental home at 716 North 20th St., Philadelphia, where ever and anon he welcomed a meeting of the Feldman Collecting Social (vii: 93; x: 152; xvii: 265). About 1907 he moved to Ardmore, Pennsylvania, and still later to a farm between Narberth and Falls of Schuylkill where he lived until his death.

For nearly forty years the writer has been in contact with Dr. Skinner, although latterly increasing work at the University and more remote residence have prevented me from seeing him as frequently as in earlier days. I am deeply conscious that he had a great influence upon my life. I looked to him for sympathy in my work and found it. I think he felt the same toward me. There is now a void which no one else can fill.

PHILIP P. CALVERT.

Frank Cowan.

Apropos of Mr. Weiss's article, *Frank Cowan and his "History of Insects"*, in the NEWS for July last, pages 212-214, it is of interest to mention that the name of the "Hon. Frank Cowan" occurs in the NEWS for October, 1902 (vol. xiii, p. 126), in the list of those who had signified their intention to become members of the Entomological Society of Western Pennsylvania.

Entomological Bibliography of Henry Skinner.

Compiled by E. T. Cresson, Jr.

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1922. The identity of *Neominois ridingsi* and *N. dionysus*. xxxiii, p. 74-75, fig.—Review: Bulletin of the Hill Museum. xxxiii, p. 95-96.—The Sierra la Sal, Utah. Annual Reports, Acad. Nat. Sci., Phila., 1921, p. 30-38.—On the male genitalia of the larger Hesperidae of North America. (With R. C. Williams). Trans. Am. Ent. Soc., xlviii, p. 109-127, ill.—Review: Etudes de lepidopterologie comparee. By C. Oberthur. xxxiii, p. 251-252.—*Protoparce rustica* in Florida and Mr. T. L. Mead. xxxiii, p. 280.

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List of New Genera and Species Described by Henry Skinner.

Compiled by E. T. Cresson, Jr.

Coleoptera.

Cantharidae.

Cantharis pilsbryi, Ent. News, xvii, p. 217.

Cleridae.

Cleris bimaculatus. Ent. News, xvi, p. 291.

Cymatodera tricolor. Ent. News, xvi, p. 292.

Meloidae.

Calopasta wenzeli, Ent. News, xv, p. 217.

Epicauta abadona, Ent. News, xv, p. 217.

Epicauta alastor, Ent. News, xv, p. 217.

Tegrodera aloga, Ent. News, xiv, p. 168.

Buprestidae.

Acmaeodera biedermani, Ent. News, xiv, p. 239.

Tyndaris barberi, Ent. News, xiv, p. 238.

Tyndaris chamaeleonis, Ent. News, xiv, p. 237.
Tyndaris olneyae. Ent. News, xiv, p. 236.
Tyndaris prosopia, Ent. News, xiv, p. 237.

Scarabaeidae.

Plusiotus beyeri, Ent. News, xvi, p. 289.

Cerambycidae.

Acanthocinus lineatis, Ent. News, xvi, p. 290.
Lypsimena tigrina, Ent. News, xvi, p. 291.
Oncideres quercus, Ent. News, xvi, p. 291.

HYMENOPTERA.

Ichneumonidae.

Metopius harbecki, Ent. News, xvii, p. 150.

LEPIDOPTERA.

Papilionidae.

Parnassius immaculata, Ent News, xxii, p. 108.
Papilio asterias alunata Skinner & Aaron, Can. Ent., xxi, p. 127.
Papilio philenor hirsuta, Ent. News, xix, p. 149.
Papilio polyxenes curvifascia, Ent. News, xii, p. 183.
Papilio rutulus arcticus, Ent. News, xvii, p. 379.

Pieridae.

Anthocharis genutia flavida, Ent. News, xviii, p. 438.
Colias hecla pallida Skinner & Mengel, Proc. Acad. Nat. Sci. Phila., 1892, p. 156.
Pieris rapae immaculata, Can. Ent., xxi, p. 128.
Tachyris ilaire neumoegenii, Ent. News, v, p. 110.

Satyridae.

Chionobas alberta oslari, Ent. News, xxii, p. 220.
Debis creola, Ent. News, viii, p. 236.
Erebia epipsodea sine-ocellata, Can. Ent., xxi, p. 239.

Nymphalidae.

Anartia dominica, Trans. Am. Ent. Soc., xvi, p. 86.
Argynnis apacheana nom. n., Ent. News, xxix, p. 67.
Argynnis californica, Ent. News, xxviii, p. 328.
Argynnis laurenti, Ent. News, xxiv, p. 450.
Argynnis platina, Can. Ent., xxix, p. 154.
Argynnis sakuntala, Ent. News, xxii, p. 108.
Argynnis snyderi, Can. Ent., xxix, p. 154.
Argynnis utahensis, Ent. News, xxx, p. 216.
Catagramma oberthuri, Ent. News, xxvii, p. 307.
Eresia texana seminole, Ent. News, xxii, p. 412.
Lemonias palmeri marginalis, Ent. News, xxxi, p. 175.
Melitaea arida, Ent. News, xxviii, p. 328.
Melitaea damoetas, Ent. News, xiii, p. 304.
Melitaea glacialis, Ent. News, xxxii, p. 89.
Melitaea maria, Can. Ent., xxxi, p. 12.
Melitaea neumoegeni, Ent. News, vi, p. 113.
Phyciodes barnesi, Can. Ent., xxix, p. 155.

Libytheidae.

Mesosemia ramsdeni, Ent. News, xxiii, p. 126.

Lycaenidae.

Lycaena chlorina, Ent. News, xiii, p. 15.

Lycaena lygdamus columbia, Ent. News, xxviii, p. 213.

Lycaena neurona, Ent. News, xiii, p. 15.

Thecla damon discoidalis, Can. Ent., xxix, p. 156.

Thecla johnsoni, Ent. News, xv, p. 298.

Thecla loki, Ent. News, xviii, p. 378.

Thecla sarita, Ent. News, vi, p. 112.

Hesperiidae.

Aegiale streckeri, Can. Ent., xxvii, p. 179.

Amblyscirtes celia, Ent. News, vi, p. 113.

Bungalotis canalis, Ent. News, xxxi, p. 134.

Bungalotis immaculata, Ent. News, xxxi, p. 133.

Callimormus dimidiatus, Ent. News, xxxi, p. 134.

Choranthus haitensis, Ent. News, xxxi, p. 187.

Copaeodes chromis, Ent. News, xxx, p. 100.

Cyclogypha gundlachi Skinner & Ramsden, Proc. Acad. Nat. Sci. Phila, lxxv, p. 314.

Ephyriades cubensis, Ent. News, xxiv, p. 72.

Eudamus aemilea, Ent. News, iv, p. 64.

Eudamus coyote, Can. Ent., xxiv, p. 164.

Eudamus outis, Ent. News, v, p. 332.

Eudamus parvus, Ent. News, xxxi, p. 134.

Eudamus protillus rauterbergi, Ent. News, vi, p. 113.

Lerodea neamathla Skinner & Williams, Trans. Am. Ent. Soc., lxix, p. 145.

Megathymus neumoegeni stephensi, Ent. News, xxiii, p. 126.

Megathymus polingi, Ent. News, xvi, p. 232.

Megathymus yuccae navajo, Ent. News, xxii, p. 300.

Mimoniades aemulus, Ent. News, xxxi, p. 132.

Mimoniades amans, Ent. News, xxxi, p. 132.

Myscelia streckeri, Trans. Am. Ent. Soc., xvi, p. 87.

Pamphila aaroni, Ent. News, i, p. 6.

Pamphila alcina, Ent. News, iv, p. 212.

Pamphila carolina, Ent. News, iii, p. 222.

Pamphila errans, Ent. News, iii, p. 174.

Pamphila howardi, Can. Ent., xxviii, p. 187.

Pamphila mystic pallida, Ent. News, xxii, p. 412.

Pamphila oslari, Ent. News, x, p. 112.

Pamphila panoquinoides, Ent. News, ii, p. 175.

Pamphila pawnee montana, Ent. News, xxii, 413.

Pamphila quinquemacula, Ent. News, xxii, p. 413.

Pamphila sassacus dacotae, Ent. News, xxii, p. 412.

Pamphila scudderi, Ent. News, x, p. 111.

Pamphila stigma, Can. Ent., xxviii, p. 188.

Pamphila streckeri, Ent. News, iv, p. 211.

Pamphila sylvanoides utahensis, Ent. News, xxii, p. 413.
Pamphila vierecki, Ent. News, xiii, p. 213.
Pamphila ychl., Ent. News, iv, p. 212.
Pscudosarbia flavo fasciata, Ent. News, xxxii, p. 236.
Proteides jamaicensis, Ent. News, xxxi, p. 133.
Pyrrhocalles antiqua orientis, Ent. News, xxxi, p. 152.
Pyrrhopyge sangaris, Ent. News, xxxii, p. 236.
Pyrrhopyge viriditas, Ent. News, xxxi, p. 132.
Pyrgus occidentalis, Ent. News, xvii, p. 96.
Telegonus antiguus, Ent. News, xxxxi, p. 133.
Thanaos burgessi, Trans. Am. Ent. Soc., xl, p. 203.
Thanaos scudderi, Trans. Am. Ent. Soc., xl, p. 215.
Thymele angustus, Ent. News, xxxi, p. 133.

Sphingidae.

Kloneus babayaga n. gen. & n. sp., Ent. News, xxxiv, p. 138.
Sphinx luscitiosa una, Ent. News, xiv, p. 168.

Syntomidae.

Cosmosoma rubrigutta, Ent. News, xvii, p. 96.
Syntomeida befana, Ent. News, xvii, p. 379.

Arctiidae.

Ruscino arida, Ent. News, xvii, p. 95.

Uraniidae.

Nyctalemon curvata, Proc. Acad. Nat. Sci. Phila., 1903, p. 298.

Noctuidae.

Anarta besla Skinner & Mengel, Proc. Acad. Nat. Sci. Phila., 1892, p. 158.
Autographa olivacea, Ent. News, xxviii, p. 329.
Erythroccia hebardi, Ent. News, xxviii, p. 329.
Rhescipha snowi, Ent. News, xvii, p. 95.

Notodontidae.

Crinodes biedermani, Ent. News, xvi, p. 209.

Geometridae.

Glaucopteryx immaculata Skinner & Mengel, Proc. Acad. Nat. Sci. Phila., 1892, p. 159.
Psychophora fasciata, Ent. News, xiii, p. 141.

Aegeriidae.

Albuna beutenmulleri, Ent. News, xiv, p. 126.

Miscellaneous Observations on a Cranberry Scale Targionia dearnessi (Ckll.) (Homop. : Coccidae).[1]

By Donald S. Lacroix.

During the fall of 1924 the writer found a peculiar scale insect on the cranberry in the town of Sandwich, Massachusetts. The insect at once became of interest because of its apparently

[1] Contribution from the Entomological Laboratory of the Massachusetts Agricultural Experiment Station, Amherst, Mass.

solitary mode of existence, an unusual trait among the Coccidae. The full-grown females could be found scattered here and there over the bog, only one scale to an upright, though in rare cases two scales were found on the same stem. Further investigations indicated that the insect occurred on many widely separated cranberry bogs and under a variety of conditions. It appeared to be fully as abundant on bogs subjected to regular flowages as on dry bogs. It infested the Early Black, Howe and Chipman varieties with no apparent preference for any one of the three kinds. No injury of any importance could be traced to the activities of the scale. A similar insect was found on bearberry *(Arctostaphylos uva-ursi)* around the edges of cranberry bogs.

Specimens from both food plants were identified by Dr. Harold Morrison, of the Bureau of Entomology as *Targionia dearnessi* (Ckll.)

This species occurs throughout the United States from Wisconsin to Florida, west to California, and north into Canada.

Food plants listed are bearberry, cranberry, summer farewell *(Kuhnistera pinnata)* and "several unknown weeds."

DESCRIPTION.

Scale of adult female sub-oval, 2 mm. long; moderately convex; color dirty white to pale gray; exuviae subcentral, yellow; ventral scale thick.

Scale of adult male elongate, parallel-sided, 1 mm. long and 0.5 mm. wide; color white; exuvia at one end, color yellow; covered with a white secretion.

Adult female—"Dark yellowish-brown, after prolonged boiling in KHO becoming transparent and almost colorless, except that the lobes remain dark brown. No circumgenital grouped glands. Only one pair of lobes, these short, parallel, very close together, practically contiguous at the tips, their ends broad and obliquely truncate, breadth of a lobe greater than its length beyond the general margin. Apparently no squames. Margin irregularly bluntly serrulate; a small projection near the lobes, and two much larger ones at considerable distances beyond, much in the style of *A. bigeloviae*. Anal orifice oval, a considerable distance from the hind end. Surface striated, with rows of small round dorsal glands, much in the manner of *A. bigeloviae*. Mouthparts large."[2]

[2] Cockerell, Can. Ent., XXX, 266-267, 1898. *A. bigeloviae* refers to *Aspidiotus bigeloviae*, the genus in which *dearnessi* was originally placed.

Adult male—0.5 mm. long; reddish brown in color; legs light yellow, with sparse hairs; tarsi terminated with single, slightly curved sharp claw; wings hyaline; antennae 8-segmented, each segment with numerous hairs; stylus one-half the length of body, ending in a sharp pointed elongation.

Life History.

Adult females live over winter beneath the scale covering. Eggs become evident within the body of the female late in the spring and were found in one female in the laboratory in early winter, December 24, 1924.

The first crawling young hatched June 16, 1925, and three days later most of the young which hatched on that date had settled down on the fresh growth of cranberry and had started to secrete a covering. The first stages of this secretion resemble filaments of absorbent cotton, but finally become matted together and the outlines of the individual strands are lost.

The tendency of the crawling young is to settle down at the base of a leaf stem or a bract, and in the majority of cases on new growth. Some settled on old wood. The young also exhibit a "wanderlust" and move away from the upright bearing the parent to search for new uprights where the females live the rest of their lives. Only occasionally did the writer find more than one female on an upright. The males, on the other hand, tend to colonize, and anywhere from one to ten may be found to an upright.

On July 13, 1925, the first second stage female was found.

On August 5, 1925, the first male pupa was found beneath its scale covering, and males were emerging August 20-24, 1925. By September 1, 1925, practically all the females were full grown. Judging from these observations, it would seem that the length of life of the female from hatching to the attainment of full growth is about seventy-five days.

The stem of the cranberry becomes somewhat swollen where the female is attached to the upright. This swelling is first noticeable about six weeks after the female has started feeding.

Parasites.

This scale is subject to parasitism to a considerable extent. Possibly one-third of the scales found on a bog in the fall will show exit-holes of parasites. Two species of Hymenoptera were reared from the scale and were determined by Mr. A. B. Gahan, of the Bureau of Entomology, as *Coccidencyrtus ensifer* (How.), and *Signiphora* sp. probably new.

Notes on Some Alberta Bombidae (Hymen.).

By Ferris Neave,

Department of Zoology, University of Manitoba.

The following notes are based on specimens of Bombidae collected in Jasper National Park, Alberta, during the summer of 1925, together with a few records gathered during a stop-off at Edmonton. The species found are not the result of an exhaustive search, but were picked up from time to time during the course of other work. Nevertheless, the number of species which were obtained in this way, together with the fact that the altitudes of the various localities were carefully noted, seems to justify a brief record of the forms which were encountered.

I am indebted to Dr. H. J. Franklin for the determination of several of the species here listed.

The country at Edmonton is Transitional in character and several species were obtained here which are probably absent from the mountains.

The Jasper records are all from the Canadian Zone or higher. At the localities where Bombidae were collected, the Hudsonian Zone begins roughly at 4,500 feet and the timber-line runs at about 6,500 feet.

Bombus occidentalis Greene. Jasper, up to 3,800 feet.

B. terricola Kirby. Edmonton[1]; Jasper, up to 3,600 feet.

B. borealis Kirby. Edmonton.

B. kirbyellus Curt. Jacques Lake, 4,700 feet.

B. strenuus Cress. Mt. Edith Cavell, 6,700 feet. A northern form, previous recorded from Alaska and Hudson Bay Country (Franklin, Bombidae of the New World, p. 298.)

B. ternarius Say. Edmonton, common.

B. huntii Greene. Edmonton.

B. bifarius Cress. Jasper, up to 3,700 feet.

B. melanopygus Nyl. Jasper; Jacques Lake; Maligne Lake; Mt. Edith Cavell. Altitudes, 3,800-6,700 feet. Apparently the commonest species in the Hudsonian Zone, from which it extends into the Canadian on the one hand and the Arctic Alpine on the other.

[1] The altitude of Edmonton is approximately 2,100 feet. The lowest level visited at Jasper was 3,400 feet.

B. sylvicola Kirby. Medicine Lake; Maligne Lake; Mt. Edith Cavell. Altitudes, 4,600-7,000 feet.

B. vagans Smith. Edmonton; Jacques; Medicine Lake; Jasper, up to 4,500 feet.

B. centralis Cress. Medicine Lake; Jacques Lake; Mt. Edith Cavell. All the specimens obtained were from the Hudsonian, 4,600-5,600 feet.

B. mixtus Cress. Medicine Lake; Twin Lakes; Jacques Lake; Maligne Lake; Mt. Edith Cavell. Hudsonian, extending into the Arctic Alpine, 4,600-6,700 feet. Some of the males were so dark as to be colored like *B. vagans*, with which they sometimes occurred.

B. californicus Smith. Jasper, 1 female, 3,800 feet.

Psithyrus insularis Smith. Edmonton; Jasper; Jacques Lake; Maligne Lake. Up to 5,500 feet.

P. ashtoni Cress. Jasper, 2 males, 3,500 feet and 3,800 feet. Regina is the most westerly record given for this species by Franklin.

P. suckleyi Greene. Edmonton.

P. fernaldae Franklin. Mt. Edith Cavell, 5,900 feet. Specimens of *P. tricolor* Franklin, which is probably the male of this species, were taken in company with the above female and also at Medicine Lake and Maligne Lake at altitudes ranging from 4,600 feet to 6,700 feet.

While further collecting would doubtless extend the vertical range of these species, the evidence obtained is probably sufficient to show roughly the zones commonly occupied in the localities in question. As is to be expected, the vertical distribution of most of the forms corresponds in a general way with the regional distribution so far as it is known. *B. terricola, borealis, ternarius* and *vagans* are, speaking comparatively, southern and eastern forms, while *B. occidentalis, huntii* and *californicus* may be similarly regarded as southern and western. The territories of several of these species overlap at Edmonton, but none of them except *vagans* was found at any considerable altitude at Jasper. On the other hand, *melanopygus, mixtus, kirbyellus, sylvicola* and *strenuus* are typically northern forms, and the data given above indicate that in the latitude of Jasper they are most plentiful above the Canadian Zone. *B. strenuus* in particular is probably confined to the upper slopes. From

the data obtained, *B. vagans*, *B. melanopygus* and *P. insularis* would seem to have the greatest depth of range.

Rearranged on the basis of their vertical distribution, the species listed appear to fall into five groups, the members of each group being co-extensive in the localities given, as follows:

I. *B. borealis*, *B. ternarius*, *B. huntii*, *P. suckleyi*. II. *B. occidentalis*, *B. terricola*, *B bifarius*, *B. californicus*, *P. ashtoni*. III. *B. vagans*, *P. insularis*. IV. *B. kirbyellus*, *B. melanopygus*, *B. sylvicola*, *B. centralis*, *B. mixtus*, *P. fernaldae*. V. *B. strenuus*.

Notes on Tree and Shrub Insects in Southeastern Pennsylvania.

By A. B. Wells, Bureau of Plant Industry,
Bryn Athyn, Pennsylvania.

The juniper webworm, *Dichomeris marginellus* Fab., is common on Irish and Swedish junipers in southeastern Pennsylvania. A few moths, many pupae and a few caterpillars were observed June 3, 1925. Moths and pupae were observed June 29, 1925, and moths and parasites were observed July 7, 1924. Pupae were observed May 18, 1925, by Mr. Floyd Smith. Small larvae in hibernating webs have been observed during September, October, November, December and January. Dusting and spraying with arsenates in April gave a slow but finally fairly complete killing of the larvae.

Moths of the arborvitae leaf miner, *Argyresthia thuiella* Packard, were observed flying from the first of June to the 15th of July though very few were seen after the middle of June. Caterpillars in mines were observed this fall.

Moths of the common bagworm, *Thyridopteryx ephemeraeformis* Haw., were observed September 8, 1925.

Moths of the white pine tube builder, *Eulia pinatubana* Kearf., were observed April 15 and July 15, 1925, there being two broods, the caterpillars of the second brood hibernating in the tubes made of webbed needles.

Moths of the larch case bearer, *Coleophora laricella* Hubner, were observed May 21, 1925.

Caterpillars were collected July 8, webbing the terminal leaves of larch twigs together and feeding on them. Moths emerged August 5, 1925, but were destroyed by dermestids before they could be identified. They were probably of the genus *Recurvaria*, two species of which have been recorded as feeding on larch.

Moths of the lilac borer, *Podosesia syringae* Harris, were observed flying the first week in June.

Moths of the Rhododendron clearwing, *Aegeria rhododendri* Beutm., were observed from June 9 to June 18, 1925.

Moths of the peach borer, *Aegeria exitiosa* Say, were observed July 27, July 30 and August 3, 1925.

Dried up unopened peony buds were observed late in August and it was noticed that they were infested with small dark caterpillars. These were reared and found to be larvae of *Moodna ostrinella* Clemens. The moths emerged September 5th and later and some of the caterpillars had not yet pupated in January, 1926. This peony budworm seems to be widely distributed around Philadelphia.

Junipers of the prostrate variety of the species *communis* have usually been found infested with a distorting mite, *Eriophyes quadrisetus juniperinus* Nalepa, which causes a warting of the needles and often kills twigs.

The roots of recently killed pines and spruces have been found infested with the grubs of the white pine weevil, *Pissodes strobi* Peck, and of Pales weevil, *Hylobius pales* Boh. There is no external evidence of the presence of the grubs in the bark and sapwood of the roots except the death of the plants. The gnawing of the bark of the branches by the adult weevils is very noticeable. Adults have been beaten from infested trees in April, May, July and September.

Adults of the European sawfly, *Acantholyda erythrocephala* Linn., were beaten from Pine and *Cornus* at Chestnut Hill in May. This insect has not been recorded from the United States before.

Adults of the European birch sawfly leaf miner, *Fenusa pumila* Klug, were observed August 4th and a new generation

of adults appeared, from leaves collected August 7th, on the 5th of September.

Adults of the Crataegus sawfly leaf miner were observed swarming, mating and laying eggs on the 4th of May and full grown larvae were beginning to drop from the leaves June 1, 1925. This sawfly was *Profenusa collaris* MacGill.

A gall-forming maple borer was observed emerging on July 3, 1925. These borers, *Xylotrechus aceris* Fisher, were found in 125 trees of 221 red maples in one nursery.

An oak borer, *Arhopalus fulminans* Fab., was found killing large black oak trees in a woods near Paoli. An adult was captured July 23, 1925.

The linden borer, *Saperda vestita* Say, was observed emerging the 1st of May and later.

An adult long-horn, *Cyrtophorus verrucosus* Oliv., was taken on linden April 22, 1925.

Cornus gall-midges, *Cecidomyia* spp., were observed May 11, 1925.

The rose stem girdler, *Agrilus viridis* var. *fagi* Ratz., was observed June 2, 1924 and an unemerged adult was cut from a rose stem April 13, 1925.

The round headed apple tree borer, *Saperda candida* Fab., was observed on *Crataegus* leaves May 28, 1925.

Bark borers, *Ips* and *Tomicus* spp., were destructive to pines during the summer drought.

Adults of the mottled willow borer, *Cryptorhynchus lapathi* Linn., were observed July 24 and 28, 1925, and September 5 and October 16, 1924.

The dogwood sawfly, *Macremphytus versicolor* Norton, was abundant in 1925. The partly rotten base of a flowering dogwood was observed honeycombed by the larvae of this sawfly after their last molt seeking a place to pupate the last week in August. Red-twigged and other dogwoods were partially defoliated in July and August.

Adults of the box psylla, *Psylla buxi*, were observed in June, August and September, 1925.

Adults of the box leaf miner, *Monarthropalpus buxi* Labou.

were observed from May 7 till June 1, 1925 and the first week in June, 1924.

Oystershell scale crawlers were observed May 28, June 11 and 26, and August 13 and 27, 1924, and May 6 and 18, June 2, July 20, 24, 27 and 28, and August 3 and 12, 1925.

Pine needle scale crawlers were observed May 26 and August 13, 1924, and May 18, July 20 and July 28, 1925.

Scurfy scale crawlers were observed May 18, and July 27 and 29, 1925.

Euonymus scale crawlers were observed June 11, 19 and 26, and August 27, 1924, and May 18 and 26, June 2, July 27, and August 10, 1925.

San Jose scale crawlers were observed June 26, August 13, and October 14, 1924, and June 19, July 16, 27 and 30, and August 3, 12 and 27, 1925.

Juniper scale crawlers were observed June 29, 1924, and June 2, 10 and 23, 1925.

Tulip tree scale crawlers were observed June 9, 1924, and October 6, 1924.

European elm scale crawlers were observed July 27, 1925.

Galls of the Sitka spruce gall aphis on Colorado blue spruce opened the first half of July, 1925.

Large larvae and new cocoons of the European pine sawfly, *Diprion simile* Hartig, were observed June, 1925. Over-wintering cocoons were collected this fall.

August 26, 1925, European pine shoot moth larvae in buds.

September 9, 1925, a large sour gum, *Nyssa sylvatica,* was seen about a mile west of Oakmont, in Delaware County, the leaves of which were heavily infested with the larvae of the sour gum case cutter or leaf miner, *Antispila nyssaefoliella* Clemens, and the larvae had already begun to cut out oval cases from the leaves. The larvae of this moth have destroyed the beauty of this fine tree for many years according to its owner. Abundant work of these caterpillars was observed in the woods between Bryn Athyn and Willow Grove this fall. According to Dr. E. P. Felt, the larvae begin linear mines in July and expand them to blotch mines later.

Adults of a holly leaf miner, *Phytomyza* spp., were beaten from holly at Chestnut Hill, May 11, 1925.

Adults of *Elaphidion mucronatum* Say were taken on black oak at Berwyn, June 26, 1925. This beetle was suspected of being partly responsible for the death of a number of recently transplanted trees which were also infested with flat headed borers and fungi.

An adult female of *Purpuricenus humeralis* Fab. was taken on *Juglans sieboldiana* Maxim. near the Goshen Church, east of West Chester, August 12, 1925.

Thanks are due to Dr. E. P. Felt, Prof. H. E. Hodgkiss, Mr. Floyd Smith, with whom some of these observations were made and who sent a number of specimens to Washington for identification, and to the American Entomological Society, the collections of which were consulted for identification of specimens.

Capsus externus Herrich-Schaeffer is a Paracalocoris (Hemiptera, Miridae).*

By Harry H. Knight, Ames, Iowa.

No doubt most workers will agree that the recognition of a long lost species of an early entomologist gives much more satisfaction than the finding of a new or unnamed species. The present writer finds this to be particularly true of the species which forms the subject of this paper.

Some time ago Dr. H. M. Parshley sent me some interesting Miridae collected in Florida by Mr. C. W. Johnson. Among these I have recognized a species that I feel sure must be *Capsus externus* Herrich-Schaeffer, described in 1848 (Wanzenartigen Insecten, viii, p. 16, fig. 791) with locality given as "Wohl aus Nordamerika." In 1916 Mr. W. L. McAtee published a revision of the genus *Paracalocoris* Distant (Ann. Ent. Soc. Am., ix, pp. 366-390), with keys to the species and varieties which has proved a most useful contribution. It is interesting to note that *Capsus externus* H. S. was not

*Contribution from the Department of Zoology and Entomology, Iowa State College, Ames, Iowa.

definitely placed at that time, but material was not available for study. In referring to this species Mr. McAtee states (p. 366): "Species that have been referred to *Paracalocoris*, probably erroneously, include two described by Herrich-Schaeffer. One of these, *Capsus tetrastigma* has been placed in *Resthenia* by Stal. The other, *Capsus externus*, in the writer's opinion, is not a *Paracalocoris*. It is true that the two central velvety black spots on the thorax mentioned in the original description suggest that the insect is a member of this genus, but no *Paracalocoris* has the first antennal joint "as long as head and thorax together," a condition plainly stated in the description and delineated in the illustration of *Capsus externus*." Van Duzee's Catalogue of Hemiptera (1917) places *externus* H. S. as a variety of *Paracalocoris scrupeus* (Say).

The most distinctive character of *externus* H. S. which impresses one at first glance, is the unusually long first antennal segment, and in certain specimens measured it is quite as long as prothorax and head taken together when viewed from the normal dorsal aspect. To correctly interpret the original description I believe we must consider the length of head and thorax as the distance between base of pronotum and front of head when the specimen is set with hemelytra approximately horizontal as viewed by the artist, and not tilted with pronotal disk horizontal as one would do when taking the greatest length of pronotum. Two specimens of *externus* H. S. are at hand which agree in all details of coloration with the original figure (fig. 791) except that the front of the head is black, leaving a pair of orange glabrous spots each side of vertex and a smaller spot just above base of each antenna; in addition the anterior half of the calli also black. These specimens are so nearly typical that I feel they should be classed as such. Both specimens have the lateral margins of the scutellum narrowly black just as shown in the original figure, a detail worth noting in recognizing the typical form of the species. For purposes of comparison the following description is offered with accurate measurements of critical characters.

Paracalocoris externus (Herrich-Schaeffer), Wanzenartigen Insecten, viii, p. 16, fig. 791, 1848.

♂. Length 7.1 mm., width 3.1 mm. Head: width 1.23 mm., vertex .57 mm., length .94 mm. Rostrum, length 2.43 mm., just attaining posterior margins of intermediate coxae. Antennae: segment I, length 1.64 mm.; II, 2.77 mm.; III, 1.11 mm.; IV, .91 mm.; black, segment IV reddish brown on basal half. Pronotum; length 1.47 mm., width at base 2.36 mm.; length of head and pronotum as viewed from above when body is held horizontal, 1.65 mm., which is practically equal to length of antennal segment I. This distance is less than the actual greatest length of pronotum (1.47 mm.) and head (.94 mm.) which is obtained when the disk of pronotum is turned up to a horizontal position.

♀. Length 7.2 mm., width 3.2 mm. Head: width 1.21 mm., vertex .57 mm. Antennae: segment I, length 1.64 mm.; II, 2.57 mm.; III, 1 mm.; IV, broken. Pronotum: length 1.5 mm., width at base 2.34 mm. Length of head and pronotum as viewed from above when body is held horizontal, 1.8 mm., which is only slightly greater than length of antennal segment I.

Plesiotypes: ♂ ♀ April 18, 1919, St. Augustine, Florida (C. W. Johnson); author's collection.

The genital claspers of *externus* H. S. are very similar to those of other species in the genus, the left clasper having at upper side of base a rounded lobe which tapers to a point posteriorly. This character is the best I have found for separating the species of *Paracalocoris* Dist. from those of *Calocoris* Fieber. *Externus* H. S. is about the size of *limbus* McAtee but the first antennal segment is longer as indicated; the pilosity of the hind tibiae is short as in *limbus*.

Certain color varieties of *Paracalocoris externus* H. S. are at hand and all of them have the dark areas deep black and contrasting sharply with the orange colored hypodermal areas. There is no indication of intergrade shades of color such as appear in varieties of *scrupeus* (Say), for example *delta* McAtee and *varius* McAtee. The color varieties studied may be separated by the following key.

Key to color varieties of Paracalocoris externus H. S.

1. Hemelytra with embolium and cuneus orange colored.... 2
   Hemelytra with embolium and cuneus black..... 3

2. Scutellum orange colored.....typical *externus* H. S.
   Scutellum black.....*solutus* n. var.
3. Scutellum with some orange color..... 4
   Scutellum entirely black..... 5
4. Scutellum orange colored, with not more than narrow lateral margins black; pronotum with orange color extending transversely across hind margins of calli, including the pair of impressed spots, and reaching upon the propleura, also extending posteriorly along median *novellus* Blatch.
   Scutellum with median line only orange colored, *scissus* n. var.
5. Pronotum transversely marked with orange nearly as in *novellus* .....*totus* n. var.
   Pronotum black between the calli and along median line of disk, the orange color reduced to a small area each side which includes the impressed spots then extending laterally upon the propleura.....*notatus* n. var.

Paracalocoris externus solutus n. var.

Structurally not differing from the typical *externus* H. S. but with the scutellum uniformly black.

Type: ♀ April 18, 1919, St. Augustine, Florida (C. W. Johnson); author's collection.

Paracalocoris externus novellus Blatchley.

Paracalocoris novellus Blatchley, Ent. News, xxxvii, p. 163, 1926.

Pronotum and scutellum colored nearly as in the typical *externus* H. S. but differs in having the hemelytra uniformly black.

Records: Florida—♂ April 6, Daytona, ♀ April 18, 1919, St. Augustine (C. W. Johnson). ♀ Dec. 19, 1915, ♀ April 19, 1920, Dunedin; ♀ April 15, 1913, Ormond (W. S. Blatchley). ♀, Inverness (Robertson). Georgia—♂ May 1, 1903, Thomasville (antennae broken).

Paracalocoris externus scissus n. var.

Pronotum colored as in *novellus* but scutellum black with narrow median line orange colored; legs entirely black.

Type: ♀ April 20, 1919, St. Augustine, Florida (C. W. Johnson); author's collection. *Paratype:* ♀ April 15, 1915, Ormond, Florida (W. S. Blatchley).

Paracalocoris externus totus n. var.

Pronotum colored as in *novellus* but the scutellum uniformly black.

Type: ♂ April 20, 1919, St. Augustine, Florida (C. W. Johnson); author's collection. *Paratype:* ♀ December 19, 1915, Dunedin, Florida (W. S. Blatchley).

Paracalocoris externus notatus n. var.

Black, the pronotal disk with orange color reduced to a small area each side which includes the impressed spots then extends laterally to cover dorsal half of propleura; femora orange colored on middle.

Type: ♂ April 20, 1919, St. Augustine, Florida (C. W. Johnson); author's collection.

The Coleoptera of the Sandhill Region of Medora, Reno County, Kansas.

By Warren Knaus, McPherson, Kansas.

The Sandhill Region of Medora is located 25 miles southwest of McPherson, and 7 miles northeast of Hutchinson, Kansas. The Rock Island and Frisco Railways intersect at the small town of Medora, two miles from the crest of the sand hills. The hills extend about 10 miles southeast and approximately 15 miles west and north-west. The width of the belt is from one to one and a half miles and the altitude is about 1500 feet. Little River flows from one to three miles north of the hills.

Between the hills are small valleys and draws, with running rivulets and ponds in the blowouts in wet seasons.

Small groves of cottonwoods, willows and sand plums are scattered over the region with "Button brush", *Cephalanthus occidentalis;* the grasses and flowering and other plants, grow luxuriantly in the valleys and small meadows. Yuccas, wild morning glory, two or three species of *Asclepias,* sensitive and wild roses are found in the hills.

It is the object of this paper to call the attention of entomologists to this region as a prolific breeding ground for all orders of insects and especially of Coleoptera.

In a paper as restricted as this one, only the outstanding and rare species taken in this region can be mentioned.

In Cicindelidae, sixteen species, varieties and forms are found, the more conspicuous and rare are: *formosa* Say, *lengi* W. Horn, form *wichitana* Csy., *scutellaris* Say, and the form with an ante-apical white spot on each elytron, *cuprascens* Lec., and the form *insomnis* Csy. In *Pasimachus,* of the Carabidae, the form *angustulus* Csy., of *elongatus* Lec., and *obsoletus* Lec., a plains form; *Helluomorpha praeusta* Dej., *Chlaenius nebraskensis* Lec., *Geopinus fluviaticus* Csy., *Nothopus valens* Csy., *Stenomorphus scolopax* Csy. In Dytiscidae, *Erctes sticticus* Linn. In Gyrinidae, *Gyrinus analis* Say. In Coccinellidae, *Brachyacantha albifrons* Say. *Cardiophorus cardisce* Say, on white sand, and *Orthostethus infuscatus* Germar, on willows and decaying watermelons in August and September, in Elateridae.

Buprestidae are represented by *Anthaxia viridifrons* Gory and *Agrilaxia flavimana* (Gory). *Chrysobothris,* form *alabamae* Gory of *femorata* (Oliv).

In Cleridae the rare *Hydnocera knausi* Wick, is occasionally taken by beating. Characteristic Tenebrionidae are *Lobometopon plumbeum* Lec., and *Bothrotes knausi* Csy. *Eleodes hispilabris,* form *nupta* Lec., the rarest of *hispilabris* forms, occurs from April to September. *Ammodonus fossor* Lec., hardly distinguishable from the sand, can be taken from June to August.

The species of Scarabaeidae are especially abundant. *Canthon depressipennis* Lec., and *praticola* Lec. occur occasionally. *Canthon lecontei* Harold, the smallest *Canthon* in this region, occurs the last half of June and the first half of July. The eggs are laid on rabbit droppings which are buried from one to two inches in the sand. Small mounds of sand indicate the female may be found at the bottom of the burrow and frequently the male also.

Phanaeus difformis Lec. is the prevalent representative here of the genus and is fairly abundant, but differing much in size and the length of the frontal horn.

Onthophagus is represented by three characteristic species,

guatemalicnsis Bates, a blueblack species reaching up from Central America, and *tuberculifrons* Harold, recognized for the first time this season by W. J. Brown of the Department of Entomology of the A. & M. College, Stillwater, Okla. This species occurs with *pennsylvanicus* Har. and resembles it very closely in appearance.

Two *Aphodius* distinctive of this region are *knausi* Fall, a small pale species attracted to light the first half of July, taken here first in 1923, and a larger species, *walshi* Horn.

Two species of *Ataenius* that come to light are *figurator* Harold and *cognatus* Lec.

One *Ochodaeus,* fairly common to light, June and July, is *kansanus* Fall. *Bolboceras fossatus* (Hald.) is a brownish yellow species of fairly large size that is taken in limited numbers each season in June and July. It burrows a perpendicular hole from 8 to 12 inches in the sand and also is attracted to light. It has great strength, and forces its way into the sand, rarely throwing sand above or around the opening of the burrow.

Odontaeus filicornis (Say) is rarely taken at light.

Geotrupes is represented by *opacus* Hald.

The rare form of Troginae found here is *Glaresis inducta* Horn. A specimen or two was taken at light in July, 1923, and this last season ten came to light July 24. The sand hills are the northern range of this species.

The rare species of *Serica* is *ochrosoma* Dawson. It is taken only sparingly at light April-May—never in numbers.

Diazus rudis Lec. is taken in July on bare sand late in the afternoon.

Phyllophaga lanceolata (Say), *crassissima* (Blanch.), *bipartita* Horn and *rugosa* (Melsh) are common species.

P. longitarsus Say was first taken here early in July, 1923, at light, and July 24th, this year, 375 specimens were taken at light in less than two hours. During this time 18 specimens of *gracilis* (Burm.) were taken—all females.

Polyphylla hammondi Lec., is the only species of the genus taken here; June-July at light.

Anomala ludoviciana Sch. occurs the last week of June and

the first week in July on bare sand or low vegetation, mating; most abundant from 5 to 7 o'clock in the afternoon.

A variety, *modulata* Csy., is attracted to light in July.

A new species of *Strigodermella, knausi* Brown, was taken by sweeping in 1923 and 1925 and will be described by W. J. Brown of the A. & M. College, Stillwater, Oklahoma.

Cotalpa suscribrata Wick., occurs in May-June and feeds on willows and cottonwoods early in the evening. During the day it clings to the leaves and twigs.

Strategus mormon Burm. is the largest finest Scarabaeid found north of the range of *Dynastes tityus* L. It was first taken in this region, a pair, May-June 1913. Since then it has been taken abundantly. Its burrows are usually under, or adjacent to, a horse or cattle dropping from six months to a year old. Burrows are from a half to three-fourths of an inch in diameter and usually made by the male and are from 4 to 12 inches deep in the sand. The fibers from the droppings are packed around the bottom of the burrow and contain the eggs. The males appear April, May, and the females are the last to be found alive as late as July 6-10.

Two specimens of the rarest *Euphoria, aestuosa* Horn, have been taken in this region, both in April-May. The species was described from Kansas. *Cuprascens* Csy., a variety of *sepulchralis,* is taken here in flowers in August. *Stephanucha pilipennis* Kratz, is also taken here, April-May, Sept.

In Cerambycidae, *Parandra brunnea* (Fab.) came to light July 24th.

Cyllene chara (Say) and a variety, and *lutosa* Lec. are taken in August and September on golden rod blossoms.

The strikingly handsome *Plectrodera scalator* Fab. is taken June-July, mating.

Tetraopes canescens Lec. is found each year feeding on the broad-leaved milkweed, June-July.

Chrysomelidae are fairly numerous in species. *Lema cornuta* Fab. and *collaris* Say are swept from low growing plants.

Pachybrachys diversa Fall, *vestigialis* Fall, *liebecki* Fall, *atomarius* Melsh, *pazonce* Fall and *luridus* Fall are taken on willows.

Metachroma parallelum Horn is found on willows during the day but flies early in the evening and feeds on cottonwood foliage. The male is black but the female is brownish yellow in color.

Zygogramma disrupta Rogers and *Calligrapha scalaris* Lec. are beaten from willows.

An undescribed species of *Anisostena* was beaten from willows June 18, 1907.

Mylabrina discoideus Say occurs in July-August, feeding during the day on *Convolvuli* and flying to light at night. All males taken Aug. 25.

In Curculionidae, *Apion robustum* Sm., *occidentale* Fall and *attenuatum* Say are found on sunflowers.

Chalcodermus collaris Horn also taken on sunflowers.

Calandra robustus Horn, *medorensis* Satth., *costipennis* Horn, *maidis* Chitt., May-June, *soltani* Chitt., July, and *destructor* Chitt., May, all occur in this region. *Maidis* and *destructor* damage growing corn.

Scores of Coleoptera not listed in this paper are in my collection taken in this region. It is equally rich in the other orders of insects. The sheeted background of a 300 candle power gasoline lantern on a quiet July evening in the dark of the moon, by 9.30 o'clock will be crowded with a seething mass of night flying beetles, Noctuid, Geometrid, Pyralid and other moths, Neuropteroid insects, Hymenoptera and Hemiptera. The region is a paradise for insect life and a source of never ending delight to the collector.

Some day this Medora Sand Hill region will be set aside and reserved for insect, bird and wild animal life.

Georgiaphis Nom. n. for Georgia (Aphididae, Homop.).

In the May number of ENTOMOLOGICAL NEWS the writers erected the tribe *Georgiini* for the genus *Georgia*. When Wilson established the genus *Georgia* for his species *ulmi* in 1911, the name had already been used by Baird in 1853 in the Reptilia, by Thomas in the Coleoptera in 1857, and by Bourguignant in the Mollusca in 1882. Since then the name has been used by Hall as a generic name in the Arachnida.

This fact makes necessary the selection of new names for the genus and tribe, for which *Georgiaphis* and *Georgiaphidini* are suggested.

Shortly after our paper appeared, the junior author came across a paper by Mordwilko in which he places *Georgia* as a synonym of *Colopha* Monell. In this we do not agree. The only real resemblance between the two is the absence of one vein in the hind wing. The galls produced by the two genera differ; *Colopha* produces a true gall while *Georgiaphis* merely causes the leaves to curl. The wax pores of the two differ in structure; Mordwilko mentions the fact that they might, but apparently had no material upon which they could be made out. The sequence of generations is different. *Colopha* has the *Pemphigus* type of life history while the life history of *Georgiaphis* does not resemble any known type of the sub-family. These reasons seem to us to be more than sufficient for retaining the genus proposed by Wilson under the new name.

Thanks are due Prof. T. D. A. Cockerell for calling our attention to the fact that the name *Georgia* was preoccupied.

A. C. Maxson, Longmont, Colorado, and F. C. Hottes, Dept. of Animal Biology, University of Minnesota, Minneapolis, Minnesota.

Personals.

On the recommendation of Professor F. V. Theobald, the noted Dipterist, of the Agricultural College, Wye, Kent, England, H. F. Barnes, a scholar of the Ministry of Agriculture and Fisheries, will spend a part of his scholarship, some 5 months beginning October 1, 1926, studying the gall midges, Itonididae, under the direction of Dr. E. P. Felt, State Entomologist, a world-recognized authority in this large and important group.

Mr. S. A. Rohwer spent several days at the Philadelphia Academy studying the types of Hymenoptera.

Dr. A. W. Lindsay of the Indiana University has been studying the types of Cynipidae at the same Academy.

Dr. C. E. Mickel of the University of Minnesota spent a few days here studying the types of Dasymutilla.

Dr. M. D. Leonard is now entomologist of the Wilson Toomer Fertilizer Co., Orlando, Fla.

Mr. Henry L. Viereck has resigned from the Entomological Branch, Canadian Dept. of Agriculture, and is located in Philadelphia.

ENTOMOLOGICAL NEWS

PHILADELPHIA, PA., OCTOBER, 1926.

Notice of Request to Admit Hübner's (1806) "Tentamen" to Nomenclatorial Status under Suspension of International Rules. (Lepid.)

The Secretary of the International Commission on Zoological Nomenclature has the honor to invite attention of the zoological profession to the fact that application has been made for the Suspension of the International Rules, in the case of Hübner's (1806) "Tentamen" in order to establish its nomenclatorial availability.

Briefly summarized: The formal nomenclatorial status of this document, involving about 100 names admitted by some authors as of generic rank, has been under controversy for many years, and opinion of specialists in *Lepidoptera* is still divided.

The arguments, as submitted, in favor of Suspension of Rules, maintain that: (1) there are sound reasons both for admitting and for denying recognition to the "Tentamen," from the standpoint of interpreting the Rules; (2) the evidence *pro* and *con* is not sufficiently conclusive to remove the question from debate; (3) the rejection of the "Tentamen" will produce greater confusion than uniformity, will necessitate a vast amount of undesirable labor and economic loss of time and work; (4) if, on the ground of expediency, the Rules can be suspended in this case, the nomenclature of the *Lepidoptera,* as used for the past 30 years, can be largely maintained.

The "Tentamen" is one of the most important and most controversial cases ever submitted to the Commission. A discussion, with essential bibliographic references, will be found in "Smithsonian Misc. Coll., v. 73(4)" (now in press).

The Commission will delay announcement of vote, on the requested Suspension, at least until Sept. 1, 1927, in order to give interested authors, and especially entomological societies, opportunity to study the premises and to present to the Commission their views and arguments, *pro* and *con,* regarding the action requested.

In order to protect groups other than *Lepidoptera,* a prerequisite to Suspension of Rules would be that representative specialists in *Lepidoptera* agree upon and furnish the Commission definite bibliographic references to the 107 names which they view as genotypes.

C. W. STILES, Secretary to Commission,
U. S. Hygienic Laboratory, Washington, D. C.

August 21, 1926.

Vernacular Names for Insects.

The writer has collected thousands of vernacular names of birds, and hundreds of them for plants, and is convinced of the great desirability of placing on record all such terms and their usage which may prove to be either very local or rather general, or fleeting or lasting. Whatever the vagaries of local names, they remain the best source of satisfactory standard vernacular names, for which there is a steadily increasing demand. Will not some entomologist cultivate this very interesting field, and give us a basis for a set of vernacular names that will have some intrinsic significance? In this search it is well to consult books, and it is necessary to consult men, preferably in the course of field work, and in as many regions as practicable. Mrs. Annie Trumbull Slosson has written (Journ. N. Y. Ent. Soc., Vol. 1, No. 1, March, 1893, pp. 1-5) entertainingly of some of her experiences along this line, and clearly points out the possibilities of the quest.

If the same rule applies to insects that is apparent among birds and plants, the more strongly characterized forms will prove the more stimulating to the production of local names. In illustration of this principle may be cited the Gyrinids, unique in appearance and behavior, and already known to be the recipients of a variety of vernacular appellations. Lackey bugs (Mass.), sugar bugs (Md.), apple bugs (N. J., Md., Ind.), and eel bugs (N. C.), are terms applied to them, besides the deliberately invented but also very appropriate Comstockism "whirligig beetles."

Local names of insects as well as those of birds and plants will be found linked with folk lore. Examples that occur to me at the moment are the doodle bug of children's rhymes, pointers (for finding lost articles, Phalangids, Ind.), and love bugs (talismans for overcoming feminine coyness, *Cicindela 6-guttata*, Md.). The study of local names is one of many-sided interest, and whoever undertakes it will not only benefit those who must talk and write about insects, but also will have a hobby rich in interest and pleasure.—W. L. McAtee, U. S. Dept. Agriculture, Washington, D. C.

On the Nomenclature of a Species of Polites (Lep. Hesperiidae).

Polites themistocles Latr.

1823, Latreille, Encyc. Method., IX, 723, 769, ignot., *Hesperia.*

taumas Fabr. (lapsus calami)

1787, Fabricius, Mant. Ins., II, 84, *Papilio,* "P. P. V."

1924, Skinner & Williams, Trans. Am. Ent. Soc., L, 152, f. 11 ♂ genit., *Polites*.

thaumas Fabr. (homonym)

1793, Fabricius, Ent. Syst., III, (1), 327, *Hesperia; "H. U."* ♀ *phocion* Fabr. (homonym)

1798, Fabricius, Ent. Syst., Suppl., p. 431, *Hesperia, "H. U."* *cernes* Bdv. & Lec.

1833, Boisduval & Leconte, Lep. Am. Sept., pl. LXXVI, ff. 1-2, *Hesperia*.

ahaton Harris.

1862, Harris, Ins. Mass. Inj. Veg. Ed. III, 317, f. 140, *Hesperia*.

"Papilo taumas" Fabr. was apparently a lapsus calami or typographical error and emended to *thaumas* by Fabricius, both names with the same types. Under Art. 19 of the International Code such errors may be corrected. The name *taumas* therefore becomes unavailable. *"Hesperia thaumas"* Fabr. is a homonym of *thaumas* Hufn. and is unavailable. *"Hesperia phocion"* Fabr. was sunk as a homonym by Latreille, because of another *"Hesperia phocion"* Fabr. Latreille erected the name *themistocles* in place of *phocion*. The species was unknown to him. His name takes the same type as *phocion*.

The name *themistocles* has been generally omitted from North American lists. The latest revisional paper, by Skinner and Williams, uses *taumas* for the name of the species.

WM. BARNES & F. H. BENJAMIN, Decatur, Illinois.

Entomological Literature

COMPILED BY E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published.

All continued papers, with few exceptions, are recorded only at their first installments.

Papers of systematic nature will be found in the paragraph beginning with (N). Those pertaining to Neotropical species only will be found in paragraphs beginning with (S). Those containing descriptions of new forms are preceded by an *.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

Papers published in the Entomological News are not listed.

4—Canadian Ent., Guelph. **6**—Jour., New York Ent. Soc., New York. **7**—Ann., Ent. Soc. America, Columbus, Ohio. **9**—Entomologist, London. **10**—Proc., Ent. Soc.

Washington. 12—Jour. of Economic Ent. 14—Ent. Zeitschrift, Frankfurt a. M. 17—Ent. Rundschau, Stuttgart. 18—Intern. Ent. Zeitschrift, Guben. 20—Societas Entomologica, Stuttgart. 21—The Entomologist's Record. 25—Bull. Soc. Ent. France. 27—Bull. Soc. Ent. Italiana. 39—The Florida Entomologist. 42—Ent. Meddelelser, Kjobenhaven. 49—Ent. Mitteilungen, Berlin. 50—Proc., U. S. National Museum. 54—Bol. Soc. Ent. Espana. 55—Pan-Pacific Ent., San Francisco. 56—Konowia, Wien. 58—Ent. Berichtens, s'Gravenhage. 59—Encyclopedie Entomologie, Paris. 60—Stettiner Ent. Zeitung. 61—Proc., California Acad. Sci. 67—Bull. Soc. Ent., Egypte. 70—Entomologica Americana, Brooklyn. 71—Novitates Zoologicae. 72—Revue Russe d'Entomologie. 75—Ann. & Mag. of Nat. Hist., London. 77—Comptes R., Soc. Biologie, Paris. 78—Bull. Biol. France et Belgique. 107—Biologisches Zentralblatt. 109—Ann. Hist. Nat. Mus. Nat., Hungarici. 116—Annals of Applied Biology. 134—Annales de Biol. Lacustre, Brussels. 138—American Mus. Novitates. 141—Amer. Naturalist. 154—Zool. Anzeiger, Leipzig.

GENERAL.—Bequaert, J.—Medical and economic entomology. Pt. 2 of Medical Rept. of the Hamilton Rice 7th Exped. to Amazon. Cont. from Harvard Inst. for Trop. Biol. & Med., No. 4 p. 157-257. **British Museum.** Dates of publication of early catalogues of natural history issued by the British Museum. By C. D. Sherborn.—**75,** xvii, 271-2. [This list includes most of those on insects.] **Cave, C. J. P.**—The physical basis of insect drift.—Nature, cxviii, 50. **Collecting** and preserving insects.—Mary. Acad. Sci., Bull., v, 37-48. **Cresson, E. T.**—Obituary note.—Science, lxiv, 8-9. **Davis, A. C.**—Preparation of soft bodied insects.—**55,** ii, p. 180. **Fulda, O.**—Sammelreise nach Kuba.—Insektenbörse, xliii, 17, (Cont.). **Gossard, H. A.**—Memorial to.—**7,** xix, p. 255-7. **Hayward, K. J.**—A simple breeding cage.—**21,** xxxviii, 93-4. **Horn, W.**—Ueber den verleib der entomologischen sammlungen der welt.—Suppl. Ent., Nr. 12, 133 pp. **Hunter, W. D.**—Memorial to.—**7,** xix, p. 257-8. **Kuekenthal u. Krumbach.**—Handbuch der zoologie. Bd. iv, Lief. 1. (See **Attemus** under Arachnida.) **Le Cointe, P.**—L'Amazonie Bresilienne. Tome ii, Insectes, p. 369-400. **Lucas, W. J.**—Insect orders.—Proc. So. London Ent. & N. H. Soc., 1925-26, 1-6. **Meissner, O.**—Kurze bemerkungen über einige neuere naturwissenschaftliche theorien. X. Das Hasebroeksche phänomen.—**20,** xxxxi, p. 29-30. **Poehl-**

mann.—Rückgang der insektenwelt.—17, xliii, p. 25-26. **Shannon, H. J.**—A preliminary report on the seasonal migrations of insects.—6, xxxiv, p. 199-206. **Tillyard, R. J.**—Fossil insects in relation to living forms.—Nature, cxvii, 828-30. **Van Duzee, E. P.**—An entomological code.—55, ii, p. 214-5. **Wade, J. S.**—The friendship of two old-time naturalists [Dr. T. W. Harris and H. D. Thoreau].—Sci. Month., 1926, 152-160. **Weiss, H. B.**—Entomological observations of Captain Cook.—6, xxxiv, p. 222.

ANATOMY, PHYSIOLOGY, ETC.—Crew, F. A. E.—Abnormal sexuality in animals.—Quart. Rev. Biol., i, 315-59. **du Buisson, M.**—Observations sur la ventilation tracheenne des insectes.—Bul. Sci., Acad. R. Belg., xii, 127-38. **Grosvenor, T. H. L.**—Variation.—Proc. So. London Ent. & N. H. Soc., 1925-26, 39-53. **Hussey, P. B.**—Studies on the pleuropodia of Belostoma flumineum and Ranatra fusca, with discussion of these organs in other insects.—70, vii, 1-80. **Jackson, D. J.**—Inheritance of brachypterous and macropterous wings in Sitona hispidula.—Nature, cxviii, 192-3. **Jucci, C.**—Comportamento ereditario di un carattere fisiologico nei bachi da seta.—27, lviii, 56-63. **Kuekenthal u. Krumbach.**—Handbuch der zoologie. Bd. 3, p. 211-272, Arthropoda. **von Lengerken, H.**—Ueber eischalensprenger bei insekten.—Der Naturf., iii, 113-20. **McIndoo, N. E.**—An insect olfactometer.—12, xix, 545-71. **Meissner, O.**—Melanismus und mendelismus.—18, xx, p. 115-6. **Meissner, P.**—Monophagie und polyphagie.—18, xx, p. 130-131. **Pearl & Penniman.**—Culture media for Drosophila.—141, lx, 347-66. **Przibram, H.**—Transplantation and regeneration: their bearing on developmental mechanics.—Br. Jour. Exp. Biol., iii, 313-30. **Stern, C.**—Vererbung im Y-chromosom von Drosophila melanogaster.—107, xlvi, 344-8. **Toumanoff, K.**—Sur la teneur en tyrosinase des differentes organes de Dixippus morosus.—77, xcv, 372-74.

ARACHNIDA AND MYRIOPODA.—Attemus, C. G.—Myriopoda, Pauropoda, Diplopoda in Kuekenthal u. Krumbach's Handbuch der zoologie Bd. iv, Lief. 1, 128 pp. **Birula, A.**—Zur äusseren morphologie der fossilen und recenten skorpione.—154, lxvii, 61-7. **Bonnet, P.**—Sur le nombre de mues que subissent les araignees.—25, 1926, 67-9. **Braendegaard, J.**—A case of lateral hermaphroditism in a spider.—42, xvi, p. 13.

(N) *Miner, R. W.—A fossil myriapod of the genus Parajulus from Florissant, Colorado.—138, No. 219, 5 pp. *Nuttall, Warburton & Robinson.—(See Ticks under Special).

(S) Bequaert, J.—(See under General, p. 168-178). Franganillo, R. P. P.—Aracnidos nuevos o poco conocidos de la isla de Cuba.—54, ix, p. 42-68. *Oudemans, A. C.—Acarologische aanteekeningen. 58, vii, 97-102.

THE SMALLER ORDERS OF INSECTA.—Bengtsson, S.—La nutrition des larves des Ephemeres.—134, xiii, 215-17. Gros, A. J.—Quelques conseils pour les elevages en aquarium des larves des Ephemeres.—134, xiv, 49-52. Hubault, E.—Recherches sur la structure intime des etuis des larves de certains Trichopteres.—134, xiii, 99-105. Hubault et Lestage.—Etudes sur la biologie des Plecopteres.—Ann. Biol. Lacustre, xiv, 217-22. Lestage, J. A.—Contribution a l'etude des larves des Ephemeres.—134, xiii, 225-302.

(N) Bequaert, J.—(See under General, p. 179-183, for Isoptera). *Carpenter, F. M.—Fossil insects from the lower permian of Kansas.—Bul. Mus. Comp. Z., lxvii, 437-44. *Ewing, H. E.—Some recent generic derivations of the mallophagan genus Philopterus.—10, xxviii, 145-50. *Ewing, H. E.—Rev. of the Am. lice of the genus Pediculus, together with a consideration of the significance of their geographical and host distribution.—50, lxviii, Art. 19. *Fox, C.—Some new Siphonaptera from California—55, ii, p. 182-6.

(S) *Navas, R. P. L.—Algunos insectos del Brasil.—Broteria, xxiii, 5-15. *Priesner, H.—Un genero nuevo y curioso del orden physopodos o thysanopteros de Mexico. Ein neues, absonderliches Thysanopteren genus aus Mexiko.—Mem. y Rev. Soc. Cien., Ant. Alzate, xliv, 485-9. Watson, J. R.—Adiciones a los Thysanoptera de Cuba.—Mem. Soc. Poey, vii, 46-7.

ORTHOPTERA.—Caudell, A. N.—Diestrammena occurring in wells (Tettigonidae).—10, xxviii, 150. Morstatt, H.—Neues von ohrwurm.—Kosmos, xxiii, 234-5. Wollman, E.—Observations sur une lignee aseptique de blattes (Blattela germanica) datant de cinq ans.—77, xcv, 164-5.

(N) *Caudell, A. N.—A new sp. of stone cricket from Arkansas (Tettigonidae).—10, xxviii, 96-7. *Cockerell, T. D. A.—A fossil orthopterous insect formerly referred to

Mecoptera.—10, xxviii, 142. *Davis & Smith.—Notes on the genus Stenopelmatus with descr. of a n. sp.—55, ii, p. 174-80. Spencer, G. J.—An earwig new to Br. Columbia.—Proc. Pacific Coast Ent. Soc., ii, 65-6.

HEMIPTERA.—Brocher, F.—Observations biologiques sur la larve de la cicadelle (Ptyelus spumarius).—134, xiii, 205-13. Davis, W. T.—Cicadas or harvest flies of New Jersey.—Circ. 97, N. J. Dept. Agric., 27 pp. Myers, J. G.—Dry-season studies of cane Homoptera at Soledad, Cuba, with a list of the coccids of the district.—Contr. Harvard Inst. Trop. Biol. & Med., iii, 69-110. Tanaka, T.—Homologies of the wing veins of the hemiptera.—Annot. Zool. Japon., xi, 33-58.

(N) *Barber, H. G.—Notes on Coreidae in the collections of the U. S. National museum with description of a new Catorhintha (Heteroptera).—6, xxxiv, 209-216. *Davis, Wm. T.—New cicadas from California and Arizona with notes on several other species.—6, xxxiv, p. 177-198. *Drake & Harris.—Notes on American Anthocoridae with descr. of new forms.—Proc. Biol. Soc. Wash., xxxix, 33-46. *McAtee, W. L.—Notes on Neotropical Eupteryginae, with a key to the varieties of Alebra albostriella (Jassidae.—6, xxxiv, p. 141-176. *McAtee, W. L.—Revision of the Am. leaf hoppers of the jassid genus Typhlocyba.—50, lxviii, Art. 18. *MacDougall, A. P.—Some n. sps. of Macrosiphum from Br. Columbia (Aphididae).—55, ii, p. 165-73. Schrader, F.—Notes on the English and American races of the greenhouse white-fly (Trialeurodes vaporariorum).—116, xiii, 189-96. Van Duzee, E. P.—Labops burmeisteri.—55, ii, p. 163.

(S) Bequaert, J.—(For Heteroptera and Homoptera see under General, p. 184-89.) *Bruner, S. C.—On the genus Macrocephalus in Cuba (Phymatidae). Sinopsis de los Reduvidos de Cuba.—Mem. Soc. Poey, vii, 55-64; 65-82. *Bruner & Fracker.—Notes on Cuban Reduviidae.—7, xix, p. 247-51. Melichar, L.—Monographie der Cicadellinen.—109, xxi, p. 195-243; xxii, p. 329-410.

LEPIDOPTERA.—Adkin, R.—Melanism in the lepidoptera.—Proc. So. London Ent. & N. H. Soc., 1925-26, 7-21. Cramer, F.—Butterfly migration.—Nature, cxviii, 191-2. Essig, E. O.—A butterfly migration.—55, ii, p. 211-12. Frost, S. W.—Certain genitalic characters in Laspeyresia molesta and L. prunivora.—7, xix, p. 198-201. Hering, M.—Biologie

der schmetterlinge.—Biol. Studienb. III. herausg. W. Schoenichen, Berlin, 480 pp., ill. **LeCerf, F.**—Contribution a l'etude des organes sensoriels des L.—**59,** (B, III), i, 133-58. **Le Moult, E.**—Observations sur l'andromorphisme et le gynomorphisme chez les Agrias.—**59,** (B, III), i, 131-2. **Mansion, J.**—La ponte d'un abdomen isole de Sericaria mori.—**25,** 1926, p. 109-11. **Noel et Paillot.**—Sur le chondriome des cellules pericardiales du bombyx du murier et de Pieris brassicae.—**77,** xcv, 43-5. **Rocci, U.**—L'influenza delle luci monochromatiche sui lepidotteri.—Atti, Soc. Lig. Sci. e Let., Pavia, iv, 275-86. **Strecker, J. K.**—Additions to a list of the diurnal L. of the vicinity of Waco, Texas.—Contr. Baylor Univ. Mus., No. 1, 2 pp. **Tshirvinskij, P. N.**—A propos de la compensation des couleurs sur les ailes des L. [in Russian]—**72,** xix, 79-82. **Watson & Lutz.**—Our common butterflies.—Am. Mus. N. H., Guide Leaflet Ser. No. 38, rev. ed. **Weiss, H. B.**—Lepidopterous larvae as aids in magic.—**6,** xxxiv, p. 208. **Williams, C. B.**—Migrations of butterflies.—Nature, cxviii, 118-9.

(N) **Barnes & Benjamin.**—On the placement of "Pseudanarta" flavidens (Phalaenidae). On the distribution of Omphalocera occidentalis (Pyralidae).—**55,** ii, p. 187-8. ***Comstock, J. A.**—A new aberrant butterfly from southern California.—Bul. So. Cal. Acad. Sci., xxv, 48. **Eyer, J. R.**—Characters of family and superfamily significance in the male genitalia of microlepidoptera.—**7,** xix, p. 237-46. **Hayward, K. J.**—Notes and observations.—**9,** lix, p. 228-229. **Hayward, K. J.**—Miscellaneous notes from Argentina. IV. —**21,** xxxviii, 109-10.

(S) **Bequaert, J.**—(See under General; p. 189-93.) ***Biedermann, R.**—Formes nouvelles de Nymphalidae Americaines.—**59,** (B, III), i, 121-3. ***Clark, B. P.**—Descr. of twelve new Sphingidae and remarks upon some other sps. —Proc. N. Eng. Zool. Club, ix, 45-59. ***Le Moult, E.**—Description de formes peu connues ou nouvelles des genres Papilio, Agrias et Morpho.—**59,** (B,III), 161-72. **Niepelt, W.**—Wenig bekanntes über columbische morphiden.—**18,** xx, 83-4.

DIPTERA.—***Curran, C. H.**—Grisdalemyia, a new genus of Tachinidae.—**4,** lviii, 133-5. ***Curran, C. H.**—Nearctic sps. of the genus Rhaphium (Dolichopodidae).—Trans. R. Can. Inst. xv, 249-60 (Cont.). **Goetghebuer, M.**—Note sur la biologie at la morphologie de Liponeura belgica (Ble-

pharoceridae).—134, xiii, 107-18. **Goetghebuer, M.**—Metamorphoses de Dactylocladius distylus (Chironomidae).—Ann. Biol. Lacustre, xiv, 275-80. **Jepson, F. P.**—House flies and their connection with manuring operations on estates in Ceylon.—Dept. Agr. Ceylon, Bul. 74, 16 pp. **Rogers, J. S.**—Some notes on the feeding habits of adult crane-flies.—39, x, 5-7. **Thompson, W. R.**—Recherches sur les larves des tachinaires Strumia, Winthemia, Carcelia et Exorista.—Ann. Parasit. Hum. et Comp., iv, 207-27.

(N) **Aldrich, J. M.**—Notes on Hypochaeta and related genera of muscoid flies.—10, xxviii, 143-5. ***Allen, H. W.**—No. Amer. species of two-winged flies belonging to the tribe. Miltogrammini (Tachinidae).—50, lxviii, Art. 9. ***Aldrich, J. M.**—No. Amer. two-winged flies of the genus Cylindromyia (Ocyptera).—50, lxviii, Art. 23. **Bequaert, J.**—(See under Hymenoptera). **Bezzi, M.**—Sulla posizione sistematica del genre di "Estridi" anthophasia.—At. Soc. Ital. Sci. Nat., Milano, lxv, 1-5. ***Czerny, L.**—Ergänzungen und berichtigungen zu meiner monographie der Helomyziden.—56, v, 53-6. ***Felt, E. P.**—New gall midges from New England.—Oc. Pap. Boston Soc. N. H., v, 207-8. ***Freeborn, S. B.**—A new chaoborid gnat, Chaoborus lacustris.—55, ii, p. 161-3. ***Ide, F. P.**—Descr. of two n. sps. of Platycheirus (Syrphidae).—4, lviii, 155-6. **Mueller, A.**—Ueber den bau des penis der tachinarier und seinen wert für die aufstellung des stammbaumes und die artdiagnose.—56, v, 72-8. **Shannon, R. C.**—The occurrence of an American genus in Europe and a European genus in America (Syrphidae and Sepsidae).—10, xxviii, 112-14. ***Shannon, R. C.**—Synopsis of the American Calliphoridae.—20, xxviii, 115-39. ***Van Duzee, M. C.**—A new sp. of Scenopinidae from Cal.—55, ii, p. 164.

(S) ***Alexander, C. P.**—Studies of the crane flies of Mexico. II.—7, xix, p. 158-79. **Bequaert, J.**—A dipterous parasite of a snail from Brazil, with an account of the arthropod enemies of mollusks.—Med. Rept. Hamilton Rice 7th Exped., p. 292-303. **Bequaert, J.**—(See under General; p. 193-249). ***Borgmeier, T.**—Novos subsidios para o conhecimento da familia Phoridae.—Arch. Mus. Nac. R. d. Janeiro, xxv, 85-281. ***Curran, C. H.**—New D. from the West Indies.—138, No. 220, 14 pp. **Duda, O.**—Die Costaricanischen Drosophiliden des Ungarischen nationalmuseums zu Budapest.—109, xxii, p. 149-229. ***Malloch, J. R.**—New genera and sps. of acalyptrate flies in the U. S. N.

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SPECIAL NOTES

Animal Ecology, with special reference to insects. By R. N. Chapman. Burgess-Brooke, Inc., Minneapolis. This is a mimeographic production in two parts of 187+183 sheets respectively, and represents the outline of a course in the ecology of insects which has been offered at the University of Minnesota for nine years.

British Spiders: Their haunts and habits. By T. H. Savory. Oxford Univ. Press, 1926, 180 pp., ill. $2.00. This small octavo book, altho treating of British spiders, should be interesting to American students, especially to those who would like to take up the study of these animals. The author divides his book into two parts, the first part going into the life history of the spider, its instincts, senses, and anatomy. All told in a manner easily understood. The second part takes up the classification of the more common spiders, giving the student a general idea of the taxonomy. An appendix, includes directions on collecting and preserving, a bibliography of the principal works published in Europe and America, and finally a glossary. On the whole a very readable book for any nature student.

Entomologica Americana. Published by the Brooklyn Entomological Society. Once more takes its place among our current journals. The publication will be issued in four numbers a year, and will average approximately 50-60 pages to a number. Each number will carry one paper such as monographs, synopses of smaller groups, biological studies, morphology, embryology, revisions and other lengthy productions. The annual subscription price is set at $4.00 a volume.

Entomological collections. In Supplementa Entomologica, Nr. 12, 133 pp. Dr. Walther Horn has an extensive paper entitled "Ueber den Verleib der entomologischen Sammlungen der Welt (ein Beitrag zur Geschichte der Entomo-Museologie). This work should be found useful by entomologists. The collections are listed alphabetically under their original owners, with present locations given.

The Fauna of British India. A volume of this famous work on coleoptera treats of the subfamilies Chrysomelinae

and Halticinae of the Chrysomelidae. By S. Maulik, 442 pp., map of India.

Proceedings of the Pacific Coast Ent. Society. Vol. 2, No. 4, pp. 47-66. This number records the minutes of the 95th to 99th meetings, and the students of the coleoptera will find some interesting notes therein, especially on the Meloidae, Hydrophilidae and Tenebrionidae. Also on forest insects.

Ticks; a monograph of the Ixodoidea. By G. H. F. Nuttall and C. Warburton. Part 3 of this work treats of the genus Haemaphysalis, contained in pages 349-550 of Vol. I. Part 4 treats of the genus Amblyomma by L. E. Robinson and commencing Vol. II, 302 pp. These parts contain some new species from S. America.

The Zoocecidia of the Netherlands East Indies. By Mrs. J. and Dr. W. M. Doctors van Leeuwen. This comprehensive work of 601 pages and numerous illustrations will probably prove useful to any student of insect galls.

It is so much easier and more satisfactory to list titles which include the order and family treated, that we recommend all authors to indicate such when ever possible.

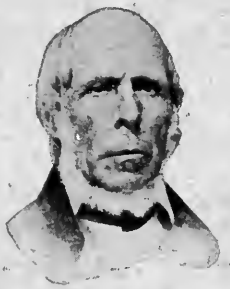
OBITUARY.

The Abbé JEAN JACQUES KIEFFER died December 30, 1925, at Bitche (Moselle) in his 69th year. For many years he was on the teaching staff of the Saint-Augustin College at Bitche, Lorraine. His published papers, from 1884 on, deal with the flora and fauna of that province, including Neuroptera and gall-forming insects of several orders, with gall-making Diptera and Hymenoptera and, in most recent years, with Chironomidae from all parts of the world. An obituary notice by F. W. Edwards is in the *Entomologist's Monthly Magazine* for February, 1926; a list of his papers from 1884 to 1900 is in vol. XVI of the *Royal Society's Catalogue of Scientific Papers.* His article on the Cecidomyiidae, in Wytsman's *Genera Insectorum,* was reviewed at some length in the NEWS for April, 1914 (vol. xxv: 185-188) by Dr. E. P. Felt. His voluminous monograph of the proctotrupoid (Hymenopterous) family Scelionidae, of nearly 900 pages, forming lieferung 48 of the encyclopedic series, *Das Tierreich,* has been published, March, 1926, since his death.

NOVEMBER, 1926

ENTOMOLOGICAL NEWS

Vol. XXXVII No. 9



JAMES RIDINGS
1803-1880

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PHILADELPHIA, PA.
THE ACADEMY OF NATURAL SCIENCES.
Logan Square

Entered at the Philadelphia, Pa., Post Office as Second Class Matter.
Acceptance for mailing at the special rate of postage prescribed for in Section 1103.
Act of October 3, 1917, authorized January 15, 1921.

ENTOMOLOGICAL NEWS

published monthly, excepting August and September, by The American Entomological Society.

Philip P. Calvert, Ph.D., Editor; E. T. Cresson, Jr., Associate Editor; Henry Skinner, M.D., Sc.D., Editor Emeritus.

Advisory Committee: Ezra T. Cresson, Philip Laurent, J. A. G. Rehn.

The subscription price per year of ten (10) numbers is as follows:

United States and possessions . .	$3.00
Canada, Central and South America .	3.15
Foreign	3.25

Single copies 35 cents

ADVERTISING RATES: Full width of page. Payments in advance.
One issue, 1 in., $ 1.20, 2 in., $ 2.40, half page, $ 4.00, full page,, $ 8.00
Ten issues " 11.00, " 20.00, " 35.00, " 70.00

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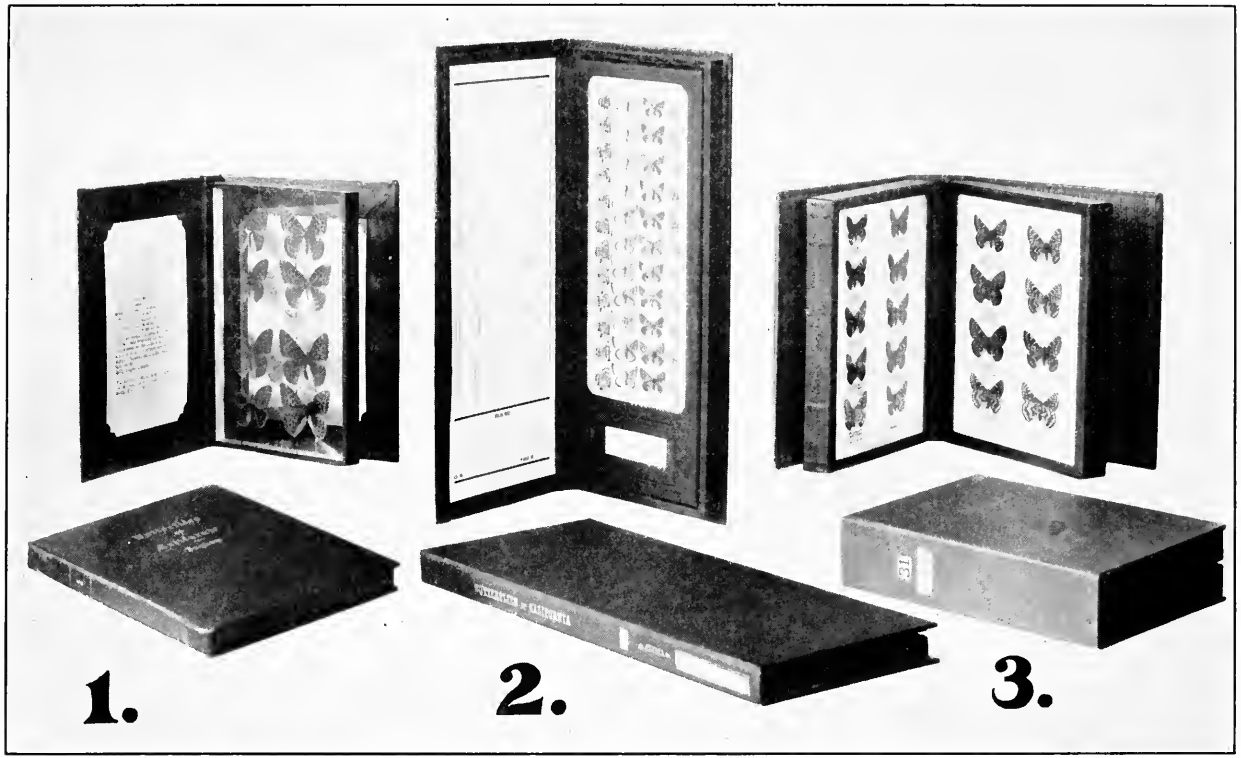

BUTTERFLY COLLECTIONS IN BOOK STYLE.—GUNDER.

ENTOMOLOGICAL NEWS

VOL. XXXVII NOVEMBER, 1926 No. 9

Butterfly Collections in Book Style.

By J. D. GUNDER, Pasadena, California.

(Plate XI).

Most collectors mount their butterflies on pins and keep the assembled species in cabinet drawers of one sort or another. This undoubtedly is the best way where only a short series is desired in a general collection and where a vast field is covered or represented. It is also better because the specimens can be picked up at will for examination and their position in boxes changed about as is necessary.

On the Pacific Coast during the last few years, there has been a tendency among collectors to mount their specimens under glass or cotton without the use of pins. This manner of preserving a collection is well suited where a restricted territory is represented, such as the confines of California or the Pacific Coast, for example.

Three of these collection methods are shown on the accompanying Plate XI. They are really butterfly collections put up in books! Each book holds a single species in long series in both sexes from the largest to the smallest and from the lightest to the darkest in different variation. These books or placks, as they are called, can be kept upright on a library shelf; can be stacked up and handled or even dropped without real harm to the specimens, and being sealed, are pest proof. The cost of the glass, cardboard, cloth, etc., is not excessive and if one is adept at binding, they can be home-made at a surprisingly reasonable price. The cost of a collection put up in this way is no greater than a good insect cabinet with glass drawers and the occupied space not nearly so large. Another advantage is that one can pack the books around and exhibit the specimens in a crowd without fear that they will become damaged.

Style No. 1 represents a book of *Dryas callippe* Bdv. from the collection of Mr. Charles Ingham of Los Angeles. No cotton

is used, but the specimens are supported between beveled glass panels and both upper and under sides may be examined. Space for original description is found on the inside front cover and the inside back cover records date and locality for each specimen. The binding is in brown leather, hand-imbossed in gold with "Butterflies of California" and check list number. Specimens may be easily removed by an ingenious idea which Mr. Ingham has conceived. The complete glass container fastens to the outer cover with auto snaps.

No. 2 shows the style adopted by the Author. The butterflies shown are *Glaucopsyche xerces* Bdv., a Plebine found around San Francisco. Males are in the first two rows to the left and females, the two rows to the right. The specimens rest on white jewelers' cotton in a central cardboard container which can be removed from the outer cover parts, thus giving ready access for examination. Contiguous to the specimens under the white name card at the bottom is a space for paracide which can be refilled from the rear. Each butterfly is located by a number which corresponds with a record on the inside cover. There is also data room for special notes. Before being placed inside, all the specimens are de-greased with high test gasoline and afterwards subjected to a half hour of moderate oven heat to kill possible infection. The book measures 1 inch by 6 by 15 inches and are in black leatherette.

No. 3 pictures the style of mounting used by Dr. J. A. Comstock, of Los Angeles, for preserving his reference collection. The butterflies shown are *Euphydryas quino* Behr. The males are in the left compartment of the book and the females in the right. Complete data labels are under each specimen. This manner of arrangement is unique and the double compartment idea in each book allows plenty of room for long series. Each plack is fastened to the outer cover with a strong cloth hinge. The outer binding is in green sack cloth and the species name and check list number are given on the front edge.

All the above described book placks are privately made and are not offered for sale.

Observations upon the Early Maggot Stage of Linnaemyia comta Fall. (Diptera: Tachinidae).[1]

By H. W. Allen.

A study of the literature indicates that *Linnaemyia comta* is widely distributed over Europe, and in North America from southern Canada to the Central American countries. Within this wide range it appears to be not uncommon but has rarely been reported in conspicuous numbers. It has been found to be parasitic upon a number of Noctuid larvae living in herbaceous vegetation and having a more or less clandestine habit of life; including the greasy cutworm (*Agrotis ypsilon* Roll.), the dark-sided cutworm (*Euxoa messoria* Harr.) (3), the granulate cutworm (*Feltia annexa* Treit.) (5), the variegated cutworm (*Lycophotia margaritosa* Hueb.) (4), the pale western cutworm (*Porosagrotis orthogonia* Morr.) (6), and the fall armyworm (*Laphygma frugiperda* S. & A.) (1) in North America, and it has been reared from *Saturnia pavonica* L. in Europe (2). Seamans (6) has reported that *comta* and *Gonia capitata* are quite effective controls of the pale western cutworm during the wet seasons, and reasons that the greater effectiveness at such times is not due to a greater abundance of parasites but rather to what he terms the leaf "ovipositing" habits of these two parasites coupled with the tendency of the host to feed more on the exposed foliage in the wet, cloudy weather. While his deductions appear well grounded, he seems not to have observed the great difference in the reproductive habits of the two species concerned, and the fact that *comta* is a larviposting form with a different method of spanning the gap between adult and host.

The adult females were moderately abundant at Agricultural and Mechanical College, Mississippi, during the spring of 1925. Several were captured and caged with suitable food and foliage. These adults deposited maggots on the foliage quite freely. Since larviposition upon foliage is the normal habit of the *Echinomyia* group to which this species has been

[1]A contribution from the Mississippi Agricultural Experiment Station, A. and M. College, Mississippi.

assigned, it is believed that the activity of the caged individuals closely approached that of free individuals in the field. Smooth vetch was the only foliage exposed in the cage. Maggots were deposited on all parts of this, but by far the largest number were attached to the upper surface of the leaves, comparatively few being placed on the stems. The presence of host caterpillars within the cage was not necessary to stimulate the female to larviposition.

The black, free-living maggots were approximately 0.8 mm.

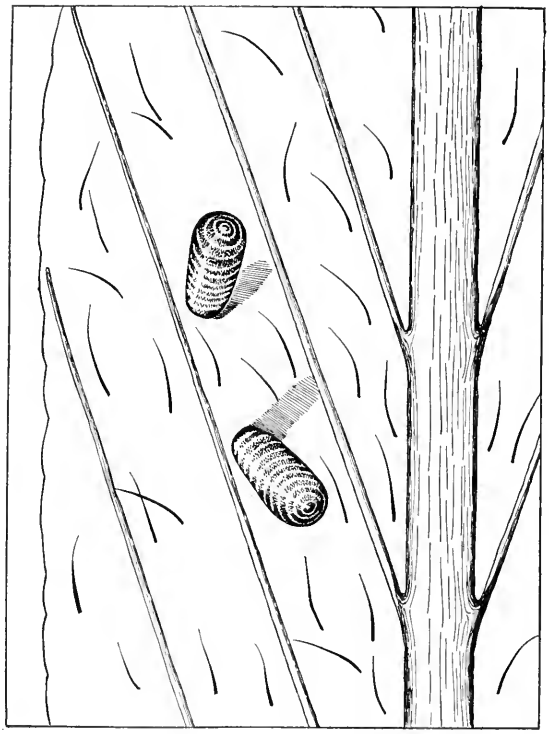

FIG. 1.
Two free living maggots of *Linnaemyia comta* Fall in characteristic upright position on a leaf of vetch.

in length, and at first sight appeared like minute particles of buoyant black soot oscillating in the air currents passing over

the surface of the foliage to which they were attached. The attachment to the substratum was by means of a small membranous cup in which the extreme posterior end of the maggot was seated. When at rest, they did not lie closely appressed to the substratum, as in the case of some related species, but assumed a position nearly perpendicular to it (fig. 1). In this position the head is retracted and the whole body foreshortened and more or less clavate, differing characteristically from the fusiform shape of many young Tachinid maggots. The conspicuous black color of the maggot is due to its covering of numerous cuticular plates arranged in a mosaic. These undoubtedly serve to protect the maggot from unfavorable atmospheric conditions, since the free-living maggots remain alive on the substratum for several days. The free-living maggot was found to be extremely sensitive to vibrations of the substratum, and became highly excited when disturbed, swinging its head about in wide circles. It forsook the basal membrane much more readily than in some related species, and crawled rapidly about over the substratum for some seconds, as if seeking the host, but finally coming to rest once more in the characteristic upright position. The maggots attached themselves quite readily to armyworms and variegated cutworms when they were placed within striking distance.

After attaching themselves, the maggots crawled over the body of the host for a period varying from a few seconds to several minutes, finally coming to rest on the spot selected for penetration. Penetration was usually effected through the dorsum of the first abdominal segment, or of the preceding or following segments, occasionally occurring elsewhere on the body though rarely through the venter. The act of boring through the cuticula of the host was accomplished with startling rapidity, the time required for penetration, as observed for several maggots on the variegated cutworm, varied from less than a minute to five minutes. Penetration was directly downward into the body of the host through both cuticula and hypodermal layer. Caterpillars in the last three instars were offered to the maggots. All were attacked and penetrated with equal avidity and ease. The entrance punctures of the mag-

gots did not close behind them as in some species but were maintained as primary breathing pores, at least throughout the instar of the host in which penetration was effected, and the succeeding instar. In the single specimen completing the development under observation, the maggot emerged from the caterpillar in its last instar, pupating outside the body of its host.

While *comta* adults were present in moderate numbers over a mixed infestation of armyworm and variegated cutworm, no specimens of this species were reared from the somewhat limited collections of these two pests made in the field. Notwithstanding the fact that free-living maggots penetrated these hosts most readily, in insectary experiments, only one specimen, which was inoculated into an armyworm, came through to maturity. Of 16 caterpillars of the variegated cutworm into which maggots penetrated, only 2 were able to pass through to normal emergence of adult moth, the remaining 14 perishing, though not in a single case permitting the maturing of the parasite. It is quite possible that a similar condition may exist in the field. In such a case, the work of the parasite might be of considerable importance, yet would almost certainly be largely overlooked in field observations or even in the usual insectary routine in which the rate of parasitism is based on the number of hosts producing mature parasites, and may explain, in part, the paucity of rearing records for this species.

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Notes on Some American Nabidae (Hemiptera).*

By HALBERT M. HARRIS.

Nabis vanduzeei Kirkaldy, Wien. Ent. Zeit, XX, 1901, p. 223.

Reuter (Mem. Soc. Ent. Belg., XV, p. 111, 1908) expressed the opinion that this form is nothing more than a variety of *N. flavomarginatus* Scholtz. He pointed out that it differed from *flavomarginatus* in general body form and in color. He further said (erroneously) that the male claspers of the two are of the same type, and this apparently is the character which led him to consider the two as conspecific. However, after having examined specimens of *vanduzeei*, brachypterous males and females and macropterous females, in series from Colorado and Montana, and specimens of *flavomarginatus* from England, Russia and Finland—including specimens of both forms bearing Reuter's determination labels—the writer is led to consider the two forms as specifically distinct. This view is based not only on those differences as noted by Reuter but also on differences in the character of the male claspers apparently overlooked by him. In *flavomarginatus* the clasper possesses on the outer surface of its blade a prominent backwardly projecting hook, a structure that is not present in *vanduzeei*. This hook, present in only one other North American species, *Nabis subcoleoptratus* Kirby, and there in a much less prominent degree, is perhaps of even greater specific value than the mere outline of the claspers.

Pagasa fusca var. **nigripes**, new variety.

Structure similar to typical *fusca* from which it may readily be separated by the deeper glistening black color of the dorsum and by having black legs.

Holotype: Brachypterous male, Pingree Park, Colorado, August, 1925, C. J. Drake, collector. *Allotype*, same data as type. *Paratypes*, brachypterous males and females taken with the types by C. J. Drake, R. H. Beamer and P. B. Lawson. The types are deposited in the author's collection, paratypes in the collections of the author, Dr. C. J. Drake, University of Kansas and Colorado Agricultural College.

*Contribution from the Department of Zoology and Entomology, Iowa State College, Ames, Iowa.

Bait Pan Insects.

By A. B. Champlain and H. B. Kirk, Harrisburg, Pennsylvania.*

The use of bait pans of fermented syrups to check up on the activities of the oriental fruit moth has resulted in the accumulation of data on a number of other insects that were attracted by these substances.

Two quart pans, filled with molasses and water, including yeast enough to quickly start fermentation, were hung upon alternate trees throughout the peach orchard. The pans, after a time, contained baits of varying proportions and a difference in the comparative values of the different concentrations was noted, but all worked fairly well. The bait with a watery consistency gave better results than the thicker mixture.

This is offered as a suggestion for a unique method of trapping insects, especially beetles, many interesting species being attracted to these fermented syrups that are not often taken in numbers under ordinary collecting conditions.

Moths and butterflies were very much in evidence, but no attempt was made to identify or check up on them with the exception of the oriental fruit moth and several other economic species for comparison, and they will not be considered in this paper. Adult peach tree borers were found in the pans from June 19 until August 24, and by far the greater majority were males.

Adult males of the Sialid, *Chauliodes pectinicornis* Linn., were taken in numbers in the bait pans from June 11th continuously until August 6th. During this period but one female was taken (July 6). It is stated in the New York State Museum Bulletin No. 68, *Aquatic Insects of New York State*, page 457, that the adults have not been known to take food but it is evident from these observations that they are attracted to fermenting syrups. As many as ten males have been taken from one pan. The streams in which these insects breed are between one-eighth and one-quarter of a mile distant.

Lace-wing flies, adults of *Chrysopa sp.*, were taken in the

*Received for publication January 28, 1926—Editor.

pans from June 22 until August 12 continuously. Sexes not noted.

Very few examples of Orthopterous and Hemipterous insects were taken, and they were considered as accidental introductions.

In the Coleoptera a great variety of material was taken and a number of families were represented by certain characteristic groups of genera and species.

Carabidae were taken at intervals during the summer and it is likely that many of them were accidental or attracted by other insects. Among them were included *Calosoma scrutator* Lec. and *C. calidum* Fab., *Galerita* and a number of smaller forms.

Several specimens of *Necrophorus* and *Silpha surinamensis* were taken, representing the Silphidae.

Neopyrochroa flabellata Fab. was taken a number of times during July and one specimen of *N. femoralis* Lec., of the Pyrochroidae.

Elateridae were represented by a few genera in great numbers and a few individuals of other genera. *Alaus oculatus* (L.) June 6, 16, 19; *Monocrepidius lividus* (DeG.) occurred continuously in considerable numbers from July 5 to August 12; *Limonius sp.*, June 19 until July 25; *Ludius hieroglyphicus* (Say) one specimen August 6; *Hemicrepidius memnonius* Hbst., July 15 until August 10; *Parallelostethus attenuatus* (Say), July 6, 15, 20 and 28; *Melanotus sp.* occurred in great numbers throughout the season from June 16 until August 12.

Scarabaeidae were scarce with the exception of one genus—*Euphoria;* our common species, *Euphoria fulgida* (Fab.), was very plentiful in the pans from June 16 until August 12, and *E. inda* Linn. from August 6 until September 28. There were as many as one dozen of the latter taken in one pan during the last part of the season.

Cerambycidae were well represented and it is likely that, were the pans placed in more favorable locations for forest insects, the catch would have been considerably greater.

Chion cinctus (Drury) was taken June 16; and *Eburia quadrigeminata* (Say), July 10 and August 12.

Two species of the Elaphidionini were taken in great numbers during the summer season and it is a curious fact that the great majority of the specimens were males. *Hypermallus villosus* (Fab.), June 11 continuously until Aug. 10; and *Elaphidion mucronatum* (Say), June 16 continuously until August 12.

Of the *Lepturini*, *Gaurotes cyanipennis* (Say) was taken June 19 and July 1; *Strangalepta vittata* (Oliv.), June 22; *Strophiona nitens* (Forst.), July 3 and 15; *Typocerus velutina* (Oliv.), July 15 to 30; *Ophistomis luteicornis* (Fab.), June 22 to July 25, continuously.

Cyllene robiniae (Forst.) taken October 23; *Arhopalus fulminans* (Fab.), June 19 to 23; *Xylotrechus acuminatus* (Fab.) several on June 22.

Purpuricenus humeralis (Fab.), a species not commonly taken in numbers under ordinary collecting conditions, was plentiful from June 19th continuously until August 10. The greater number of individuals were males. The rare species, *P. axillaris* Hald, was taken from July 1 to 13—a number of fine specimens in perfect condition, both sexes. *Leptostylus aculifer* (Say), June 22.

It is quite likely that a trap line of these pans scattered throughout a forest area would yield some wonderful returns in rare and interesting species of Cerambycidae, and no doubt some new facts might be discovered concerning the feeding habits of these interesting insects. Why the preponderance of males in so many instances? What condition of the fermented mixture contains the attractive agent, and just what is this substance?

Hymenopterous insects were plentiful in the syrup, which was to be expected. Quite a variety of Ichneumonoids were observed and a number of other families represented. The most prevalent were hornets. Common Yellow Jackets (*Vespa sp.*) were taken continuously from June 1 until August 26. *Vespa maculata* occurred in the pans from June 19 until August 12. *Sphecius speciosus* was taken July 28, August 4, 6, 12. *Polistes sp.* occurred from June 22 until August 26.

Very few honey bees were found in the pans, the only obser-

vations July 6, 13, 15. Bumble bees were taken plentifully from July 3 continuously until August 4.

Of the Diptera, there were a great number of small species that were not studied. One interesting observation was the presence of male *Tabanus*, especially *T. atratus* which occurred continuously from June 16 until July 23.

Undescribed Species of Crane-flies from the Eastern United States and Canada (Dipt.: Tipulidae). Part III.

By CHARLES P. ALEXANDER, Massachusetts Agricultural College, Amherst, Massachusetts.

In this installment, a few species of the genus *Tipula* are considered, most of them belonging to the so-called *tricolor* group. As before, the majority of the specimens were included in collections received from Professor J. Speed Rogers, collected by himself and Mr. Hubbell. One other specimen was sent by Mr. Curran and another by Mr. C. W. Johnson. My sincere thanks are extended to the above gentlemen for this co-operation.

Tipula brevifurcata sp. n.

Allied to *T. iroquois* Alexander; vertical tubercle produced into a small elevated dusky knob; lateral praescutal stripes entire; median stripe split by a capillary dark brown vitta; male hypopygium with the ninth tergite large, the distal end narrowed into a median decurved lobe that is split at apex, into two short divergent points.

♂. Length about 12 mm.; wing 15.5 mm.

Frontal prolongation of head relatively elongate, pale brown, very sparsely pruinose; nasus short and blunt; palpi brownish black. Antennae with the scapal segments yellow; flagellum black, the extreme bases of the first few segments vaguely paler; antennae of moderate length, if bent backward extending about to the root of the halteres; flagellar segments only moderately incised. Head gray, the vertical tubercle produced into a small elevated dusky knob.

Pronotum obscure yellow. Mesonotal praescutum buffy gray, with three brown stripes, the lateral stripes entire, the median stripe obliterated anteriorly, becoming evident at about

opposite the cephalic ends of the lateral stripes, narrowly margined with darker brown and split for its whole length by a capillary dark brown median vitta; scutum buffy, each lobe virtually covered by two confluent brown marks; scutellum testaceous; postnotal mediotergite pale whitish gray. Pleura pale, covered with a dense white bloom. Halteres pale, the knobs infuscated. Legs with the coxae pale, sparsely pruinose; trochanters obscure yellow; femora yellow basally, passing into dark brown near midlength; remainder of legs brownish black; legs very long and slender, the tibiae longer than the femora, the tarsi exceeding the tibiae. Wings tinged with brownish yellow, the base and costal region clearer yellow; stigma dark brown; wing-apex distinctly suffused with brown; vein Cu_1 and *m-cu* seamed with brown; narrow brown seams along the cord; vein *2nd A* narrowly seamed with darker; veins dark brown, those in the costal region paler. Venation: Cell R_2 large, the veins enclosing it diverging; petiole of cell M_1 about twice *m*; basal deflection of M_1+_2 relatively long.

Abdominal tergites brownish yellow, the outer segments becoming darker; tergites five to seven narrowly ringed caudally with paler; lateral margins of the tergites broadly yellowish; ninth tergite uniformly darkened; sternites obscure yellow, the basal segments variegated with darker. Male hypopygium of moderate size, the tergite distinctly separated from the sternite by a suture that extends back to beneath the eighth segment. Ninth tergite very large, the basal portion arched, the apical portion suddenly narrowed into a median decurved blackened lobe, its apex split into two short divergent points. Basistyle large but the sutures separating it from the sternite almost obliterated. Outer dististyle relatively long and narrow, obscure yellow, gradually narrowed to the obtuse apex. Inner dististyle appearing as a heavily blackened, shiny, hook-like spine. Dorso-caudal angle of the median region of the ninth sternite produced into a small straight subchitinized rod. Aedeagus elongate, projecting conspicuously from the genital chamber.

Habitat.—Tennessee. *Holotype:* ♂, Scott Co., May 30, 1922 *(J. S. Rogers);* No. 6.

Type returned to Professor Rogers.

Tipula floridensis sp. n.

Belongs to the *tricolor* group; closely allied to *T. fraterna* Loew; size large; wing-apex entirely darkened; whitish fascia at the cord not entirely traversing the wing; male hypopygium

with the lobe of the ninth tergite elongate, subrectangular in outline; outer dististyle with the setae sparse and inconspicuous.

♂. Length about 15 mm.; wing 18 mm. ♀. Length about 20 mm.; wing 19 mm.

Frontal prolongation of the head obscure yellow, the concolorous nasus long and slender; palpi brown. Antennae of moderate length, in male, if bent backward, extending about to the base of the abdomen; basal segment dark brown, sparsely pruinose; second segment a little paler; flagellar segments bicolorous, the base of each dark brown, the long pedicel yellow, this latter color becoming darker on the outer segments which thus become more uniformly infuscated. Head dark gray, the anterior vertex paler. In the female, the antennae are shorter; head with a capillary brown median vitta.

Mesonotal praescutum brownish gray with three brown stripes, all of the latter indistinctly bordered with darker, the median stripe further split by a capillary brownish black vitta that becomes obsolete before the suture; scutum brownish gray, each lobe with two darker brown areas; scutellum paler brownish gray; postnotal mediotergite light gray pruinose. Pleura clear light gray, the dorso-pleural membrane obscure yellow. Halteres pale brown, the extreme base of the stem paler, the knobs darker. Legs with the coxae pale, pruinose; a brown spot at base of fore coxa; trochanters obscure testaceous yellow; femora brownish yellow, the tips narrowly and vaguely darkened; tibiae obscure brownish yellow, darkening outwardly; tarsi similar, the terminal segments uniformly brownish black. Wings dark brown, this color including the entire wing-apex; proximal end of stigma yellow, the distal end dark brown; cells *M*, *Cu* and the Anal cells largely pale, the outer ends more darkened; a relatively narrow but conspicuous whitish obliterative band crosses the wing before the cord, extending from the yellow stigma far into the base of cell M_3, the inner end of cell *1st* M_2 being included; center of cell M_4 extensively pale; veins dark brown, pale in the obliterative areas. Venation: Basal section of R_2 fully one-half *r*; cell *1st* M_2 relatively long and narrow; petiole of cell M_1 about one-third the cell; cell *2nd A* relatively narrow.

Abdominal tergites pale yellowish brown, with a broad dark brown sublateral stripe, the ground-color becoming more pruinose on the posterior segments; lateral margins of segments broadly paler; sternites light brown. Male hypopygium with the caudal margin of the ninth tergite bearing a conspicuous strongly depressed, subrectangular, median lobe, the

sides gradually narrowed outwardly, the tip truncate, with the apical angles rounded. Outer dististyle compressed, the apex truncated, the surface of the style on distal half with sparse short setae that are more numerous on the ventral-outer angle but still inconspicuous. Ninth sternite with a deep V-shaped notch, the margins of the incisions fringed with conspicuous elongate setae that completely fill the aperture. Ovipositor with the tergal valves slender, dark brown.

Habitat.—Florida. *Holotype:* ♂, Gainesville, Alachua Co., March 28, 1922 *(J. S. Rogers);* No. 28. *Allotype:* ♀ March 14, 1922.

Type returned to Professor Rogers.

Tipula concava sp. n.

Belongs to the *tricolor* group; praescutum with three brown stripes that are narrowly margined with darker brown, the median one further split by a capillary dark brown vitta; wings brown, longitudinally vittate with whitish subhyaline; cell R_5 largely pale; male hypopygium with the median lobe of the ninth tergite very broad, its caudal margin broadly emarginate.

♂. Length 12.5—13 mm.; wing 12—13.5 mm.

Frontal prolongation of head obscure yellow, darker laterally, the nasus slender. Antennae with the scapal segments dark brown; flagellum bicolorous, the basal segment yellow, the succeeding segments with the basal enlargements narrowly blackened, the remainder yellow; on the outer segments the ground-color passes through brownish yellow to yellowish brown. Head grayish brown, narrowly clearer gray on the orbits, the center of the vertex with a slightly darker brown median vitta; anterior vertex buffy.

Pronotum obscure yellow, with three brown spots. Mesonotal praescutum buffy with three brown stripes that are narrowly margined with dark brown, the median stripe further divided by a capillary vitta of the same color; in some specimens the interspaces are clouded with darker; scutum brownish buff, each lobe with two contiguous darker brown areas; scutellum buffy gray, in cases with a vague capillary darker line; postnotal mediotergite buffy with a longitudinal brownish line on either side. Pleura light gray, vaguely striped longitudinally with darker gray. Halteres pale, the knobs infuscated. Legs with the coxae and trochanters pale, whitish pruinose; femora obscure yellow, the tips narrowly blackened; tibiae yellowish brown, the tips narrowly darker; tarsi uniformly dark brown. Wings brown, longitudinally vittate with whitish subhyaline,

the latter color including all of cells *R* and *M* except the base and seam along *Rs* and most of the cubital and anal cells except their more infuscated outer ends; a conspicuous obliterative area before the cord, extending from cell *1st* R_1, across the proximal third of cell *1st* M_2 into the basal half of cell M_3; center of cell M_4 extensively pale; outer half of cell R_5 more or less distinctly whitened, cell M_1 uniformly darkened; cell *2nd* M_2 sometimes vaguely paler at center; veins dark. Venation: Cell M_1 about equal to its petiole.

Abdominal tergites obscure yellow, with a broad brown longitudinal stripe on either side, the lateral margins of the segments broadly grayish, the caudal margins narrowly of the same color; sternites obscure brownish yellow, the caudal margins of the segments paler. Male hypopygium with the ninth tergite produced medially into a broad and relatively short blackened lobe, the caudal margin of which is conspicuously and broadly emarginate.

Habitat.—Eastern United States. *Holotype:* ♂, Hanover, Jefferson Co., Indiana, July 22, 1921 *(J. S. Rogers);* No. 64. *Paratopotype*, ♂; *paratypes*, ♂, Ann Arbor, Washtenaw Co., August 6, 1921 *(J. S. Rogers);* No. 2; ♂, Winnipauk, Connecticut, June 16, 1909 *(C. W. Johnson),* in the Boston Society of Natural History.

Type returned to Professor Rogers.

Tipula concava bears a resemblance to *T. cluta* Loew in the relatively diffuse wing-pattern. It is readily told from the other described species of the group by the broadly concave apex of the median lobe of the tergite of the male hypopygium.

Tipula parvemarginata sp. n.

Belongs to the *tricolor* group; head brownish gray to gray, with a capillary dark brown median vitta; antennal flagellum dark brown, the extreme bases of the segments restrictedly paler; wings suffused with pale brown, the disk without conspicuous subhyaline or hyaline longitudinal vittae; M_3+_4 very short to lacking; male hypopygium with the median lobe of the ninth tergite broad, with a small median notch.

♂. Length about 12—13 mm.; wing 12.5—13 mm. ♀. Length 14—15 mm.; wing 15—16 mm.

Frontal prolongation of head obscure yellow, the nasus conspicuous; palpi dark brown. Antennae with the scapal segments obscure yellow, the flagellum dark brown, with the

extreme proximal ends of the basal enlargements of the segments paler. Head brownish gray, the front and posterior orbits clearer gray; a capillary dark brown median vitta. In cases the ground-color of the head is clear gray.

Mesonotal praescutum grayish brown with three nearly concolorous or slightly more reddish brown stripes that are vaguely margined with darker brown, the median stripe split by a similar dark brown vitta; in some cases, the ground-color and stripes are of a much clearer gray; scutum obscure yellow, the lobes largely covered by two contiguous dark brown marks; scutellum and postnotum buffy or grayish buffy, with a very narrow capillary brown line. Pleura yellow, the sternopleurite and anepisternum sparsely pruinose. Halteres pale, the knobs dark brown. Legs with the coxae pale, sparsely pruinose; trochanters yellow; femora and tibiae obscure brownish yellow, the tips narrowly infuscated; tarsi brownish yellow, soon passing into brownish black. Wings suffused with pale brown, the base and costal region darker, this color including the cephalic half of cell *R*, most of cell *1st* R_1 and the stigma; no distinct hyaline vittae as usual in the *tricolor* group, the center of the wing in cells *R* and *M* being only slightly paler than the remainder of the ground-color; obliterative areas along the cord include the outer end of *Rs*, basal section of M_1+_2 and the basal portion of the first section of M_3; stigmal region somewhat brighter brown than the ground-color; a dusky cloud on the anterior cord; Cu_1 and especially *m-cu* seamed with brown; veins dark brown. Venation: Petiole of cell M_1 about equal to or longer than *m*; M_3+_4 very short, only about one-half longer than the punctiform basal section of vein M_4. In cases, vein M_3+_4 is obliterated, both veins M_3 and M_4 arising directly from the end of *M*.

Abdominal tergites obscure yellow, with a broad dark brown sublateral stripe, these ending on the seventh tergite; eighth tergite yellow, with a median brown spot; sternites obscure yellow, the caudal margins of the segments narrowly grayish; seventh and eighth sternites infuscated; hypopygium largely yellow. Male hypopygium with the ninth tergite obscure yellow, with a more or less distinct brown line on either side, in cases fused into a single median blotch; caudo-median area of the tergite produced caudad into a short broad median lobe that has a small U-shaped notch, the lateral lobules thus formed being microscopically spiculose. Outer dististyle of moderate size and width.

In the female, the basal flagellar segments are more uniformly pale,

Habitat.— Northeastern North America. *Holotype:* ♂, Devil's Lake, North Dakota, July 23, 1920 *(T. H. Hubbell)*; No. 39. *Allotopotype*, ♀, August 8, 1920; No. 161. *Paratopotypes*, 6 ♂♀, July 23—August 14, 1920; Nos. 39, 48, 161, 196; *paratypes*, ♂, Turtle Mts., North Dakota, July 30, 1920 *(T. H. Hubbell)*; No. 88; ♂, Portage la Prairie, Manitoba, July 2, 1924 *(A. J. Hunter)*, in the Canadian National collection; ♂, Ann Arbor, Washtenaw Co., Michigan, June 28, 1920 *(J. S. Rogers)*; No. 20.

Type returned to Professor Rogers.

Insects as Litigants.

By Harry B. Weiss, New Brunswick, New Jersey.

In these times insects are occasionally the causes of litigation but never the litigants. Such was not the case some centuries ago when legal prosecutions of the lower animals were not unusual. In France, Spain and Italy the lower animals were subject to the laws and in Switzerland, they could in addition be admitted as witnesses. There are instances recorded, of a writ being served against rats in the diocese of Autun, of a sow and six pigs being charged with the murder of a child at Lavegny in 1457, of a process issued against leeches at Lausanne in 1451, and of a cock being tried at Basle in 1474 for laying an egg.

A law suit between the inhabitants of the Commune of St. Julien and the beetle *Rhynchites aureus* is said to have lasted more than forty years, or from 1445 to 1487, and was not settled even then. At one time the people proposed a settlement of the case by giving to the beetles in perpetuity, a piece of their district, not a poor piece, but a productive one. The attorney for the beetles objected but the court over-ruled the objection and appointed agents to survey the land. This they did and finding it well supplied with water and trees, the land was deeded in due form to the insects. Unfortunately this did not end the case because it was discovered later that some one had an ancient right-of-way over the land, which if taken advantage of might disturb the insect owners; and so the contract

was invalidated and the case started anew. During the progress of the suit the lawyers had to be paid and other expenses such as those for religious processions and ceremonies were incurred. A district could not start a suit of this kind unless its taxes were fully paid up.

Domestic animals were tried in the common criminal courts and if convicted, the penalty was death. Wild animals were tried in the ecclesiastical courts and punished by banishment and death by exorcism. St. Patrick, for example, exorcised the snakes of Ireland into the sea and St. Bernard, being irritated one day by the persistent activities of a blue-bottle fly, said, "Be thou excommunicated," and thus unintentionally caused the death of all the flies in the district. In Purchas's "Pilgrims," locusts are spoken of as being exorcised and excommunicated so that they flew away and again—"In the yeere 1603, at Fremona, great misery happened by Grasse-hoppers, from which Paez freed the Catholikes, by Letanies and sprinkling the Fields with Holy-water; when as the Fields of Heretikes, seuered only by a Ditch were spoyled by them. Yea, a Heretike vsing this sacred sprinkling, preserued his corne, which, to a Catholike neglecting in one Field, was lost, and preserued in another by that coniured aspersion (so neere of kinne are these Locusts to the Deuill, which is said to hate Holy-water)."

Manoel Felix reported that red ants ate the alter cloths in the Convent of St. Antonio, Maranham, Brazil, and also brought up pieces of shrouds from the graves, for which they were prosecuted by the friars. Another case deals with the unwelcome activities of ants in a convent at Avignon, whereupon they were sued, excommunicated and ordered to move within three days to a place alloted to them in the middle of the earth. According to the clerical statement, this the ants did, taking away with them, their young and their provisions.

The right to exercise the power of trying domestic animals is said to have been based on the Jewish law as laid down in Exodus XXI, 28 and other places in the Old Testament. Lawyers were appointed to defend the animals and the whole event, including the sentence was carried out with extreme formality.

If the residents of a district were being annoyed by specific animals, the court appointed experts to inspect the area and report their findings. A counselor was selected to defend the animals and to show cause why they should not appear in court. They were then summoned three times and failing to appear, a decision was given against them by default. The court then issued a *monitoire* admonishing them to leave the district within a specified time, "under penalty of adjuration." Failing to disappear within the time set, exorcism was pronounced with due gravity. The courts however did everything that they could to delay this last pronouncement because of the danger that the animals might fail to pay attention to it, thereby placing them in a ridiculous position. The animals in some cases, instead of vanishing after being execrated, multiplied and were more destructive than before. This was attributed by the erudite jurists of the time not to a lack of court power, nor to an unjust sentence, but to the malignant hostility of the Prince of Darkness.

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Chambers, R. (ed.)—Book of Days (London, 1862-64).
Purchas, S.—Purchas his Pilgrimes (London, 1625, 1626).
Southey, Robt.—History of Brazil (London, 1817, 1822).

Concerning the Genus Chalcomyia Williston (Syrphidae, Dipt.).

Shannon (Proc. Ent. Soc. Wash., xxviii, 111-114) gives a key to this genus and describes a new species, *C. beckeri*. This latter is almost certainly a synonym of *Psilota ruficornis* Zett. which has been placed in the genus *Myolepta* Newm. since 1858. *Chalcosyrphus* Curran should be considered a genus distinct from *Chalcomyia*. At the time the subgenus was erected only the female was known but males have since been examined. In this genus the abdomen is narrow and elongate, in both sexes, whereas in *Chalcomyia* it is very broad in the female and broad in the male. *Chalcosyrphus atra* Curran is undoubtedly the female of *depressa* Shannon and this latter should be considered as the genotype of *Chalcosyrphus* Curran. *Chalcomyia anomala* Shannon evidently belongs to the genus *Cynorhina* or *Cynorhinella*, and is certainly not *Chalcomyia*.

C. H. CURRAN, Ottawa, Can.

ENTOMOLOGICAL NEWS

PHILADELPHIA, PA., NOVEMBER, 1926.

The People are Becoming Better—Especially the Entomologists.

It is a joy to know that in some respects people are changing to the better. Surely scientific men are growing broader and more unselfish—more considerate of one another and more interested in the welfare of humanity as a whole. The specialist always draws his examples from his own class after making a generalization, and, just as the beetle chaser in Van Bruyssel's charming "Population of an Old Pear Tree" said "especially with the Buprestidae," so in this case I say "especially with the economic entomologists."

There is, for example, a striking contrast between the mutually helpful attitude of the entomologists all over the world at the present day in the important matter of introducing parasites and other natural enemies of destructive insects into one country from another and the attitude assumed by B. D. Walsh for John Curtis sixty years ago in the imaginary correspondence which he supposed to have taken place between Asa Fitch and Curtis concerning the importation of the parasites of the wheat midge from England into New York State (Practical Entomologist, vol. II, p. 54). Look it up in your library, and then, when you have read it, consider present conditions and think how glad Guy Marshall or Imms of England, Marchal of France, Berlese or Silvestri of Italy, Escherich, Reh or Walther Horn of Germany, Horvath or Jablonowski of Hungary, Pospelov of Russia, Kuwana of Japan, Fletcher of India, Williams of Egypt, Lounsbury of South Africa, Tillyard of New Zealand, or any of the growing army of younger workers would be of a chance to help us in any way! Then think how gladly we welcome the foreign entomologists who are visiting us in increasing numbers and what a privilege it is to us of the present generation to be of assistance to any one of the men I have named, or in fact to any other good worker, no matter in what country he may be working. Economic entomology—

the fight of humanity against the insects—has become broadly international, and there are no barrier lines between the workers of different nations.

So much for the international aspects suggested by Walsh's imaginary correspondence. Am I right in my strong impression that the relations among our own American workers are vastly better than they were in the days of Walsh? When I think of the rivalries and jealousies of my earlier days, when I remember the harshly critical articles that were published from time to time, I believe that my present impression is right: the people are becoming better—especially the entomologists.

L. O. HOWARD.

New Prize Fund of the Entomological Society of France.

At its meeting on April 14, 1926, the Entomological Society of France accepted an offer made to it by M. H. Gadeau de Kerville of 20,000 francs to establish a fund the income of which is to be given annually as a prize to a French author of a printed or manuscript paper on the biology of a group of Arthropods (or even of a single species), not to be limited to insects. (Bull. Soc. Ent. Fr. 1926, no. 7, p. 74).

Changes of Addresses.

Kenneth A. Salman, 82 Pleasant Street, Amherst, Mass.

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Henry L. Viereck, Acad. Nat. Sciences, Philadelphia, Pa.

Thanaos clitus (Lepid.: Hesperiidae) in California.

Thanaos clitus Edwards was reared from larvae feeding on *Hosackia* sp. The larvae were taken at Torrey Pines, San Diego County, California, April 23, 1926.

A. J. BASINGER, Riverside, Calif.

Entomological Literature

COMPILED BY E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published.

All continued papers, with few exceptions, are recorded only at their first installments.

Papers of systematic nature will be found in the paragraph beginning with (N). Those pertaining to Neotropical species only will be found in paragraphs beginning with (S). Those containing descriptions of new forms are preceded by an *.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

Papers published in the Entomological News are not listed.

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SPECIAL NOTICES

Insecta Matsumurana. Edited by Prof. S. Matsumura. Issued by The Entomological Museum, Hokkaido Imperial University, Sapporo, Japan. The first number of this new journal has just appeared. The journal is to contain descriptions of the new species of insects collected by Dr. Matsumura. Its papers are to be in English, German, or French.

Zoological Record. Insecta. Prepared by The Imperial Bureau of Entomology. This part of volume 42, 1925, has just appeared, containing 421 pages.

BIOLOGIE DER SCHMETTERLINGE, von DR. MARTIN HERING: (Berlin, Julius Springer, 1925).—This is an amazing book. In some five hundred pages it covers practically the whole field of the biology, in the stricter sense, of the butterflies and moths; and also gives an equally full account of the structure of the various stages, though the systematic side is neglected. It is difficult to see how a single man has managed to cover the field of published data so completely. I find in each field that I have sampled, not only the generally accepted and better known facts, but an extraordinary mass of other items less well known, and not a little that I believe to be unpublished. In the matter of published material apparently not only the well known scientific sources seem to have been covered, but also the obscurer and more popular sources which frequently contain important points of ecology, habits and life history.

There are some points that seem to me worthy of criticism, and a few errors and omissions surprising in an otherwise so perfect piece of work. On p. 4 the "ocelli" of the larva are referred to. It is now well known that the so-called ocelli of caterpillars are not true ocelli, but are the isolated ommatidia of a degenerate compound eye. The essential differences between the compound eye and the ocellus of an insect are as follows: In the compound eye each group of retinal cells (retinulae) is supplied by a separate lens and cornea, and is composed of about seven elements; in the ocellus there is a single cornea and no lens for a group of retinulae, each of which is composed of two or three, rarely four elements.* The figure of the caterpillar ommatidium (*Macrothylacia rubi*, as *Gastropacha*) in Schroeder's "Handbuch," vol. 1, fig. 125, shows these features plainly, and Hering's figure on p. 185 obviously represents the same structure, though it is not labelled "larva." For the true ocellus of the Lepidoptera see E. Link: Zool. Jahrb. Abt. Anat. 27, p. 233 fig. E. It shows two-cell retinulae grouped under a single cornea.

On p. 59, in the discussion of monophagy and polyphagy of caterpillars, the intermediate condition, where members of a group of closely related genera are attacked (oligophagy) is not sufficiently considered. This is perhaps a serious omission, as so many of the primitive forms show it, and probably the whole discussion of the primitive character of polyphagy should be inverted. Early oligophagous types are the Eriocraniidae, Papilionidae and Hesperiidae as a whole, Nepticulidae, and some genera of Incurvariidae such as *Prodoxus* and *Paraclemensia*. The last is unusual in being practically confined not merely to a single genus, but to a single species. It might well be argued that the relatively few polyphagous primitive forms (such as *Hepialus humuli*) originally fed on some Cryptogam now extinct, and have been forced to substitutes. The botanical omniscience of the Ithomiids (Neotropidae) is vitiated by the fact that one or two species feed on "Yuca" or Cassava (Euphorbiaceae). I suspect similarity of smell (from the insect point of view) is more important than botanical kinship. The association of Vitaceae with Lythraceae and Onagraceae by no less than five genera (*Desmia, Alypia, Eudryas, Pholus, Choerocampa* s. l.) is another striking case overlooked by Dr. Hering. *Ambrosia* and Compositae should be added to the foods of *Tischeria* on p. 61.

*This difference fails in larvae of Coleoptera and Hymenoptera, which have a structure of intermediate type in the position of the compound eye.

American workers will be likely not to recognize our familiar *Feniseca tarquinius* under the name of "Polyommatus porsenna" on p. 73.

On p. 76, one is left with the impression that the dorsal glands mentioned are of general occurrence. In fact they are limited to the Lymantriidae, and even there are absent from such highly aberrant forms as *Doa*. The curious use described for them in the gold-tail, should be verified in other forms, and other soft-haired caterpillars should be examined to see if they show anything similar (*Apatelodes*, for instance).

On p. 78 the statement is made that forms with evenly distributed bristles are primitive. In fact the exact opposite is true, evenly distributed bristles being limited to a few more or less specialized groups (all except the butterflies highly specialized), and the primitive forms have a sparse and highly irregular pattern.

It does not seem sufficiently clear, that in the case of the sphingid horn, and the ocelli, only the cuticle is renewed at the molt, the soft parts being withdrawn. The Gracilariidae also do not not undergo their hypermetamorphosis at the first, but at one or another of the later molts. The statement that the young *Phyllocnistis* larva is a tissue feeder is surprising. *Marmara* in any case is a sap-feeder its whole life.

The discussion of the genealogy of the Lepidoptera is perhaps still a matter of opinion, but a couple of points in the table on p. 43 would satisfy very few,—notably the wide separation of the Castniidae and Hesperiidae, and of the Gracilariidae from the Lyonetiidae. The arrangement of the families of higher moths is to me merely a mystery, it seems to follow neither the old conceptions based on the "Bombyx"-like appearance or the venation, nor the more recent systems based on egg, larva and tympanum, all three of which would associate the Dioptidae and Notodontidae with the Noctuidae etc., and the Bombycidae, at least distantly, with the Saturniidae.

The tympanum, p. 193 etc., seems to have been a source of trouble, the two figures on p. 194 being entirely unrecognizable. In fig. 58 I suppose an arctiid is represented, but the tympanic membrane is extraordinarily large for a form with the spiracle on the outer side of the hood, and there is nothing either in figure or text to indicate that the part of the body that bears it is the *thorax*. In the figure it seems to belong to a mysterious extra segment (labelled merely "Thorax"), while the text moves it onto the abdomen. The other figure appears to be synthetic, combining features of the Geometridae (where the membrane is on the first segment of the abdomen, and

more or less faces the thorax), with the Drepanidae, where it lies farther back; and perhaps shows some influence also of *Urania,* where it is really on the second segment, as described in the text. Not only my not wholly satisfactory paper in Psyche seems unknown to Dr. Hering, but also the very full and important monograph by Eggers (Zool. Jahrbucher, Anat. 41:273-376) is unmentioned.

The chapter on geographical distribution is very interesting, and carefully worked out. I wonder if more allowance might not be made for relatively recent extinction of formerly world-wide forms; as in other groups where fossils are known, this has turned out to be the true reason for several distributions formerly credited to "Notogaea" or "Lemuria." An interesting case is the South American and African *Hypanartia (Antanartia).* This might be thought of as an example of an early land-bridge, but in fact the group (genus in the broad sense) is represented in North America by the fossil *Prodryas persephone,* and the genus, which is closely related to *Vanessa,* may really have been world-wide.

The chapter on mines is of special interest, but perhaps the complicated system of Greek names for the various types of feeding habit might prove more a source of confusion than a necessity. Some of the generalizations also would have to be modified to take in the American forms.

The figures on the few plates are well selected, and are beautiful reproductions, but apparently were grouped almost haphazard. In some cases the effect is unfortunate, as in the case of the Bistons, where the hybrid is separated by some dozen pages from its parents. With a little less enlargement all could have gone easily on the same plate.

There is a short bibliography, selected on no obvious principle. Jordan is for instance represented by one of the least important of his papers. American titles are completely absent.

Wm. T. M. Forbes.

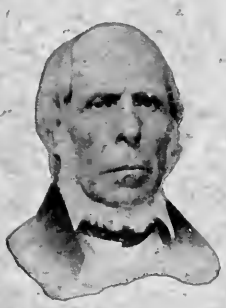
OBITUARY.

The death of Fernand Meunier, member of the Entomological Society of France since 1890 and author of a large number of notes and memoirs on fossil insects, was announced at the meeting of the Society March 24, 1926, but without any particulars as to the date or place of his decease. (Bull. Soc. Ent. Fr. 1926, no. 6, p. 65).

DECEMBER, 1926

ENTOMOLOGICAL NEWS

Vol. XXXVII No. 10



JAMES RIDINGS
1803–1880

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PHILADELPHIA, PA.
THE ACADEMY OF NATURAL SCIENCES.
Logan Square

Entered at the Philadelphia, Pa., Post Office as Second Class Matter.
Acceptance for mailing at the special rate of postage prescribed for in Section 1103.
Act of October 3, 1917, authorized January 15, 1921.

ENTOMOLOGICAL NEWS

published monthly, excepting August and September, by The American Entomological Society.

Philip P. Calvert, Ph.D., Editor; E. T. Cresson, Jr., Associate Editor; Henry Skinner, M.D., Sc.D., Editor Emeritus.

Advisory Committee: Ezra T. Cresson, Philip Laurent, J. A. G. Rehn.

The subscription price per year of ten (10) numbers is as follows:

United States and possessions	$3.00
Canada, Central and South America	3.15
Foreign	3.25

Single copies 35 cents

ADVERTISING RATES: Full width of page. Payments in advance.

One issue, 1 in., $ 1.20,	2 in., $ 2.40,	half page, $ 4.00,	full page,,	$ 8.00
Ten issues " 11.00,	" 20.00,	35.00,		70.00

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Of The American Entomological Society will be held at 7.30 o'clock P. M. on the fourth Thursday of each month, excepting June, July, August, November and December, and on the third Thursday of November and December.

Communications on observations made in the course of your studies are solicited; also exhibits of any specimens you consider of interest.

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KANSAS ENTOMOLOGICAL SOCIETY, APRIL 24, 1926.

BACK ROW: ABERCROMBIE, BEAMER, COOK, SCHWARDT, GATES, MORTIN, GUILD, GILMER, BALES.
CENTER ROW: LAWSON, CIPRA, SMITH, STILLWAGON. SMITH, PARKER, DEAN, REODIO, DOERING, BRYSON.
FRONT ROW: BROWNE, DEAY, STEPHENSON, HUNGERFORD, McCOLLOCH, BUTCHER.

ENTOMOLOGICAL NEWS

VOL. XXXVII DECEMBER, 1926 No. 10

A Key to the North American Species of Macrolophus with Descriptions of Two New Species (Hem.: Miridae).*

By HARRY H. KNIGHT, Ames, Iowa.

It now appears that three species have been passing under the name *Macrolophus separatus* Uhler, all of which have the same general color aspect yet differ distinctly in the structure of antennae and head, not to mention a few minor characters. From a study of the original description of *separatus* Uhler it is impossible to know the type locality of the species and likewise the particular specimens from which the description was drawn. If the type is selected from the Grenada specimens it is possible that the species might prove different from the form here redescribed. For the present I determine *separatus* Uhler as the species with hemelytra having a fuscous point at base of each hair except on narrow outer margin, and in distribution found from the transition to lower austral life zones.

The best characters for distinguishing the species of *Macrolophus* appear to be in the relative length of antennal segments, width of head and vertex, size of eyes and position, and width and length of the pronotum. The genitalia appear to be generic in character, and noteworthy in having the right clasper greatly reduced and inconspicuous; and in this connection I have studied the genotype, *Macrolophus nubilus* (H. S.).

Macrolophus separatus (Uhler).

1894 *Dicyphus separatus* Uhler, Proc. Zool. Soc. London for 1894, p. 194.

The form I take to be *separatus* Uhler has the following characters: ♂. Length 4.3 mm. Head: width .54 mm., vertex .28 mm.; lateral width of an eye .20 mm., space between eye and pronotal collar, .114 mm.; without trace of a fuscous vitta behind dorsal margin of eye. Rostrum, length 1.79 mm.,

*Contribution from the Department of Zoology and Entomology, Iowa State College, Ames, Iowa.

scarcely attaining posterior margins of hind coxae. Antennae: segment I, length .38 mm., black; II, 1.17 mm., yellowish, narrow apex blackish; III, 1.28 mm., slender, yellowish to dusky; IV, .51 mm., fusco-brownish. Pronotum: length .66 mm., width at base 1.06 mm.

♀. Length 4.2 mm. Head: width .56 mm., vertex .285 mm.; lateral width of an eye .20 mm., space between eye and pronotal collar .114 mm. Antennae: segment I, length .34 mm.; II, 1 mm., practically equal to width of pronotum at base; III, 1.2 mm.; IV, .52 mm.

Plesiotypes: ♂, ♀, Sept. 22, 1907, Hessville, Indiana (W. J. Gerhard). Records: ALABAMA—♀ August, 1918, Kushla (A. H. Sturtevant). DISTRICT OF COLUMBIA—♀ July 27, 1885, ♂ August 5, 1885, Washington (O. Heidemann); these specimens determined as *separatus* by Uhler. FLORIDA—♂ ♀, "Jacksonville." ILLINOIS—♂ August 4, Chicago (W. J. Gerhard). INDIANA—♂ ♀ September 22, 1907, Hessville (W. J. Gerhard). MARYLAND—2♀ August 7, Annapolis Junction; ♂♀ September 11, 1892, Blandensburg (O. Heidemann). NORTH CAROLINA—2♀ July 25, Tryon (W. F. Fiske), collected at light.

Macrolophus longicornis new species.

Color characters suggestive of *separatus* Uhler, but distinguished by the longer antennae as compared with the head and pronotum; length of antennal segment I equal to (♀), or greater than (♂) width of head.

♂. Length 4.5 mm., width 1.03 mm. Head: width .48 mm., vertex .27 mm.; lateral width of an eye .156 mm., space between eye and pronotal collar .14 mm. Rostrum, length 1.76 mm., nearly attaining posterior margins of hind coxae. Antennae: segment I, length .51 mm., pale, apex blackish; III, 1.52 mm., slender, pale; IV, .52 mm., pale to dusky. Pronotum: length .56 mm., width at base .86 mm. General coloration greenish yellow, and darkened with fuscous nearly as in *separatus* Uhler, but the fuscous points on corium much fainter and confined to inner half; length of antennal segment II about equal to basal width of pronotum plus width of head (1.32 mm.).

♀. Head: width .50 mm., vertex .28 mm. Antennae: segment I, length .50 mm.; II, 1.20 mm., length much greater than width of pronotum at base; III, 1.52 mm.; IV, .54 mm. Pronotum: length .54 mm., width at base .91 mm.

Holotype: ♂ July 24, 1920, Cranberry Lake, New York (C. J. Drake); author's collection. Allotype: ♀ July 29, 1920, Wanakena, New York (C. J. Drake). *Paratypes:* ♀ July 15, 1920, allotypic. ♂ July 21, 1920, Branford, Connecticut (B. H. Walden). ♂ 2 ♀ July, 1888, Muskoka Lake District, Ontario (E. P. Van Duzee); Iowa State College collection.

Macrolophus brevicornis new species.

Suggestive of *longicornis* but the antennae distinctly shorter, segment I not equal to width of head; distinguished from *separatus* as shown in the key.

♂. Length 3.6 mm., width .96 mm. Head: width .48 mm., vertex .26 mm.; lateral width of an eye .157 mm., or a trifle greater than the space (.114 mm.) between eye and base of head where the collar normally fits against it. Rostrum, length 1.34 mm., reaching to middle of hind coxae. Antennae: segment I, length .34 mm., scarcely equal to width of vertex plus dorsal width of an eye; II, .88 mm., being a trifle longer than width of pronotum at base, the apical one-fourth blackish; III, 1.03 mm., length greater than segment II which is unusual in the family Miridae; IV, .43 mm. Pronotum: length .54 mm., width at base .84 mm.

♀. Head: width .47 mm., vertex .25 mm.; lateral width of an eye .157 mm., space between eye and pronotal collar .114 mm. Antennae: segment I, length .33 mm.; II, .75 mm., not equal to width of pronotum at base; III, 1 mm.; IV, .38 mm. Pronotum: length .54 mm., width at base .84 mm.; thus antennal segment II is not equal to basal width of pronotum in the female.

General coloration lemon yellow, sometimes greenish yellow; head with a fuscous stripe behind dorsal margin of the eye; hemelytra with fuscous points more distinct than in *longicornis*, basal two-thirds of corium without fuscous points at base of hairs except one row bordering claval suture.

Holotype: ♂ August 19, 1920, Lakehurst, New Jersey (Wm. T. Davis); author's collection. *Allotype:* same data as the type. *Paratypes:* Iowa—2♂, 1♀, July 1, 1894, ♂ July 26, ♂ Aug. 18, 1895, ♀ June 20, 1896, Ames (E. D. Ball); Iowa State College collection. Kansas—♀, "Kans." Maryland—♂ October 12, 1901, Glen Echo (O. H. Heidemann). Missouri—♀, Forest Park, St. Louis.

Key to the species of Macrolophus.

1. Length of antennal segment I equal to width of head across eyes.....2
   Length of antennal segment I equal to or slightly greater than width of head across eyes; length of segment II distinctly greater than basal width of pronotum.
   longicornis n. sp.
2. Head with postocular space nearly equal to lateral width of an eye, a fuscous stripe behind dorsal margin of eye; antennal segment II with apical one-fourth blackish; basal two-thirds of corium without fuscous points at base of hairs except one row bordering claval suture.
   brevicornis n. sp.
   Head with postocular space equal to little more than half the lateral width of an eye; antennal segment II narrowly fuscous at apex; corium with three or four rows of fuscous points on basal two-thirds.....*separatus* Uhler

Notes on the Acrididae of Brazos County, Texas (Orthoptera).

By V. A. Little, College Station, Texas

For the past two years the writer has intensively collected and made many notes upon this family. The work was not limited to the summer months alone but extended over the entire year. Much of the data of the seasonal appearance of the adults was obtained from caged specimens.

Brazos County is located in the east central part of Texas, about one hundred and fifty miles north of the Gulf of Mexico. It lies in that part of the Gulf Costal Plain known as the "East Texas Timber Belt." The general elevation ranges from two hundred to four hundred feet above sea level, sloping gently toward the southeast.

Tryxalinae.

Mermiria bivittata Serville. Fairly common. Taken as early as May 29. Found usually in damp spots in rank grass.

Mermiria maculipennis maculipennis Bruner. Very rare.

Tryxalis brevicornis Linnaeus. Very rare. Not found earlier than the latter part of July.

MESOCHLOA ABORTIVA Bruner. Common. Both adults and nymphs taken throughout the year. Found in greatest numbers along small streams in pastures.

SYRBULA ADMIRABILIS Uhler. Common. Reaches maturity as early as June. Rank grass of lowlands its favorite habitat.

AMBLYTROPIDIA OCCIDENTALIS Saussure. Rare. Found in fall and spring among post oak and hickory leaves.

DICHROMORPHA VIRIDIS Scudder. Rather rare. Found in pasture lands among water courses.

ORPHULELLA PICTURATA Scudder. Common. Taken as early as the middle of May.

ORPHULELLA PELIDNA Burmeister. Common. Reaches maturity as early as June 1.

BOOPEDON NUBILUM Say. Fairly common. Reaches maturity in early June.

BOOPEDON AURIVENTRIS McNeill. Rare. Taken as early as May 29. Found in ungrazed pasture lands.

AGENEOTETTIX DEORUM Scudder. Taken sparingly in pastures. Not confined to sandy soils. Reaches maturity by midsummer.

PSOLOESSA TEXANA Scudder. Rare. Found in post oak woods in April.

OEDIPODINAE.

ARPHIA XANTHOPTERA Burmeister. Common. July 8, earliest date taken. Found in post oak woods.

ARPHIA SULPHUREA Fabricius. Common. Reaches maturity as early as the middle of April. Found in post oak woods and edges of old fields and pastures.

CHORTOPHAGA VIRIDIFASCIATA De Geer. Common. Winter passed in nymph stage. Adults taken as early as February 6.

ENCOPTOLOPHUS SUBGRACILIS Caudell. Taken sparingly in pastures among goat weeds.

HIPPISCUS RUGOSUS Scudder. Very common in pasture lands. Reaches maturity in early June.

HIPPISCUS SAUSSUREI Scudder. Fairly common in pastures and waste lands. Adults taken in April.

DISSOSTEIRA CAROLINA Linnaeus. Fairly common. Adults seen as early as May. Widely distributed.

Spharagemon bolli Scudder. Taken sparingly in post oak woods.

Spharagemon cristatum Scudder. Common in sandy soils. Adults taken as early as April 17.

Spharagemon aequale Say. Very rare.

Tomonotus aztecus Saussure. Very rare. Found on red clay and gravel.

Mestobregma fuscifrons Stal. Common. Overwintering nymphs reach maturity in early March. Brood hatching from overwintering eggs reach maturity in early June.

Mestobregma aspera Scudder. Very rare. Found only in fall.

Psinidia fenestralis Serville. Very common on sandy soils. Adults taken as early as latter part of April. Nymphs found throughout winter.

Trimerotropis citrina Scudder. Common. Adults taken as early as April 17.

Hadrotettix trifasciatus Say. Common. May 20, earliest date taken. Usually found in rocky waste lands.

Locustinae.

Romalea microptera Beauvois. Fairly common. Reaches maturity in early June.

Schistocerca americana Drury. Common. Adults taken throughout the year.

Schistocerca obscura Fabricius. Common in late summer and fall.

Schistocerca damnifica Saussure. Rather rare. Found in fall, winter and spring in post oak woods.

Paraidemona punctata Stal. Common. Taken throughout the year.

Campylacantha olivacea Scudder. Rather common. Taken in August and fall on goat weeds and broom weeds near post oak woods.

Hesperotettix speciosus Scudder. Common in fields and pastures. Latter part of May earliest date taken.

Melanoplus scudderi Uhler. Most abundant and widely distributed short-winged species we have. One specimen taken in mid-winter.

MELANOPLUS TEXANUS Scudder. Found only in the spring in post oak woods. Reaches maturity in April.

MELANOPLUS PLEBEJUS Stal. Very common in low lands on edges of fields and pastures.

MELANOPLUS FLAVIDUS Scudder. Taken sparingly during summer and fall in pastures and uncultivated fields.

MELANOPLUS ATLANIS Packard. Rather common. Adults taken in numbers as early as April 9. Found chiefly in pastures.

MELANOPLUS FEMUR-RUBRUM De Geer. Rather common. Maturity reached in late spring or early June.

MELANOPLUS BISPINOSUS Scudder. Very common. Adults taken as early as latter part of April.

MELANOPLUS IMPIGER Scudder. Rather rare. Maturity reached by the middle of June. Found in uncultivated fields.

MELANOPLUS KEELERI Thomas. Rather rare. Found along edges of lowlands in woods and thickets. Taken not earlier than June.

MELANOPLUS DIFFERENTIALIS Thomas. Maturity reached in early June. Most destructive locust in Texas.

MELANOPLUS PONDEROSUS Scudder. Found in numbers along the margins of fields feeding on foliage of trees and shrubbery. Reaches maturity in early summer.

Notes on the Distribution of Hesperiidae in Western Massachusetts (Lepidoptera).

By H. H. SHEPARD, College Park, Maryland.

My early collecting days were spent on a farm and its neighboring woods and fields on the hills of Phillipston, a small town in northwestern Worcester County, Massachusetts, about ten miles from the New Hampshire line and directly south of Mt. Monadnock. This portion of Massachusetts has many faunal characteristics in common with New Hampshire, even its more northern White Mountain region, as will appear from facts set forth in this paper. The hills in Phillipston are of an altitude of 1100-1300 feet above sea level. No low point is much more than two hundred feet lower than the first figure.

Although I had collected for several years previously to 1919, I had not taken much notice of the Hesperiidae. At that time, however, I became interested in them through my first and best friend in entomology, Mr. C. V. Blackburn, of Stoneham, Mass. Since then I have made a list of Hesperiid captures with notes, and think it will be of interest to lepidopterists in general and to those of New England in particular. I have attempted to give comparative notes from other parts of western Massachusetts, especially as I have for the past five years been located at Amherst in the Connecticut Valley, continuing the collecting of skippers in that locality.

Amherst is located in a very interesting, and a somewhat peculiar, land-formation. The Connecticut Valley at this point is nearly ten miles broad, flat and fertile with hills to the east and west. On the north there are hills which shut in the valley close to the river in that direction. South of Amherst the Holyoke Range, of which Mt. Tom forms the western end, lies directly across the valley as a narrow ridge 900 feet higher than the floor of the valley, Amherst itself being nearly 300 feet above sea level. This protected bit of valley affords a place for the more southern forms of life to find a favorable home, provided they can find their way through the Holyoke Range, certainly a most formidable barrier at most points. Amherst is about thirty miles southwest of Phillipston, and its butterfly fauna makes quite a contrast to the northern elements in that of the latter.

I have used in his paper the classification of Hesperiidae that A. W. Lindsey uses in his "Hesperioidea of America North of Mexico," February, 1921.

Hesperiidae taken in Phillipston, Massachusetts.

Epargyreus tityrus Fabr. In mid-June and later.

Thorybes pylades Scud. As early as June 4. Eggs are laid on the leaves of white clover.

Thanaos icelus Scud. & Burg. Earliest date, May 24. I have reared this species from a larva found on poplars.

T. persius Scud. Captured on May 27 in 1920.

Race lucilius Scud & Burg. Larvae found on garden col-

umbines *(Aquilegia)* in considerable numbers in late summer. Specimens reared from columbine seem to always exhibit the distinct markings of *lucilius*, but I should want to rear a long series before making anything like a definite statement.

T. JUVENALIS Fabr. Earliest date, May 27. This species and *icelus* have been the most common species of the genus in my experience in Massachusetts.

T. HORATIUS Scud. & Burg. Taken on July 13, 1919. Not at all a common species in Massachusetts.

CARTEROCEPHALUS PALAEMON Pallas. My best capture. As far as I can ascertain this species had never been taken in Massachusetts up to this time. My specimen was taken in a freshly cut-off woodland swamp at an elevation of somewhat over 1000 feet on June 20, 1920. It was flying in the bright sunshine in a rank growth of raspberry briars in full bloom.

Three of the four specimens of *palaemon* that are contained in the collection of the Boston Society of Natural History are labelled from White Mountain localities (two from Bretton Woods and one from Franconia); the fourth specimen is evidently an old one and bears no locality label.

As compared to *palaemon* from England, my specimen is a little smaller and quite differently marked, the checker-spots of yellow being smaller and covering the wings less. It agrees with White Mountain specimens of *palaemon*.

PAMPHILA METEA Scud. Appeared in 1920 in considerable numbers on May 30 and for a week or so thereafter. I found it only in a certain field covered with old matted bunch-grasses where were some wild strawberries in blossom around which the skippers flew to some extent. They were found almost equally abundant throughout the field, however, and probably laid their eggs on the type of grass present there.

P. LEONARDUS Harris. Taken on roadside flowers on September 3 and thereafter; not particularly common.

P. SASSACUS Harris. A common skipper flying soon after *habomok* in the early summer. My earliest date in Phillipston seems to be June 10, but I believe this species would turn up there at least a week earlier.

POLITES MANATAWQUA Scud. An uncommon species of which I have a record from Phillipston dated July 8.

P. TAUMAS Fabr. (=*cernes* Bd. & Lec.) Very common. My earliest date is June 18, but this species also must occur much earlier.

P. PECKIUS Kirby. Extremely common in early June and practically all summer.

P. MYSTIC Scud. Common; a little later in appearing than the two preceding. My earliest record for Phillipston is June 18, 1918.

CATIA OTHO A. & S., race *egeremet* Scud. Earliest on July 8, 1919.

POANES HOBOMOK Harris. Usually about the first of the common Pamphilids to appear. June 4 is my earliest for Phillipston. The dark female *pocahontas* Scud. occurs at about the same time.

ATRYTONE LOGAN Edw. I have taken one specimen on July 7, 1919.

A. VESTRIS Bdv. Rather common; found by July 13.

ATRYTONOPSIS HIANNA Scud. I found this species on May 29, 1921, in the same field that *metea* occurred in on May 30 of the year before. Not at all common.

AMBLYSCIRTES VIALIS Edw. Flying in mid-June in dry grass fields, usually near woods. My earliest date at this place is June 15, 1920.

Hesperiidae taken in Amherst, Massachusetts.

The dates given are the earliest ones recorded. Asterisk (*) indicates date from specimen in collection at Massachusetts Agricultural College.

EPARGYREUS TITYRUS Fabr., May 29, 1923.

THORYBES PYLADES Harris, May 27, 1925.

T. DAUNUS Cramer, July, 1922.

PHOLISORA CATULLUS Fabr., May 18, 1925.

THANAOS ICELUS Scud. & Burg., May 22, 1925.

T. BRIZO Bdv. & Lec., May 3, 1925.

T. PERSIUS Scud., May 8, 1922.

*race LUCILIUS Scud. & Burg., July 18, 1904 (labelled—"det. by Skinner").

*T. MARTIALIS Scud., June 15, 1894.
T. JUVENALIS Fabr., April 27, 1925.
*T. TERENTIUS Scud. & Burg., July 25, 1905.
ANCYLOXYPHA NUMITOR Fabr., May 31, 1921.
*PAMPHILA LEONARDUS Harris, August 11, 1904.
P. SASSACUS Harris, May 28, 1922.
POLITES VERNA Edw., June 30, 1922.
*P. MANATAAQUA Scud., July 12, 1905.
P. TAUMAS Fabr., May 27, 1925.
P. PECKIUS Kirby, May 27, 1925.
P. MYSTIC Scud., June 8, 1922.
CATIO OTHO A. & S., race *egeremet* Scud., June 28, 1922.
*POANES MASSASOIT Scud., August 5, 1905.
P. HOBOMOK Harris (typical form), May 20, 1925.
♀form POCAHONTAS Scud., May 20, 1925.
ATRYTONE VESTRIS Bdv., July 6, 1922.
ATRYTONOPSIS HIANNA Scud., May 28, 1922.
AMBLYSCIRTES VIALIS Edw., May 31, 1925.

To this list of 24 species of Hesperiidae from Amherst may be added three mentioned from there by Scudder in his Butterflies of Eastern United States and Canada:

THANAOS HORATIUS Scud. & Burg.,
ATRYTONE LOGAN Edw.,
AMBLYSCIRTES HEGON Scud. (=*samoset* Scud.).

Four other records by Scudder add to a list of Hesperiidae taken in the Connecticut Valley not more than 20 miles from Amherst:

ACHALARUS LYCIDAS A. & S. at Mt. Holyoke,
POANES VIATOR Edw. from Holyoke,
PAMPHILA METEA Scud. from Springfield,
ATRYTONE BIMACULA G. & R. at Mt. Tom.

Comparative Notes

The occurrence of such species as *lycidas*, *daunus* (= *bathyllus*), and *terentius* at Amherst very well illustrate the advance of southern species along the lowlands of the north. It is in just the same manner that the northern *palaemon* ad-

vanced southward along the highlands south of the White Mountains.*

I am convinced that the reason that *numitor* is not represented in the Phillipston list is that my collecting there has been confined almost entirely to the hills. Scudder says, concerning *numitor*,—"In New England it is abundant south of the northern boundary of Massachusetts, but has been recorded from only two localities north of it . . ." It "frequents low marshy meadows and the borders of runlets passing through them . . ." The late Dr. Russell, a well-known collector in Winchendon, Massachusetts (a town bordering Phillipston on the northeast), records *numitor* from that place in his "List of Lepidoptera No. 1." This region is certainly the border-line for *numitor*. It is a very striking species on the lowlands because it is so numerous, but within a short distance in the hills it is never seen.

The distribution of Hesperiidae in this region is interesting also from the seasonal point of view. In the spring of 1925 careful records were kept of early captures in Amherst and many new records were made. It was an exceptional year for *brizo* which was very common, while *icelus* did not appear until much later than was expected. Further than this it will be sufficient to refer the interested reader to the dates given in each list. Those dates in the Amherst list, however, will give the better picture of seasonal distribution of the various species in Western Massachusetts, as more records were made at Amherst.

Personal.

Dr. H. H. Knight spent the summer of 1926 at the U. S. National Museum, naming and arranging the collection of Miridae.

Erebus odora in Massachusetts (Lepid.: Noctuidae).

A fine male specimen of *Erebus odora* was taken here September 27, 1926, and is now in my collection.

E. J. Smith, Sherborn, Massachusetts.

[* Compare W. F. Fiske's "List of Rhopalocera taken in Webster, New Hampshire," Ent. News, vii, pp. 241-2, Oct., 1896.—Editor.]

Collecting in South America.

By A. F. Porter.

[From a letter addressed to Dr. Henry Skinner and written from Choramazu, Peru, June 24, 1926.]

I have been in Peru now just three months and have had about two months actual collecting. I spent two weeks in Lima with my wife and after she sailed for home I left by train for Oroya and Cerro de Pasco where the Cerro de Pasco Copper Corporation has its mines. I had letters from President Drew of this Corporation to the officials here and was shown every courtesy during my visit at Oroya and in Cerro de Pasco. I was given a pass over the railway and when I went to the hospital for an examination for dysentery and asked for my bill I was told there was no charge, so you see I was treated royally. The mines, smelters, etc., are all very interesting and it was indeed a pleasure to be in and with Americans once more after six months of Brazil, Uruguay, Argentine and Chile.

The railway trip from Lima up to Oroya is very interesting. The railway reaches the highest altitude of any railway in the world at a station called Ticlio, altitude 16,500 feet above sea level. At such heights many people are stricken with what is known as *sorche* and indeed some are unable to pass over this railway because of the altitude. However, I escaped and suffered no inconvenience at all. The views along the route are grand and to me more so than on the Transandean Railway over which I passed enroute from Argentine to Chile. At Ticlio there were about three inches of snow on the ground and one felt more comfortable in an overcoat.

After four days in Oroya and Cerro de Pasco, I took passage in an auto, (a Dodge) from Oroya to Tarma and on to the village known as La Merced where the real jungle starts. This trip was also very interesting if one can concentrate on the scenery and not think about the rate of speed at which one passes over a very dangerous road. One descends at the rate of 50 to 60 kilometers per hour (about 30 to 35 miles per hour) over a road which twists and turns back and forth and *in places* with only ten to twelve inches to spare

between the wheel tracks and the edge of the cliff, a drop of from 100 feet to 1000 feet should the auto go over (as one did only three weeks ago, killing all passengers). I was delighted with the beauty and ever changing scenery at every turn. First at the highest altitudes only rocks, then a little grass and shrubs and flowers and as one reaches an altitude of 5000 to 3000 feet the forests begin and at 2000 feet tropical jungles abound on every side. In one place we passed under a beautiful waterfall the road being cut into the side of the cliff. Many streams are crossed and some beautiful waterfalls are seen, and all this midst a wonderful flora such as only the tropics can produce.

At La Merced one passes the night at a small hotel and next day I took mules and was on my way to Colonia del Perene one of the five Haciendas of the Peruvian Corporation where I had arranged to stop and make my headquarters with Sr. Valle Riestra, a very superior Peruvian gentleman, who is in charge of all the Haciendas. Here I was met by my kind host, shown to my room and made myself at home. After about two weeks collecting in and about the Colony, I was furnished mules and, with a Chuncha Indian boy, I passed on over a charming but very bad trail to Hacienda No. 3 of the Colony where I spent a month with my Indian boy collecting. Near the "Casa" was a small creek which I named Butterfly creek because of the great quantities of "Mariposas" along this stream, and in one place, some distance up from the house, a beautiful waterfall, some thirty feet or more high, I called Cacia falls because of the number of *Morpho cacia* taken here. My favorite location was on top a great boulder in the center of the stream where I would sit by the hour and watch these gorgeous beauties zigzag up and down along with two other species of *Morpho*. I found that by pinning a battered specimen on the rim of my net these morphos, seeing the flash of blue in the sunlight, were attracted to the net and not a few were captured in this manner. I left after twenty-eight days' actual collecting with 1782 specimens to my credit and my Indian boy brought in 1002 more, so you see we were busy.

Returning to the Colonia del Perene, I secured four mules and a driver, and with my Indian boy as guide we started on a two-day trip to Choramazu with tent, provisions for one month, camera and collecting outfit. I pitched my tent near a beautiful river, water clear as crystal and fine and cold for drinking. The first three days were rainy and not much taken but the fourth day broke bright and clear and I was off at eight o'clock. I found a small creek bed which led away back up a ravine and following this I came, here and there, to swarms of butterflies resting in damp places along the stream. I never saw so many butterflies in all my experience, they would rise in swarms of hundreds at times and in other places not so many. There were many species in these swarms and it was indeed hard for the eye to follow any one individual, zigzagging in and out among so many other common species. As I passed on I came to a great monarch of the forest which at some time had fallen across the stream forming a dam over which the water passed forming a beautiful cascade. Here I took my first *Papilio zagrious* and twenty more in the same place have since fallen into my net. They are not difficult to net if you succeed on the first stroke but once they take alarm they are off and do not return as many other species of butterflies do. I called this "Cascada" Zagrious and here I have spent many hours of watchful waiting for these great orange, yellow and black beauties. Among those taken were two with secondaries almost all black. I think it is called *Baccus* or *Bachus*, but am not sure. Cascada Zagrious is also my favorite bath and I try each day to have a dip in its cool refreshing waters. It beats any shower bath I ever saw to sit under this great log allowing the water to pour over one's shoulders, and is most exhilarating after a long hot day's collecting.

I heard many stories before coming to the Chanchamayo Valley, of the many dreaded insect pests, the terrible fevers, "tigers," (they call all jaguars "tigers" here), venomous snakes, etc., etc., and many of my friends urged me not to go into this dreaded region, but the lure of nature's most wonderful flora and fauna led me on and I have survived two months in the

heart of the jungle and hope to live through three months more. I am told the death rate in the valley is four or five per month out of a population of some 500 people living in the colony and scattered huts here and there, but I think most of these can be laid to improper protection and care, with poor food.

I take six grains of quinine daily as a prophylactic and take a head net to wear in places where mosquitoes are bad; my cot is covered with a mosquito net and my tent door and window also. I use a 2 per cent mercuric iodide soap to wash with and at my bath as well. This soap I find disinfects the hands and body from insect bites, etc., and helps to heal any wound or cut. It is a Parke, Davis and Co. product and I always carry it with me on collecting trips to the tropics or at home. Another essential on tropical jungle trips is good food and plenty of it, for collecting is hard work and the body requires substantial food to keep one going here. Our menu today was "Qutspe," a sort of wild rabbit without the long ears; they are very palatable and my Indian boy knows where to get them. But to go on with the menu: boiled rice, canned peas, crackers, and cheese, cocoa—not so bad for the heart of the jungle. Another thing I consider essential to good health in the jungle is a good canvas folding cot with mosquito net. I also carry two woolen blankets and one comforter or quilt and find an air mattress adds considerably to one's comfort. I always wear light weight all wool underwear which protects one from chills should one get soaked in a sudden tropical downpour and a pair of light gloves with fingers cut out would add protection to the hands and wrists from a tiny gnat found plentifully here while collecting or in camp.

[A later letter from Mr. Porter, at Colonia del Perene, stated that he expected to leave on October 1 for Ecuador, spend three months in that country and then on to Colombia for four months. Mr. Judson Coxey, of the American Entomological Society, plans to join Mr. Porter at Buenaventura, Colombia.]

Concerning the Insect Collection.

By Melville H. Hatch,* University of Michigan.

While much has been written about the collecting of insects, there is relatively little concerning the organization of the insect collection. The following treats of certain aspects of this matter. The function of the insect collection is dual, and success in its maintenance depends upon the distinctness with which the two are kept separate in the collector's or curator's mind. They are its reference function and its research function.

The collection organized for reference will contain a limited number of specimens (which may range upward from one or two) of each type or form which it is desired to represent. Males and females, wherever distinguishable, should be treated as separate types, as well as color or structural variants, named or unnamed. In this way a single species may come to be represented by anywhere up to several dozen short series of specimens in the case of highly variable species. In case the variants recognized are not distinguished in the literature, they should be numbered, lettered, or named in the collection and notes made as to the distinguishing characters. No attempt should be made to illustrate geographical distribution.

A collection of Coleoptera so organized is useful for the determination of specimens by comparison, for the interpretation of the literature, for morphological purposes where occasional specimens may be selected for dissection, and for the study of fossils.

The scope of the research collection is much more extensive. As a basis for the study of individual variation or geographical distribution and as the depository of material that has served as the basis of ecological, life history, or other studies, there is no limit to the number of specimens of a type it should involve. It recognizes that a species is only an induction based on individual specimens and that the larger the series the more valid the induction becomes.

The difficulties of ever mounting costs and increasing insect

*Contribution from the Zoological Laboratory of the University of Michigan.

boxes, ultimately tending to terminate in chaos, to which the private collection is so frequently subject, are probably due in great measure to a failure to keep these two functions separate in mind and practice. A reference collection of beetles, if rigidly limited in the number of specimens maintained per species or type, can be expanded to contain an appreciable portion even of this order without becoming unmanageable. A thousand Schmidt boxes, containing an average of 25 to 50 species each, provide space for from twenty-five to fifty thousand species.

The value of a reference collection for the individual student of Coleoptera or the museum is of the same general nature as that of the library.

On the other hand, it is easy for the research collection to grow to such an extent as to become unmanageable or very expensive. Only the largest museums can attempt to collect series in all groups and for all regions. Individuals and most museums must confine their attempts to one or a few groups or one or a few regions. Every museum, from largest to smallest, should assemble series from at least its own immediate region (county, state, or country, as circumstances may permit). No investigator should, however, confine himself in monographic work to a single collection, but should borrow material as extensively as possible.

The following points may be noted in the organization of a reference collection. Each determination label should bear in addition to the complete name of the form (genus, subgenus in parentheses, species, variety, and author of the last component of the name) the name of the determiner and year in which the determination was made, since only thus may the accuracy of the determination be estimated. The author finds it impracticable to arrange his collection in one series for the world. Not only is the Junk-Schenkling *Coleopterorum Catalogus* not completed, but its arrangement of species under the genus is alphabetical, a most unsatisfactory arrangement for cabinet purposes. The Coleoptera portion of the *Genera Insectorum*, in which the species are arranged naturally, to say nothing of its great cost, is still more incomplete. Furthermore, for or-

dinary purposes, only the Nearctic series is usually required. Therefore the author arranges his collection in three series. (1) The Nearctic series is arranged according to the Leng catalogue or a subsequent revision, in which each species label is given the Leng catalogue number. (2) The European series is arranged at present according to the Reitter, Heyden, and Weise *Catalogus Coleopterorum Europae* published in 1906. In the future, however, collections from this area should be arranged according to Winkler's *Catalogus coleopterorum regionis palaearcticae*, now in process of publication, which will allow for the inclusion of species from Palaearctic Africa and Palaearctic Asia. The introduction of serial numbers in this excellent work makes it possible to place numbers on the species labels as with the Leng catalogue. (3) An exotic series from the rest of the world arranged according to the *Coleopterorum Catalogus* where available and the best obtainable sources otherwise. The presence of the species in the collection is indicated by placing an "x" before the name of the species in the Nearctic or Palaearctic catalogues. In the *Coleopterorum Catalogus* an "x" indicates the presence of a species in the exotic series, and a "N" or "P" its presence in the Nearctic or Palaearctic series.

But coleopterists are mortal! The great Coleoptera collections in this country have been willed to museums. Lesser ones are willed to museums or broken up and sold. Each generation of coleopterists must start in anew to build up its material equipment. Further, at no museum known to the author in the entire country, except the National Museum, is there any prospect of a succession of coleopterists being maintained. Many do not have a coleopterist at the present time. The author, therefore, is led to enquire whether or not the advancement of coleopterology would be better served by having collections passed from individual to individual, so that the pupil might start in as regards material equipment where the master left off.

Several comments may be made on such a proposal.

(1) This plan would be unnecessary if all coleopterists were

assured of positions in or near museums with large collections. The possession of such a collection would not make a man unavailable for a museum position, though it might be necessary to arrange that he should make no additions to his collection while in the services of the museum.

(2) Special provisions might or might not be desirable for the deposition of types.

(3) Provisions would have to be made so that the bequest would not become a burden to the recipient. It might be provided that the recipient should select only the material that would supplement his own reference series. The residue might be deposited in a museum.

(4) A certain standard of ethics would have to be maintained. Material secured in this way should not be subject to sale at all or to disposal except to students who would carry on the original stipulations.

Special collections involving extended series are probably best deposited in museums as at present.

Such a plan would mean that large collections would be not alone in the hands of middle aged men who have spent all their lives in their formation, but in the hands of young men as well, who would be able to make extra progress thereby. At least, let the idea be considered.

Additions to the Insects in the United States National Museum.

The U. S. National Museum has recently received as donations two important collections of insects. One of these is from John D. Sherman, Jr., of Mount Vernon, New York, comprising about 20,000 specimens of water beetles of the families Dytiscidae and Haliplidae, and representing about forty years of entomological activity on the part of the donor. This Mr. Sherman gives "in loving appreciation and honor of Dr. E. A. Schwarz." The second donation is from Dr. E. A. Chapin, formerly of the Bureau of Animal Industry, but recently appointed to the staff of the Bureau of Entomology as a specialist in beetles. This collection comprises fleas, lice and other ectoparasites, and is the largest addition in this group ever received by the museum. (*Science*, Oct. 29, 1926, pp. 424-5.)

ENTOMOLOGICAL NEWS

PHILADELPHIA, PA., DECEMBER, 1926.

Welcome to Philadelphia.

The American Association for the Advancement of Science and its affiliated and associated societies, will meet at Philadelphia, December 27, 1926, to January 1, 1927. The University of Pennsylvania and the Academy of Natural Sciences of Philadelphia offer meeting places to the visitors and extend to them a cordial welcome. Among those coming to this city the NEWS looks for many entomologists, who will find a hearty greeting awaiting them in the Department of Insects of The Academy, and on the part of The American Entomological Society.

Tenth International Congress of Zoology in Budapest, 1927. Preliminary Announcement.

The Ninth International Congress of Zoology in session at Monaco in March, 1913, decided to hold the tenth meeting in 1916 at Budapest, Hungary, under the presidency of the undersigned. Unfortunately the events of the war made it impossible to adhere to this decision, and the meeting of the Tenth Congress had to be postponed. The present international situation is now such, however, that this congress can be held during the coming year.

In accord with the Permanent Committee of the International Congress of Zoology I have the honor, therefore, to announce that the Tenth International Congress of Zoology will meet in Budapest, Hungary, on September 4 to 9, 1927, and that all zoologists and friends of zoology are hereby cordially invited to attend.

The detailed program of the Congress will be issued before the end of the present year and sent to those interested.

Budapest, Hungarian National Museum, September 4, 1926.

DR. G. HORVATH,

President, Tenth International Congress of Zoology, Director, Department of Zoology, Hungarian National Museum.

Entomological Literature

COMPILED BY E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published.

All continued papers, with few exceptions, are recorded only at their first installments.

Papers of systematic nature will be found in the paragraph beginning with (N). Those pertaining to Neotropical species only will be found in paragraphs beginning with (S). Those containing descriptions of new forms are preceded by an *.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

Papers published in the Entomological News are not listed.

1—Trans., American Ent. Soc., Philadelphia. **4**—Canadian Ent., Guelph. **6**—Jour., New York Ent. Soc., New York. **7**—Ann., Ent. Soc. America, Columbus, Ohio. **8**—Ent. Monthly Mag., London. **9**—Entomologist, London. **10**—Proc., Ent. Soc. Washington. **12**—Jour. of Economic Ent. **14**—Ent. Zeitschrift, Frankfurt a. M. **18**—Intern. Ent. Zeitschrift, Guben. **19**—Bull., Brooklyn Ent. Soc. **20**—Societas Entomologica, Stuttgart. **21**—The Entomologist's Record. **22**—Bull. of Ent. Research, London. **25**—Bull. Soc. Ent. France. **29**—An. Rept., Ent. Soc., Ontario. **36**—Trans., Ent. Soc. London. **39**—The Florida Entomologist. **48**—Wiener Ent. Zeitung. **50**—Proc., U. S. National Museum. **55**—Pan-American Ent., San Francisco. **57**—Revue Men., Soc. Ent. Namuroise. **72**—Revue Russe d'Entomologie. **75**—Ann. & Mag. of Nat. Hist., London. **77**—Comptes R., Soc. Biologie, Paris. **89**—Zool. Jahrbucher, Jena. **101**—Biological Bul., Woods Hole, Mass. **104**—Zeit. f. Wissens. Zool., Leipzig. **107**—Biologisches Zentralblatt. **133**—Jour. Experimental Zool. **135**—Quarterly Jour. Microscopic. Sci. **154**—Zool. Anzeiger, Leipzig.

GENERAL.—Boycott, A. E.—The reaction to flea bites.—Nature, London, cxviii, p. 591. **Britton, W. E.**—Some insects and entomologists.—**29**, lvi, p. 55-63. **Chapman, R. N. et al.**—Studies in the ecology of sand dune insects.—Ecology, vii, p. 416-26. **Criddle, N.**—The entomological record [for Canada].—**29**, lvi, p. 104-107. **Davis, J. J.**—Opportunities in entomology.—Proc. Indiana Acad. Sci., xxxv, p. 299-302. **Essig, E. O.**—Insects in the Yosemite museum.—**55**, iii, p. 43. **Felt, E. P.**—The distribution of insects and the significance of extralimital data.—**29**, lvi, p. 44-50. **Fisher & Ford.**—Variability of species.—Nature,

London, cxviii, p. 515-6. **Flanders, S.**—Insect enemies of the codling moth in the vicinity of Ventura, California.—**55,** iii, p. 44-45. **Heikertinger, F.**—Wie wird man spezialist? Erstes stuck der artikelreihe: "Die schule des spezialisten."—**48,** xliii, p. 49-68. **Hering, M.**—Die ökologie der blattminierenden insektenlarven.—Zool. Bausteine, Berlin, i, 253 pp., ill. **Huxley, J. S.**—The outlook in biology.—Rice Inst. Pamphlet, xi, p. 241-338. **Leng, C. W.**—The resting place of some collections.—**6,** xxxiv, p. 286-287. **McGregor, E. A.**—A device for determining the relative degree of insect occurrence.—**55,** iii, p. 29--33. **Meissner, O.**—Kurze bemerkungen über einige neuere naturwissenschaftliche theorien.—**20,** xli, p. 37-38. **Mote, Wilcox, Davis.**—The natural "cleaning up" habit of insects.—**12,** xix, p. 745-748. **Osborn, H. F.**—The problem of the origin of species as it appeared to Darwin in 1859 and as it appears to us to-day.—Science, lxiv, p. 337-41. **Poulton, E. B.**—The evolution of the colours and patterns of cuckoo's eggs and its relation to that of insect resemblances, such as mimicry.—**36,** 1925, p. xcvi-civ. **Rau, P.**—The ecology of a sheltered clay bank; a study in insect ecology.—Trans. Acad. Sci. St. Louis, xxv, p. 158-276, ill. **Smith, H. S.**—The fundamental importance of life-history data in biological control work.—**12,** xix, p. 708-714. **Stiles, C. W.**—Notice of request to admit Hübner's (1806) "Tentamen" to nomenclatorial status under suspension of international rules.—**4,** lviii, p. 234. **Swezey, O. H.**—Recent introductions of beneficial insects in Hawaii.—**12,** xix, p. 714-720. **Van Dyke, E. C.**—The value of life history studies from the viewpoint of systematic entomology.—**12,** xix, p. 703-707. **Weiss, H. B.**—Two quasi entomological essays of the eighteenth century.—**4,** lviii, p. 209-211. **Weiss, H. B.**—Peter Pindar and the entomology of his poems.—**6,** xxxiv, p. 231-24 p. **Wheeler, W. M.**—Emergent evolution and the social.—Science, lxiv, p. 433-440.

ANATOMY, PHYSIOLOGY, ETC.—Abney, L.—The occipital suture and its relation to a protocular sclerite.—**7,** xix, p. 286-289. **Altenburg, E.**—A working model for demonstrating the mosaic theory of the compound eye.—Brit. Jour. Exp. Biol., iv, p. 38-45. **Bodines, J. H.**—Hydrogen ion concentration in the blood of certain insects (Orthoptera).—**101,** li, p. 363-69. **Cameron, J. A.**—Regeneration in Scutigera forceps.—**133,** xlvi, p. 169-79. **Crampton, G. C.**—A comparison of the neck and prothoracic sclerites throughout the orders of insects from the standpoint of

phylogeny.—1, lii, p. 199-248. **Eisentraut, M.**—Ueber das auftreten von chromosomenbläschen in den reifeteilungen einiger acridier.—104, cxxviii, p. 253-66, ill. **Hargitt, C. W.**—Studies in behaviorism.—Proc. Indiana Ac. Sci., xxxv, p. 269-73. **Hein, H.**—Das punktauge.—Kosmos, Stuttg., x, p. 356-9, ill. **King, S. D.**—Note on the oogenesis of Peripatopsis capensis.—135, lxx, p. 553-8. **Oka, H.**—Ein interessanter fall von körpertorsion bei insekten.—154, lxviii, p. 205-8, ill. **Plunkett, C. R.**—Interaction of genetic and environmental factors in development.—133, xlvi, p. 181-244. **Rudolfs, W.**—Studies on chemical changes during the life cycle of the tent caterpillar (Malacosoma americana).—6, xxxiv, p. 249-256. **Stern, C.**—Eine neue chromosomenaberration von D. melanogaster und ihre bedeutung für die theorie der linearen anordnung der gene.—107, xlvi, p. 505-8. 8.

ARACHNIDA AND MYRIOPODA.—Bradbury, O. C.—Some phases of the embryology of the carnation mite.—Jour. E. Mitchell Sci. Soc., xlii, p. 94-98. **Ewing, H. E.**—The life history and biology of the tree-toad chigger, Trombicula hylae.—7, xix, p. 261-267. **Flaig, W.**—Spinnen auf der fischjagd.—Kosmos, Stuttg., x, p. 339-42, ill.

(N) **Savory, T. H.**—The classification of spiders: some comments and a suggestion.—75, xviii, p. 377-381. ***Vitzthum, H.**—Acari als commensalen von Ipiden.—89, Syst., lii, p. 406-503.

THE SMALLER ORDERS OF INSECTA.—Fedorow, B.—Zur anatomie des nervensystems von Peripatus.—89, Anat., xlviii, p. 273-310. **Krafka, J.**—The so-called occipital suture in the trichopterous larvae and in other orders.—7, xix, p. 281-285. **Wiebe, A. H.**—The first three larval stages of Hexagenia bilineata.—Ohio Jour. Sci., xxxvi, p. 267-75, ill.

(N) ***Moulton, D.**—New American Thysanoptera.—1, lii, p. 119-28, ill. ***Moulton, D.**—New California Thysanoptera with notes on other species.—55, iii, p. 19-28.

(S) ***Navas, L.**—Insectos exoticos neuropteros y afines.—Brotéria, Zool., xxiii, p. 79-93, ill.

ORTHOPTERA.—Rummel, C.—Observations on polygamous and supposedly cannibalistic insects of the order Orthoptera.—19, xxi, p. 144.

(N) ***Hebard, M.**—A revision of the N. Amer. genus Belocephalus (Tettigoniidae).—1, lii, p. 147-86, ill.

HEMIPTERA.—Olsen, C. E.—A review of DeLong's monograph of the genus Deltocephalus.—**6**, xxxiv., p. 265-268. **Palmer, M. A.**—Life history studies of seven described species of the genus Lachnus.—**7**, xix, p. 300-330. **Readio, P. A.**—Studies on the eggs of some Reduviidae.—Univ. Kans. Sci. Bull., xvi, p. 157-80, ill.

(N) ***Ball and DeLong**—Three new species of Deltocephalus.—**6**, xxxiv, p. 241-242. **Blatchley, W. S.**—Heteroptera or true bugs of eastern No. America.—Nature Pub. Co., Indianapolis, 1116 pp. ill. ***Dozier, H. L.**—Notes on new and interesting delphacids.—**6**, xxxiv, p. 257-263. ***Essig, E. O.**—The madroma aphis.—**55**, iii, p. 42-43. ***Knight, H. H.**—Descriptions of eleven new species of Phytocoris from eastern North America (Miridae).—**19**, xxi, p. 158-168. **Robinson, W.**—The genus Erythroneura north of Mexico.—Univ. Kans. Sci. Bull., xvi, p. 101-156, ill.

(S) ***Drake, C. J.**—South Am. species of the genus Tingis.—Ann. Carnegie Mus., xvii, p. 83-5. ***Goding, F. W.**—New Membracidae.—**6**, xxxiv, p. 243-46; 279-281. ***Osborn, H.**—Faunistic and ecologic notes on Cuban homoptera.—**7**, xix, p. 335-366.

LEPIDOPTERA.—Anon.—Chez les papillons.—Nat. Can., liii, p. 49-50. **Beuret, H.**—Remarques sur la variation des ocelles de revers chez les Lycenes.—**57**, 1926, p. 70-72. **Clark, A. H.**—Our giant moths.—Sci. Monthly, 1926, p. 385-97, ill. **Dow, R. P.**—Migration of Pyrameis cardui.—**6**, xxxiv, p. 287-288. **Englehardt, G. P.**—Melitaea harrisi from Long Island, N. Y.—**19**, xxi, p. 157. [**Fladung, E. B.**]—Common butterflies of Maryland.—Bul. Mary Acad. Sci., v, p. 58-64. **Hayward, J. K.**—Miscellaneous notes from Argentina. VI.—The earlier stages of Papilio thoas race brasilensis.—**21**, xxxviii, p. 130-133. **Kusnezov, N. J.**—Morphology of the copulatory structures in some cases of gynandromorphism in lepidoptera.—**101**, li, p. 245-56. **Mace, H.**—Pieris brassicae and its parasite, Apanteles glomeratus.—**9**, lxix, p. 278-79. **Przegendza.**—Ueber Zygaenenbastardierung.—**14**, xxxx, p. 317-319. **Rostand, J.**—Influence de diverses conditions exterieures sur le Bombyx disparate.—**25**, 1926, p. 151-152. **Rummel, C.**—Observations on the propagation and behavior of Telea polyphemus.—**19**, xxi, p. 156-57. **Smith, T.**—The breeding of lepidoptera.—Trans. N. Strafford Field Club, lx, p. 96-102. **Stiles, C. W.**—Zoological nomenclature. [In re. the "Tentamen"].—Science, lxiv, p. 381. **Van Duzee, E. P.**—Interesting moths

from Mill Valley, California.—**55,** iii, p. 33. **Yagi, N.**—Cocooning behavior of a saturnian caterpillar (Dictyoploca japonica); a problem in analysis of insect conduct.—**133,** xlvi, p. 245-62.

(N) ***Barnes, W. & Benjamin.**—A new Xylomyges from California (Phalaenidae).—**55,** iii, p. 12. ***Barnes & Benjamin.**—New species of Coloradia (Saturniidae).—**55,** iii, p. 13-15. **Barnes and Benjamin.**—Synonymic notes on Arctiidae.—**55,** iii, p. 16-18. ***Barnes and Benjamin.**—A new form of Sabulodes caberata (Geom).—**55,** iii, p. 41. **Bell, E. L.**—Notes on some Hesperiidae from Alabama (Rhopalocera).—**6,** xxxiv, p. 269-271. ***Draudt, A.**—Seitz's Die Gross-schmetterlinge der erde, Fauna Amer., Lief. 188, 189, Vol. 7, p. 293-308, ill. [n. sp. from Mexico]. ***Gehlen, B.**—Neue Sphingiden.—**18,** xx, p. 248-252. ***McDunnough, J.**—A new Haploptilia from sweet fern.—**4,** lviii, p. 218.

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SPECIAL NOTICES.—Correction.—Under General in the July number of this journal p. 217, we credited a title to W. Bateson in error. This should have been E. B. Poulton.

Opinions rendered by the international commission of zoological nomenclature No. 97. Did Hübner's tentamen, 1806, create monotypic genera? (Smith's Misc. Coll. Vol. 71, No. 4, p. 19-30.

DIE ÖKOLOGIE DER BLATTMINIERENDEN INSEKTENLARVEN von DR. MARTIN HERING. Zoologische Bausteine, Ausschnitte aus dem Gesamtgebiet der Zoologie. Band I Heft 2:1-253, 1926.—Dr. Martin Hering is well known as an authority on leaf-mining insects and has described more than a score of new species especially in the genus Phytomyza (Diptera). His papers have been published in numerous German periodicals from 1920 to 1926.

The present paper "The Ecology of Leaf-Mining Insect Larvae" summarizes, in a large measure, his previous work and adds many original observations, covering the field in an admirable manner. He has drawn freely from the investigations of other workers which greatly enhances the value of the study and he has selected representative species from the whole world to illustrate his ideas and theories regarding the leaf-mining habit. The task of summarizing the habits of species so scattered in four orders of insects is not an easy one and the author has accomplished it remarkably well. The paper shows careful, painstaking work and keen observation. It contains two hundred and fifty three pages, is well written and amply illustrated with text figures and includes two plates, one a polychrome showing color changes in certain mines. There is in addition an excellent bibliography of more than four hundred entries arranged alphabetically according to authors.

The study is introduced by a definition of a mine and a description of the tissues of a leaf eaten by leaf-miners. A nomenclature of leaf-mines, previously published by the author, is summarized. Names are also given for each type of leaf-mine. While this terminology may have its value especially to designate certain types of mines hitherto unnamed, it is doubtful whether the old mine names, in use since the time of Réaumur, Swammerdam and DeGeer will ever be abandoned. In considering the various types of mines, the author apparently

does not distinguish between the bast-miners (Marmara and other genera) and the cambium-miners (certain species of Agromyza). The former feed on dead plant cells while the latter feed on living plant cells.

A series of chapters follow dealing with the various habits and problems of the miners in their peculiar abode, the leaf. They are first reviewed in relation to miners of other plant tissues. All are alike in that they have a similar protective covering and take similar food. The temporary leaf-miners form a connecting link between the true leaf-miners (stationary leaf-miners) and the miners of other tissues.

In concluding the general discussion on miners, the author gives a systematic arrangement of the mining genera with criteria for determining to what order of insects the mines belong.

The author then proceeds to a discussion of the leaf-mining species, taking up at first the eggs. The subsequent chapter deals with the course and distribution of the mine on the leaf. Considerable space is devoted to a discussion of the larva in relation to its mining habit, showing modifications and adaptations of the larvae to the mining habit. Trägårdh has been followed closely especially in the discussion of the Lepidoptera. The food habits are discussed in comparison with the food habits of the free-feeding larvae, the principal difference being that the mining larvae feed on parenchyma and the sap of epidermal cells while the free-feeding larvae eat a wider range of plant cells. The chapter closes with a discussion of the Coleophora and a key to the types of cases they construct.

In discussing the nourishment of the larvae, the author points out conditions peculiar to leaf-mining larvae such as, the added protection from the coverings of the mine, the higher temperature and the greater moisture conservation in the mine. In logical sequence a description of Monophagous, Polyphagous and Oligophagous miners follows, with a list of the plant families and the insects mining upon them.

The discussion of the disposal of the excrement brings up new ecological problems which have been discussed but little in literature. The larvae show ingenious ways of avoiding their waste material.

The chapter on the change of color in the mine involves considerable chemistry and botany. Certain conditions within the mine as the presence of frass and the interference with the fibrovascular bundles introduce new factors in connection with the leaf-mining larvae. Reference is also made to the change in color of certain larvae.

A chapter is devoted to the miners of aquatic plants. Some excellent, original observations are added, especially concerning certain females that descend into the water to lay their eggs and certain larvae that fall into the water and seek new leaves in which to mine.

The part dealing with the enemies of leaf-miners is largely new, especially the inquilines of miners and the symbiotic organisms as the yeasts, bacteria and molds that live in the mine.

The author goes into considerable detail concerning the nature of the injury to the plant, discussing the proliferation of the parenchyma calls in the mine chamber in an attempt of the plant to overcome the injury. This response of the plant eventually leads, in some species, to the production of galls.

The concluding chapter deals with the geographical distribution of leaf-miners and a word about specialists who are studying leaf-miners.

We believe that this paper is a valuable contribution to entomology and especially to our knowledge of the leaf-mining insects, and should be highly valuable not only to the student of leaf-mining insects but to the ecologist, the plant physiologist, the morphologist and to those who desire to become better acquainted with some of the most interesting and highly specialized of insect life-histories.

S. W. FROST.

Two Recent Text-books on Ecology

ANIMAL ECOLOGY. By A. S. PEARSE, Professor of Zoology, University of Wisconsin. McGraw-Hill Book Co., Inc., New York, 1926. Pp. ix, 417. $4.00—ANIMAL ECOLOGY WITH ESPECIAL REFERENCE TO INSECTS. By ROYAL N. CHAPMAN, The University of Minnesota. Burgess-Brooke, Inc., Minneapolis, 1925. [The Preface, however, is dated June, 1926.] Pp. ix, 187, 183. $4.85.—The former is a volume printed as usual on both sides of each leaf, measuring 9¼x6x1¼ inches; the latter is mimeographed on one side only of each leaf resulting in a tome 10⅞x8½x1¾ inches, weighing 3 pounds, 15 ounces, and so bound as to require considerable muscular effort to keep it open at a desired place. Prof. Pearse tells us that "Animal ecology may be said to have three chief aspects: (1) descriptive, (2) quantitative, (3) analytic and synthetic"; his own book is a descriptive ecology and catalogues a large number of ecological facts. Prof. Chapman's work belong in the second division: "Quantitative data have been presented as far as possible" (p. ii). In the first book the subject matter

is grouped under Physical, Chemical, (Chap. II) and Biological (III) Factors, Succession (IV), Marine (V), Freshwater (VI) and Terrestrial (VII) Animals, Relations of Animals to Plants (VIII) and to Color (IX), Intra- (X) and Inter- (XI) Specific Relations and the Economic Relations of Ecology (XII). The subject matter of the second volume is treated as A. Autecology and B. Synecology. These terms, proposed by Schröter in 1910, are equivalent respectively to the "individual ecology" and "associational ecology" of C. C. Adams of 1913. Autecology of Chapman thus considers the topics dealt with in Pearse's chapters II-IV and parts of IX-XI, while Synecology embraces much of Pearse's chapters IV-VII and XII. As an illustration of Prof. Chapman's viewpoint, the following paragraph from the discussion of biotic potential may be quoted (pt. I, pp. 145-6): "In the consideration of the effects of the various physical factors of the environment, some indication was given of the amount of information which has accumulated with regard to the action of these factors. In general, this information is all measured in terms of physical processes and in addition to this there is no standard method of tabulating it. It is possible that when we have terse methods of expressing these effects in terms of their action on organisms, the day may come when tables will be prepared of the various physical coefficients and constants of species in much the same way that we now have them for the various elements and their compounds in the physical and chemical tables. This would be a striking contrast to our present method of burying quantitative data in long descriptive papers. It would make it possible for future generations to obtain a brief summary of the knowledge of the past without going thru untold numbers of volumes." In Prof. Pearse's ninth chapter insects naturally receive much attention and he is more sympathetic with theories of warning coloration and of mimicry than most American writers have been in spite of his slap at "the enthusiasm that is so characteristic of the Poultonean School." Heterodox is the statement that "the insect pupa that is formed as an outgrowth from the larva is to be interpreted as a separate generation from the larva" (p. 341). Both works contain extensive bibliographies; Prof. Pearse's unfortunate practice of quoting frequently from late editions of his authors (*e.g.* Bates 1892, Wallace 1905—p. 311) can not fail to give a distorted historical perspective to unsophisticated readers, but his book is provided with an index, which Prof. Chapman's lacks.

P. P. Calvert.

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(*indicates new genera, species or varieties)

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EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and only when necessary those at the top (being longest in) are discontinued.

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Pselaphidae desired from all parts of N. A. for study. Will determine for privilege of study or pay cash. Am monographing family. F. C. Fletcher, Dept. of Entomology, Cornell University, Ithaca, N. Y.

Buprestidae—I am making a revisional study of the North American Agrilus, and will be glad to examine any material in this genus collected north of Mexico. W. S. Fisher, U. S. National Museum, Washington, D. C.

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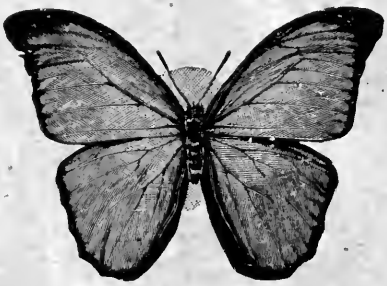

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ENTOMOLOGICAL NEWS

VOLUME XXXVIII, 1927

JAMES H. B. BLAND,
1833-1911

PHILIP P. CALVERT, PH.D., Editor
E. T. CRESSON, JR., Associate Editor

PUBLISHED BY
THE AMERICAN ENTOMOLOGICAL SOCIETY,
PHILADELPHIA, PA.:
THE ACADEMY OF NATURAL SCIENCES
LOGAN SQUARE
1927

The several numbers of the NEWS for 1927 were mailed at the Post Office at Philadelphia, Pa., as follows:

No. 1—January	January 8, 1927
" 2—February	February 9
" 3—March	March 4
" 4—April	April 8
" 5—May	May 4
" 6—June	June 9
" 7—July	July 1
" 8—October	October 4
" 9—November	October 31

The date of mailing the December, 1927, number will be announced on the last page of the issue for January, 1928.

SUBSCRIPTIONS FOR 1927 ARE NOW DUE

JANUARY, 1927

ENTOMOLOGICAL NEWS

Vol. XXXVIII No. 1

JAMES H. B. BLAND,
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PHILADELPHIA, PA.
THE ACADEMY OF NATURAL SCIENCES.
Logan Square

Entered at the Philadelphia, Pa., Post Office as Second Class Matter.
Acceptance for mailing at the special rate of postage prescribed for in Section 1103, Act of October 3, 1917, authorized January 15, 1921.

ENTOMOLOGICAL NEWS

published monthly, excepting August and September, by The American Entomological Society.

Philip P. Calvert, Ph.D., Editor; E. T. Cresson, Jr., Associate Editor.

Advisory Committtee: Philip Laurent, J. A. G. Rehn, Chas. Liebeck, J. Chester Bradley, Ph.D., Frank Morton Jones, John C. Lutz, Max Kisliuk, Jr.

The subscription price per year of ten (10) numbers is as follows:

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ADVERTISING RATES: Full width of page. Payments in advance.

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ANTON HOCHSTEIN.

ENTOMOLOGICAL NEWS

VOL. XXXVIII JANUARY, 1927 No. 1

Anton Hochstein, Illustrator of Trimble's "Insect Enemies of Fruit and Fruit Trees."

By HARRY B. WEISS and FRED SCHOTT,
New Brunswick, New Jersey.

(Portrait, Plate I).

In 1865, William Wood and Company of New York published a "Treatise on the Insect Enemies of Fruit and Fruit Trees" by Isaac P. Trimble, M.D.* The greater portion of the book is monopolized by accounts of the plum curculio and codling moth, and of the eleven plates eight treat, for the most part, of the work of the plum curculio. Nine of the eleven plates are colored and the title page bears the statement, "Numerous Illustrations drawn from Nature, by Hochstein, under the immediate supervision of the Author." Seven of the colored plates demonstrate mainly various fruits injured by either the plum curculio or codling moth, another is occupied almost entirely by different stages of the plum curculio and another by the work of the codling moth under bark, together with the heads of birds. The two remaining plates are black and white illustrations showing the application of devices for trapping the plum curculio and codling moth.

The colored plates appear to have been done by hand—by the application of water colors to black and white prints, and the tinting in general ranges from very good to somewhat inferior. Taken as a whole, the colored plates are fair and with several exceptions show some skill. The black and white drawings are the least attractive and rather illy done, but on the other hand they illustrate perfectly the devices which the author of the text evidently wanted brought out. In fact, the same can be said of all the plates, as they exemplify completely just what the text is concerned with. The plate of the plum curculio is the poorest of all, the delineation and coloring espe-

*For an account of the author see Ent. News Vol. XXIX, pp. 29-32.

cially being imperfect, and the same is true of the small figures of insects scattered over the other plates. Hochstein had some difficulty in painting insects and was more skillful with other subjects. On page seventy-three of the "Treatise," Trimble, writing about the metallic tints of the plum curculio, states "I have often wished that these vivid colors could be transferred to canvas; and my friend Hochstein has several times made the attempt, but he has now abandoned the undertaking as beyond his power."

Anton Hochstein was born in Bavaria, September 3, 1829, and acquired his artistic training in what was known as the Düsseldorf School. He came to this country about 1849 with his father and mother, two brothers, Louis and August, and a sister, Barbara, the entire family going to a farm near Buffalo, New York. A grocery business was started by his brothers Louis and August about 1860 at the corner of Garden and Seventh Streets, Hoboken, Anton not being very active therein. Louis, it appears, served in the Civil War, and Anton at that time lived in New York City where he was engaged, according to Mrs. J. K. McDougal, now living in Hoboken and formerly on intimate terms with the Hochstein family, in doing illustrations for Henderson or Young and Elliott, seedsmen's catalogues and probably for some of Kate Greenaway's books for children. It was not possible to verify either of these statements by the location of such illustrations.

Mrs. McDougal stated also that Anton studied in Münich and traveled considerably in Europe, but did not know whether such activities took place before or after his residence in New York City. He is supposed to have lived in New Jersey from about 1869 on, or some 42 years, at 58 Seventh St., Hoboken, or what is now 162 Seventh St., in an old-fashioned three-story and basement brick building, a short distance from Stevens College. This is five or six years later than the time Trimble says the original paintings for his "Treatise" were made at Newark, New Jersey. In view of this Anton might have moved to New Jersey prior to 1869, or he perhaps lived in New York and made trips to Newark to do Trimble's work.

Hochstein appears to have been interested in the painting of various subjects, using both oil and water colors, some of his pictures depicting rural scenes, Swiss and Scotch views, flowers, fruits, birds and insects. The Free Public Library of Hoboken owns some of his paintings, a flower panel in water colors and an oil painting of about a dozen Lepidoptera. In the office of Mr. August Peter, of Hoboken, there is a bird group in oil by Hochstein which appears to be very well done. His ability should not be judged entirely by the colored plates in Trimble's book, because some of his other work is far superior. His pictures were exhibited at Weber's art shop on Washington Street near 4th Street, Hoboken, some time between 1892 and 1916, but the sales were said to have been rather slow because of the absence of discrimination among Hoboken's art patrons at that time and their unwillingness to pay what they considered too high a price.

Mrs. B. Sontag, the present occupant of the house where Anton lived with his brother Louis and sister Barbara, and a young girl at the time, recalls him as a jovial, socially inclined man, not overly concerned with prosaic or mercenary matters, and similar recollections were made by others who knew him. Mrs. Sontag remembers that an acquaintance once asked him to replace a water scene with a grass effect, "ein grass garten anstreichen, und das wasser austreichen." Anton became vastly indignant, exclaiming "das wasser austreichen? Ich bein kein austreicher und anstreicher; ich bein ein artist!"

The Hoboken Library, of which Thomas F. Hatfield was librarian at the time, was the rendezvous of a coterie of artists and the ethically inclined, and here were exhibited many of Hochstein's water colors. Hochstein was also intimate with William Peter, then head of the Peter Brewing plant at Weehawken St. and Hudson Ave., receiving from him moral encouragement and perhaps financial aid. It requires no great stretch of the imagination to recreate the convivial scenes presented by these friendly meetings in a day when seidels bumped openly and freely and when the leading figure of the juntas was the proprietor of a brewery!

Whether the remuneration for his pictures and semi-commercial work was inadequate or whether his habits were such as to preclude the acquisition of much worldly goods is now a matter of conjecture. Anton never married and at his death on November 3, 1911, in St. Mary's Hospital, Hoboken, at the age of 83, he left nothing by which success is usually measured. His death was pronounced by Dr. Henry T. Von Deeston to have been due to chronic myocarditis and he was buried in the Hoboken Cemetery November 5, from Volk's Mortuary. His sister Barbara, the last of the family, lived but a few years afterward.

The photograph accompanying this account was obtained through the courtesy of the present librarian, Mrs. Nina Hatfield, of the Hoboken Library, and is from an original taken a few years before his death. A short death notice (inserted by Mrs. McDougal) occurs in the "Hudson Observer" for Friday and Saturday, November 3 and 4, 1911. In Cassino's "Naturalists Directory" for 1884 he is listed as a "botanical artist" and in "Catalogus Plantarum in Nova Cæsarea Repertarum" (1874) by Willis his name occurs in the botanical directory as A. H. Hochstein.

Food Preferences of the Black Cricket (Gryllus assimilis) with Special Reference to the Damage Done to Fabrics (Orthop.).*

By Margaret B. Savin, Philadelphia, Pennsylvania.

For five years during my August vacation at Avalon, New Jersey, I have been interested by the black *Gryllus* which is so abundant in sandy fields and in houses there. These crickets possess an annoying characteristic, which is not constant, but rather spasmodic, the habit of chewing holes in woolen and cotton goods such as suits, sweaters, overcoats, dresses and curtains. Having seen articles damaged by crickets in this way, I determined to discover, if possible, the causes for

*Submitted to the Graduate School of the University of Pennsylvania in partial fulfillment of the requirements for the degree of Master of Arts.

such action on the part of these insects which are normally vegetarians. Various theories have been advanced for the stimulus which urges *Gryllus* to attack woolen materials, but no definite attempts to find its food habits and preferences have, so far as I can learn, been made.

Observers (Popenoe 1917, Quaintance 1907) of the damage done by crickets upon strawberries, mushrooms, cranberries, grain and other food crops urge the use of ground potatoes or carrots with arsenic, or of deep vessels of vinegar, as a means of control. Severin (1920) reports heavy damage worked upon alfalfa seeds and seed pods and also on binder twine. The control he suggests is a bait of bran, molasses, oranges, water, and arsenic. As a bait for trapping specimens for my work, I used finely cut potatoes and carrots in a large box in the high grass. Many times I visited the trap but found the scheme unsuccessful. After making various types of boxes and using the suggested liquids and solids, I finally resorted to catching them by hand in the field or by a tumbler in the house.

Beginning my work on the first of August, I found that all of the crickets which I caught were wingless nymphs. This was true for the first two weeks. Evidently in this locality *Gryllus* reaches the adult stage only at the end of the second week in August.

The specimens when first caught averaged eighteen millimeters in length. In the adult form they became very little larger, with antennae half again as long as the body, shiny black heads, dull greyish thorax and brown wings.

To locate *Gryllus* in the sandy fields of high grass beside the house, it was necessary to lift up pieces of driftwood, or disturb piles of damp grass freshly cut from the lawn, or turn over a piece of damp carpet or cardboard. By this method I secured some twenty individuals one afternoon.

Most of the fifty crickets upon which I experimented were caught in the house, either beside the fireplace, running across the floor of a room, in a drawer of the kitchen cabinet among the linen towels, on the shelves among the groceries, in the

vegetable basket, or in a shoe on the bedroom floor. The method I used most in securing the subject was to place over it a tumbler, after which I slipped a card under the edge closing the top. By this procedure, the individual was not harmed at all and it was an easy matter to cover the glass with a piece of netting. From experience I learned that the cotton mosquito netting which I used to cover the tops of the glasses was impractical. About six of the first crickets caught escaped from confinement during the night, by chewing holes in the netting. I soon made caps of aluminum screening to fit the jelly glass cages used for the work. Each numbered glass confined a separate specimen, for which was kept a card containing its number, size, sex and the date and time of capture. For the food trials the exact time of feeding and time required for eating was recorded.

As only nine of the fifty died during imprisonment and five of the nine lived normally from nine to twenty-five days, I judge that the jelly glass quarters were not ill-adapted. When the males became winged, they chirped loud and long during the day as well as the night which seemed to indicate that they were comfortable. Of course, a pipette of water was given each specimen daily.

When the cricket was caught it was confined with water only, for a certain period, in order to have the subjects, as far as possible, in the same state of hunger. This period of fasting averaged twenty hours.

Among the foodstuffs tried, were carefully measured pieces of raw tomato, peach and potato, lima bean pods, green lima beans, cooked lima beans, cooked corn, sugar, cornstarch, dried beef, raw beef and sweet cake. The following is a complete list of "foods" used in the experiments.

Tomato (raw)	Suiting—grey—new—clean.
Potato (raw)	Suiting—grey—new—spotted (peach juice).
Carrot (raw)	Suiting—grey—new—spotted (bacon).
Lima bean (raw)	Suiting—blue—old—perspired.
Corn (raw)	Suiting—blue—old—spotted (bacon grease).

Lima bean (cooked)	Suiting—blue—new—clean.
Pea (cooked)	Suiting—blue—new—spotted.
Corn (cooked)	Broadcloth—henna—new—clean.
Lima bean (in pod)	Broadcloth—henna—new—spotted (peach juice).
Lettuce	Linen—white—new—spotted (peach juice).
Peach (raw)	Linen—pink—new—clean.
Blackberry (raw)	Silk—tan—new—spotted.
Green grass	Silk—pink—new—clean.
Green leaf of Perennial Sweet Pea	Cotton—white—old (a curtain).
Sugar	Cotton—white—new—clean.
Cornstarch	Rubber—blue and white.
Sweet cake	Paper—with paste.
Dried beef	Paper—without paste.
Bacon	Paper—crepe—new—clean.
Mosquito (dead)	Corn worm pupa.
Housefly (dead)	

To my surprise there was not a thing in this list of varied carbohydrate, protein, fat, and mineral matter which was not eaten in part or entirely, by at least one if not all individuals.

Though a careful record of results was kept, I feel that the average times required for eating various foods are hardly an indication of preference. To my mind, the results obtained for foodstuffs are seriously affected by the molting process which was going on until the middle of August. Frequently I found a pale, motionless cricket which had just molted with its chitinous shell lying beside it. At times I discovered one consuming the last bits of the newly cast skin. Obviously the insect would not be hungry after having eaten its molt, nor would it be in condition to eat during the critical time twenty-four hours or so before the beginning of the process. Thus, pieces of food remained several days in the glass before they were eaten, while a normal active cricket would consume them within five or six hours.

The following reproductions of the records kept for subjects numbered 22 and 34 will serve to illustrate method, times of feeding, and type of results obtained in the work.

No. 22. Male—length 19 mm. Nymph; adult in 16 days.
8/5 — 5:00 P. M.—caught in field beneath wet carpet; confined with water.
8/6 — 2:30 P. M.—given 1 by 3 by 3 mm. piece of potato.
— 5:30 P. M.—gone.
8/7 —11:15 A. M.—given cooked corn kernel.
— 8:45 P. M.—gone.
8/10— 9:00 A. M.—given green lima bean.
8/11— 9:00 A. M.—2/3 eaten; given navy blue suiting, new, 25 by 27 mm.
8/12— 8:00 P. M.—no result; given small cooked lima bean.
8/13— 7:30 P. M.—bean well eaten.
8/19—10:30 A. M.—given grass.
8/20—11:00 A. M.—no result.
8/21—11:30 A. M.—just molted to adult. I removed skin from glass.
8/21— 2:30 P. M.—given new grey suiting spotted in center with peach juice.
8/22— 6:00 P. M.—no result.
8/25— 1:00 P. M.—no result.
8/26— 7:30 P. M.—one corner chewed, cloth not taken into body.
8/29— 9:30 A. M.—one corner well frayed. Cloth left in and lettuce given. Began on latter at once.
—12:00 P. M.—all gone—given rubber flower.
8/30— 7:00 P. M.—well damaged — edges of white center chewed.

No. 34. Female adult.
8/12— 1:15 P. M.—caught on porch floor.
8/14— 9:30 A. M.—given navy blue suiting, new—one corner sweetened by lemonade. It immediately investigated.
— 9:40 A. M.—chewed a ragged hole in side where spot is.
8/15—11:00 A. M.—no further damage—spot of bacon fat put on.
8/16—10:00 A. M.—good sized hole chewed but not on spotted portion; given new suiting—clean.
8/18— 6:00 P. M.—large holes chewed.
8/19—10:10 A. M.—much damaged; given 2 blades of grass (each 50 mm. in length).
— 2:00 P. M.—grass gone all but 15 mm.
8/20—10:20 A. M.—grass all gone.

—11:15 A. M.—given small green lima bean—began to eat at once.
— 7:30 P. M.—completely gone.
8/21— 2:30 P. M.—given rubber flower from bathing cap—began to eat at once and continued for three hours.
8/22— 6:00 P. M.—petals greatly damaged.
8/24— 9:30 A. M.—given clean, new, grey suiting.
8/26— 7:30 P. M.—greatly damaged. Bits of cloth lying about.
8/27—11:30 A. M.—given cotton curtain 2 thicknesses and hem (4 thicknesses).
8/28— 8:30 P. M.—hole through two thicknesses; put in glass with No. 43 male.
8/29— 9:30 A. M.—neither harmed. Given lettuce. Both eating at it.
8/30—12:00 A. M.—given piece of blue rubber.
— 7:00 P. M.—5 small holes in it.

As I was particularly interested in the reactions to cloth, most of the days were devoted to trials on woolen and cotton materials. The work of necessity went slowly. With the vegetables, I had to first determine the approximate amount of a cricket's meal in order to have the food eaten within as short a time as possible. Most of the tests with foodstuffs were performed with nymphs, as they were the only individuals available in the early part of the month.

Sixteen of the specimens, I brought back with me to Philadelphia, with the intention of trying adult crickets on potato, tomato, carrot, etc. The reactions to food in the city were quite abnormal, as foods preferred at the shore, such as beans and corn were ignored; so that most of the results for these trials are omitted. They seemed to thrive upon lettuce and moist bread when kept together for a week, in one large can with sand in the bottom and aluminum screening on top.

In order to distinguish the trials made in the city from those made previously, I lettered the subjects. The record card for K is here included. A liking for both animal and vegetable matter is exemplified.

K. Female adult.
9/8 —10:00 P. M.—confined in jelly glass with 1 inch of sand on bottom. Given water.

9/9 — 5:07 P. M.—given three house flies (dead).
— 5:20 P. M.—all eaten.
9/10— 6:15 P. M.—tomato given and 1 raw corn kernel.
9/11— 6:00 P. M.—both gone; given raw beefsteak—began at once.
— 6:08 P. M.—gone.
9/13— —given cooked lima bean; eaten in a few hours. Subject laying many eggs in sand.

Of all the vegetables used in the food trials, I should say that green lima beans proved most popular, with cooked corn kernels coming next on the list. This I state from my observation at the time when feeding was going on. My statistics do not seem to bear this out. As I have stated, the apparent inaccuracies must be due to the interference of the molting process. In a study of "Field Crickets in Manitoba," N. Criddle observed that they like green peas and soft corn grains. This reference I was pleased to read after completion of my tests, as it seems to confirm my results. From the figures for raw and cooked lima beans and corn, given in Table III, I conclude that the cooked vegetables are preferred.

From my results, I cannot see that carrots and potatoes are especially desired, as others (Felt 1909, Popenoe 1917) indicate. The table of statistics gives a shorter time for potatoes than for beans and corn, but the portion of potato given was a cube 1 by 3 by 3 millimeters, which is small compared to a small bean or a corn kernel.

(To be continued)

Another "Black Witch" in the North (Lepid.: Noctuidae).

On July 25, 1926, while visiting a property on S. Cottage Grove Ave., Urbana, Illinois, in the interests of a termite eradication program, I noticed a much battered specimen of *Erebus odora*, the "Black Witch," lying on the window sill. It was dead. Upon inquiring of the owner I learned that the moth had been picked up in the street on the above date and was then in the same condition as when I first saw it. The specimen was a female. Strong southwest winds had prevailed during the two days preceding the capture, which may account for the presence of this southern resident in this northern locality. —August E. Miller, State Natural History Survey, Urbana, Illinois.

Oddities in Cocoons of some Common Saturnidae (Lepidoptera).

By AUGUST E. MILLER, Urbana, Illinois.

Beginning during 1913 and continuing for a period of five years, it became a hobby with me to scour the country for a radius of ten miles about Zanesville, Ohio, for insect specimens of whatever kind I might chance to find. Saturnid cocoons were quite common and each year I collected from 1,000 to 3,000 or more of the several species occurring in the locality. Among these were many that differed in varying ways from normal specimens. The more outstanding deviations have been of such interest to me that I am presenting them with the thought that they may be of some interest to others. I have have not spent much time in trying to determine how often similar facts have been recorded.

Samia cecropia Linnaeus.

On March 10, 1914, I found a large cocoon of this species spun on a small elm tree overhanging the Licking River. During the flood of March, 1913, this specimen had apparently been submerged for a period of several days. The sediment had filtered into and thoroughly impregnated the outer case of the cocoon. Upon drying it had become very hard and gave the cocoon almost a stone-like texture. The submergence had not killed the pupa. At the time for emergence the adult had split the pupal skin and attempted to work its way to the outside. It was able to push its head through the opening of the inner case but then encountered the mud-blocked exit of the outer. It had apparently labored hard to pass through this as hairs and scales were nearly all worn off the head region. The specimen was a female and had extruded a number of sterile eggs behind it in the inner case of the cocoon. The wings were very small and much malformed but the color was quite bright a year later.

On December 15, 1916, a *cecropia* cocoon was found on an old rail fence that had partly fallen down since the spinning of the cocoon. One of the rails had fallen across the opening of the outer case effectually blocking it. The cocoon was evi-

dently spun during 1915. The moth, also a female, had attempted to emerge. It was unable to do more than push the head through the opening of the inner case. In this position it had apparently struggled to escape, for all the hairs and scales were worn from the head, but to no avail. No eggs were deposited in this case and the wings were badly malformed and the antennae torn.

During the years between 1913 and 1918 numerous paired and triple cocoons of this species were found. No case has ever come to my notice in which either of the cocoons was so placed as to impede the egress of the moth from the other cocoon. Several specimens of twin cocoons have been found which appeared to have been spun at the same time since there apparently had been a slight interweaving of the silk between them. In two cases caterpillars had spun their cocoons against deserted ones of preceding years. Sexual pairing has not been the case where cocoons have been thus found in close contact with each other.

Those who secure cocoons by searching them out from among natural environments and do not rear the insects to this stage can imagine with what satisfaction I gathered 79 healthy specimens of *cecropia* cocoons from three small trees within six feet of each other. A cottonwood, a wild crab, and a peach-leaf willow comprised the group and the cocoons were almost equally distributed among them. I judged that a fertile female had become injured near this spot and this large number of cocoons were all the progeny of one individual.

Callosamia promethea Drury.

On February 14, 1917, a cocoon of this species was taken and upon testing it it seemed to contain the pupa of a parasite rather than of a moth. It was cut open. The outer and inner cases were normal in orientation and proportion, but the caterpillar had pupated in an inverted position, that is, the head of the pupa was directed toward the ground, which is a condition quite unusual for any suspended species. The pupa was removed and kept under careful observation and during the following summer a normal female moth appeared. Had the cocoon remained undisturbed it seems safe to conclude that the moth

would never have emerged although it might have broken the pupal skin. The host was *Prunus serotina*. I secured no progeny from this moth.

On March 10, 1917, a twig of *Prunus serotina* was found upon which nine healthy cocoons of this species had been spun on about 11 inches of twig. Each leaf in this length had been taken by a caterpillar for spinning its cocoon.

On November 17, 1918, a double cocoon of *promethea* was found upon *Prunus serotina*. Selecting a large leaf of the host, one caterpillar had formed a normal cocoon using the lower half. After completion another larva had used the remaining upper half in such a way as to seal up the lower cocoon so that it would have been impossible for the moth to emerge. A normal female appeared from the upper cocoon in due time.

In addition to these finds I have frequently secured cocoons of *cecropia* and *promethea* containing from one to six or more kernels of corn. Because the silk about the cocoon openings was always pushed in as though from the driving of the beak of some bird, it has been my opinion that these cocoons were serving as caches for some bird, although I have never seen birds in the act of placing the grain in them. The corn has always been in the loose middle layer of silk, although in *promethea* they were never pushed beyond view as one looked into the top of the cocoon. These grains of corn have never been observed to interfere with the emergence of the moths. I have never seen birds removing the kernels.

Since coming to Illinois this past winter I have seen several cocoons of the white-marked tussock moth into which several grains of corn had been inserted.

Telea polyphemus Cramer.

During each year of my collecting several cocoons of this species were found in which the larva had spun side by side, giving twin or paired cocoons. I have never found specimens in which one cocoon interfered in any way with the emergence of the moth from the other. Some have been spun together in leaves upon the host plant while others have been spun in this manner among leaves upon the ground.

Homopterological Gleanings No. 2. The Types of Certain Genera of Membracidae.

By Z. P. Metcalf.[1]

The types of the genera of Homoptera have never been fixed. Sometimes the accepted types do not conform to the rules of nomenclature and need to be changed. There is apparently in the minds of many entomologists who are not systematists confusion between the generic concept as applied to the actual insects and the names that are to be applied to these insects. The former are not amenable to rules, and the conception of what constitutes generic limits is constantly shifting as our technique grows better and we give more and more attention to the finer details. Names, however, are not only subject to rules, but they must conform to rules or nomenclatural chaos is the result. For our purpose we may accept the "Entomological Code" of Banks and Caudell, as the rules are especially applicable to entomology and are very clearly stated. If we are to achieve stability in nomenclature, it can be done only by laying a firm foundation on a carefully considered set of rules. With these rules in mind, a survey of Dr. Funkhouser's manuscript of the "Catalog of Membracidae" shows the following changes to be necessary.

1. The Genus Combophora.

The genus *Combophora* was established by Germar in 1833, Silbermann's Rev. Ent. I: 177, for two species, *Centrotus horridus* Fabr. and *C. trifidus* Fabr. In the same volume, page 227, Burmeister monographs this genus, describing fourteen species in all including *horrida* and *trifida*, as well as two species, *vulnerans* and *Besckii (sic)*, described as new by Germar. *Besckii* cannot, therefore, be the type of *Combophora*, as it was not included in the genus at the time of its original description. Of the two species originally included, *horrida* belongs to *Heteronotus* Laporte 1832 and *trifida* Fabr. belongs to *Cyphonia* Laporte 1832. The name *Combophora* is, there-

(1) Published with the approval of the Director of the North Carolina Agricultural Experiment Station as paper number 8 of the Journal Series.

fore, not valid as its only included species belong to previously described genera. The only name available for the genus *Combophora* auctorum seems to be *Anchistrotus* Buckton, 1903, Mon. Memb: 147, haplotype *A. obesus* Buckton.

2. The Genus **Hoplophora.**

The genus *Hoplophora* was first used by Perty for a genus of *Orthoptera*,[2] Delect. Anim. Brasiliam 1830 (1830-34). The part on *Orthoptera* must have been published prior to 1833, as it is reviewed in Silbermann's Rev. Ent. I: 1833, (vide Metcalf, Ent. News XXXII: 238). Germar, Silbermann's Rev. Ent. I: 177, proposed the same name for a genus of Homoptera *Membracidae*, citing *Membracis sagittata* Germar and *Membracis triangulum* Germar. *Sagittata* was removed to the genus *Platycotis* by Stål in 1869, Hemip. Fabr. II: 37, and is now considered a variety of *P. vittata* Fabr., the type of *Platycotis*. Kirkaldy recognized that *Hoplophora* was preoccupied and proposed *Hoplophorion* as a new name. This name will stand, and *Membracis triangulum* Germar is its type.

3. The Genus **Enchotypa.**

The genus *Enchotypa* Stål 1869 has as its type *Hoplophora granadensis* Guerin, cited by Stål in error for *Hoplophora fairmairci* Guerin. Stål later corrected this, but this correction cannot stand according to the "Entomological Code," 96: "The genotype of a monobasic genus is the only specific name cited irrespective of misidentifications or restrictions." The name *Enchotypa* is a synonym of *Potnia* Stål 1866, type *Umbonia venosa*, Germ. I propose the name *Stalotypa*, type *H. fairmairci* Guerin, for the genus formerly known as *Enchotypa* Stål.

4. The Genus **Hemiptycha.**

The genus *Hemiptycha* was described by Germar in 1833, Silbermann's Rev. Ent. I: 177, for the following species: *Membracis galeata* Fabr., *M. obtecta* Fabr., *M. bimaculata* Fabr. and *Centrotus spinosus* Fabr. In Silberman's Rev.

[2]According to Scudder's Nomenclator Zoologicus; Neuroptera according to d'Orbigny's Dict. Hist. Nat.

Ent. III: 244-247, Germar described this genus more in detail and added six species. Many species have been added to this genus by the various workers since that time, but most of these have been removed to other genera until at the present time only three species are generally recognized as belonging to this genus, and three others are doubtfully referred here. Of these species *Membracis punctata* Fabr. 1775 (equals *Hemiptycha cervus* Germar 1835) was named as type by Blanchard (d'Orbigny's Dict. Hist. Nat. VI: 533) and has been generally recognized as the type since that time. This species was not included in the genus until 1835, therefore, this designation cannot stand. The disposition of the four species originally included in the genus by Germar is as follows: *Centrotus spinosus* Fabr. 1803 (*Membracis spinosus* Fabr. 1775) is the haplotype of the genus *Umbonia*, Burmeister 1835, Handb. Ent: 138; *Membracis bimaculata* Fabr. 1794 is the haplotype of the genus *Thelia* Amyot and Serville, Hist. Nat. Ins. Hemip.: 540; *Membracis galeata* Fabr. is one of the two species mentioned by Stål when he established the genus *Archasia* 1867, Bid. Hemip. Syst: 556. It was designated as the logotype for this genus by Van Duzee 1916, Check List Hemip. North Amer. 60. *Membracis obtecta* Fabr. is the haplotype of the genus *Hypselotropis* Stål. 1869 Hemip. Fabr. II: 26. Since this name had already been used, Kirkaldy proposed the name *Gelastophora* for *Hypselotropis*, Ent. XXXVII: 279. By elimination *M. obtecta* Fabr. becomes the type of *Hemiptycha* Germar 1833, and *Hyselotropis* Stal 1869 and *Gelastophora* Kirkaldy 1904 are synonyms. While the only remaining species is not necessarily the type of the genus, it would seem to cause much less confusion in this case to select *M. obtecta* Fabr. as the type of *Hemiptycha*. *Hemiptycha* Auctor. is without a name, and I propose *Hemikyptha*, type *M. punctata* Fabr.

5. The Genus **Membracis**.

The genus *Membracis* was described by Fabricius in 1775, Syst. Ent: 675, including fourteen species. The only one of these species that would be considered as typical of the genus

at the present time is *Cicada foliata* Linneus 1766. So far as I have been able to discover there has been no definite type fixation for this genus. Kirkaldy states, Entomol. XXXIII: 27, that Fabricius gives *atrata* as a pseudotype, 1803 Syst. Rhyng: 6, but this is incorrect, as there is nothing to indicate a type designation, and so far as I can discover generic types were not used at that time. Again Kirkaldy, Ent. XXXIII: 264, states that Latreille, Nouv. Dict. Hist. Nat. XXIV, gives *foliata* as the type of *Membracis*. I do not have a copy of this volume before me at the present time, but I do not remember that generic types were designated in this work. My opinion in this matter has veen verified by Mr. W. J. Fox, Assistant Librarian, Academy of Natural Sciences, Philadelphia. Van Duzee, Cat. Hemip: 560, gives *Membracis* Fabr., logotype *atrata* Fabr., but this cannot be correct as *atrata* was not one of the originally included species. Since the type of this genus has apparently never been designated, I would designate *Cicada foliata* Linn. 1766 as the type of *Membracis* Fabr. 1775.

Megachile subexilis Ckll., a Resin-Working Bee (Hymen.: Apoidea).

By Charles H. Hicks, University of Colorado, Boulder, Colo.

The *Megachile* bees are commonly termed the "Leaf-cutters" because of a very general habit they have of cutting pieces out of rose leaves, rose petals, poppy petals, the petals of hollyhocks, aspen leaves, and from the leaves and petals of a host of other plants. The pieces cut are of two general shapes, small round ones and oblong larger ones. The former are used for the ends and the latter for the sides of the thimble or oblong-shaped cells into which the pollen and egg are placed and in which the young bee develops, spins its cocoon, pupates and from which it later emerges mature. The cells may be placed in tunnels in the ground, *e. g.*, *M. perihirta*, or in the old stems of plants, *e. g.*, *M. montivaga*, or in various and unique places.

This habit of cutting leaves is one of long standing as evidenced by the fact that Professor T. D. A. Cockerell has found unmistakable evidence of it having existed more than a million years ago. Fossil leaves have been found at Florissant, Colorado, from shales dating back to the Miocene Period, from which the characteristically shaped pieces, similar to those made by the *Megachile* bees of today, have been cut. In one specimen a number of these had been cut, the edges sharp and clearly defined, showing that they could not have been the result of some chance injury. It seems very probable that these were made by *Megachile* bees, for the cuttings from the leaves are so very like those of today while fossil *Megachile* bees are found from these same rocks. The fact that a number of pieces were cut from one leaf suggests that the bee had a habit of returning to the same leaf for material. This habit is observed very often now where a rose may be found completely riddled from the many visits of a bee.

Many observers have recorded finding *Megachile* bees using pieces of leaves and petals for cells and the habit is so well known that no attempt will be made to enumerate the species observed. Today the *Megachile* bees are numerous and widespread and wherever observed have been found to possess this same habit with a very few exceptions. Some of these exceptions were first noted by Mr. Henry Hacker (1915) who found certain of these species in Australia using resin for their nests. The bees found there, which have been termed "resin-workers," are *M. hackeri* Ckll., *M. rhodura* Ckll., *M. mystacea* (Fb.), and *M. ustulata* (Sm.). These bees Professor Cockerell has placed in a new subgenus called *Hackeriapis*. He informs me that Mr. F. H. Timberlake has found *M. schauinslandi* Alfken, an Hawaiian species, a resin worker and sometimes using keyholes for sites.

Hacker found specimens of *M. ustulata* carrying masses of a resinous substance in their mandibles with which they line crannies and holes in timber. A resin cell was taken containing a half-grown larva of this species. *M. mystacea* was found to use resin with which it lined the clay cells of the nest of a

wasp, *Sceliphron lactum*. The exit holes were sealed up with the same material. Hacker did not find *M. rhodura* nesting, but he inferred that it used resin for the bees were observed visiting a Eucalyptus tree, from which resin had oozed, and rasping the patch of resin with the mandibles. Both sexes were captured on these resin patches and he inferred that the males assist the females in constructing the cells. This latter point should be actually observed before ascribing the function to the male. *M. hackeri* was bred from an old clay nest of *Abispa*, the cells having been lined with resin which also filled up the exit holes. It is quite probable that more resin workers will be found. A species recently described by Professor Cockerell (1925) called *M. orthostoma* and found on Sibuyan Island, Philippines, had a large mass of resin sticking to the mandibles.

Many bees of the genus *Megachile* here in Colorado have been observed to use leaves in the construction of cells, among which are *M. perbrevis*, *M. brevis*, *M. montivaga*, *M. fortis vestali*, *M. wootoni* and others. In this country there seems to be no record of any bees of this genus which do not use leaves in the nest. *M. subexilis* affords an unique and interesting exception, building its nest of resin and using neither leaves nor petals. The following account is based on my observation and study of the species.

The nest was found April 28, 1926, in the side of an almost vertical sandstone cliff at White Rocks, near Boulder, Colorado. The nest was about 10 feet above the ground and the outer evidence was a plug of resin completely filling a hole in the rock. The rock was not so hard but that the nest could be dug out with a jackknife. The tunnel went in for 3 inches and had 2 cells. The plug to the outside was 5 mm. in length and 5 mm. in thickness. Immediately below this was a cocoon very thin, light in color and surrounded on the sides by resin 2 to 4 mm. in thickness. The extreme thinness of this cocoon was in sharp contrast to that of *M. montivaga* which has a cocoon quite thick and dense. It is probable that *M.*

subexilis is admirably protected by the resin and rock and a thick cocoon is not needed.

A very thin partition of resin separated the inner cell from the outer and from it a larva was taken April 28. This larva, from the inner cell, was surrounded by a cocoon similar to that from which *M. subexilis* later emerged although somewhat thicker. The larva pupated May 8 and, from its form, appeared to be a *Coelioxys* pupa. On May 24 the pupal skin was cast after which the bee remained inactive for two days while the wings and nervures of the wings changed from clear transparency to dark margins and light nervures. The next day the bee was somewhat active and on the following very active. This date, May 28, was considered to be the time when it had reached maturity. The bee was determined to be a female *Coelioxys gilensis* Ckll., agreeing in most points with the specimens in the collection except that the tegulae were dark instead of the usual reddish color. This parasite along with the host was kept at about 21 degrees C. from the time secured until the bees reached maturity, the development thus being materially hastened. The larva of *C. gilensis* winters over in the larval stage as probably does that of *M. subexilis* also.

Last summer at Boulder, males of *M. subexilis* were taken June 20 and July 3; females were taken August 9 and 11. It seems probable that we have more than one brood here a year.

Professor Cockerell has kindly identified these specimens collected and reared and has given me references to the known resin-workers.

All the resin bees of the genus *Megachile* observed by Hacker had parallel-sided abdomens and were quite similar in appearance. The species found using resin by Timberlake look much like these bees in shape and in the dark color of the wings and the red pile of the abdomen and thorax. *M. subexilis* has a parallel-sided abdomen and a very little reddish pile on the male. Robertson '03 has proposed a new genus, *Oligotropus,* for a species very closely related to *M. subexilis.* The writer

does not feel capable at present of attempting to determine the proper classification of this species. However, from a comparison of the genitalia of *M. subcrilis* with the genitalia of other bees of the genus *Megachile* no radical difference was observed. This species has a parasite common to the genus, does not differ greatly morphologically from other bees of the genus *Megachile* and has therefore been considered a species of it. A more complete and comparative study of this and other resin workers may show good reasons for separation.

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HACKER, H. 1915. Mem. Queensland Mus., iii, Jan., pp. 137-8 (*M. ustulata* Sm., *M. rhodura* Ckll., *M. hackeri* Ckll).

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ROBERTSON, C. 1903. Trans. Am. Ent. Soc., xxix, p. 168 (*Oligotropus*).

Correction for December, 1926, Entomological News.

Page 316, 2d line, should read

"1. Length of antennal segment 1 not equal to width of head," etc.

The proof as returned by the author was correct; in resetting the line to bring the first word further out to the left, the compositor omitted the word "not."—EDITOR.

Change of Address.

Mr. Melville H. Hatch from Department of Zoology, University of Michigan, Ann Arbor, Michigan, to Department of Animal Biology, University of Minnesota, Minneapolis, Minnesota.

ENTOMOLOGICAL NEWS

PHILADELPHIA, PA., JANUARY, 1927.

The Study of Insect Relations

If the past teaches us to understand the main outlines of the distribution of our insect world, we will learn to grasp the details, the exact occurrence, the reality itself, in so far as we give ourselves up to the present. This means a flight away from books, catalogs, theories and formal logic into out of door life. Simple as this seems, it is difficult to the city man of to-day wrapped up in books, writing and speech. But if he has gone through the books and theories and has not become too old thereby, he will perhaps still be capable of hearing from living Nature some of her secrets, which are not withheld from him as long as he receives them naively and free from theories.

To understand the single species in its surroundings, in its natural relations, is an alluring aim, the accomplishment of which raises us far above the activities of the mere collector and cataloger, although many obstacles lie in the way. Be it briefly intimated that we entomologists must follow the botanists who today study plant associations as unities and have made their relations to soil and climate, their succession in time and their transformation in the same locality the subject of comprehensive researches. On this theme there are many fine works which concern our land, yet it is self-evident that all is yet in *flux* and, unfortunately, not free from the unfruitful strife of the schools.

But the methods of research can not be simply carried over from the botanical to the entomological field; the moving animal is not to be conceived in the same way in his relations to his surroundings, in which he is in general freer than the plant, fixed in its habitat. The idea of association and especially that of succession requires, for its transfer to corresponding relations in the insect world, a careful testing before it can be accepted from botany. Above all, the relations of insects are more complicated in this: that their associations presuppose the associations of plants and consequently offer a potentially higher complication of their dependences. Almost all this awaits a coming generation of entomologists.—F. RIS.

[From his address on The Geographical Distribution of the Insects of Switzerland at the Third International Congress of Entomologists, Zürich, July 20, 1925. Verhandlungen of the Congress, Bd. II. pp. 1-19, Weimar, 1926.]

Entomological Literature

COMPILED BY E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published.

All continued papers, with few exceptions, are recorded only at their first installments.

Papers of systematic nature will be found in the paragraph beginning with (N). Those pertaining to Neotropical species only will be found in paragraphs beginning with (S). Those containing descriptions of new forms are preceded by an *.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

Papers published in the Entomological News are not listed.

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SPECIAL NOTICES. Monograph of the tribe Hesperiidi (European species) with revised classification of the subfamily Hesperiinae . . based on the genitalic armature of the males (Trans. Ent. Soc. London, lxxiv, p. 1-170, ill. Although treating of the European species, this paper will prove to be of interest to all students of this family of the lepidoptera.

SYLLABUS DER INSEKTENBIOLOGIE, VON DR. HANS BLUNCK: First installment (Berlin, Gebrüder Borntraeger, 1925).—The first part of Doctor Blunck's ambitiously planned Syllabus of the Biology of Insects has appeared. It includes the Coleoptera through Histeridae, and is issued as a pamphlet of 136 pages. Doctor Blunck has undertaken a stupendous task. That is to record all that has been published upon the life histories of insects, group by group and species by species. The literature of this subject is extremely fragmentary and diffuse. Short notes have been published in every language and in every country, and it is Doctor Blunck's aim to make it all available to workers in the most condensed way and in the form of a list. Very many renowned specialists are co-operating with him, and the total result will be invaluable to workers; and, more than that, it will be a stimulus to investigation, since by referring to its pages any one can easily see the gaps in our knowledge that are to be filled. The general plan as elaborated so far is to issue six volumes, as follows: Volume 1, Apterygota, Ephemerida, Odonata, Perlidae, Dermaptera, Orthoptera, Isoptera; Volume 2, Corrodentia, Thysanoptera, Hemiptera, Pediculidae; Volume 3, Neuroptera, Trichoptera, Lepidoptera; Volume 4*a*, Coleoptera; Volume 4*b*, Coleoptera with Strepsiptera; Volume 5, Panorpatae, Diptera, Aphaniptera; Volume 6, Hymenoptera.

If the subsequent parts are done as well as this first part of the Coleoptera (and, by the way, it seems strange that a part of Volume 4 should be published as the first one of the general scheme) all workers will be delighted. On account of the great mass of material, the author has found it necessary to use a large number of symbols and many abbreviations in the German language, but a little practice will enable its ready

use. I am delighted with the whole plan. Of course, I am not a Coleopterist, and have therefore asked my colleague, Mr. Herbert S. Barber, for his opinion of this first part. He shares my great interest in the work, and tells me that he heartily welcomes the appearance of this first number. He tells me that it will be "indispensable" for ready reference in the National Museum. Of course he does not mean *indispensable*, since he and his fellow workers have done very well down to the present time without it, but I imagine the reader will catch his meaning. He has pointed out to me a very few omissions of American records, but has pointed out also a number of records which brought together in this way give us much better ideas as to group habits than we would be likely to gain in any other way.

Of course, as the work goes on the degree of completeness must be expected to vary to some extent with the different collaborators, but, with such an excellent guide as this first part will be to them, a complete whole of very great value cannot fail to eventuate. L. O. Howard.

Insects of Western North America. By E. O. Essig. New York: Macmillan Co., 1926. Pp. 1035. 766 figures.—The appearance of this book, by the Associate Professor of Entomology in the University of California, puts the whole subject of Western insects on a new and better footing. For the first time, we have a usable guide to our insect fauna west of the hundredth meridian. Within the limits of a single volume, even of more than a thousand pages, it is impossible to describe or even mention all the genera and species, but nearly all the commoner or more important ones are referred to. Species of economic importance, or otherwise specially interesting, are briefly described, and usually well figured. The recorded habits are very fully cited, and the references to literature are unusually complete. In short, the book is packed as full of valuable information as possible, and in the hands of an intelligent student, professional or amateur, it will be a constant and indispensable source of information. For those in other regions it will also be of great value, and perhaps especially to Entomologists in foreign countries, who have difficulty in keeping informed concerning the progress of American Entomology. It may not be unreasonable to hope that the impetus given to western Entomology by Essig's work will lead to other developments. The next thing to plan for should be a series of volumes, dealing with the several orders, and including all known genera and species. *The Lepidoptera of New York and Neighbouring States,* by Forbes (1923) would serve as a model,

though the fuller treatment of the *Fauna of British India*, could this style be adopted, is greatly preferable. The greatest obstacle to the development of such a plan is undoubtedly financial, but Entomologists should concertedly urge the claims of their science, supporting them by facts well known to them, but almost wholly unknown to the general public. For example, I learn from Mr. H. S. Smith that the total value of the oranges in California in 1925 was $79,200,000. The value of the lemons was $18,000,000. Los Angeles and Orange counties have approximately half the citrus acreage of the whole state. Los Angeles County in 1925 had 53,458 acres of bearing citrus trees. Orange County had 41,773 acres. They average about 90 trees to the acre. Los Angeles County spends over a million dollars a year fighting insects on the citrus trees; Orange County about nine hundred thousand. Without constant effort, breeding the *Cryptolaemus* ladybug in specially constructed insectaries and turning them loose every year in the orchards, the *Citrophilus* mealy-bug would undoubtedly ruin the whole industry. The black and red scales have to be fought incessantly, and now with renewed vigor because, following the teachings of Darwin, they have through a process of survival of the fittest developed resistance to cyanide fumes. We, who cheerfully eat oranges throughout the season, little imagine the trained intelligence, labor and expense which make it possible for us to have them at all. Such considerations, of an economic nature, should in themselves convince any one of the importance of supporting Entomological research and publication. Yet they may be reinforced by others, in some respects even more weighty. It is difficult to exaggerate the moral value of interest in nature, or the pleasure derivable from such interest. Though we are fed, housed and clothed, we shall never be really worth while, to ourselves or others, until we learn to appreciate the beautiful world in which we live and the marvelous order of the universe. This appreciation, like our regard for persons, is necessarily partly intellectual and partly emotional, and must rest on a basis of knowledge.

Examining the details in Essig's book, I marvel at the general accuracy. In such a mass of detail, occasional slips must occur, but those I notice are few, and generally due to mistakes in the literature cited. Thus on page 830 an *Aleyrodes* is called "*cuphorbiara*". It was named *cuphorbiarum*, but Quaintance and Baker, not recognizing a genitive plural, wanted to make the word agree in gender with *Aleyrodes*, and Essig copied the mistake. I am credited with publishing *Murgantia nigricans*, a synonym of *M. histrionica*, because it so appears in Van Duzee's

Catalogue. As a matter of fact, I published only a variety *nigricans*, the dark form common along the coast of Southern California. There is no dispute as to the existence of this form, and it stands exactly where I left it. The error in this case arose simply from the method of citation in the Van Duzee catalogue. There is more serious confusion in the Lepidopterous family Aegeriidae. *Alcathoë* is printed *Alcathoe*. *Aegeria* is made to include two quite distinct genera, *Aegeria* of the later lists, and *Synanthedon* or *Conopia*, the *Aegeria* of former times. This is the consequence of the way names have been shuffled and changed in this group, utterly confusing to anyone who has not closely followed the literature. It is rather singular that it is said of the larvae of the sawfly *Nematoneura malvaccarum* that they "do not appear to attack cultivated hollyhocks," when the title of the original paper, duly cited, was "A New Sawfly which is Injurious to Hollyhocks." A few years ago I again found the larvae in Santa Fé, infesting hollyhocks in the garden of Dr. E. L. Hewett. The list of mayflies is by no means up to date; it ignores the work of Dodds and McDunnough.

Although the title refers only to insects, other terrestrial arthropods are included, and there is a most serviceable account of the Isopoda, scorpions, ticks and mites, etc. Only a few of the most conspicuous spiders are cited. An excellent feature is the large number of references to recorded parasitism, involving among other things a summary of the species of parasitic Hymenoptera. Many of the chapters have been submitted to specialists, with the result that we often find new or almost new synonymy, and other evidences of revisional work. The very full index is greatly to be commended.

T. D. A. Cockerell.

OBITUARY.

On the morning of November 11th, 1926, Curtis G. Lloyd died at Bethesda Hospital in Cincinnati at the age of 68. During a lifetime that was largely devoted to scientific work he built up in Cincinnati what is probably the largest collection of fungi in the world. Together with his brothers John Uri Lloyd and Nelson Ashley Lloyd, he founded the Lloyd Library in Cincinnati. This library contains more than 52,000 volumes, and is foremost in works on Materia Medica and Mycology.

The bulletins of this library he edited, and for the most part wrote. They are 27 in number. Five of them are mainly entomological and were prepared at Cornell University

They are as follows:

No. 1. North American Caddisfly Larvae, by J. T. Lloyd.

No. 2. Notes on the Biology of some of our North American Species of Mayflies, by Helen E. Murphy.

No. 3. Morphology, Anatomy and Ethology of Nemoura, by C. F. Wu.

No. 4. Neotropical Mayflies, by James G. Needham and Helen E. Murphy.

No. 5. A Preliminary Biological Survey of the Lloyd-Cornell Reservation, by members of the scientific staff of Cornell University.

The University of Cincinnati last June conferred upon him the honorary degree of Doctor of Science.

Dr. Lloyd was a real promoter of conservation. While many others talked wild-life preserves, he quietly brought them into existence: first a fine area of virgin forest near his boyhood home at Crittenden, Kentucky, which he filled with wild flowers. Then three of the choicest bits of nature near to Cornell University: one an area of cold, upland bogs near McLean; another a wild flower preserve in a woodland near Slaterville Springs; and the third a region of potholes in beech woods at Ringwood Hollow. All these he placed in the permanent keeping of a board of trustees for the benefit of the public.

J. G. NEEDHAM.

The deaths of the following entomologists were announced in *Science* for Nov. 19, 1926: Rev. FRANCIS DAVID MORICE, of England, Hymenopterist, on September 23 in his seventy-eighth year; TASUSHI NAWA, of Japan, known for his work on termites, aged seventy years; and Professor ERMANNO GIGLIO-TOS, professor of zoology in the University of Turin.

The number for the NEWS for December, 1926, was mailed at the Philadelphia Post Office on December 10th, 1926.

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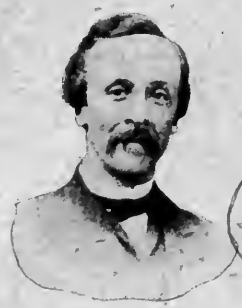
FEBRUARY, 1927

ENTOMOLOGICAL NEWS

Vol. XXXVIII No. 2



JAMES H. B. BLAND,
1833-1911

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PHILADELPHIA, PA.
THE ACADEMY OF NATURAL SCIENCES,
Logan Square

Entered at the Philadelphia, Pa., Post Office as Second Class Matter.
Acceptance for mailing at the special rate of postage prescribed for in Section 1103, Act of October 3, 1917, authorized January 15, 1921.

ENTOMOLOGICAL NEWS

published monthly, excepting August and September, by The American Entomological Society.

Philip P. Calvert, Ph.D., Editor; E. T. Cresson, Jr., Associate Editor

Advisory Committtee: Philip Laurent, J. A. G. Rehn, Chas. Liebeck, J. Chester Bradley, Ph.D., Frank Morton Jones, John C. Lutz, Max Kisliuk, Jr.

The subscription price per year of ten (10) numbers is as follows:

United States and possessions	$3.00
Canada, Central and South America	3.15
Foreign	3.25

Single copies 35 cents

ADVERTISING RATES: Full width of page. Payments in advance.
One issue, 1 in., $ 1.20, 2 in., $ 2.40, half page, $ 4.00, full page,, $ 8.00
Ten issues " 11.00, " 20.00, " 35.00, " 70.00

SUBSCRIPTIONS AND ADVERTISEMENTS. All remittances, and communications regarding subscriptions, non-receipt of the NEWS or of reprints, and requests for sample copies, should be addressed to Entomological News, 1900 Race St., Philadelphia, Pa.

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Of The American Entomological Society will be held at 7.30 o'clock P. M., on the fourth Thursday of each month, excepting June, July, August, November and December, and on the third Thursday of November and December.

Communications on observations made in the course of your studies are solicited; also exhibits of any specimens you consider of interest.

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ENTOMOLOGICAL NEWS

VOL. XXXVIII FEBRUARY, 1927 No. 2

Food Preferences of the Black Cricket (Gryllus assimilis) with Special Reference to the Damage Done to Fabrics (Orthop.).

By MARGARET B. SAVIN, Philadelphia, Pennsylvania.

(Continued from page 10.)

Table I is a summary of a fuller table copies of which are deposited with the Graduate School, University of Pennsylvania, and with the American Entomological Society. It will give some idea of the time required for consuming certain raw and cooked vegetables and the age and sex of the subjects used. If the food was not touched a blank space is left.

TABLE I.

Food.	Crickets Tested.	Time in hours required for consuming food.
Tomato (raw, pyramid 10 mm., 1-16 mm. thick)	4 ♀ nymphs	.75 to 12.
	1 ♂ adult, 1 ♂ nymph	
Potato (raw, 1 x 3 x 3 mm.)	7 ♀ nymphs	.75 to 34.
	6 ♂ nymphs	.75 to 17.5
Carrot (raw, pyramid 10 mm., 1-16 mm. thick)	3 ♀ nymphs	1.25 to 28.
	1 ♂ adult, 1 ♂ nymph	
	2 ♂ nymphs	37. and 58.
	4 ♀ nymphs	5.3 to 48.
Lima Bean (raw, 10 mm. in diameter)	4 ♀ adults	8.25 to 48.
	3 ♂ nymphs	24. to 32.
	4 ♂ adults	8.5
	2 ♀ nymphs	23.5
Lima Bean (cooked, 10 mm. in diameter)	1 ♀ molting	96.
	3 ♂ nymphs	23.5 to 63.
	2 ♂ adults	63. and 96.
Corn (raw, 1 kernel)	1 ♀ nymph	6.
	5 ♀ adults	24.
	1 ♂ nymph	5.5
	3 ♂ adults	24. to 26.
Corn (cooked, 1 kernel)	3 ♀ nymphs	5. to 24.
	7 ♂ nymphs	9.5 to 24.
	3 ♂ molting	

Some interesting feeding habits were observed, such as the eschewing of the skin of the tomato and peach and of the hilum of the bean. The skin of the corn kernel was eaten last, all of the part within having been gouged out. Each of two individuals was given a whole lima bean pod. Both crawled up to the top of the pod and began eating at the stem end, working back. No attempt was made to secure the beans until they were reached in the course of feeding. It required eight days to consume the entire pod. This behavior is contrary to that reported of crickets in alfalfa fields (Severin 1920). We read: "When the pest has opened up the seed pod, it pulls out the developing seed and devours it."

A small nymph caught in a basket of corn was confined with a corn ear worm. Both continued to be lively for six days when the caterpillar went into a chrysalis and the cricket molted. Two days later, the nymph had eaten one-half of the pupa. Several writers (Bintner 1891, Chittenden 1896, Criddle 1925) have recorded the cannibalistic tendency of *Gryllus* and its liking for animal matter; Criddle reared his first nymphs on tabanid flies alone. My observations bear this out very decidedly. Nine adults were given three fresh killed house flies apiece. These were devoured in an average time of eighteen minutes.

Two of the confined specimens for some unknown reason chewed off and ate their own hind legs, first one and then the other. To my knowledge, they had not been injured nor were they hungry. Both continued to live for ten days until I chloroformed them.

We discovered in a closet, an all-rubber bathing cap trimmed with blue and white rubber flowers, which had many small holes chewed in it. As the damage could have been laid to a mouse, I put an unharmed rubber flower in each of the glasses of three adult crickets. Immediately they began to bite into the rubber and continued working for three hours. Most of the chewed bits were actually taken into the body, although there were some fragments lying on the bottom of the glass. I repeated this experiment with several other specimens and found that there is no question of the liking for rubber.

Lintner in 1891 reported that crickets will "gnaw holes into boots and shoes." We found a new leather traveling bag much scarred, the black grain and finish having been entirely chewed off. Though I did not attempt a proof of the cricket's guilt, I do not doubt that it was responsible for the damage to the leather.

Some magazine pictures which had been pasted in an upper room on the brick fireplace chimney were much chewed, at the corners especially. This observation suggested that *Gryllus* will eat paper and paste. I put on one glass a piece of American bond paper with well-dried paste in the center, and in another glass paper with fresh moist paste in the center. The paper was finally eaten on the edges where no paste had been put, but apparently not used for food, as many tiny bits of paper lay scattered on the bottom of the glass.

Many references to the economic status of *Gryllus* mention the case first quoted by Lintner (1893) of the damage done by crickets to a new suit, belonging to a friend of Mr. Wm. B. Marshall, of the New York State Museum, when he was visiting at Cape May.

From conversation with those who frequently sojourn in the less built up parts of seashore resorts, from state agricultural bulletins, and references of entomologists (Herrick 1914, Felt 1909, Lutz 1921, Criddle 1925) and from my own experience, I know that the field cricket does cause damage to clothing, particularly to woolens. This habit has been observed in *Gryllus domesticus* also (Morse 1922, Surface 1913, Lugger 1896.) It was my intention to determine why the crickets turn their attention away from their normal vegetable diet to cloth materials.

Lintner proposed that "clothing long worn and charged with animal matter from person and from extraneous sources might naturally be supposed to attract crickets that have acquired the taste indicated above." The reference is to the flesh of putrid birds. From the results I obtained with house flies offered as food, this taste seems to me to be well established and certainly not acquired since my experiments began.

As I had always suspected that spots of grease or food on

clothing would attract, I placed in some glasses clean pieces of new, navy blue, woolen suiting, and in others pieces of the same spotted with bacon grease or with lemonade or sweetened peach juice. After a time, the cloth was chewed in holes of no regular size or shape. However, in almost every case, the areas eaten were not those which had been spotted. Most pieces were damaged only on the edge and but one or two were actually cut on the spotted portion.

I used pieces of old suiting soiled with perspiration. This was attacked in the same manner. No discrimination on the part of the feeders was evidenced. They did not begin at once to bite the cloth, but only after a day or more had passed and no other food had been offered. The average time required before the cloth was first damaged was forty-four hours for all kinds and conditions of woolen material. I believe that this coincidence means nothing, however, as the number of cases used was too few.

The results given in the following table for woolen fabrics show that the time elapsing before the first damage to the material, varies greatly with different individuals.

TABLE II.

Food	Sex and	Individual number of Cricket	Time in hours elapsing before first damage	Nymph or Adult
Suiting (wool, old—spotted	♀	7	24.	Nymph
	♂	30	120.	Nymph
	♀	35	.08	Adult
Broadcloth (new)	♂	11	71.	Adult
Suiting (new)	♀	34	56.	Adult
	♀	36	24.	Adult
	♀	40	27.	Adult
Suiting (wool, new—spotted)	♂	18	24.	Adult
	♂	19	71.	Adult
	♂	22	144.	Adult
	♀	31	72.	Adult
	♀	34	.16	Adult
	♀	35	23.	Adult
	♀	41	27.	Nymph
	♂	72	27.	Adult
	♀	46	.16	Adult

One specimen did show great avidity for cloth. It was a cricket caught late at night on the bedroom floor and put in a glass containing one inch-and-one-half square of henna colored broadcloth, soaked some twelve hours before with sweetened peach juice. On the following morning, the square inch of cloth was in unrecognizable form. It had been chewed into three larger pieces and innumerable smaller ones.

Lugger, in a Minnesota Agricultural Bulletin, stated in 1896, that "house crickets cause damage by eating clothes, especially if these are wet." This statement I was unable to prove. In fact the cloth tested frequently became wet when the water was given to the cricket each day, but the saturated condition did not seem to hasten the damage.

As I expected, my experiments show a decided preference on the part of *Gryllus* for materials of wool. In a drawer of the kitchen cabinet where towels were kept, I found a clean but old cotton net curtain folded many times and riddled with holes, made through several thicknesses of material. I put a whole piece of curtain, three times folded, in with one of the specimens. It was quickly chewed in several good-sized holes. All other pieces of cotton materials were untouched. Pink and white linen, tan and pink silk and colored voile were placed in the glasses of a number of individuals. Some of these were sampled, as could be seen by a very slight nick on one edge, but no real damage was done.

Though experiments with linen were unsuccessful, I found as I was packing a green linen dress to return home, that a large circular hole had been made in it. This was undoubtedly the work of a cricket. So many of my daily results were like this. The subjects did not adhere to any one method or habit and seemed almost temperamental.

Table III shows *average* times required for consuming foods. The averages cited for fabrics refer to the amount of time elapsing before the first damage was done. Unfortunately the number of subjects (crickets) used for various food varies considerably.

TABLE III.

Food	Average Time	Longest Time	Shortest Time	No. of Subjects	Nymph Average	Adult Average	Male Average	Female Average
Tomato (raw).....	6.	12.	1.3	4				
Potato (raw).....	6.	34.	3.	11			4.7	16.4
Carrot (raw).....	25.9	58.	1.25	5			47.	11.5
Lima Bean (raw)...	20.5	53.	8.5	14	32.7	8.4	16.2	26.
Lima Bean (cooked).	50.1	96.	23.5	9	41.7	79.	51.4	47.6
Corn (cooked).....	13.8	24.	5.	9	13.8		15.3	12.8
Corn (raw).....	5.5	6.	5.5	2				
Cloth (new).....	44.	71.	24.	4				
Cloth (old spot).....	44.	120.	.8	3				
Cloth (new spot)....	44.	144.	.16	9				
3 flies	.3	.66	.10	9		.3		

Undoubtedly crickets prefer raw and cooked vegetable food to woolen and cotton fabrics. The cause of attacking the latter I do not yet understand. Whether they are actuated by hunger or by a desire to escape from under a fold in a garment, I do not know and very much doubt. "Pure wantonness" as one worker (Chittenden 1896) has put it, seems to be the best explanation, although it does evade the question.

The peculiar attraction to rubber as a food and their eagerness in eating it made me think as I watched them, that they preferred it to the most favored vegetables. The explanation of this fact is still a question in my mind.

Forty-two different types of food were offered to one or more of the fifty crickets used in experimentation. I cannot say that crickets will refuse to try any article on this list from vegetables to rubber. Scarcely will two individuals require the same amount of time for eating, nor will they go about the task in the same way. A better demonstration of temperamentalism, if they could be guilty of such a trait, one could not find. With Lutz and Criddle, I agree upon the title "Omnivorous Gryllus."

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An Aberrant Specimen of Necrophorus tomentosus (Weber) (Coleop.: Silphidae).

Recent investigations have obliged me to collect numbers of *Necrophorus* beetles of various species. About midnight of July 8, a specimen of *N. tomentosus* was taken on a piece of slightly old meat in a pile of bricks in my own yard at Elgin, Illinois, the right elytron of which is marked as follows:

The sub-basal and sub-apical spots are united by a band of the same color. This band is approximately 2mm. wide, and covers the median half of the elytron. It is narrower by about ½mm. at the point where it fuses with the sub-apical spot than it is where it joins the sub-basal. Thus, instead of the usual black between the spots, extending in an uninterrupted band from the outer to the inner margin of the elytron, only a black spot approximately 2x2mm. extends from the outer margin to the middle of the elytron.

Careful examination revealed no other abnormalities in coloring or in external structure. Although I have had much experience with various species of *Necrophorus* for many years, I have never before found an aberrant specimen, nor noticed any discussion of such in the journals. I should be pleased to hear from any one who has found such a specimen.

CYRIL E. ABBOTT, Dept. of Zoology,
Johns Hopkins University, Baltimore, Md.

Note on the Collecting of Say's Mulatto-Bug (Cydnoides albipennis Say) (Hemiptera, Cydnidae).*

By Harry H. Knight, Ames, Iowa.

While on a collecting trip in Colorado during August, 1925, the writer along with Dr. C. J. Drake, collected several specimens of an interesting bug belonging to the family Cydnidae. Because of its remarkable color pattern, which we had not seen elsewhere in collections, we knew at once that our find represented at least a rare or little-known species. Members of the family Cydnidae are commonly called negro-bugs, apparently since a majority of them are deep black in color. The bug we collected has the large scutellum and basal area of pronotum reddish brown, head and part of pronotum black, with lateral margin of pronotum and the chitinized part of the wing white, except for a small brownish spot near apex of corium. The color combination of this bug suggests on first casual glance a Coccinellid beetle rather than a Cydnid. Because of this illusion I have a recollection of allowing the first specimen to escape, since in my net Coccinellids did not take precedence over Hemiptera.

The writer took nine female specimens while Dr. Drake collected eight others, August 4, 1925, along the main automobile road about three miles north of Wray, Colorado. These specimens were taken by sweeping sedges found growing along the course of a small spring fed stream which arises on the west side of the road, passes under a bridge and flows southeast. We were at a point where the first low foot hills rise from the great plains of eastern Colorado.

After looking up the literature I find this insect was first described as *Thyreocoris albipennis* by Thomas Say (Descrip. N. Sps. Heter. Hemip. N. A., p. 2, 1831). It was next mentioned in the year 1876, when Uhler (Bul. U. S. Geol. Geog. Surv., I, p. 271) quotes the original description of *albipennis* Say and remarks:

"Obtained by Mr. Say in Nebraska near the Missouri River.

*Contribution from the Department of Zoology and Entomology, Iowa State College, Ames, Iowa.

The specimen described by Mr. Say was a mutilated one, without a head. The description is copied here with a view to call the attention of collectors to this remarkable insect, and to enlist those who are favorably situated to endeavor to recover it for the advancement of our knowledge in this branch of modern science."

The rediscovery of the species is recorded by Professor Herbert Osborn (Ent. News, IV, p. 91, 1893) in which he states:

"In a collection of Colorado Hemiptera which I have recently had the pleasure of examining for Prof. C. P. Gillette, of Fort Collins, Colorado, I found a specimen which agrees in every particular with Say's description. I can have no hesitation in referring it to his species, and considering it a very well marked and distinct species. Say described it under the name of *Thyreocoris albipennis,* but it should be referred to *Corimelaena."*

The following year, Prof. Osborn (Proc. Ia. Acad. Sci., I, pt. 4, p. 121, 1894) again recorded the same specimen.

Van Duzee (Trans. Am. Ent. Soc., xxx, 1904) changes the name of *albipennis* Say to *Corimelaena Sayi* since that name is preoccupied in the genus *Corimelaena* by *C. albipennis* Eschscholtz (1822). He also gives a redescription of the species based upon two specimens which were recognized in the collection of the Colorado Agricultural College at Fort Collins, having been collected in the foot hills about thirty miles northwest of Fort Collins. Van Duzee remarks that: "These individuals and another sent by Prof. Gillette to Prof. Herbert Osborn and recorded by him (1893 and 1894), are, so far as I can learn the only known specimens.

It remained for Zinmer (Univ. Neb. Studies, xi, 1912, p. 247) to report the finding of a large series of specimens when he states:

"Very little is known concerning the habits or distribution of this insect owing to its apparent rarity. Say described it in 1831 from a specimen, lacking a head, collected in 'Missouri . . . on the Missouri river.' The exact locality is indeterminable, but there is a probability that the place was somewhere within the present limits of Nebraska. Since that time, two specimens have been collected at Fort Collins, Colorado, and the occurrence recorded. Another individual, thought to be of this species, was recorded from the same locality but was

later found to be the immature form of *renormata* Uhler. Aside from these specimens no others have come to light. For some time there has been a specimen in the collection, taken at Halsey, Nebraska. On August 25, 1911, when I was collecting at that locality, Mr. A. G. Vestal, who was with me, called my attention to a bug which he had picked up. I found it to be an individual of the present species and search revealed the presence of such an abundance of others that I was able to secure a hundred or more in a comparatively short time. The habitat of the species here was a sandy stretch of ground, occupied by a prairie-dog town and covered with typical Nebraska sandhill vegetation, including among the plants *Euphorbia geyeri*. This plant, growing flat on the ground and spreading out rather broadly, sheltered the insects, which were found, sometimes a dozen or more at a time, under the prostrate stems and leaves. The same plant grew higher up on the hills and in the blow-outs, and I found the bug once in such a location on September 2, when I collected a dozen or more. On September 15, at Crawford, Nebraska, I collected another specimen in a canyon of the pine ridge near the canyon's mouth, although I did not take it from the *Euphorbia*, and at Halsey, again, on the 23d of the same month I found it still abundant, although after a heavy frost."

We next find mention of this insect by Malloch (Ill. Nat. Hist. Surv. Bull., xiii, p. 209, 1919) when he describes the new genus *Cydnoides*, and includes four species, of which one is *sayi* (Van. D.). Knowing of the rarity of this species, Malloch states: "I take this opportunity to extend its hitherto known range by recording the collection of three fine female specimens of *sayi* at Fort Brown, Brownsville, Texas, November 29, and December 9, 1910, by Mr. Hart."

More recently, Van Duzee (Ent. News, xxxiv, p. 305, 1923) gives a re-arrangement of the species of Thyreocorinae and lists *Cydnoides albipennis* (Say) as the correct name for the species. After looking up the literature I find that *Scutellera albipennis* Eschscholtz (Entomographien, 1822, p. 159, *also* Dorpat. Naturw. Abhandl., I, 1823, p. 159) described from Chili, still remains in the genus *Corimelaena*, thus *albipennis* Say is not preoccupied in the genus *Cydnoides* and the name can be revived.

Such is the known history of Say's mulatto-bug.

Synopsis of the Syrphid Genus Copestylum Macq. (Diptera.)*

By C. H. Curran, Ottawa, Ontario.

In Entomological News, volume 21, pp. 222-25, 1910, Dr. J. M. Aldrich published a valuable review of this genus, but did not make any attempt to interpret the Townsend species in relation to those already described. However, he had examined the types of the species described by Townsend, which were in the California Academy of Science and determined that several of the species placed in the genus *Volucella* by Townsend actually belonged to *Copestylum*. While at Kansas University several years ago I discovered the type of *Volucella inops* Townsend and found that it was the same as *Copestylum marginatum* Say.

From Townsend's descriptions the only conclusions which can be drawn are that all but one are absolutely synonyms of *Copestylum marginatum* Say, while the remaining species is undoubtedly the same as *C. limbipennis* Williston. The descriptions of the five species listed here as synonyms of *marginatum* show very little difference of importance, and much more striking color variations are obtainable in large series. The species herein described as new does not agree with any published descriptions, although it has long been confused with *marginatum*. It remains to be seen whether *C. simile* Giglio-Tos is distinct from *marginatum*, but until series of this form are available it will not be possible to decide this question.

Table of Species.

1. Fourth abdominal segment clothed with abundant erect pale pile, sometimes with coarser black hairs intermixed 2
   Fourth abdominal segment clothed with sparse, coarse, somewhat flattened, sub-appressed whitish hair. *caudatum* n. sp.
2. Wings at most a little darkened; with a blackish spot at base of stigma and along the anterior crossvein ... 3
   Subapical half of the wing brown in front of the third vein ..... *limbipennis* Will.

*Contribution from the Division of Systematic Entomology, Entomological Branch, Dept. of Agriculture, Ottawa.

3. Fourth abdominal segment without black hairs; scutellum broadly pale haired on the border.....4
   Fourth abdominal segment with longer coarse black hairs intermixed with the pale ones on much of the surface; venter wholly black (in ♀?)....*lentum* Will.
4. Venter black, with the narrow lateral border pale; legs black except the bases of the tarsi....*simile* G.-T.
   Venter with the second and third segments yellowish, the second sometimes mostly black...*marginatum* Say.

Copestylum limbipennis Williston.

Synopsis N. Amer. Syrphidae, 152, 1886.

Volucella lucasana Townsend, Pr. Calif. Acad. Sci., iv, 615, 1894. (Apr. 1895).

Readily recognized by the color of the wings. There is a specimen before me from Mission, Texas, Dec. 5, 1910. Townsend's description agrees quite well.

Copestylum simile Giglio-Tos.

Boll. R. Univ. Torino, vii, No. 123, p. 2, 1892.

Copestylum parvum Giglio-Tos, Boll. R. Univ. Torino, vii, No. 123, p. 2, 1892.

Giglio-Tos, in his *Ditteri del Messico,* expresses doubt about these two forms representing different species. The differences indicated in the descriptions appear to be insufficient to retain them as distinct species.

Copestylum marginatum Say.

Volucella marginata Say, Journ. Acad. Nat. Sci., Phila., vi, 167, 1829. (Mexico).

?*Copestylum flaviventris* Macquart, Dipt. Exot., suppl. i, 125, 1846. (Colombia).

Copestylum distinctum Giglio-Tos, Ditteri del Messico, i, 41, 1892 (Mexico.)

Volucella estebana Townsend, Pr. Calif. Acad. Sci., iv, 612, 1894 (1895). (Lower Calif.)

Volucella sodomis Townsend, Pr. Calif. Acad. Sci., iv, 616, 1894 (1895). (Lower Calif.)

Volucella fax Townsend, Trans. Amer. Ent. Soc., xxii, 42, 1895. (Colo.)

Volucella inops Townsend. Trans. Amer. Ent. Soc., xxii, 43, 1895. (Colo.)

Volucella toltec Townsend, Trans. Amer. Ent. Soc., xxii, 45, 1895. (Mexico). *(toltcca* Aldrich).

The types of the species described by Townsend from Lower California were examined by Dr. Aldrich shortly before they were destroyed, but in his discussion of them no indication of synonymy was given. The type of *inops* I have seen and it is quite evidently the same as *marginatum*. In other cases the descriptions leave little doubt as to the synonymy. *C. distinctum* G.-T. is only a variety of *marginatum*, there being many intermediate forms.

Copestylum lentum Williston.

Copestylum marginatum lentum Williston, Syn. N. Amer. Syrphidae, 152, 1886.

I consider this to be quite distinct from *marginatum* as the scutellum bears all black hairs while in *marginatum* the disc bears short black hair and the border longer pale pile. In the specimen of *lentum* before me the thorax is all black-haired except laterally in front of the suture and above the anterior coxae, where shorter, fine, crinkly, pale pile is quite evident. Abdominal venter wholly black, at least in the male.

Copestylum caudatum new species.

Distinguished from the remaining species in the genus by the sparse, coarse, somewhat flattened hairs on the fourth abdominal segment and sides of the others. Length, 7 to 8 mm.

♂.—Face bleached yellowish, a rather broad median vitta, a very broad stripe separating the face and cheeks, the cheeks except an anterior stripe and spot at the posterior corner of the eyes, and the front, except a large orbital spot on either side, shining black; the black color covers the whole of the antennal tubercle. Vertical triangle and occiput black, the posterior orbits broadly grayish pollinose. Pile cinereous, a broad band of black pile on the eyes in front. Antennae reddish brown to brownish red, the third segment narrowed on the apical fourth; arista black, densely short haired above and on the lower edge except basally.

Thorax shining black, the lateral margins of the mesonotum, a pair of oval longitudinal prescutellar spots and the scutellum, translucent reddish yellow. Pile wholly cinerous, fine. A large reddish spot on the mesopleura above.

Legs black; apices of femora and basal third to half of the tibiae, yellow; apices of the anterior four tibiae, more or less broadly, and the first three segments of all the tarsi, reddish.

Hair black except on the anterior basal third of the middle tibiae.

Wings hyaline, the veins mostly yellowish; a black spot at the base of the stigma and along the anterior crossvein. Squamae and fringe white, the rim yellowish tinged. Halteres whitish yellow.

Abdomen shining black, the second segment with a pair of moderately large lateral triangles which are slightly concave in front, slightly oblique behind, almost touch the base of the segment laterally and are broadly separated from the posterior margin, the spots separated from each other by more than one-third the width of the segment. Third segment with a pair of large, basal yellowish spots which are narrowed towards either end, the ends rounded, separated more or less broadly from the lateral margins and narrowly so from each other. Fourth segment with obscure reddish tinge towards either side basally. Pile very short on the disc, longer, sparse, whitish laterally and on the fourth segment, more or less flattened and rather coarse; on the second and third segments the hair is black behind the pale spots and between them except basally, elsewhere whitish. Venter black, the incisure between the second and third sternites broadly reddish, the sides of the basal sternites very narrowly reddish; pile cinereous, long, black on the apices of the terminal sternites.

♀.—Cheeks reddish yellow with a brown stripe across the middle; the yellow of the face extends broadly to above the middle of the front along the orbits and is joined inwardly to an oval spot on either side below the middle; vertex, produced triangularly to the neck, yellow. Pale markings of the thorax yellowish. Abdomen much more extensively pale, the black markings mostly replaced by ferruginous, the second segment yellow on the basal two-thirds or three-fourths, the pale spots on the third segment occupying two-thirds the length of the segment, subrectangular, the spots on the fourth segment similar but rounded posteriorly on the inner border, the apex of the segment pale yellow. Second and third sternites yellowish, a narrow median vitta and most of the third segment rusty reddish.

Holotype, ♂, Medicine Hat, Alberta, May 8, 1926, (F. S. Carr). No. 2304 in the Canadian National Collection, Ottawa. *Allotype*, ♀, Oak Creek Canyon, Arizona, (F. H. Snow). *Paratypes:* ♂, same data as holotype; 2♂, Jemez Springs, New Mexico.

The allotype is evidently an unusually pale specimen.

The Automobile vs. Insects.

By A. O. Larson, U. S. Bureau of Entomology

Dr. Howard (1) says that "every man who studies insects and who records his results is doing greatly needed work and work that sooner or later will help to lead to a close understanding of insect life which may bring about its control by man." Whether one observes the insects and their activities, or the agencies which aid or hinder their ever-increasing spread and multiplication, such observations can be beneficial only after they are made available to others.

In this paper the writer purposes to show that the automobile not only acts as a carrier of insects, thereby aiding the insects to establish themselves in new sections, but also in at least the following four ways, performs noteworthy service in reducing the number of insects with which man has to contend:

1. It aids in keeping down the number of house flies by reducing or making inaccessible the quantity of pabulum necessary for the fly larvæ.
2. In some sections it greatly aids in the control of certain species of mosquitoes, by means of the oil drippings, including garage wastes, which enter the drainage systems and there serve as efficient larvacides.
3. By filling hedge rows with dust and debris, it destroys the favorite breeding places of certain insects thereby reducing their numbers.
4. It destroys immense numbers of insects by running over and crushing those on the highways and by striking against others in flight.

The automobile has long been recognized as an important factor in the distribution of insects from one section to another. Titus (2) in 1910 recognized it as one of the means by which the alfalfa weevil was carried into uninfested areas, and it has frequently been mentioned as an important factor in the distribution of the Japanese beetle, the European corn borer, the gipsy and brown-tail moths (1), the melon fly (3), the Mediterranean fruit fly, the cotton boll weevil, and other important insects.

Because of the recognized importance of the automobile as

an insect carrier, certain states have instituted automobile inspection on the principal highways leading from certain insect-infested areas. The importance of this inspection in California is emphasized by the variety of insects taken at the northern border stations during the past season (1925). A list of these follows:

Name of Insect	Number of Specimens	Number of Autos carrying Insects
Agonoderus sp.	1	1
Allograpta sp.	1	1
Amara sp.	10	8
Anatis sp.	1	1
Anelastes sp.	3	3
Ant lion larvae	2	2
Anthicid	1	1
Anthonomus sp.	1	1
Aphodius sp.	3	3
Aradus	11	7
Aradus lugubris	6	5
Ataenius abditus	1	1
Attagenus piceus	1	1
Bembidium sp.	2	2
Berytid (undetermined)	4	4
Blapstinus sp.	5	4
Brachyrhinus ovatus	26	18
Bruchid	1	1
Bruchus quadrimaculatus	7	1
Caddice fly	1	1
Calathus sp.	7	3
Calosoma	1	1
Camponotus	1	1
Cardiophorus sp.	1	1
Carabid (undetermined)	3	3
Centipede	1	1
Cerambycid	3	3
Ceratomegilla vittigera	3	2
Chalcid	2	2
Chilocorus bivulnerus	2	2
Chlorochroa congrua	1	1
Chrysobothris sp.	1	1
Chrysomelid (undetermined)	3	3
Chrysomphalus aurantii	1	1
Chrysopid larva	1	1
Cicadellid (undetermined)	1	1
Cimex lectularius	54	3
Cistela opaca	1	1
Cleonus sp.	1	1
Clerus sp.	1	1
Coccinellid (undetermined)	10	8
Coleoptera (undetermined)	42	18
Collops sp.	1	1
Coniontis sp.	5	4
Coreid (undetermined)	1	1
Corizus sp.	1	1
Corimelaenid	1	1
Cydnid (undetermined)	1	1

*This list was kindly furnished by Mr. A. C. Fleury, Supervising quarantine officer of the California Department of Agriculture.

Name of Insect	Number of Specimens	Number of Antos carrying Insects
Dendroctonus sp. ..	1	1
Dendroctonus valens	1	1
Dermacentor sp. ..	3	3
Dermestes vulpinus	2	2
Dermestid larvae ..	4	4
Diachus sp.	1	1
Dorytomus sp.	43	13
Dorytomus cuneatulus	1	1
Dorytomus inaequalis	123	38
Drosophilids	2	1
Elaterid larvae ...	3	3
Eleodes sp.	5	5
Eleodes tricostata .	3	3
Ephestia sp.	27	1
Epicauta maculata.	1	1
Eusattus dubius ...	1	1
Formica	1	1
Geocoris sp.	16	11
Gyrinid	3	1
Haltica	3	3
Harpalus sp.	1	1
Heliothis obsoleta larvae	3	3
Hesperiid	1	1
Hemipterous nymphs	11	9
Hippodamia sp. ...	1	1
Hippodamia crotchii	2	2
Hippodamia convergens	2	2
Hippodamia 5-signata	1	1
Hippodamia parenthesis	1	1
Hister sp.	2	2
Hoplia callipyge ..	5	5
Hydnocera sp.	1	1
Hymenorus sp. ...	6	6
Hypera postica 3246		529
Hypera punctata ..	1	1
Jassid (undetermined) .	2	2
Lepidopterous larvae	70	53
Lepidosaphes beckii	1	1
Luperodes varipes.	1	1
Lygus sp.	2	2
Lygaeus kalmii ...	1	1
Lygaeus reclivatus.	1	1
Lygus pratensis ...	19	9
Magdalis sp.	1	1
Machilid (undetermined) .	2	2
Malachiid	1	1
Membracid (undetermined) .	2	2
Metachroma sp. ...	1	1
Metachroma californicum	13	1
Metoponium faustum	2	1
Mirid (undetermined) .	10	6
Moths (undeterimined) .	7	5
Monoxia sp.	3	3
Notoxus sp.	4	3
Noctuid larva	1	1
Notonectid (undetermined) .	1	1
Nyctoporis sp.	1	1
Nysius ericae	7	4
Pentatomid	1	1
Periplaneta sp.	1	1
Perla	1	1
Phaedon sp.	30	4
Phalangiid	3	3
Porcellio sp.	1	1
Pristoscelis	2	2
Pseudoscorpion ...	1	1
Pterostichus sp. ...	3	3

Name of Insect	Number of Specimens	Number of Autos carrying Insects
Reduviid (undetermined)	3	3
Saprinus sp.	1	1
Saprinus lugens	3	3
Sawfly larva	1	1
Scarabaeid	2	2
Scatophaga sp.	2	1
Scorpion	5	5
Serica sp.	3	2
Sitones sp.	4	2
Sitones hispidulus	6	5
Silpha sp.	4	4
Snout beetle (undetermined)	8	4
Sphenophorus vomerinus	3	3
Solpugid	4	4
Spondylis eupiformis	1	1
Springtail	1	1
Staphylinid	2	2
Stenochidus carbonarius	1	1
Tenebrioides mauritanicus	3	3
Tenebrionid (undetermined)	8	7
Trichodes sp.	2	2
Trirhabda sp.	2	2
Tribolium confusum	1	1
Triatoma protractus	1	1

The above list emphasizes the danger of injurious insects being transported into a state where agriculture is of such tremendous importance, and where the establishment of pests would be so disastrous. The magnitude of the task of keeping out one of these, the alfalfa weevil, *Hypera postica,* is shown by A. C. Fleury in a letter dated December 15, 1925, in which he says:

"During the first eleven months of the year 1925 there have been inspected 118,286 automobiles. At the northern stations, all automobiles entering California are stopped and those carrying camping equipment are required to unload for inspection. All tents, blankets and other equipment are thoroughly examined and shaken out on a canvas-covered platform and all insects removed are cyanided and sent to this State office for determination and statistical purposes. These stations are maintained principally to intercept the alfalfa weevil, which experience has shown is readily carried in camping equipment when it has been used in an area where the insect occurs. It is not necessary that the tourist spread his blankets or pitch his tent in an alfalfa field, for if the blankets have been spread on the ground in the vicinity of an alfalfa weevil infes-

tation during the period in which the adult weevil is active, there are almost certain to be alfalfa weevils present when the automobile reaches our border station. I have found that one of the easiest ways to gather adult alfalfa weevils is to spread a coat or blanket on some growing alfalfa and leave it there for a short period. Upon examining the under side of the article the adult weevils will be readily found, in spite of the fact that it may be practically impossible to find them upon examining the alfalfa itself.

"There are a number of automobile camp grounds in the vicinity of Reno, Nevada, where the weevil is quite prevalent, and while all growing alfalfa has been eradicated from these camps it is an absolute certainty that alfalfa weevil will be found in the blankets of all tourists camping in these grounds, provided they have not used their blankets from the time they leave the camp until they arrive at our border station."

"In shaking out the blankets at the border stations, many insects other than alfalfa weevil are found and these are also sent to this office. These stations are kept open from the early part of June until the middle of October, the time varying according to weather conditions. You will note that 3246 alfalfa weevils were taken from 529 automobiles. While the inspectors make a special effort to gather up and send in all alfalfa weevils shaken from the blankets, the work will not always permit of their gathering up all the other insects, and therefore the list is not an accurate record of all insects taken from automobiles at these stations. It will, however, give some idea of the wide range of insects carried in automobiles, some of them injurious and some of them beneficial."

(To be continued)

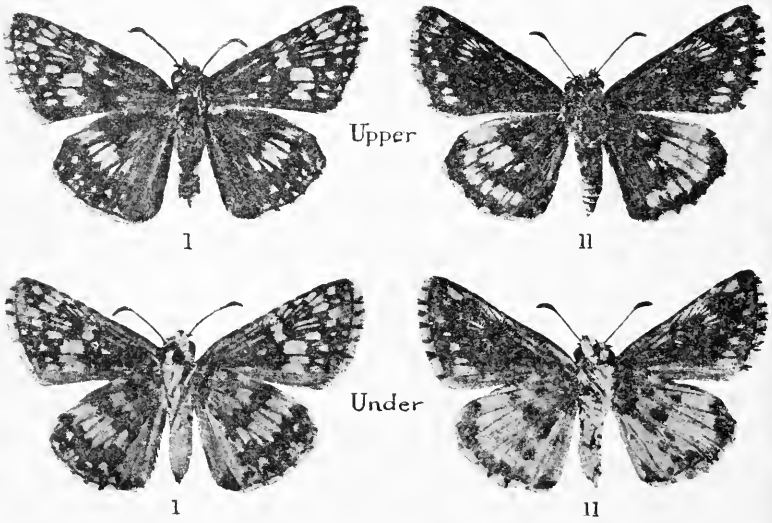
A New "Skipper" Aberration (Lepid.: Hesperiidae).

By J. D. Gunder, Pasadena, California.

Urbanus tessellata (Scud.), var. **occidentalis** (Skin.), ab. ♀ **skinneri** nov. aberr.

Figures No. I illustrate the upper and under sides of a typical female var. *occidentalis* (Skin.) and figures marked No. II show the aberration. These figures are greatly enlarged.

Upper side. The primaries of this aberration are quite melanic except for a single, complete, submarginal row of odd-sized and elongated white spots near outer margin, which spots tend to become larger as they approach both the inner angle and the apex; and a few small flashes of thin white marks at and above extremity of cell. The secondaries are more suffused with white than in normal specimens, having a heavy, squarish row of white spots slightly back from the outer margin, instead of the minute rows normally found adjacent to this margin; this row fuses with the normally placed, but enlarged, discal



area white spotting from the cell extremity to the costal margin.

Under side. Primaries melanic in accord with the upper surface markings, and secondaries with a broad white band all thru discal area, except for two black spots near SM vein; base conglomerate with black spots; and a band or row of confluent black spots on outer margin. Fringes, body and antenna as in the typical species.

Aberrant grade and degree: melanic; final.

Data. Holotype ♀, Expanse 26 mm., (Author's Coll.), Los Angeles, Los Angeles County, California, July 7, 1926.

Named in honor of my friend, the late Dr. Henry Skinner of Philadelphia, to whom I am indebted for many kindnesses.

The North American Nematoproctus (Dipt. : Dolichopodidae).

By M. C. Van Duzee, Buffalo, New York.

Table of species, Males.

1. Lower orbital cilia and beard yellow.....*venustus* Wheeler.
— Lower orbital cilia and beard snow white.....2
2. Middle tarsi with last two joints slightly flattened and widened; fore tarsi plain.....*terminalis* Van Duzee.
— Middle tarsi plain; fore tarsi with a fringe of long black hair on one edge of apical half of first and whole of second joint.....*jucundus* new species.

Nematoproctus jucundus new species. ♂: Length 4.5 mm. Face very narrow, the eyes almost touching on the middle of the face. Palpi small, yellow with a few black hairs. Front green, the silvery white pollen of the face extending over it so as to almost conceal the ground color. Lateral and inferior orbital cilia short, snow white, as are also the bristles on lower part of the head. First and second antennal joints yellow, second a little infuscated, first without hair, third brown, slightly yellow at base, the long basal arista brown with very short pubescence.

Dorsum of thorax blue, polished, with green and violet reflections, which form indistinct lines; pleuræ and scutellum more green. First abdominal segment green, second and third yellow, fourth black, apex of abdomen more greenish black; hairs on the dorsum black, on the venter of the first three segments yellow. Hypopygium concealed; it has long black filaments fringed with stiff, short, black hairs, a few at apex longer.

Fore coxæ wholly yellow with short yellow hair and black bristles at tip; middle and hind ones yellow with a black streak. Femora, tibiæ and fore and middle tarsi yellow; extreme tips of middle tibiæ, apical fourth of hind tibiæ, last two joints of middle tarsi and whole of posterior ones, black; fore tarsi with the last joints infuscated, first joint fringed above on apical half with black hairs, which become longer toward the tip, second joint fringed with bristle-like hairs, the hairs being of nearly equal length and as long as those at tip of first joint; both joints have a row of little black hairs below, which are as long as width of joint, fourth and fifth joints have this row continued but the hairs are more spine-like and bent at tips; last two joints of middle tarsi not or scarcely widened; joints of fore tarsi as 47-20-14-9-8; of middle ones as 56-28-20-9-8; those of the posterior pair as 42-42-35-11-9. Calypters and halteres yellow, the former with white cilia.

Wings dark grayish; third vein bent backward, parallel with fourth at tip; last section of fifth vein 55-, cross-vein 30-fiftieths of a millimeter long; sixth vein sinuous, not reaching quite to the wing margin.

♀: Face of parallel width, quite wide, silvery white, lower part longer than wide, a little shorter than upper portion, silvery white. Palpi half as long as the face, oval, yellow, with a few black hairs and silvery pollen; front green, the pollen of the face extending over lower half; antennæ as in the male.

Thorax green with blue reflections, sometimes with only a median, blue line; posterior edge of pleuræ yellow. First three abdominal segments and venter of fourth yellow, apical segments green with wide, lateral edges of fourth and very narrow edges of fifth yellow; hairs of abdomen black, except on venter of last two segments, where there are a few yellow hairs.

Coxæ, legs and feet colored as in the male, except that the fore and middle tarsi are more blackened towards their tips. Joints of fore tarsi as 39-40-26-15-11; those of middle ones as 60-29-21-9-8; those of posterior pair as 44-39-27-16-10.

Described from one male and six females which I took in the bed of the old canal at Amity Hall, Benvenue, Pennsylvania, June 4, 1925.

Type and *allotype* in the author's collection.

The Chilean Society of Natural History

A new scientific society was organized recently in Santiago, Chile, with the name The Chilean Society of Natural History (Sociedad chilena de Historia natural). The first officers are as follows: *President,* Professor Carlos E. Porter, Zoologist, Entomologist; *Vice-President,* Professor Francisco Fuentes M., Chief of National Herbarium; *Secretary,* Mr. Gualterio Looser, Honorary Aid in Anthropological Section of National Museum; *Assistant Secretary,* Professor Gilberto Montero, Professor of Natural Sciences; *Directors,* Professor Marcial R. Espinosa, chief of Cryptogamic Botany, National Museum; Professor Miguel R. Machado, Chief of Geological and Mineralogical Section, National Museum; Fr. Flam. Ruiz P., Professor of Natural History, specialist in Apidae. The address of the Society is:—Casilla 2974, Santiago, Chile.

ENTOMOLOGICAL NEWS

PHILADELPHIA, PA., FEBRUARY, 1927.

Entomology at the "Convocation Week" Meetings, December 27, 1926, to January 1, 1927.

The eighty-third meeting of the American Association for the Advancement of Science and meetings of many affiliated societies were held in Philadelphia during the week noted. Entomological subjects were discussed in the following numbers of papers listed on programs, but not all of these papers were delivered:

Entomological Society of America	38
American Association of Economic Entomologists	102
American Society of Zoologists alone	13
Same, Joint Genetics Section	5
Same, with Ecological Society of America	1
Ecological Society of America alone	1
American Society of Parasitologists	4
American Phytopathological Society	1
Total	167

This total (167) exceeds those of the Kansas City and New Haven meetings of 1925-6 (158) and Washington meeting of 1924-5 (166), but not that of the Cincinnati meeting of 1923-4 (180). This last total included 41 brief papers composing the symposium of that year of the Entomological Society of America. If we deduct this number, the number of papers on the programs of the two entomological societies in 1926-7 is higher than for any of the meetings of the last four years.

The subjects treated in these 167 papers were as follows:

Teaching Entomology	1	Physiology	23
Technique	3	Behavior	2
Cytology	4	Ecology	13
Anatomy	4	Ontogeny	9
		Genetics	3

Parasites of Insects	6	Products	3
Insects affecting Man and Animals	7	Do. Forest and Shade Trees	8
Evolution	1		ii
Taxonomy	4	Orthoptera	3
Bibliography	1	Isoptera	2
Nomenclature	1	Ephemerida	2
General Subjects	2	Mallophaga	1
General Economic Entomology	20	Anoplura	1
Insecticides and Appliances	23	Thysanoptera	1
Apiculture	10	Homoptera	13
Insects affecting Cereal, Forage and Field Crops	13	Heteroptera	4
Do. Truck Crops	1	Coleoptera	28
Do. Greenhouse Plants	5	Hymenoptera (excl. *Apis*)	6
Do. Fruit	17	*Apis*	12
Do. Household and Stored		Lepidoptera	31
		Diptera (excl. *Drosophila*)	15
		Drosophila	3
		Siphonaptera	1

Many of these figures are duplicated both between sections i and ii and also within each section.

The Entomological Society of America met Tuesday and Wednesday, December 28 and 29, for its twenty-ninth annual meeting, under President Dr. Wm. A. Riley, of the University of Minnesota, and Second Vice President Dr. Annette F. Braun, of Cincinnati. The American Association of Economic Entomologists, including its sections on Plant Quarantine and Inspection and Apiculture, held its thirty-ninth annual meeting December 28 to January 1. President Arthur Gibson, Dominion Entomologist, presided at most of the general sessions.

The annual public address of the Entomological Society was given by Prof. G. H. F. Nuttall, F.R.S., Quick Professor of Biology in the University of Cambridge, England, and Director of the Molteno Institue for Research in Parasitology in the same University. He spoke on "Insect Parasites of Man," describing the characteristics and habits of various mosquitoes, flies, bedbugs, fleas, ticks and lice in relation to human beings. This lecture was given in the lecture hall of The Academy of Natural Sciences, on Tuesday evening, December 28, and was attended by over 300 persons. Following it a smoker was extended to all entomologists by those of Philadelphia.

The banquet of the Economic Entomologists, to which all others were also invited, was given at the Hotel Walton on Thursday evening, December 30, and was participated in by an equal number. The members of the Japanese Beetle Laboratory at Riverton, New Jersey, provided an entertaining and amusing program in which music, comic sketches by local talent and remarks by Doctors W. E. Britton, L. O. Howard, Edith M. Patch, Glenn W. Herrick and W. H. Brittain were delightfully mingled.

The sessions of the two societies were held in Logan Hall of the University of Pennsylvania and were well attended, the Economic Entomologists being frequently present to the number of 250 and more. In a separate room were displayed exhibits of enlarged photographs, physiological apparatus, nomenclature charts, microscopic slides, life histories and a living larva of a remarkable Nemopterid, *Croce*, from the pyramids of Egypt, shown by members of both societies.

Philadelphia bade the Entomologists welcome and we believe that our visitors enjoyed their sojourn among us.

Prof. Cockerell Plans a Trip Abroad.

Prof. T. D. A. Cockerell has been given sabbatical leave of absence from the University of Colorado for the academic year 1927-28 and hopes to carry out the following program: Leaving Boulder in June, he will go to England and after a few days there to Leningrad. Thence he will go to Irkutsk, Siberia, and examine the Ust Balei fossil beds, perhaps on to Chita to see the Trans-Baikal fish and insect shales and in any case visit Lake Baikal and see as much as possible of its peculiar fauna. On the return trip perhaps two weeks in Russian Turkestan. Reach Leningrad about September 20-October 1 and spend three weeks or a month in European Russia, meeting the scientific men and working on his collections at the Russian Academy. Perhaps visit Saratov to see the sunflower work. Back to England about October 25-November 1; a month in England, further work on his collections at the British Museum. About December 1 go to India and Siam, about February 1 to Australia and New Zealand. Home by way of South Sea Islands and California, returning to Boulder about September 1, 1928.

A Case for the English Sparrow as an Insect Destroyer (Lepidoptera).

Altho one usually considers the English sparrow as a bird of no value, more often one of distinct harm because of its aggressive disposition when in association with many of our native birds, there is slowly accumulating a volume of data which indicates that our earlier judgment concerning this bird has been prejudicial or that we are witnessing a marked change in food habit. The following observations are offered in behalf of the English sparrow.

During four years' study of truck crop insects about Chillicothe, Ohio, from 1922 to 1926, I frequently witnessed flocks of this bird industriously moving about the extensive cabbage patches common in that locality. By carefully watching their behavior I felt certain that they were searching for something on the plants. They would hop from plant to plant, often along the rows between the plants, and from time to time pick at some object on the leaves. An examination of the cabbage showed the larvae of the cabbage looper and the imported cabbage worm to be present in large numbers. Could it be that our despised sparrow was eating an equally despised insect? Further observation showed that such was the case.

Remarking to various cabbage growers that the sparrows were becoming somewhat of a benefit, I was surprised to learn that they too had observed this habit from time to time during several years. Thus it seems that, even with an abundance of grain and seeds for food, this bird is slowly becoming a factor of control in the case of the depredations of these two caterpillars.

Since residing in Illinois my attention has been called on two occasions to the English sparrow again functioning in a beneficial role. A resident of Urbana, Ill., whose name I was unable to secure, related having seen a sparrow at work attempting to subdue a large Cecropia caterpillar. Whether the bird had pulled the insect from a tree was not certain, but when observed the bird was busily engaged driving its beak into the luckless worm as it lay on the ground and with bull-dog energy it would then shake its victim. The sparrow was reported to have been somewhat averse at first to attacking the writhing larva, but as the energies of the latter became exhausted the sparrow became more confident and soon was able to carry off its prize.

Mr. J. C. Frankenfeld has also related having observed a similar episode between a sparrow and an almost full grown Cecropia caterpillar.—August E. Miller, State Natural History Survey, Urbana, Illinois.

An Indian Entomologist to Visit the United States.

On the 24th of December last, Prof. T. V. Ramakrishna Ayyar, B.A., F.E.S., F.Z.S., an eminent Indian Entomologist, expected to arrive at San Francisco, by the Japanese boat S. S. Siberia Maru. Mr. Ayyar was the first Indian to take up the study of Entomology in his country. He joined the entomological department of the Government of India in 1903 and has been doing entomological work ever since.

In addition to a thorough knowledge of Tropical Entomology in general, Mr. Ayyar has specialised in Hymenoptera, Coccidæ and Thysanoptera, and earned a worldwide reputation.

Though Mr. Ayyar is new to America his publications are quite familiar in entomological circles. He comes here with a view to see at first hand the work done by American entomologists and get into personal touch with them. He will spend a few months in visiting the important Natural History Museums of the country and return to India via England, France, Germany and Italy.

Personal.

Dr. R. H. Painter has been appointed Assistant Professor of Entomology at the Kansas State Agricultural College.

Entomological Literature

COMPILED BY E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published.

All continued papers, with few exceptions, are recorded only at their first installments.

Papers of systematic nature will be found in the paragraph beginning with (N). Those pertaining to Neotropical species only will be found in paragraphs beginning with (S). Those containing descriptions of new forms are preceded by an *.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

Papers published in the Entomological News are not listed.

1—Trans., American Ent. Soc., Philadelphia. **8**—Ent. Monthly Mag., London. **12**—Jour. of Economic Ent. **14**—Ent. Zeitschrift, Frankfurt a. M. **18**—Intern. Ent. Zeitschrift, Guben. **23**—Boll., Laboratorio Zool. Gen. e Agr., Portici. **25**—Bull. Soc. Ent. France. **26**—Ent. Anzeiger, Wien. **27**—Bull. Soc. Ent. Italiana. **45**—Zeit. f. Wissenschfl. Insektenbiol., Berlin. **50**—Proc., U. S. National

Museum. 55—Pan-Pacific Ent., San Francisco. 58—Ent. Berichten, s'Gravenhage. 69—Comptes R., Acad. Sci. Paris. 70—Entomologica Americana, Brooklyn. 71—Novitates Zoologicae. 77—Comptes R., Soc. Biologie, Paris. 78—Bull. Biol. France et Belgique. 101—Biological Bul., Woods Hole, Mass. 103—Proc. Zool. Soc. London. 105—Proc. Biological Soc. Washington. 139—Bull. Southern Cal. Acad. Sci., Los Angeles. 146—Anales, Mus. Nac. Hist. Nat., Buenos Aires. 154—Zool. Anzeiger, Leipzig.

GENERAL. Aue, A. U. E. Wie ich sammele und züchte.—**14,** xxxx, p. 417-419. **Buxton, P. A.** The colonization of the sea by insects: with an account of the habits of Pontomvia, the only known submarine insect.—**103,** xlv, p. 807-814. **Grabe, A.** Einiges zur frage des industriemelanismus.—**18,** xx, p. 317-319. **Hingston, R. W. G.** Animal life at high altitudes.—Smiths. Rep. 1925, p. 337-347, ill. **Hoffmann, A.** Entomologen addessbuch. 2d. Auflage. Wien, 1926, 330 pp. **Howard, L. O.** The needs of the world as to entomology.—Smith. Rep. 1925, p. 355-372. **Keler, S.** A good type of cage for rearing parasites.—**12,** xix, 866-867, ill. **Longin Navas, S. J.** Un nouveau caractere pour la systematique des insectes.—Assoc. Avanc. Sci., Sess. 49, Grenoble, 1925, p. 416-17. **McAtee, W. L.** The rôle of vertebrates in the control of insect pests.—Smiths. Rep. 1925, p. 415-437, ill. **Schulze, Kuekenthal, Heider u. Kuhlgatz.** Nomenclator animalium generum et subgenerum. Band 1, Lief. 4, Einleitung u. litteraturverz. A-Hew.—Berlin, Preuss-Akad. Wissensch. **W. T. C.** Taxonomy in biology.—Nature, London, cxviii, p. 901-2. **Wagner, F.** Nachträge und richtigstellungen zu Ad. Hoffmanns entomologen-addressbuch.—**26,** vi, p. 189-190.

ANATOMY, PHYSIOLOGY, ETC. de Baehr, V. B. Sur les bases cytologiques de l'heredite.—La Cellule, xxxvi, p. 373-444, ill. **Balfour van Burleigh, C. P. G. C.** 't sluitmechanisme der insectenstigmata.—**58,** vii, p. 109-110. **Bonnier, G.** Temperature and time of development of the two sexes in Drosophila.—Brit. Jour. Exp. Biology, London, iv, p. 186-95. **Bouin, P.** Les cinèses de maturation et la double spermatogenese chez Scolopendra cingulata.—La Cellule, xxxv, p. 373-421, ill. **Cappe de Baillon, P.** Variation et parthenogenese. Note sur la biologie de quelques phasmides.—**78,** lx, p. 473-82, ill. **Cappe de Baillon, P.** Contribution a l'etude des glandes segmentaires chez les

insectes (Dermapteres et Orthopteres).—La Cellule, xxxvi, p. 255-85, ill. **Cuscianna, N.** L'Anatomia dell'Apis mellifica, di razza italiana.—23, xviii, p. 37-77, ill. **Demoll, R.** Die atmung der luftatmenden insekten.—154, lxix, p. 8-16. **Foa e Romeo.** La variabilità nelle uova del baco da seta studiata in rapporto alla produzone del sesso.—23, xviii, p. 130-149. **Gatenby & Bhattacharya.** Notes on the cytoplasmic inclusions in the spermatogenesis of the Indian scorpion.—La Cellule, xxxv, p. 253-62, ill. **Jucci, C.** Su l'eredità de la capacità d'accrescimento in incroci reciproci tra varie razze di bachi da seta (Bombyx mori).—23, xviii, p. 116-129. **Jucci, C.** La fecondita nei Bombyx mori studi statistici sui caratteri della ovificazione (numero, grandezza e peso delle nova) in varie razze di bachi da seta.—23, xviii, p. 225-237. **Kleine, R.** Die abhängigkeit der getreidehalmfliege (Chlorops taeniopus) von der temperatur.—45, xxi, p. 91-98. **Kowalski, J.** Les phenomenes de cata- et d'anachromase dans les autosomes et l'heterochromosome des. . . Orthopteres.—La Cellule, xxxvi, p. 7-83. **May, E.** Die beiden haupttypen der legeapparate bei den insekten. 18, xx, p. 301-308, ill. **Morgan, T. H.** The bearing of genetics on the cytological evidence for crossing-over.—La Cellule, xxxvi, p. 111-23. **Portier et de Rorthays.** Sur la composition chimique de l'atmosphere interne des cocons de Bombyx mori.—77, xcv, p. 1394-5. **Snodgrass, R. E.** From an egg to an insect.—Smiths. Rep. 1925, p. 373-414. **Vecchi, A.** Ulteriori esperienze sull'alimentazione del baco da seta con Maclura aurantaica.—27, lviii, p. 122-136. **Vejdovsky, F.** Quelques remarques sur la structure et le developpement des cellules adipeuses et des oenocytes pendant la nymphose de l'abeille.—La Cellule, xxxv, p. 63-103, ill. **Walton & Wright.** Hydrogen-ion concentration and the distribution of Limnaea. . . with a note bearing on mosquitoes.—Parasitology, xviii, p. 363-367. **Whiting, P. W.** Heredity of two variable characters in Habrobracon. —Genetics, xi, p. 305-16.

ARACHNIDA AND MYRIOPODA. Pavlovskij, E. Zur morphologie des weiblichen genitalapparats und zur embryologie der scorpione.—Ann. Mus. Zool., Acad. U. R. S. S., xxvi, p. 137-205, ill.

(S) ***Oudemans, A. C.** Acarologische aanteekeningen lxxxii.—58, vii, p. 119-126.

THE SMALLER ORDERS OF INSECTA. **Essig, E. O.** Swarming termites.—**55,** iii, p. 92. **Millet, J. G.** Un geste de chasse du fourmilion.—La Nature, 1926, p. 415-6, ill.

(S) ***Snyder, T. E.** Nasutitermes benjamini, a new name for Eutermes insularis.—**105,** xxxix, p. 143.

ORTHOPTERA. (N) **Fulton, B. B.** Geographical variation in the nigricornis group of Oecanthus.—Iowa Coll. Jour. of Sci., i, p. 43-61, ill.

HEMIPTERA. (N) ***Hottes, F. C.** Two n. gen. and 5 n. sp. of Aphididae.—**105,** xxxix, p. 115-120, ill. ***de la Torre-Bueno, J. R.** The family Hydrometridae in the western hemisphere.—**70,** vii, 128 pp.

LEPIDOPTERA. **Bethune-Baker, G. T.** Hübner's "Tentamen" (1806).—**8,** lxii, p. 287. **Clark, A. H.** Carnivorous butterflies.—Smiths. Rep. 1925, p. 439-508. **Colton, H. S.** The unnatural history of the clothes moth.—Sci. Monthly, xxiv, p. 45-57. **Flanders, S. E.** Variations in the seasonal development of the walnut codling moth and its host as influenced by temperature.—**55,** iii, p. 93-94. **Frost, S. W.** Apple leaf-rollers of the genera Amorbia, Archips, Eulia, Pandemis and Peronea.—**12,** xix, p. 813-819. **Paillot et Noel.** Sur l'origine des pigments dans les cellules hypodermiques de Pieris brassicae.—**77,** xcv, p. 1372-4. **Patijaud, E.** Au sujet du sens spécial attribué a nos Bombyx pour la recherche des femelles.—**25,** 1926, p. 164. **Portier et de Rorthays.** Recherches sur la charge supportee par les ailes des lepidopteres de diverses familles.—**69,** clxxxiii, p. 1126-9. **Rostand, J.** Influence de l'ether sur les œufs de Bombyx mori—**25,** 1926, p. 170.

(N) ***Barnes & Benjamin.** Generic synonymy (Phalænidæ); New subspecies of Euparthenos nubilis (Phalænidæ, Catocalinæ).—**55,** iii, p. 64-74; p. 74. ***Barnes & Benjamin.** Notes on diurnal L., with additions and corrections to the recent "List of diurnal lepidoptera."—**139,** xxv, p. 88-98. **Barnes & Benjamin.** The Hübner Tentamen.—**139,** xxv, p. 99-104. **Cottle, J. E.** Euphydryas quino.—**55,** iii, p. 75-76.

(S) **Jordan, K.** On a pyralid parasitic as larva on spiny saturnian caterpillars at Para.—**71,** xxxiii, p. 367-370. **Jordan, K.** Some new Agaristidae, with remarks on nomenclature.—**71,** xxxiii, p. 371-378. **Krueger, R.** Eine neue Castnia. (Castnia minerva)—**18,** xx, p. 297-298. ***Meyrick,**

E. Exotic microlepidoptera, iii, p. 257-320. *Michael, O. Ueber einige neue Agriasformen vom Amazonasgebiet.—14, xxxx, p. 420-422. *Stichel, H. Beiträge zur kenntnis der Riodinidenfauna Südamerikas.—45, xxi, p. 98-110.

DIPTERA. Nitzulescu, V. Contribution a l'etude de l'appareil buccal des simulides.—77, xcv, p. 1336-8. Valadez, S. M. Pequeña contribucion para la parasitologia Mexicana [Cuterebra].—Mem. Soc. Cien. "Anton. Alzate," xlv, p. 1-12, ill. Villeneuve, J. Les mouches qui voyagent. Especes naissantes chez les Calliphorinae.—Ass. Avanc. Sci., Sess. 49, Grenoble, 1925, p. 413-15.

(N) *Alexander C. P. Three undescribed Eriopterine crane-flies from California (Tipulidæ).—55, iii, p. 77-79. Cameron, A. E. The occurrence of Cuterebra (Oestridae) in western Canada.—Parasitology, xviii, p. 430-35, ill. *Cresson, E. T. Descriptions of new genera and species of diptera (Ephydridae and Micropezidae).—1, lii, p. 249-274. *Shannon, R. C. Review of the American xylotine syrphid-flies.—50, lxix, Art. 9, 52 pp. The chrysotoxine syrphid-flies.—50, lxix, Art. 11, 20 pp.

COLEOPTERA. Grandi, G. Contributo alla conoscenza biologica di alcuni lamellicorni fillofagi. . . . 23, xviii, p. 159-224, ill. Howes, P. G. The truth about Hercules.—Nature Mag., Jan., p. 27-29, ill.

(N) *Chapin, E. A. On some Coccinellidae of the tribe Telsimini, with descr. of new sps.—105, xxxix, p. 129-134. *Fall, H. C. Additions to the list of Alaskan coleoptera taken in the summer of 1924.—55, iii, p. 59-63. Knull, J. N. The Buprestidæ of Pennsylvania.—Ohio Sta. Univ. Studies, ii, 71 pp. ill. Van Dyke, E. C. Notes on Listronotus obliqus; and Dyslobus (Amnesia) granicollis.—55, iii, p. 63. Winters, F. C. Notes on the Hydrobiini (Hydrophilidæ) of Boreal America.—55, iii, p. 49-58.

(S) *Benderitter, E. Description d'un Rutélide nouveau de Colombie.—25, 1926, p. 160-161. *Brethes, J. Sur une collection de Coccinellides (et un Phalacride) du British museum. Coccinellides du British museum, (avec une nouvelle famille de colcoptères).—146, xxxiii, p. 145-175; 195-214. *Pic, M. Melanges exotico-entomologiques, Fasc. 46, 32 pp.

HYMENOPTERA. Balduf, W. V. Telenomus cosmopeplae, an egg parasite of Cosmopepla bimaculata.—12,

xix, p. 829-841. **Frison, T. H.** Experiments in rearing colonies of bumblebees in artificial nests.—**101,** lii, p. 51-67. **Hachfeld, G.** Zur biologie der Trachusa byssina (Megach).—**45,** xxi, p. 63-84. **Koelsch, A.** Auf dem wege zum bienenstaat.—Kosmos, Stuttgart, xxiii, p. 424-9, ill. **Marechal, P.** Etude biologique de l'Osmia aurelenta.—**78,** lx, p. 561-92, ill. **Parker, R. L.** Collection and utilization of pollen by the honeybee.—Cornell Univ., Agr. Exp. Sta., Mem. 98, 55 pp., ill. **Strand, E.** Enumération des hyménoptères qui jusq'à l'année 1926 ont été décrits dans les travaux.—**14,** xxxx, p. 409-412.

(N) ***Cockerell, T. D. A.** An interesting new bee from California.—**55,** iii, p. 58. ***Cockerell, T. D. A.** Some bees in the collection of the California Academy of Sciences.—**55,** iii, p. 80-90. **Porter, B. A.** American wasps of the genus Sceliphron.—**50,** lxx, Art. 1, 22 pp., ill.

(S) ***Menozzi, C.** Neue ameisen aus Brasilien.—**154,** lxix, p. 68-72, ill.

SPECIAL NOTICES. A Naturalist in East Africa. By G. D. H. Carpenter. Oxford, 1925. 187 pp., ill. This book has much of interest to the general entomologist, there being chapters containing notes on the habits, mimetics, butterfly collecting, insects at night, stridulating insects, flies and their prey, and experiments with a monkey on the relative edibility of insects. . . supporting the theory of natural selection.

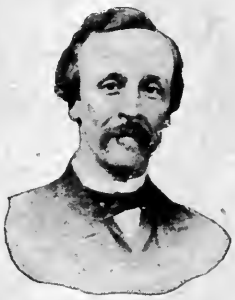
OBITUARY.

Major John Coney Moulton died in London, June 6, 1926. He was born December 11, 1886, and was educated at Eton College and Magdalen College, Oxford. He was Curator of the Sarawak Museum from 1909 to 1914, served in the war, was Director of the Raffles Museum and Library at Singapore 1919-1923 and since 1923 Chief Secretary to the Rajah of Sarawak. His entomological publications include papers on Malayan Cicadidæ, Butterflies of Borneo and Mimicry in Bornean Butterflies. Further details concerning his life are to be found in the *Entomologists' Monthly Magazine* (London) for October, 1926, from which we have made this abstract.

MARCH, 1927

ENTOMOLOGICAL NEWS

Vol. XXXVIII No. 3



JAMES H. B. BLAND,
1833-1911

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PHILADELPHIA, PA.
THE ACADEMY OF NATURAL SCIENCES,
Logan Square

Entered at the Philadelphia, Pa., Post Office as Second Class Matter.
Acceptance for mailing at the special rate of postage prescribed for in Section 1103, Act of October 3, 1917, authorized January 15, 1921.

ENTOMOLOGICAL NEWS

published monthly, excepting August and September, by The American Entomological Society.

Philip P. Calvert, Ph.D., Editor; E. T. Cresson, Jr., Associate Editor.

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The subscription price per year of ten (10) numbers is as follows:

United States and possessions . .	$3.00
Canada, Central and South America .	3.15
Foreign	3.25

Single copies 35 cents

ADVERTISING RATES: Full width of page. Payments in advance.
One issue, 1 in., $ 1.20, 2 in., $ 2.40, half page, $ 4.00, full page,, $ 8.00
Ten issues " 11.00, " 20.00, " 35.00, " 70.00

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ENTOMOLOGICAL NEWS

VOL. XXXVIII MARCH, 1927 No. 3

The Automobile vs. Insects.

By A. O. LARSON, U. S. Bureau of Entomology

(Continued from page 51)

Although the automobile is so important a factor in the transportation of injurious insects, it must also be recognized as an effective agency in reducing their numbers.

As early as 1896, when motor cars were rare, Dr. Howard (4) predicted that the replacing of the horse by the automobile would very greatly reduce the number of house flies in many localities. This prediction has been fulfilled. Viosca (5) reviewing the house fly situation in New Orleans, states that within the last few years, there has been a marked decline of the house fly pests in that city. In discussing the causes of this decline he says, "No doubt a very significant factor is that which caused the decrease of the sparrow, viz.: the increase of the automobile. Not only does the consequent decrease in the number of horses mean less manure, but that which is deposited on the streets is soon rolled over and scattered by automobiles and is thus quickly dried or otherwise made inaccessible to fly larvae. The paving of streets facilitates this destruction by traffic of the chief pabulum for the fly larvae."

Discussing *Culex quinquefasciatus*, the chief night-biting mosquito of New Orleans, Viosca (6) says, "Organic pollution such as is characteristic of city wastes determines its prevalence, and it is therefore the chief gutter breeder of the city. Natural enemies do not usually play any appreciable part in the control of this species, because of the artificial character of its choice habitat. * * * The installation of surface drainage and paving was not followed at once by a corresponding reduction of the species in the paved sections, and there was evidence of widespread breeding in the surface canals. This would have been a difficult problem to deal with were it not for the advent of the automobile, the oil drippings from which, includ-

ing garage wastes, enter the drainage system and there serve as efficient larvacides. * * * Our chief habitats today are found in open gutters on unpaved streets, and open drainage canals in suburban sections where the oil wastes do not control the situation."

Dr. Howard has informed me that at the Second International Entomological Congress at Oxford in 1912, the Rev. F. Morice stated that motoring was destroying many famous old entomological localities in England by filling the hedgerows full of dust and debris. This condition might be expected to exist along unpaved country roads, where in dry weather every passing automobile would be followed by a great cloud of dust.

During the summer one can scarcely motor through an agricultural section without noting the great numbers of insects that are killed by automobiles.

In August, 1915, Mr. Giffard (7) resorted to the automobile as a means of collecting insects in California. In this work he used the ordinary collecting muslin net as a trap, holding it at the side of the car when the speed was not more than 12 to 15 miles per hour. Speaking of his interesting collection obtained on two trips in three hours of traveling, he says:

"Of the *Coleoptera* there are eight families, consisting of 16 genera and 18 species, totaling 43 specimens. Of the *Hymenoptera* there are five families, consisting of 14 genera, and 16 species, totaling 28 specimens. Of the *Hemiptera* there are six families, consisting of 9 genera and 9 species, totaling 18 specimens. The numerous Dipterons were undetermined. The grand total comprises three orders, 19 families, 39 genera, and 43 species. In all 89 specimens, excluding Dipterons."

This record is interesting because of the absence of the butterflies and dragon-flies which must have been very numerous in Santa Clara County at that time. The complete absence of these insects is readily accounted for by the fact that they are able to dart away from a slowly moving vehicle. However, two or more insects per mile were caught. How many escaped after entering the net is problematical. There was no special attracting force in the net either to draw the insects into it

or to hold them after they were within, but the front of the automobile, having an area several times as great as that of the net, also acted as an insect trap, the motor-impelled air current of the cooling system serving as an added force to draw the insects into it. There they were killed or crippled by the impact of their bodies against, or by contact with heat and oil under the hood of the machine. As the speed of the automobile is increased, the chances for insects to escape from its path are lessened, and the force of the ingoing current of air being also increased, even the very swift fliers are caught. The suction of the air current makes butterflies appear to dart against the front of a speeding automobile, where they frequently remain attached until it stops. When the fan-driven air current is no longer sucked through the radiator, the butterflies usually fall to the ground, but they are often so deeply embedded in the air spaces of the radiator that they do not fall. Where two insects per mile are caught in so small a space as an insect net moving at 12 to 15 miles per hour, how many must be killed by the front of a rapidly speeding automobile?

On September 10, 1925, while driving through the San Joaquin Valley, I decided to record the number of automobiles that I met and the number of butterflies contained thereon. Twenty-five miles of wide smooth paved road between Merced and Turlock gave a good opportunity for making such a record. I left Merced at 4.25 P. M. and arrived at Turlock at 5.20 P. M., making the 25 miles in 55 minutes. Over this distance all automobiles and trucks were recorded. In some instances it was impossible to get an exact count of the butterflies on the front of the radiator, but a fairly accurate count was obtained. The faster the machines were moving the more butterflies they caught. Some cars and practically all trucks carried no butterflies. Most of the trucks and some of the other machines were moving too slowly to catch butterflies as they passed. In all, I recorded 212 automobiles carrying 490 butterflies. This was about two and three-tenths butterflies for each machine or about twenty butterflies to the mile and nine each minute of travel.

The next day while going from Waterford to Modesto, over a distance of twelve miles, my machine caught six butterflies just before noon. At noon I noticed a car standing at the curb with 40 butterflies on the front of its radiator. It reminded me of the appearance of most rapidly moving automobiles along any of the roads of southern California during the time of the remarkable flight of the painted lady, *Vanessa cardui*, in 1924. During that time newspapers reported that motorists were sometimes compelled to stop and remove the butterflies from their machines in order to give their engines proper ventilation. Undoubtedly this was true in some instances with air-cooled machines.

On September 17, while driving to Sacramento, I recorded the number of butterflies on all automobiles other than trucks which I met over the first five miles after leaving Modesto. This distance, I traveled in 15 minutes, between 2.15 and 2.30 P. M. I noted 45 automobiles carrying 174 butterflies. This was approximately four to the machine, 35 to the mile, and 12 every minute. Several species were included but the alfalfa butterfly, *Eurymus eurytheme*, the cabbage butterfly, *Pontia rapae*, and the painted lady, *Vanessa cardui*, were present in greatest numbers. The first named was probably more numerous than all others combined.

These butterflies were not all caught on the measured distances in which they were recorded, neither do they give an accurate check on the numbers that were being killed by the machines because many, possibly several times as many, of the butterflies were crippled or killed and knocked to the pavement, where they could be seen as they were moved about by the breezes. The count represents only those which were firmly attached to the machines moving in one direction, that is, those that were held in place as a result of the currents of air which rush inward through the radiators.

This insect mortality is not confined to butterflies alone. Moths, dragon-flies, beetles, bumblebees and other bees, wasps, hornets, species of flies too numerous to mention, grasshoppers, aphids and other flying insects are killed in tremendous numbers, not only by the radiator but also by the windshield, wind

wings and other parts of the automobile. On smooth paved roads the windshield often becomes smeared with the smashed bodies of bees and soft-bodied flying insects.

Caterpillars, beetles and other crawling insects are killed in smaller numbers, but in a state having one and one-fourth millions of automobiles and thousands of miles of paved roads, as California has, the number of crawling insects which are killed must daily mount to large figures. The number of butterflies and moths which are killed each day probably runs into the millions over part of the summer and autumn and into the hundreds of thousands daily over a much longer period of time. Large numbers are thus killed even during the warm days of winter. On December 26th in Riverside County, I saw as many as three butterflies on the fronts of some automobiles.

In this connection the observations of H. R. Dill, of the University of Iowa, published in Science (8) are of interest. Mr. Dill, discussing the number of animals killed by automobiles, called attention to the dead insects that were taken from the back of his automobile radiator and from the catch pan below. Nearly one pint of insects was removed, in which he was able to recognize 20 grasshoppers, 17 cabbage butterflies, 16 bot flies, 14 honeybees, and parts of many house flies, moths, and beetles. These insects were the residual accumulation of about 2,000 miles of travel; many, of course, had disintegrated or fallen along the way. Mr. Dill thought one pint a fair estimate of the quantity of insects killed by a car of average size in traveling 2,000 miles, stating that larger cars traveling at a higher speed would kill many more. Allowing one pint as the average catch of one car, he makes the interesting deduction that the eighteen million cars now in use in this country would kill a block of insects 30 feet square and as high as the Woolworth Building in New York City.

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The Genus Stenoxenus (Chironomidae, Diptera).

By O. A. Johannsen, Cornell University, Ithaca, New York.

Thus far but two species of this peculiar Ceratopogonine genus have been described, one from the United States, the other from Peru. A second Peruvian species is described herewith. The following key will serve to distinguish them.

1. Yellowish species; the anterior branch of the radius ends in the costa beyond 7/8 the wing length. Peru..*fulvus* n. sp.
— Blackish species; anterior branch of the radius ends almost opposite the middle of the anterior branch of M.....2
2. Basal antennal segment, black, very large, broader than long. N. J.....*johnsoni* Coq. (Ent. News 10:60, 1899).
— Basal antennal segment yellow, of moderate size, as broad as long. Peru.
dimorphus Kieffer (Ann. Mus. Nat. Hung. 7:46, 1909).

Stenoxenus fulvus n. sp. ♀. Head rusty yellow, shining; front nearly one-third as wide as the head, not excavated; face broader than the front, prominent, produced downward, tapering, dark amber-colored, with few erect hairs; the proboscis small; palpi yellow, short, apparently three-segmented, first about as long as broad, last one somewhat smaller and shorter than the second. Antennae somewhat shrivelled in drying,

of the usual Ceratopogonine type, first segment of moderate size, yellow, subglobular, the second one cylindrical, yellow, the intermediate segments somewhat darker, the apical ones paler yellow, hairs sparse. Eyes bare, moderately emarginate at the base of the antennae.

Thorax including scutellum, yellow, shining, not produced over the head, not bristly but sparsely pilose with short yellow, more or less depressed hairs.

Abdomen shrivelled in drying, elongate, brown, shining, venter more yellowish, sparsely pale haired.

Legs slender, yellow, sparsely short-haired. The segments of the fore legs have the proportions 45 : 45 : 25 : 11 : 3 : 3 : 5; the middle legs are slightly longer but with about the same proportions; the segments of the hind legs are as 73 : 80 : 48 : 22 : 3 : 3 : 5. The fourth tarsal segment of all the legs is pilose below, spoon-shaped, with the articulation of the fifth within the cavity; claws with a small tooth; empodium vestigial; pulvilli absent; hind tibia broadened apically, with a dark, curved spur; first and second tarsal segments each ciliated below with a row of closely set, small, slightly curved setae, each set on a brown base that bears in addition two small divergent hairs (ctenidiobothriae, Enderlein, 1903).

Wing bare, 4 mm. long, three times as long as broad. In the pinned specimen the anterior longitudinal veins appear to be coalescent as far as the forking of the media, as shown in Coquillett's and Kieffer's figures (l. c.), but in a balsam mount the wing flattens out and then the subcosta, radius and media, though close together and parallel, are distinct from each other; the subcosta is evanescent at the tip ending free about the middle of the wing; anterior branch of R rises at the middle of the wing-length just proximad of the origin of the r-m crossvein, runs very close to the radial sector and then curves forward to join the costa at about 0.11 the wing length from the apex measured parallel to the longitudinal axis; from the point where the anterior branch curves forward the radial sector gradually approaches the costa, joining it tangentially very distinctly behind the wing tip; the r-m crossvein is short and oblique in position, located but very little beyond the mid length of the wing. The media is very delicate and colorless, the anterior branch running about as indicated in Kieffer's figure, but less sinuate at the tip; the two sections of the posterior branch are perpendicular to each other, the latter is nearly straight, curving posteriorly only slightly at the apex; the cubitus forks at about one-sixth of the wing-length from the base, the anterior branch joins the wing margin slightly

distad of the crossvein, the tips of the two branches are separated by a distance equal to seven-eighths of the maximum width of the wing; the anal vein is somewhat sinuate, its tip approaching and almost touching the posterior branch of the cubitus a little beyond the fork; anal angle strongly developed. Halteres yellow. Length 2 mm.

The *holotype* in the Cornell University collection was taken by Dr. J. C. Bradley at La Chorerra, Putumayo district, Peru, on August 17, 1920.

Three New Species of Psilopus from North America, and Notes on caudatus Wied. (Dipt.: Dolichopodidae).

By M. C. Van Duzee, Buffalo, New York.

Psilopus parvicauda new species.

♂: Length 3 mm., of female 4 mm. Face blue with white pollen, bare. Front green. Palpi small, black, with white hair; proboscis yellow. Antennæ black, small, second joint with two bristles below, which are about as long as the antenna; arista about as long as the head height.

Thorax and abdomen green; thorax, scutellum and base of abdomen with violet reflections, bristles and hairs black, hairs on the venter of abdomen mostly black. Hypopygium small; its lamellæ very small with short black hair.

Fore coxæ and all femora and tibiæ yellow, tips of posterior tibiæ black; middle and hind coxæ wholly black, anterior pair with a few white hairs on front surface and two black bristles near the tip; all femora with a few, long, white hairs below; fore tibiæ with three extremely small bristles on upper posterior edge; middle and hind ones with one bristle near basal third of upper surface. Fore and middle tarsi infuscated from tip of first joint, hind tarsi wholly black with a bristle below at base of first joint, apical joint very slightly widened; middle basitarsus with two or three spines below on apical half. Joints of fore tarsi as 41-12-9-6-5; of middle ones as 48-16-13-7-5; joints of posterior pair as 37-16-12-6-6. Calypters yellow with a black border and cilia; halteres yellow.

Wings grayish; last section of fourth vein with its fork at right angles, the part from the crossvein to the fork 27, from fork to wing margin 25-fiftieths of a millimeter long; crossvein 18, last section of fifth vein 16-fiftieths long.

♀: About as in the male; it has the last joint of posterior

tarsi slightly widened, the bristles of the legs as in the male, the violet reflections extend onto the front and to the tip of the abdomen.

Described from three specimens, which I took at Wainfleet, Ontario, July 20 & 26, 1924. *Type* and *allotype* in the author's collection.

Psilopus graenicheri new species.

In addition to the characters given under *caudatus* below, the following points may help identify the species. Length 4-5 mm. Third antennal joint small, nearly round, not longer than wide, second joint with two bristles which are as long as the antenna, the others short; arista dorsal, as long as the eye height. Wing venation as in *caudatus* Wiedemann and *cockerelli* described below. Longest hairs at tip of hypopygium 83-fiftieths of a millimeter long. The male has on the middle basitarsi, besides the hooked spines below, a row of hairs or slender bristles on upper anterior edge, which are as long as the diameter of the joint; fore tibiæ with two bristles on upper posterior edge and one on lower posterior edge, also two very small ones on posterior surface near the base; joints of fore tarsi as 48-14-12-7-6; of middle ones as 51-15-10-5-5; those of posterior pair as 42-20-12-7-7. Both male and female have on the posterior tibiæ a rather long bristle at basal third of upper anterior surface and one a little smaller at apical third.

The female has three bristles above on fore tibiæ, no bristles long enough to notice below; middle tibiæ with one large bristle on upper anterior edge near basal third, one near the middle and a very small one near the base, below they have one before and one after the middle; joints of fore tarsi as 53-10-12-8-7; of middle ones as 47-26-15-8-7; joints of posterior pair as 52-21-15-9-9.

Described from ten males and sixteen females, all taken at Miami, Florida, in January, February and May, 1924, by S. Graenicher, after whom I take pleasure in naming the species.

Type and *allotype* in the Canadian National Collection.

Psilopus cockerelli new species.

♂: Length 4 mm. Face green with blue reflections and long white hair; front shining green. Antennæ black, second joint with two bristles below, which are as long as the antenna, third

joint small, not longer than wide; arista dorsal, as long as the height of the head.

Thorax green with blue reflections, its bristles moderately long; pleuræ dulled with white pollen. Abdomen green, second segment with blue reflections; fourth segment with the base purple then with a little brilliant coppery, the apical part more golden bronze; fifth of nearly the same color. Hypopygium as in *scobinator* Loew; the height of the apical end is 24-fiftieths of a millimeter, the longest hairs at tip are 16-fiftieths, its appendages very small.

Coxæ black, anterior pair more blue with long white hair; femora blue-green, their tips and the trochanters yellow, all femora with a row of white hairs below, which are not as long as their width. Tibiæ yellow, posterior pair black on apical fifth. Fore tarsi black from tip of first joint, hind tarsi wholly black; middle tibiæ with a long erect spur at tip, a row of four bristles on lower anterior edge of basal half and one bristle above at basal third, also one above near the tip; middle basitarsus with a row of hooked spines below and a row of nearly erect bristles above, which are as long as the width of the joint and a little bent at tip. Joints of fore tarsi as 54-15-11-5-6; those of middle ones as 47-17-14-8-5; joints of posterior pair as 46-19-15-7-8. Calypters yellow with a black edge and cilia; halteres yellow.

Wings grayish hyaline; cross-vein 26-fiftieths of a millimeter long; from the cross-vein to fork of fourth vein 40, from fork to wing margin 27, last segment of fifth vein 23-fiftieths of a millimeter; fork at nearly right angles to fourth vein, curved in a nearly regular arc to its tip.

Described from one male, given me by Prof. Cockerell and taken by him at Boulder, Colorado. *Type* in the author's collection.

This species looks very much like *scobinator* Loew; it differs from that species in having a row of slender, erect bristles on upper edge of middle basitarsus.

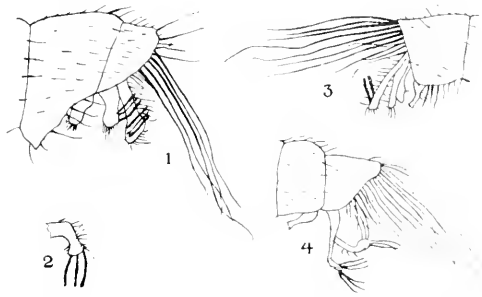
Psilopus caudatus Wiedemann and its allies.

While in Ottawa in November, 1925, Mr. C. Howard Curran called my attention to a series of what seemed to be *caudatus,* taken at Miami, Florida; they differed in some respects from the ones taken in the north and also from Dr. Becker's drawing,

which, as I understand, was made from South American specimens.

These three forms agree in size, form and color; all have long hairs at tip of the abdomen and also have a pair of somewhat clubbed, hypopygial appendages; they also all have the long spur at tip of middle tibiæ, the hooked bristles or spines on lower surface of middle basitarsus and conspicuous white hair on the face.

In all three forms there are finger-like formations at the tip of the hypopygial appendages; in the northern form there are two such fingers; in the Miami specimens there are three



DETAILS OF THE PSILOPUS CAUDATUS GROUP.

Fig. 1, Hypopygium of *Ps. graenicheri* new species. Fig. 2, Tip of the hypopygial appendage with its three finger-like projections, same species as the preceding. Fig. 3, Hypopygium of *Ps. caudatus* Wiedemann. Fig. 4, After Dr. Becker's drawing of *Ps. caudatus* Wied.; this is probably Wiedemann's South American species *smaragdulus*.

such fingers, this form I am calling *graenicheri;* Dr. Becker in his drawing shows two groups of three fingers to each appendage.

Wiedemann described *caudatus* from Georgia (Aussereuropaische Zweiflugelige Insekten, Vol. ii, p. 224, 1920); this is no doubt our northern form and the same that Dr. Loew described in 1864 as *caudatulus* from Illinois and Missouri; I have seen specimens of this form from several of the northern states and Ontario, also from Georgia, Bradentown, Florida, and Utah Lake, near Lehi, Utah, all of these agree in having only two fingers to each appendage (Figure 3). If Dr. Becker's drawing was made from a South American specimen, as I suppose

it may have been, it probably is *smaragdulus* Wiedemann, described from South America on the page following the description of *caudatus;* it differs from both of the other forms in having two groups of three fingers to each appendage (Figure 4); the Miami, Florida, specimens in the Canadian National collection have three fingers to each appendage (Figures 1 and 3).

Both North American species (*caudatus* and *graenicheri)* have long bristles on the venter of the last two segments of the abdomen in both male and female; white hair on lower surface of all femora; fore coxæ with white hair and two black bristles, one at apical third and one near the tip; fore and middle femora each with several black bristle-like hairs near the tip, those on anterior pair on posterior surface and those on middle ones on anterior surface; posterior femora with one preapical bristle, and posterior basitarsi with a bristle at base below in both sexes.

Psilopus caudatus Wiedemann.

The male has one bristle on fore tibiæ at basal fourth of upper anterior edge and three on upper posterior edge, all very small; middle tibiæ with one large bristle near basal third of upper anterior edge, one or two smaller ones near apical third of upper posterior edge and three slender ones on lower anterior edge of basal half. In the female the fore tibiæ have two bristles on lower posterior edge, one near the middle and one near the base, also one above near basal fourth; middle tibiæ with two bristles on upper anterior edge, a large one at basal third and one at apical third, also one near the middle of upper posterior edge; below they have one pair near the middle and sometimes a very small pair beyond these.

Both male and female have one large bristle near basal third of upper posterior edge, but none near apical third as found in the male of *graenicheri.* Joints of fore tarsi of the male as 44-14-11-7-6; of middle ones as 48-18-13-8-6; those of posterior pair as 42-19-13-7-7, the two apical joints are scarcely widened. Joints of fore tarsi of female as 37-15-12-6-5; of middle ones as 48-19-14-7-6; those of posterior pair as 40-19-8-5-6. The longest hairs at tip of hypopygium are 57-fiftieths of a millimeter long.

ENTOMOLOGICAL NEWS

PHILADELPHIA, PA., MARCH, 1927.

The New Index to Entomological Literature.

The twenty-sixth number of Dr. Walther Horn's *Et Meminisse et vaticinari licet*, after briefly referring to the ever increasing bibliographical difficulties of the entomologist and the existing means of coping with them, continues:

Along with the annual summaries there exists the necessity for retrospective bibliographies covering long periods of time. It is no accident that the historically greatest biographer of the entomological world, Hagen, has trodden this path in his *Bibliotheca Entomologica*. For a long while my thoughts have been turned as to whether it would be possible to walk in his paths; in the last twelve months the plan has assumed a practical form. For some weeks it has been in execution. The Entomological Institute under my direction had to alter essentially its work; Entomobibliography shall gradually become one of its chief functions.

Since Hagen's *Bibliotheca* has long been out of print and a large number of the most widely scattered additions to it exist, I have decided to prepare a new edition of it, with the aid of Herr S. Schenkling. Even now we can say that we will give in it more than 1000 additions and corrections. Since its outer form will be essentially different from that of the "old" Hagen, we consider it sacrilegious to retain the old name *Bibliotheca Entomologica;* classical works should not be plastered over. The new edition will therefore receive the title *"Index Litteraturae Entomologicae*, Band I, die gesamte bis 1863 erschienene entomologische Literatur umfassend" [Index to Entomological Literature, Volume I, comprising all the entomological literature published up to 1863]. This first volume will appear in four parts (as numbers 14, 15, 16 and 17 of *Supplementa Entomologica;* probably at 11 marks), the first of which, it is hoped, will come out about the middle of next year [*i. e.*, 1927]. Supplementary to this there will be established, in the Deutsche Entomologische Institut, a great card catalog, comprising all the later literature up to current issues, which will be at the international service of every en-

tomologist for information. Whether, and in what form, this may be published later remains in the bosom of the future. I hope, however, to live to see published that part of it treating of the literature from 1864 to 1893 or 1900, or even, if possible, to 1912 (the date of beginning of Guy Marshall's indexes).

It is intended to give with each volume, as a supplement, a large number of portraits of the entomologists of the corresponding period. The price of these supplements will vary.

I see very clearly that this new task of the institute under my direction is a very great one, for which only scanty means are at hand. Many difficulties can be overcome by organization and this depends upon whether it may be possible to organize a small international group of collaborators who, looking at bibliography from the standpoint of the specialist, will each of them supervise a particular subdivision of the literature. I hope it will be possible in this way to raise bibliography to a generally recognized independent branch of entomology. The fate of entomology of the future rests in great part on its shoulders. (Entom. Mitteilungen, XV, No. 3-4, pp. 209-211. Berlin-Dahlem, July 1, 1926).

Personals.

The Trustees of the British Museum have appointed Major E. E. Austen, deputy keeper of the department of entomology at South Kensington, to the keepership of the department on the retirement of Dr. C. J. Gahan from this position on January 20. (*Science*, Dec. 31, 1926).

Dr. H. W. Allen has been assigned to the parasite work of the Japanese Beetle Laboratory, Riverton, New Jersey.

Dr. Alfred E. Emerson, of the University of Pittsburgh, will make a year's study in Europe, to work on the phylogeny of termite castes.

Dr. E. A. Schwarz has retired from activity in the United States Department of Agriculture, but retains his title of Honorary Custodian of the Coleoptera in the National Museum.

Mr. M. McPhail has accepted a position as entomologist in the lower valley substation, Mercedes, Texas.

Mr. David Dunavan is an assistant professor in Zoology and Entomology at the South Carolina Agricultural College.

American entomologists will be pleased to learn that Professor Mario Bezzi, a great authority on the Diptera of the world, has been promoted by being made Professor of Zoology

and Director of the Zoological Museum in the Royal University of Turin. Professor Bezzi began his active career as a dipterist some forty years ago in Sondrio, Italy, and has been for a long time connected with the Lyceum in Turin. He is now justly advanced to one of the prominent scientific positions in his country, succeeding Professor Ermanno Giglio-Tos, who died a few months ago.

Chiromyia oppidana Scopoli occurring in the United States (Dipt.)

Several specimens of this European species have been taken on windows in entomological offices in Washington, D. C. I have seen one collected by Frederick Knab, on May 10, 1911; one by W. L. McAtee, on May 28, 1912; three by J. R. Malloch, on June 3, 1922; and another by the same collector on May 19, 1925. The specimens are in the Biological Survey except the one collected by Knab and one of Malloch's first lot, which are in the National Museum. The species differs from those previously known in this continent in having the third antennal joint black, a striking mark. The species was originally described as *Musca oppidana* by Scopoli in his Ent. Carniolica, 1763, p. 349. Becker has given a good description in Zeitsch. f. Hym. u. Dipt., IV, 1904, 131; he erroneously referred it to the genus *Pelctophila*. Bezzi corrected this and gave full synonomy in Soc. Ital. Sci. Nat., XLIII, 1904, 10; this is quoted in the Palaearctic Catalogue IV, p. 233. Malloch incorporated Bezzi's generic synonomy in a review of the known American species, in Proc. Ent. Soc. Wash., XVI, 1914, 179-181, but did not include *oppidana*.

J. M. Aldrich.

The Bowditch Collection of Coleoptera.

The family of the late Mr. Fred. C. Bowditch has presented his great collection of Coleoptera to the Museum of Comparative Zoology. There are two principal portions: (1) a general collection of Coleoptera of the world based on the famous G. D. Smith collection, and (2) special collection of the Chrysomelidae, containing the Jacoby collections (except part of the second), the Tring Museum collection, and an enormous amount of other material. Of the Chrysomelidae there is an arranged collection in over 250 double boxes contained in 29 metal cabinets, and an immense amount of miscellaneous material, partly unassorted. The Jacoby collection contained over 2000 types, and Mr. Bowditch added several hundred more.

N. Banks.

Entomological Literature

COMPILED BY E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published.

All continued papers, with few exceptions, are recorded only at their first installments.

Papers of systematic nature will be found in the paragraph beginning with (N). Those pertaining to Neotropical species only will be found in paragraphs beginning with (S). Those containing descriptions of new forms are preceded by an *.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

Papers published in the Entomological News are not listed.

1—Trans., American Ent. Soc., Philadelphia. **4**—Canadian Ent., Guelph. **6**—Jour., New York Ent. Soc., New York. **7**—Ann., Ent. Soc. America, Columbus, Ohio. **8**—Ent. Monthly Mag., London. **9**—Entomologist, London. **10**—Proc., Ent. Soc., Washington. **11**—Deutsche Ent. Zeitschrift, Berlin. **13**—Jour. of Ent. and Zoology, Claremont, Cal. **17**—Ent. Rundschau, Stuttgart. **18**—Intern. Ent. Zeitschrift, Guben. **19**—Bull., Brooklyn Ent. Soc. **27**—Bull. Soc. Ent. Italiana. **36**—Trans., Ent. Soc. London. **49**—Ent. Mitteilungen, Berlin. **50**—Proc., U. S. National Museum. **56**—Konowia, Wien. **63**—Deutsche Ent. Zeitschr., "Iris" Dresden. **69**—Comptes R., Acad. Sci. Paris. **74**—Acta Ent. Mus., Pragae. **75**—Ann. & Mag. of Nat. Hist., London. **79**—Koleopterolog. Rundschau, Wien. **101**—Biological Bul., Woods Hole, Mass. **127**—Archiv f. Entwickl. der Organis., Berlin. **133**—Jour. Experimental Zool. **137**—Archiv f. Zoologi, Stockholm. **153**—Bull. Museum Nat. Hist. Naturelle, Paris. **154**—Zool. Anzeiger, Leipzig.

GENERAL.—Angleman, J. B.—Obituary notice. **19**, xxi, p. 181. **Anon.**—Pour l'amour de l'entomologie. Le Naturl. Canadien, liii, p. 121-3. **Baudrimont, A.**—Attraction que peut exercer sur les insectes la lumiere refletee par les surfaces liquides. Act. Soc. Linn. Bordeaux, lxxvii, p. 113-117. **Baudrimont, A.**—Sur l'attraction des insectes par le miroitement de l'eau au bord de la mer. Act. Soc. Linn. Bordeaux, lxxvii, p. 125-128. **Bell, E. L.**—Collecting at Wilmington, North Carolina, and Suffolk, Virginia.

6, xxxiv, p. 351-354. **Cockayne, E. A.**—Homoeosis and heteromorphosis in insects. 36, lxxiv, p. 203-230, ill. **Giglio-Tos, E.**—Necrologie. Rev. Gen. Sci. Pur. et Appl., xxxvii, p. 689-690. **Heikertinger, F.**—Der gartentopf als insektenzuchtgerät. 79, xii, p. 177-191. **Holmquist, A. M.**—Studies in arthropod hibernation. 7, xix, p. 395-428, ill. **Horn, W.**—Et meminisse et vaticinari liceat. Ueber den auftakt. 49, xv, p. 329-330. **Janson, O. E.**—Obituary. 8, lxiii, p. 15-16, ill. **Kieffer, J. J.**—Biography with portrait. Brotéria, Ser. Zool., xxiii, p. 126-148. **McAtee, W. L.**—Nomina conservanda from the standpoint of the taxonomist. 10, xxviii, p. 189-190. **Morice, F. D.**—Obituary. 9, lix, p. 328. **Robertson, C.**—Flowers and insects. XXIV. Ecology, Brooklyn, viii, p. 113-132. **Weiss, H. B.**—James A. Turner and his "Remarks on the Linnaean orders of insects." 4, lviii, p. 287-289. **Weiss, H. B.**—Insects and homeopathic magic. 6, xxxiv, p. 342. **Weiss, H. B.**—The entomology of Hakluyt's "Voyages." The entomology of Pliny the Elder. 6, xxxiv, p. 354; 355-359. **Williams, C. B.**—Further records of insect migration. 36, lxxiv, p. 193-202. **Wilson, G. F.**—Insect visitors to sap-exudations of trees. 36, lxxiv, p. 243-254, ill.

ANATOMY, PHYSIOLOGY, MEDICAL, ETC.—**Eltringham, H.**—On the abdominal glands in Colaenis, Dione, and Eueides. On the structure of an organ in the hind-wing of Myrmeleon nostras. 36, lxxiv, p. 263-266, ill.; p. 267-268, ill. **Fink, D. E.**—A micro method for estimating the relative distribution of glutathione in insects. Science, lxv, p. 143-145. **Grabe, A.**—Einiges zur frage des industrie-melanismus. 18, xx, p. 309-315. **Hosselet, C.**—Sur la genese de myofibrilles de structure radiée dans les myoblastes des pattes de Culex annulatus. 69, clxxxiv, p. 119-121. **King, S. D.**—Note on the oogenesis of Peripatopsis capensis. Quart. Jour. Micro. Sci., lxx, p. 553-8, ill. **Komai, T.**—The culture medium for drosophila. Science, lxv, p. 42-43. **Redfield, H.**—The material inheritance of a sex-limited lethal effect in Drosophila melanogaster. Genetics, Brooklyn, xi, p. 482-502. **Rudolfs, W.**—Studies on chemical changes during the life cycle of the tent caterpillar (Malacosoma americana). Nitrogen and its relation to moisture and fat. 6, xxxiv, p. 319-330, ill. **Spencer, W. P.**—A gynandromorph in Drosophila funebris. Am. Nat., lxi, p. 89-91. **Sturtevant, A. H.**—The effect of the bar gene of Drosophila in mosaic eyes. 133, xlvi, p. 493-498, ill.

ARACHNIDA AND MYRIOPODA.—Hirst, S.—Note on the development of Allothrombium fuliginosum. Jour. R. Microsc. Soc., xlvi, p. 274-276, ill. **Phisalix et Marcenac.**—La soi-distant immunite naturelle du Cien sloughi aux venins de scorpion et de vipere, ainsi qu'ua virus rabique. 153, 1926, p. 275-277. **Smith, F. R.**—Observations on scorpions. Science, lxv, p. 64.

(S) **Enderlein, G.**—Psyllidologica VIII. 49, xv, p. 397-401. ***Lombardini, G.**—Duo nova genera acarorum. 27, lviii, p. 158-161, ill. ***Myers & Salt.**—(See under Hemiptera). ***Roewer, C. F.**—Fauna sumatrensis. Opliones-Laniatores. 49, xv, p. 297-302. ***Sellnick, M.**—Alguns novos acaros (Uropodidae) Myrmecophilos e termitophilos. Arch. Mus. Nac. R. de Janeiro, xxvi, p. 29-56, ill.

THE SMALLER ORDERS OF INSECTA.—Babaud, E.—Sur le régime alimentaire des larves de Chrysopa vulgaris. La Feuil. Natural. xlvii, p. 164-167.

(N) **Hill, G. F.**—The genus Porotermes (Isoptera). Proc. R. Soc. Victoria, xxxviii, p. 143-149. ***Huggins, J. R.**—Variations in size of Calopteryx maculata and a proposed new subspecies (Odonata; Agrionidae). 1, lii, p. 355-364, i'l. ***McDunnough, J.**—New Canadian Ephemeridae with notes IV. 4, lviii, p. 296-303, ill.

(S) ***Cockerell, T. D. A.**—A new mayfly from Peru, 19, xxi, p. 189-191. ***Esben-Petersen, B.**—Fauna sumatrensis. Neuroptera 88. 49, xv, p. 404-407, ill. ***Longinos Navas, R. P.**—Algunos insectos del Museo de Paris. Brotéria, Ser. Zool., xxiii, p. 95-115, ill. ***Samal, J.**—Fauna sumatrensis. Plecoptera. 49, xv, p. 302-305, ill.

ORTHOPTERA.—Criddle, N.—The life history and habits of Anabrus longipes. 4, lviii, p. 261-264. **Hugues, A.**—Sur la répartition geographique des orthopteres. La Feuil. Natural., xlvii, p. 168. **Meissner, O.**—Ein fall von neotenie bei Carausius morosus. 17, xliii, p. 45.

(N) ***DeLong & Cartwright.**—The genus Chlorotettix. A study of the internal male genitalia. Including the description of a new species. 7, xix, p. 499-511, ill.

(S) ***Hebard, M.**—Studies in Dermaptera and Orthoptera of Colombia. Fourth paper. Orthopterous family Tettigoniidae. 1, lii, p. 275-354, ill.

HEMIPTERA.—Muir, F.—The morphology of the aedeagus in Delphacidae (Homoptera). 36, lxxiv, p. 377-380, ill. **Olsen, C. E.**—Some interesting cicadellid papers. 19, xxi, p. 185-187. **de la Torre-Bueno, J. R.**—Kentucky heteroptera new to the state. 19, xxi, p. 190-191.

(N) **Esaki, T.**—Remarks on the Linnean species of Nepa and Laccotrephes (Nepidae). 19, xxi, p. 177-181. **Goding, F. W.**—Classification of the Membracidae of America. 6, xxxiv, p. 295-317. ***Hottes, F. C.**—Two new species of Aphididae from Minnesota. Proc. Biol. Soc. Wash. Vol. xxxix, 114 pp. ***Hungerford, H. B.**—Some new Corixidae from the north. 4, lviii, p. 268-272, ill. ***Hungerford, H. B.**—Some undescribed Corixide from Alaska. 7, xix, p. 461-463, ill. ***Hungerford, H. B.**—Some new records of aquatic hemiptera from northern Michigan with the description of seven new Corixidae. 19, xxi, p. 194-200, ill. ***Knight, H. H.**—Descriptions of seven new Paracalocoris with keys to the Nearctic species and varieties (Miridae). 7, xix, p. 367-377.

(S) ***Myers & Salt.**—The phenomenon of myrmecoidy, with new examples from Cuba. 36, lxxiv, p. 427-436, ill.

LEPIDOPTERA.—Anon.—New Long Island lepidoptera records from a White Cedar swamp. 19, xxi, p. 187. **Babcock, K. W.**—The European corn-borer. Pyrausta nubilalis. I. A discussion of its dormant period. Ecology, Brooklyn, viii, p. 45-59. **Bell, E. L.**—Atrytanopsis vierecki from Texas. 6, xxxiv, p. 317. **Bell, E. L.**—Collecting notes for Long Island, New York. 19, xxi, p. 202. **Cleare, L. D.**—On the life history of Caligo illioneus illioneus, (Morphidae). 36, lxxiv, p. 361-366, ill. **Crumb, S. E.**—The bronzed cutworm (Nephelodes emmedonia). 10, xxviii, p. 201-207, ill. **Eltringham, H.**—On a new organ in the abdomen of Eryphanis polyxena. 36, lxxiv, p. 367-369, ill. **Forbes, W. T. M.**—The species of Hübner's tentamen. 10, xxviii, p. 191-201. **Ford, E. B.**—Zygaenidae attracted by the female of Lasiocampa quercus. Proc. Ent. Soc. London. I, p. 20-21. **Kreig.**—E. Titschack: Untersuchungen über den temperatureinfluss auf die kleidermotte (Tineola biselliella). 18, xx, p. 333. **Mousley, H.**—Thanaos juvenalis. 4, lviii, p. 293. **Mousley, H.**—Notes on the birds, orchids, ferns and butterflies of Mount Royal, Montreal; Further notes on the orchids, ferns and butterflies of North Hatley Quebec. Canadian Field Nat. xl, p. 181-183; p. 178-179. Phil-

pott, A.—The uncus in the micropterygoidea. 36, lxxiv, p. 371-376, ill. **Plunkett, C. R.**—The experimental production of melanism in lepidoptera. Am. Nat., lxi, p. 82-88. **Rummel, C.**—Notes on aberrations of New Jersey butterflies. 19, xxi, p. 203 (cont.) **Townsend, M. T.**—The breaking-up of hibernation in the codling moth larva. 7, xix, p. 429-439.

(N) ***Barnes & Benjamin.**—Notes and new species, (Phalaenidae). 4, lviii, p. 303-310. **Barnes & Benjamin.**—On the placement of the names caduca and retis (Phalaenidae). 19, xxi, p. 182-184. **Bell, E. L.**—Remarks on Megistias neamathla; A new locality for Thanaos tristis; Additional records of the distribution of some North American Hesperiidae. 19, xxi, p. 184; 192. ***Blackmore, E. H.**—Two new greyas from British Columbia (Incurvariidae). 4, lviii, p. 294-296. **Buckstone, A. A. W.**—Pyrameis cardui flying at night, etc. 9, lx, p. 16. **Burgeff, H.**—Lepidopterorum catalogus. Pars 33: Zygaenidae I (Generis Zygaena palaearctica pars). 91 pp. **Forbes, W. T. M.**—The relationships of some aberrant pyralids. 6, xxxiv, p. 331-338, ill. **Riley, N. D.**—On the identity of certain Hesperiidae described by Latreille. 36, lxxiv, p. 231-241.

(S) ***Hering, M.**—Zur Kenntnis der südamerikanischen Nymphaliden-gattung Dione. 63, xl, p. 195-204. ***Meyrick E.**—On micro-lepidoptera from the Galapagos Islands and Rapa. 36, lxxiv, p. 269-278. ***Niepelt, W.**—Neue Morphoformen von Columbien. 18, xx, p. 329. ***Röber, J.**—Lepidopterologisches. 49, xv, p. 372-377.

DIPTERA.—Bonnamour, S.—Elevages et nouvelles liste dipteres fongicoles. Ann. Soc. Linn. Lyon, lxxii, p. 85-93. **Bromley, S. W.**—The external anatomy of the black horse-fly Tabanus atratus. (Tabanidae.) 7, xix, p. 440-460, ill. **Hendel, F.**—Bemerkungen zu Dr. Beckers arbeit über die paläarktischen Ephydriden 1926. 11, 1926, p. 353-355. **Mueller, A.**—Zur kenntnis des penis der Acalypteren. 56, v, p. 240-246. **Smirnov u. Zhelochovtsev.**—Veränderlung der merkmale bei Calliphora erythrocephala unter dem einfluss verkürzter ernährungsperiode der larve. 127, cviii, p. 579-595, ill. **Zavrel, J.**—Die mundteile der Tanypinenlarven. Bull. Inertn, Acad. Sci., Prague, xxi, p. 247-263, ill.

(N) ***Aldrich, J. M.**—Descriptions of new and little known diptera or two-winged flies. 50, lxix, Art. 22, 26 pp. ***Curran & Alexander.**—Diptera collected by the late Allan

Crawford on Wrangel Island. 4, lviii, p. 289-293. *Curran, C. H.—A new species of Comantella. (Asilidae.) 4, lviii, p. 310-312. *Felt, E. P.—New non-gall making Itonididae. 4, lviii, p. 265-268. *Felt, E. P.—Three western gall midges. 13, xviii, p. 79-81. Hendel, F.—Beiträge zur systematik der Agromyziden. 154, lxix, p. 248-271. Johannsen, O. A.—Diamesa (Psilodiamesa) hurida (Chironomidae). 19, xxi, p. 205.

(S) *Alexander, C. P.—New species of crane-flies from South America I. (Tipulidae.) 7, xix, p. 378-394. *Alexander, C. P.—New or little-known Tipulidae in the collection of Deutsches Entomologisches Institut. 49, xv, p. 386-392, ill.

COLEOPTERA.—Arrow, G. J.—Mimicry in coleoptera. Proc. Ent. Soc. London, I, p. 18-19. Baudrimont, A.—Note complementaire sur la stridulation du prione tanneur. Act. Soc. Linn. Bordeaux, lxxxvii, p. 111-113. Benick, L.—Ueber atmungsintervalle einheimischer Dytisciden. 154, lxix, p. 164-70. Cockayne, E. A.—Teratological coleoptera: Heteromorphosis, reduplication of leg, incomplete union of pronotum. 36, lxxiv, p. 261-262, ill. Dobzhansky, T.—Ueber die morphologie und systematische stellung einiger gattungen der Coccinellidae (tribus Hippodamiina). 154, lxix, p. 200-208. Hatch, M. H.—Notes on the morphology of the eyes of coleoptera. 6, xxxiv, p. 343-348, ill. Horn, W.—Zur faunistik, synonymie etc. der Cicindelinen. 49, xv, p. 369-372. Kleine, R.—Können myrmekophile Brenthiden fliegen? Folia Myrm. et Termit., I, p. 8-13, ill. Netolitzky, F.—Aus der praxis des käfersammlers. Ueber das sammeln auf lehmboden. 79, xii, p. 207-209. Scheerpeltz, O.—Aus der praxis des käfersammlers. Ueber das sammeln ripikoler insekten auf schlamm, sand, und schotterbänken. 79, xii, p. 245-257.

(N) *Buchanan, L. L.—A new otiorhynchid with single tarsal claws. 10, xxviii, p. 179-181. *Chittenden, F. H.—A new species of Listronotus from north of Mexico. 6, xxxiv, p. 341-342. Fisher, W. S.—New cactus beetles. 10, xxviii, p. 214-218. *Hatch, M. H.—New and noteworthy Histeridae from Alberta. 4, lviii, p. 272-276. Hatch, M. H.—Tillyard on Permian coleoptera. 19, xxi, p. 193. Obenberger, J.—Revision monographique des Trachydes pachyscheloides de l'amerique. (Buprest) 74, iii, p. 3-149, ill. *Schaeffer, C.—New species of Boloschesis (Chlamys) with

notes on known species (Chrysomelidae; Fulcidacinae). **10,** xxviii, p. 181-187.

(S) ***Arrow, G. J.**—Fauna sumatrensis. Endomychidae and Erotylidae. **49,** xv, p. 248-262. ***Aurivillius C.**—Neue oder wenig bekannte coleoptera Longicornia. **27,** xviii, No. 9, 22 pp. ***Fisher, W. S.**—Fauna sumatrensis. Buprestidae. **49,** xv, p. 282-295. ***Kessel, F.**—Synopse geral do genero Laemophloeus con a descripcâo de algumas novas especies sul-americanas. Arch. Mus. Nac. R. de Janeiro xxvi, p. 59-93. ***Kleine, R.**—Fauna sumatrensis. Lycidae. **49,** xv, p. 280-281, ill. ***Kleine, R.**—Ein neuer Rhaphirhynchus aus Brasilien. (Brenthidae) **74,** iii, p. 177. **Moser J.**—Fauna sumatrensis. Melolonthini. Cetonini. **49,** xv, p. 296-297. ***Pic, M.**—Coleopteres exotiques nouveaux ou peu connus. Ann. Soc. Linn. Lyon, lxxii, p. 73-77. ***Reichensperger, A.**—Cryptomimus, eine neue myrmekoide Staphylinidengattung. Zool. Anz., lxix, p. 113-25, ill.

HYMENOPTERA.—Balduf, W. V.—The bionomics of Dinocampus coccinellae. **7,** xix, p. 465-498, ill. **Bugnion, E.**—Les pièces buccales, les sac infrabuccal et le pharynx des fourmis. Folia Myrm. et Termit., I, p. 33-44, ill. **Frisch, K. v.**—Ueber den farbensinn der fische und der bienen. Schrif. Ver. Verbr. Naturh. Kennt. Wien. lix, p. 1-22. **Krausse, A.**—Ein neues formicarium. Folia Myrm. et Termit., I, p. 13-14, ill. **Lovell, J. H.**—Why do honey-bees swarm. Maine Nat., vi, p. 23-28. **Myers and Salt.**—(See under Hemiptera. **Schwarz, H. F.**—Observations on the bees of Rangeley, Maine. Maine Nat., Portland, v, p. 136-48. **Staeger, R.**—Messor Barbarus als ersteller gemanerter obernester oder nestkuppeln. Folia Myrm. et Termit., I, p. 21-29, ill. **Staeger, R.**—Unterirdische "grabkammern" in einem nest von Formica pratensis. Folia Myrm. et Termit., I, p. 14-21, ill. **Whiting & Whiting.**—Gynandromorphs and other irregular types in Habrobracon. **101,** lii, p. 89-120, ill.

(N) **Blüthgen, P.**—Beiträge zur synonymie der bienengattung Halictus (Apid.). **11,** 1926, p. 348-352. ***Bradley, J. C.**—Descriptions of North American species of Pristaulacus (Aulacidae). **19,** xxi, p. 173-176. ***Crawford, J. C.**—North American bees of the genus Panurginus. **10,** xxviii, p. 207-214, ill. ***Fouts, R. M.**—Notes on Serphoidea with description of new species. **10,** xxviii, p. 167-179. ***Kamal, M.**—Four new species of parasites for aphidophagous Syrphidae. **4,** lviii, p. 283-286.

(S) ***Berland, L.**—Les Sphegidae du museum national de Paris. **153**, 1926, p. 200-206, 282-285 (cont.). ***Cockerell, T. D. A.**—Descriptions and records of bees. **75**, xviii, p. 621-627. **Menozzi, C.**—Due nuove specie di Eciton (Formicidae). Folia Myrm. et Termit., I, p. 29-32, ill. **Reichensperger, A.**—Das female von Eciton mattogrossensis. **49**, xv, p. 401-404, ill.

SPECIAL NOTICES

Novitates Macrolepidopterologicae. Katalog der in "Seitz" nicht enthaltenen und seitden neu beschriebenen palaearktischen macrolepidopteren. Herausg. von Otto Bang-Haas. Band 1, bis zum jahre 1920. Dr. O. Staudinger und A. Bang-Haas, Dresden-Blasewitz. 1926, 238 pp.

Monograph of the Tribe Hesperiidi (European Species) with Revised Classification of the Subfamily Hesperiinae . . based on the Genitalic Armature of the Males. By B. C. S. Warren, Trans. Ent. Soc. London, lxxiv, pp. 1-170. Ill.—Many years ago the writer sent to Dr. J. L. Reverdin in Switzerland a large number of the species of American Hesperiidae and slides of the genitalia. Dr. Reverdin at that time contemplated monographing the family, and did write several papers on the European and some of the American forms. Then there was a lapse, the war and other distractions intervening, and finally he wrote me that he had abandoned the idea on account of his inability to secure sufficient representation of the American species and I was not aware until the publication of the paper, referred to above, that he had turned his material and data over to Mr. Warren, to continue the work. The results, however, show that Reverdin's choice of his successor was well made, and Mr. Warren's sixteen years of labor have resulted in a remarkable paper which seems to be the last word as to the European species and which also contains a great deal of information on the subject of the male genitalia and on the other species of the old world.

Mr. Warren states that he has sacrificed artistry to accuracy in figuring type and typical insects though sometimes broken or with the abdomen removed, but the excellent photographs of the butterflies and the genitalia, their unusual clearness and accuracy in reproduction, and the general set-up of the plates, without crowding and well arranged, make it exceedingly pleasing to the eye, and in my opinion, truly artistic. The sixty plates give figures of all the European species with

many variations, the male genitalia of each and also of many of the old world extra-European species, together with many enlargements of the insects and details of the genital armature most useful in their identification, some of them being superficially very similar.

It is now generally conceded that the male genitalia, in most groups of the Hesperiidae, offer the best characters for separating the species, and Mr. Warren goes further (and I agree with him) that these characters are also of the highest generic value. The information given, the deductions made by him, and the nomenclature used in describing and discussing these characters are sensible and clear.

Of the species of Hesperiidae covered, there are two which occur in America, *centaureae* and Warren's own species, *freija*. His paper will stimulate interest in this country, and our collectors will overhaul their series, so that we may be able to map out more accurately the distribution of these two, which may be migrants from the European Metropolis of the Genus *Hesperia*.

A word on the terms used in describing the genitalia may be of interest. The words "clasp," "valve," and "harpe," have been used indiscriminately to mean the entire structure of the grasping organs. Mr. Warren uses the word "clasp" for the entire structure; the word "harpe" for the dorsal lobe; the word "cuiller" (a very apt one) for the external ventral lobe; the internal proximal portion, he calls the "ventral plate," and he also very interestingly calls attention to the fact that the clasp is separable laterally.

All of this is excellent, and I believe the nomenclature should be generally adopted. However, the process, which Mr. Warren designates as the "lateral apophysis of the tenth sternite" might be called the "scaphium," as used by Pierce for a process below the uncus, a structure which is present in a very large percentage of the Hesperiidae.

As to the taxonomy, Mr. Warren has rather reversed the usual American conception of some of the terms. We have been using the word "race" in the same sense that he uses the word "subspecies," and he has sunk "race" to mean the lowest form of variation just above "aberration." Our conception of "race" carries with it the idea of locality, and we have been using the word "form" for variation in a given locality, whether seasonal, dimorphic, color phase, or otherwise. I call attention to this, not in a critical mood, but that students may understand the values of these terms as rather generally used by the American and many European writers.

It is a pity to wind up a review of such a remarkably studious and fine paper with a criticism, but it seems the custom for reviewers to do this so I will call attention to the fact that Mr. Warren, whose selection of the generic names was based on Tutt's diagnoses, was evidently unaware of the publication of Dr. Lindsey's paper on the "Types of Hesperioid Genera," which appeared in the "Annals of the Entomological Society of America" in March, 1925. I am perfectly aware of the long time frequently elapsing between the manuscript and the printed page, and I appreciate that this time must have been long extended in a paper so elaborately illustrated as this one, nevertheless, some one of his friends should have called his attention to this situation. Of course, the paper can not be considered, like the Tentamen, as non-published, and if Lindsey is correct (and I believe him to be 98% right) most of the generic names mentioned by Mr. Warren, with the exception of those erected by himself, will have to be replaced by others. R. C. WILLIAMS, JR.

HOW INSECTS LIVE; an Elementary Entomology by WALTER H. WELLHOUSE. The Macmillan Company, New York. 435 pages, ill. $5.00.—In this book we have a manual which is intended to give students of economic entomology the necessary fundamental knowledge of insects as a class, especially of those illustrating the principal habits of the insect group as well as the principal orders of the group. Most of the species chosen are widely distributed over North America and are commonly seen by any observing person. The book should appeal to county agents of the farm bureaus, teachers of agriculture, farmers and fruit growers, who lack the training given by the introductory course and have taken only an economic entomology course while in school. His plan differs from the usual one, in that there are fewer species used as types with more lengthy discussions as to their biology, life history, and appearances at different stages, with many well chosen illustrations. Each discussion is supplemented by "References," giving a list of articles wherein more detailed information may be gleaned, and is a very creditable adjunct. The text is very readable, especially appealing to the layman, and the matter is all apparently original, showing that much of the scattered literature had to be consulted by the author, in its preparation. Most of the illustrations are sharp and well made. A key to the principal orders and families is given and is, as the author states, "nothing more than a short cut to finding out what a

specimen is by the elimination of other groups." It is augmented by crude but suggestive figures of the typical insect. A chapter on the Phylum Arthropoda is included with the idea that after the student has learned the ways of the insect group he should associate that group in its proper place among the small creatures which are apt to be confused with insects. Another chapter gives suggestions for collecting and preserving insects.

Although the author says that "due regard for the systematic relationship of the species is given," this phase has not been carried out as it could and should have been without interfering with the general plan adopted by the author. The sequence of the orders in the main body of the book is not in conformity with that given in his chapter on the families of insects, and neither is in accordance with any proposed system. This seems to be the only adverse criticism of any importance that can be made, but his arrangement absolutely breaks up any concept of the proper sequence of the orders, families and genera. However, the sequence of the families in his chapter on the orders and families of the class insecta is what may be considered correct. E. T. Cresson, Jr.

Heteroptera of Eastern North America, with especial Reference to the Faunas of Indiana and Florida. By W. S. Blatchley, 1116 pages, 215 figures, xii plates. The Nature Publishing Co., Indianapolis, Ind. 1926.—The author of this volume has published three manuals, "The Coleoptera of Indiana" (1910), "Orthoptera of Northeastern America" (1920), and with Charles W. Leng, "Rhynchophora or Weevils of Northeastern America" (1916), which have proven of real service to professional entomologist and amateur collector alike, and we wonder how we ever managed to get along without them. Professor Blatchley has the faculty of preparing simple, concise, descriptive matter which any one can understand. The work on the Heteroptera is on the same plan and is nearly as large as his "Coleoptera of Indiana"; it is printed on the same kind of coated paper, making a rather heavy volume weighing about four and three-fourth pounds. Though I have not yet had the opportunity of using the keys and descriptions, I expect to find them workable, especially if they compare at all with those of the author's other manuals. In this work on the Heteroptera, Blatchley describes one new subfamily, four new tribes, one new genus, 29 new species, and four new varieties. Four of the new species were described from Indiana and 24 species and two varieties from Florida. On page 1087, a table

gives the number of species in each of the forty families treated in the work and also their distribution as regards Florida, Indiana and other states. Of the 1253 species treated, 414 are recorded from Indiana and 548 from Florida; 187 species are common to both states and 209 species are recorded only from Florida. A bibliography of 23 pages, though admittedly incomplete, contains most of the principal reference works.

There has been considerable activity, during the last few years, among students of the Heteroptera, and books like this of Professor Blatchley's have a tendency to stimulate further activity. Of course some workers are waiting for that great work now in preparation on the Heteroptera of the World, but until it appears this book by Professor Blatchley will be most useful. In fact a book of limited scope is often more useful to the majority of workers in the geographical area which it covers than the more pretentious work. It is evident that Blatchley's new book on the Heteroptera will be a welcome addition to our list of manuals treating of various groups of insects. W. E. BRITTON.

HETEROPTERA OR TRUE BUGS OF EASTERN NORTH AMERICA with Especial Reference to the Faunas of Indiana and Florida. By W. S. BLATCHLEY. The Nature Publishing Company, Indianapolis. 9¼ x 6¼ inches, pp. 1116, 12 pls., 215 text figs., $10.00.

The assiduous Mr. Blatchley has produced another of his extraordinary manuals. What a half-dozen of authors (including myself) failed to do—though they announced their intention some years ago—this laborious and magnificently efficient scientist has accomplished. Here is a descriptive and pictorial manual of the eastern Hemiptera-Heteroptera, the character and value of which needs no other recommendation than to say that it is a bigger and better "Coleoptera of Indiana," *mutandis mutatis*.

The author has acquainted himself not only with a vast majority of the species occurring within his limits, but also with the extensive literature which has lately grown up about the subject. He quotes liberally from keys, descriptions and illustrations already published (which is of course in large part what they are for), but he declares his independence and makes such changes in rank and nomenclature as seem to him to be fitting. Of the more than 1200 species treated, 29 are described as new, and some new varieties and higher groups are proposed. There is a useful bibliography and a very full index.

Detailed and technical criticism will be gradually forthcoming as specialists scrutinize the work, but it goes without saying that this manual as a whole is reliable, comprehensive and as fully simplified as the subject allows. It is, says Mr. Blatchley, the last of his manuals; let us hope not. But if so, the four will stand as a life-work of rarely equalled value, quite sufficient to justify the laurels that we herewith ungrudgingly place athwart his brow. H. M. PARSHLEY.

THE INSECTS OF AUSTRALIA AND NEW ZEALAND. By R. J. TILLYARD. Angus and Robertson, Ltd., Sydney, 1926.—The appearance of this work has been anxiously awaited by many Americans since the announcement of its forthcoming publication by the author during his recent American tour. It is, as stated by the author, designed primarily as a textbook for students of Australia and New Zealand and secondarily for those who maintain an interest in the insect fauna of that region. However, to the morphologist and systematist, even without an interest in the area under consideration, this work will rank as of prime importance especially for the studies contained therein on insect wing venation which comprise, not only the bringing together of recent publications by Tillyard on the subject, but also in several instances new and unpublished data on insect wings.

Nothing since the publication of Comstock's notable work on wing venation equals the comprehensiveness of this new book. Going deep into the subject of fossil wings, he has made numerous changes in the interpretation of the homologies in several orders which simplify the study especially for the beginning student. As an example of this, Tillyard's view that the vein Cu_1 is composed of two branches Cu_{1a} and Cu_{1b} and that the vein lying in the anal fold is Cu_2 was tried on a group of beginning students in wing venation and it seemed to offer a better explanation of the development of these veins and caused far less confusion in the interpretation of the modifications of these veins. The studies in Odonata dispute the crossing of Rs over M_2 as proposed in the Comstock-Needham system and seem to offer an easier solution of the problem. In the Hymenoptera far more radical changes are brought forth which in no way agree with the complicated MacGillivray system of terminology.

To those who heard the author's lectures on wing venation, these changes come as no surprise. It is of interest to point out that much of the new data obtained from fossil insects was

based on the relations of convex and concave veins, a subject far too little emphasized in the study of wing venation in this country.

The book is unique in the possession of practically an entire set of original illustrations, only a few of which have previously appeared in the author's older volume on Dragonflies. The large series of full page colored plates painted by Mrs. Tillyard are especially commendable. Adversely, little can be said, but space has limited the amount of discussion on internal anatomy. The author's use of the term "N. sp." (pages 49, 50 and elsewhere) is to be deplored, since obviously the descriptions do not accompany the names. Chapter 29 on the fossil record of insects is of especial interest. A good glossary is appended and in the words of a local printer, the book is very well done typographically. Students of insect structure can not afford to be without the work. It is further commendable on the part of the author that he advanced private funds toward the immense cost of publication in order to keep the price within the reach of the average student.

WM. P. HAYES, University of Illinois.

FIRST LESSONS IN NATURE STUDY. By EDITH M. PATCH, Dept. of Entomology, University of Maine, Orono. With 38 drawings by Robert J. Sim. New York, The Macmillan Co., 1926. 9¼ x 7 inches. 287 pp.—This book, appropriately dedicated to Anna Botsford Comstock, is composed of fifteen chapters with the titles Sugar, Milk and Animals that feed it to their young, Seeds, Meat and Hunters, Hunters that have backbones, The Cotton Plant and some of its relatives, Flax and some other fibre plants, Spinners, Fur Coats and animals that wear them, Caves and Dugouts, Buildings of Stone and other earthy stuffs, Traveling Homes, Houses of Wood, Questions and Answers. Insects appear in some of these chapters, as bees and aphids under Sugar; dragonflies, hornets and the "fiery hunter" [*Calosoma calidum*] under Meat and Hunters; caterpillars, cecropia and the silkworm under Spinners; the bumble bee and cricket under Caves and Dugouts. The book, both text and illustrations, should be a delight to entomologists of very tender years.

P. P. CALVERT.

ZOOLOGIE IM GRUNDRISS von Dr. WALTER STEMPELL, ord. Professor der Zoologie, vergleichenden Anatomie und vergleichenden Physiologie, Direktor des Zoologischen Instituts der Westfälischen Wilhelms-Universität zu Münster i. W. Mit 676 Abbildungen und Abbildungsgruppen im Text und 97

Lichtbildern. Berlin, Verlag von Gebrüder Borntraeger. 10½ x 7 inches. Erste (1925) u. zweite Lieferungen, pp. 1-160, 161-336.—A note on the second page of the familiar, orange-colored, paper covers of both Lieferungen informs us that for a long time there has been lacking a text book of zoology which treats equally of all branches of this science as they are today. The existing text books are mostly comparative morphology and taxonomy and treat not at all or but briefly of physiological and biological problems and mechanics of development, topics which are entering more and more into the foreground. The present book seeks to avoid this one-sidedness and to present modern zoology in its entirety and as a unit, bringing the synthetic method into its own rightful place, as well as the analytic. The erste lieferung contains a table of contents of the whole work but without the page numbers, so that information is lacking as to the amount of space devoted to each division of the subject. This division is as follows: Introduction (definition, scope, divisions and history of zoology—16 pp.) 1. Structure and Form of Animals (extending to beyond p. 336), 2. Life functions of Animals (Physiology and Development), 3 Living relations of Animals [ecology], 4. Descent of Animals (Phylogeny), 5. Theoretical Zoology and Conclusion. The second section above listed is in turn divided into A. Promorphology and B. Synopsis of the forms (Taxonomy and Comparative Morphology). The ten phyla under which all animals are grouped present no novel arrangement; Vermes and Molluscoidea are still in the running. The seventh phylum, Arthropoda (pp. 159-208), is subdivided into three subphyla—Diantennata (classes Entomostraca, Malacostraca), Chelicerata (classes Palaeostraca, Arachnoidea), and Antennata (classes Protracheata, Myriapoda, Insecta). The structure and development of insects in general are described on pages 189-198, while the following 10 pages, in smaller type, give the chief characteristics of each of the 17 orders here recognized. As one of these orders is the Pseudoneuroptera, the author's conservatism is evident. It is an excellent thing for a young student of zoology or entomology to read and study a text book of his science in one or more foreign languages as well as in his own tongue, thereby acquiring facts, views, vocabularies, idioms and modes of expression all at once. We have no means of judging the character of the last four sections of Prof. Stempel's *Grundriss*, but his first two lieferungen will be useful to the young student aforesaid.

P. P. CALVERT.

Doings of Societies.

The American Entomological Society

The stated meeting of September 23, 1926, was held in the hall of The Academy of Natural Sciences of Philadelphia. Mr. R. C. Williams, Jr., President, in the chair. Seven members were present. The meeting was given over to informal discussion and determination of specimens.

At a stated meeting held October 28, 1926, in the same hall, Mr. Williams presiding, sixteen members and visitors were present.

It was moved and seconded that the president appoint a committe to arrange for a meeting of the Entomological Society of America in the hall of The Academy on December 28.

The Publication Committee reported having published 14 papers during the year 1926 in the *Transactions* of the Society.

Mr. Robert J. Sim was elected to resident membership.

Announcement was made of an oil portrait of Dr. J. Breckenridge Clemens presented to the Academy by his family.

Dr. Calvert gave a short illustrated address on a previously announced subject, "New Characteristics in Identifying Dragonfly Larvae." The differentiation of genera of Libelluline larvae can be made on the number of teeth on the mandibles and also upon the presence and arrangement of divided setae on the segments of the tarsi and on the tibia. In the discussion that followed, Dr. Calvert spoke of the difficulties in rearing the larvae and of the numerous larval instars.

Mr. Williams referred to the recent visit of Mr. J. D. Gunder, of California, who is studying aberrrations of butterflies, and exhibited several aberrant forms and an abnormality, namely, a dark ♀ (*phileta*) of *Pieris monuste* from Florida with a caterpillar's head. This insect had evidently carried the larval head case through the pupal stage, not being able to cast it and had emerged in this manner. In other respects the insect was normal and was flying with other females of the species although it must have been blind.

R. J. Titherington, *Recording Secretary.*

At a stated meeting held November 18, 1926, in the same hall, Mr. Williams presiding, nine members were present.

Mr. J. H. Fiebiger was elected to resident membership.

The meeting was then continued in informal discussion and determination of specimens.

E. T. Cresson, Jr., *Rec. Secty* (pro tempore).

OBITUARY.

Deaths of the following entomologists have been announced:

Dr. CYRIL LUCKES WITHYCOMBE, lecturer in advanced and economic entomology at the University of Cambridge, known for his work on Neuroptera, on December 5, 1926, at the age of twenty-eight years (*Science*, Dec. 31, 1926).

Mr. J. C. HUGUENIN, of 1810 15th St., San Francisco, California, in December. His latest contribution to the NEWS was in July, 1921, entitled "Life History of Pyrameis caryae in California."

GEORGE LEWIS, for many years recognized as the chief authority on the Histeridae of the world, died at Folkestone, England, September 5, 1926. He was born August 5, 1839, and spent some years from 1862 on in China, as the representative of a firm engaged in the tea trade. From 1867 to 1872 and from 1880-1882 he was in Japan, spending six months in Ceylon on the return journey to England. In all these countries he made collections of beetles; those from Japan contain the types of a large proportion of the known species; they were acquired by the British Museum in 1910. His papers on Histeridae date from 1884 to 1915; in them he has described 60 genera and more than 750 species. His collections in this family were bequeathed to the same Museum. (Obit. in Entom. Mo. Mag., Nov., 1926.)

An obituary notice of the Rev. FRANCIS DAVID MORICE, whose death, at Woking, England, on September 21, 1926, was announced in the NEWS for January last (p. 32), is in the *Entomologist's Monthly Magazine* for November, 1926. He was born June 23, 1849, educated at private schools, Uppingham, Winchester and Oxford. He was ordained in 1873, and taught at Rugby 1874-1894. His interest in natural history was aroused in 1885 by his election as "President of the Rugby School Natural History Society, and in order to justify his election he thought he ought to know something about the things which were interesting his boys. A desultory study of the Lepidoptera was his first essay, but finding that some of the other orders promised a greater field of fruitfulness he turned his attention to the Hymenoptera and ultimately got in touch with Edward Saunders who became his friend and guide." He published upon Chrysididae, bees and wasps, but especially upon the Tenthredinidae; at the time of his death he was engaged upon a revision of the British species of this family. He was President of the Entomological Society of London in 1911 and 1912.

APRIL, 1927

ENTOMOLOGICAL NEWS

Vol. XXXVIII No. 4

JAMES H. B. BLAND,
1833-1911

CONTENTS

PHILADELPHIA, PA.
THE ACADEMY OF NATURAL SCIENCES.
Logan Square

Entered at the Philadelphia, Pa., Post Office as Second Class Matter.
Acceptance for mailing at the special rate of postage prescribed for in Section 1103, Act of October 3, 1917, authorized January 15, 1921.

ENTOMOLOGICAL NEWS

published monthly, **excepting August and September,** by The American Entomological Society.

Philip P. Calvert, Ph.D., Editor; E. T. Cresson, Jr., Associate Editor.

Advisory Committtee: Philip Laurent, J. A. G. Rehn, Chas. Liebeck, J. Chester Bradley, Ph.D., Frank Morton Jones, John C. Lutz, Max Kisliuk, Jr.

The subscription price per year of ten (10) numbers is as follows:

United States and possessions . .	$3.00
Canada, Central and South America .	3.15
Foreign	3.25

Single copies 35 cents

ADVERTISING RATES: Full width of page. Payments in advance.
One issue, 1 in., $ 1.20, 2 in., $ 2.40, half page, $ 4.00, full page,, $ 8.00
Ten issues " 11.00, " 20.00, " 35.00, " 70.00

SUBSCRIPTIONS AND ADVERTISEMENTS. All remittances, and communications regarding subscriptions, non-receipt of the NEWS or of reprints, and requests for sample copies, should be addressed to **Entomological News, 1900 Race St., Philadelphia, Pa.**

All complaints regarding non-receipt of issues of the NEWS should be presented within three months from date of mailing of the issue. After that time the numbers will be furnished only at the regular rate for single copies. Not more than two issues will be replaced gratis, through loss in transit or in change of address, unless such have been registered, at the subscriber's expense.

MANUSCRIPTS. Address all other communications to the editor, Dr. P. P. Calvert, Zoological Laboratory, University of Pennsylvania, Philadelphia, Pa.

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. The receipt of all papers will be acknowledged. Proof will be sent to authors when requested. Twenty-five "extras" of an author's contribution, without change in form and without covers, will be given free when they are wanted; if more than twenty-five copies are desired *this should be stated on the MS.*

Owing to increased cost of labor and materials, no illustrations will be published in the NEWS for the present, except where authors furnish the necessary blocks, or pay in advance the cost of making blocks and pay for the cost of printing plates. Information as to the cost will be furnished in each case on application to the Editor. Blocks furnished or paid for by authors will, of course, be returned to authors, after publication, if desired.

STATED MEETINGS

Of The American Entomological Society will be held at 7.30 o'clock P. M., on the fourth Thursday of each month, excepting June, July, August, November and December, and on the third Thursday of November and December.

Communications on observations made in the course of your studies are solicited; also exhibits of any specimens you consider of interest.

The printer of the NEWS will furnish reprints of articles over and above the twenty-five given free at the following rates: One or two pages, twenty-five copies, 35 cents; three or four pages, twenty-five copies, 70 cents; five to eight pages, twenty-five copies, $1.40; nine to twelve pages, twenty-five copies, $2.00; each half-tone plate, twenty-five copies, 30 cents; each plate of line cuts, twenty-five copies, 25 cents; greater numbers of copies will be at the corresponding multiples of these rates.

ENTOMOLOGICAL NEWS

VOL. XXXVIII APRIL, 1927 No. 4

Notes on the Pierid Butterfly, Kricogonia castalia Fab. (Lepid.).

By GEORGE N. WOLCOTT, Port-au-Prince, Hayti.

Records of an unusual abundance of a particular kind of insect are by no means uncommon in entomological literature, and indeed, such occurrences are often of such economic importance as to abundantly warrant the entire time and attention of one member of the U. S. Bureau of Entomology being given to them. In some cases, other features may outweigh the economic interest. The esthetic thrill produced by millions of light-colored butterflies dancing about one can be more readily imagined than described, and the mystery of where they all came from, and where they are going, especially if they seem to be steadily moving in one direction, is not at once susceptible to scientific explanation.

While I was lying sick in bed in Port-au-Prince, Haiti, in April and May, 1926, considerable numbers of yellow Pierid butterflies were to be noted flying past, often as high up as the tops of the royal palms. For minutes at a time, all would seem to be going in the same general direction, then some would be noticed going in the opposite direction. Repeated observations only served to confirm the original impression that despite the business-like (for a butterfly) air with which they were flying, there was no definite direction in which even the majority of them were going. In July and August they were no more noticeably abundant than when first noted, but early in September there was a decided increase in their numbers. By the middle of the month, the peak of abundance had been reached, and a week later very few were to be seen.

The center of maximum abundance appeared to be the more desert portion of the plain of the Cul-de-Sac, especially towards the coast, and by migration, this was extended northward, or north-west, along the coast line for possibly as much as

thirty or forty miles. The speedier automobiles coming into Port-au-Prince from the north had their radiators entirely covered with the yellow wings of the butterflies. Where shallow ditches on either side of the road thru the desert region held a little water, or fresh horse or burro manure proved attractive, the clouds of startled butterflies that rose up as one passed filled the car, and momentarily hundreds of soft bodies and fluttering wings beat against one's face and arms.

Despite the numberless times individual butterflies stopped to rest and drink, there was no question about the direction of their movement. They were moving steadily northward, or as nearly northward as the steep mountains which form the northern boundary of the plain and to the northwest closely skirt the coast, allowed. Along the coast, some of the butterflies were flying out over the water, but none were observed to be very far out, and many hugged the shore, stopping now and then to sip salty water from wave-moistened stones or driftwood. The highroad and the railroad right of way paralleling the beach, and even the low woods at the foot of the mountains were alive with their northward-impelled bodies.

The vast majority of the butterflies were of a single species, *Kricogonia castalia* Fab., or some variety of this species, altho a comparatively few may have been *Picris monuste* Linnaeus, which would be practically indistinguishable in flight. Now and then one might see one of the larger and more intensely colored Catopsilias, or a black *Papilio*, or a chestnut *Dione vanillae* Linnaeus, but none of these other species seemed to be more than temporarily imbued with the northward urge of *Kricogonia*.

Of the early stages of *Kricogone lyside*, Holland says, "Nothing has, as yet, been satisfactorily ascertained in relation to these." Such enormous numbers of butterflies having developed in a comparatively restricted desert area must surely have produced a noticeable defoliation of their host plant or plants. Desert vegetation in the Cul-de Sac appears to consist largely of cactus and dwarfed leguminous trees. The cactus was obviously untouched by caterpillars. As the caterpillars of the

allied genus, *Catopsilia*, feed on the leaves of various legumes, a careful inspection was made of the foliage of such trees and shrubs, but no indication of caterpillar injury was noted.

Amid the grey or bluish-green and feathery leaves of the common desert vegetation, the dense dark green foliage of lignum vitae, *Guajacum officinale*, is as distinctive and striking as is its trunk, mottled and blotched like that of the buttonball. The rounded oval of its leaves had often before been noted as notched by the feeding of the little Otiorhynchid beetles, *Artipus psittacinus* Gyllenhal (determination by Dr. Guy A. K. Marshall). These beetles are covered with light green scales above and silvery white ones beneath, and are so conspicuous against the dark green lignum vitae leaves that they were credited with being responsible for all leaf injuries whatsoever that might appear on this plant. My six-year-old daughter, however, conducting an independent investigation of her own, noted that the trunk of one of the lignum vitae trees was alive with a multitude of wandering caterpillars and these, on being reared to adults, proved to be *Kricogonia castalia* Fab., as determined by Dr. Wm. Schaus, of the United States National Museum.

The fully grown last instar larva is about three-fourths of an inch long and one-eighth inch wide, cylindrical, of substantially uniform diameter, with a skin somewhat roughened and pubescent. The oval head is of nearly the same diameter as the body, dull green in color, with numerous irregularly-shaped lighter spots on the dorsal half, the ocelli and the bases of some of the hairs being black. On the body, the prominent but narrow silvery or grey mid-dorsal stripe is laterally broadly bordered with chocolate brown. At the sides, this breaks up into numerous spots on a golden yellow background, which midway to the silvery lateral stripes become so numerous as to form a continuous stripe, sharply limited ventrally by the golden yellow background. The lateral silvery stripes are narrowly above and scarcely at all below, margined with brown. Below, posteriorly, and at the sutures, the body is dull green like the head, but somewhat lighter around the prolegs. The claws of the prolegs are brown; those of the true legs are semi-transparent green.

The chrysalis is bluish grey in color, with whitish bloom,

smooth but not shining, wing pads prominent and rather sharply depressed posteriorly to meet the small abdomen. The pupal period was six days.

From the chrysalids of other larger butterflies collected at the same time in this region, black parasitic wasps, *Chalcis incerta* Cresson, were reared, but none of those of *Kricogonia* were thus parasitized. From each of several of the larvae, however, two *Apanteles* larvae emerged and spun cocoons. The imagos were determined by Mr. A. B. Gahan, of the United States National Museum, as *A. cassianus* Riley.

Notes on some Louisiana Dragonflies (Odonata).

By B. Elwood Montgomery, Poseyville, Indiana.

From June 15 to August 16, 1925, while working at the Tallulah, Louisiana, laboratory of the Bureau of Entomology, I made use of my spare time to study and collect dragonflies. Only holidays and brief periods in the late afternoon could be given to this work. The number of points which could be visited on such occasions was limited but fairly represented the local habitats. The elevation of Tallulah, which is probably representative of the entire district in which collecting was done, is 91 feet. Five hundred and ninety-six specimens, representing twenty-eight species were taken.

I am indebted to Mr. E. B. Williamson, of Bluffton, Indiana, for the identification of a few species and for checking my determinations of other species. Several members of the Tallulah staff assisted in collecting specimens.

Eagle Lake, an old bayou channel about four miles west of Tallulah, was visited more frequently than any other locality. This body of water is about a mile long and has a maximum width of about 250 yards. Collecting was done at only one end of the lake where the water was comparatively shallow. Here the banks were wooded and rather free from low vegetation. *Tramea* and *Pantala* were usually to be found soaring over a nearby field grown up to a uniform height of about four feet with weeds. *Argia apicalis* was frequent in the paths among the trees near the lake. *Pachydiplax longipennis* was

abundant about a small area of water smart weed. *Enallagma signatum, Perithemis domitia* and *Libellula incesta* flew along the shore. *Epicordulia princeps* was frequently seen.

Bear Lake, about six miles northwest of Eagle Lake resembles the latter, both in its general character and its dragonfly fauna.

Alligator Bayou, seven miles southwest of Tallulah, was visited at a point where the bayou spreads out into a broad pond grown up with *Nelumbo*. The banks were grass-covered and partly shaded by trees. *Enallagma geminatum, E. signatum, Ischnura posita, Nasiaeschna pentacantha, Perithemis domitia* and *Pachydiplax longipennis* were captured here.

Lake Bruin, which was visited on July 26 and August 8, is an old ox-bow cut-off about sixteen miles long in Tensas Parish, abouty forty miles south of Tallulah. Collecting was done near the west end, where a sand beach extends from a few feet to several yards back from the water. *Celithemis eponina* was found on both dates, alighting on the branch tips of cypress trees growing in the water or on lower vegetation back of the beach. *Epicordulia princeps, Tramea lacerata* and *Brachymesia gravida* flew over the water. *Perithemis domitia* and *Enallagma signatum* were found in numbers at the water margin and the former less frequently in the vegetation back from the beach where *Erythemis simplicicollis* was common. *Argia apicalis, Enallagma civile, E. geminatum, Ischnura posita, I. ramburii, Anomalagrion hastatum* and *Plathemis lydia* were also taken in this vegetation.

Collecting was done frequently at Bayou Roundaway, three miles south of Tallulah. The water was only a few inches deep and the channel, six to ten feet wide, was filled with a growth of low water vegetation. *Enallagma signatum* and *Ischnura posita* were common; *Libellula incesta* was frequently seen; and a few individuals of *Libellula vibrans* were present. A *Hetaerina* was once seen here but was not taken.

Bayou Macon, seventeen miles west of Tallulah, was visited on August 9 and 15. The water flows with a quite noticeable current in this bayou. The channel is about fifty feet wide and

the maximum depth was six to ten feet when I visited it. Collecting here was difficult as the banks were steep and the few islands supporting a growth of vegetation could not be reached. The water was very clear and fish could be easily seen swimming about at all depths. The banks were wooded and free from all herbaceous growth. *Erythemis simplicicollis* was common in open areas near the bayou. Three species of *Argia, apicalis, sedula* and *tibialis* were taken from the bare ground among the trees. Along the margin of the bayou *Hetaerina titia, Enallagma signatum, Ischnura posita, I. ramburii* and *Anomalagrion hastatum* were found. *Macromia taeniolata* patrolled the stream; *Tramea* and *Pantala* were seen soaring over the water but none were taken.

Alligator Lakes were visted on one day only. These are a series of three ponds in the bed of an old bayou in the deep woods about seven to eight miles southwest of Tallulah. The water is shallow and over the muddy banks logs and fallen trees are thickly scattered. Dragonflies were not abundant but a few *Macromiae* were seen and one specimen each of *Argia apicalis, Ischnura posita, I. ramburii, Pachydiplax longipennis* and four each of *Libellula incesta* and *Perithemis domitia* were taken.

List of Species.

1. Hetaerina titia Drury. Bayou Macon, August 9 and 15, all tenerals.

2. Argia apicalis Say. Eagle Lake, June 20; July 4; August 12. Bear Lake, July 11 and 18. Lake Bruin, July 26; August 8. Bayou Macon, August 15. Alligator Lakes, August 16. Common at first three localities, exceeded in number by both the following species of the genus at Bayou Macon. At Alligator Lakes a male of this species was the only *Argia* seen.

3. Argia sedula Hagen. Bayou Macon, August 9 and 15. Seven males and one female taken on each day.

4. Argia tibialis Rambur. Eagle Lake, July 1. Bear Lake, July 18. Bayou Macon, August 9 and 15.

5. Enallagma civile Hagen. Bayou five miles east of Tallulah, July 23. Lake Bruin, July 26; August 8.

6. ENALLAGMA EXSULANS Hagen. A male from Bear Lake, July 11.

7. ENALLAGMA GEMINATUM Kellicott. A male from Alligator Bayou, June 20. Nine males from Lake Bruin, July 26.

8. ENALLAGMA SIGNATUM Hagen. Eagle Lake, June 20 and 29; July 4 and 11; August 12. Alligator Bayou, June 20 and 21. Bayou Roundaway, June 27. Bear Lake, July 11. Lake Bruin, July 26; August 8. Bayou Macon, August 9. Everywhere common.

9. ISCHNURA POSITA Hagen. Alligator Bayou, June 20 and 21. Eagle Lake, June 20; July 4; August 12. Bayou Roundaway, June 27; July 2 and 30. Bear Lake, July 11 and 18. Lake Bruin, July 26; August 8. Bayou Macon, August 9 and 15. Alligator Lakes, August 16. Everywhere common. Twice as many specimens of this species as of any other were taken.

10. ISCHNURA RAMBURII Selys. Lake Bruin, July 26; August 8. Bayou Macon, August 9 and 15. Alligator Lakes, August 16. Both yellow and green females were taken.

11. ANOMALAGRION HASTATUM Say. Eagle Lake, July 4. Lake Bruin, July 26. Insect grounds, July 31. Bayou Macon, August 15. Only one specimen was secured from each locality; the Lake Bruin specimen was a female, the others males. The male from the insectary grounds was taken during a rain, while flying actively about from one stalk of grass to another.

12. GOMPHUS SP. Individuals of this genus were seen several times at Eagle Lake, alighting on stumps and sticks protruding above the water but flying at the approach of the boat. A teneral female, apparently belonging to the *pallidus* group, was taken June 20.

13. ANAX JUNIUS Drury. Seen many times at various localities during the summer. A male was taken at the insectary grounds July 27.

14. NASIAESCHNA PENTACANTHA Rambur. A male from Alligator Bayou, June 21 and a female from Bear Lake, July 11.

15. MACROMIA TAENIOLATA Rambur. Bear Lake, July 11. Bayou Macon, August 9 and 11. Four males were taken.

16. Epicordulia princeps Hagen. Eagle Lake, June 29; July 4 and 18; August 11 and 12. A male and female flying tandem along the edge of the water were taken on the first date.

17. Libellula incesta Hagen. Eagle Lake, July 4 and 11. Bear Lake, July 11 and 18. Bayou Macon, August 15. Alligator Lakes, August 16. On one occasion at Bayou Roundaway, where several individuals of this species were patrolling the bayou channel, they were noted to visit the flowers of a plant about three feet high which was common along the bayou. The action seemed intentional as the dragonflies hovered for a moment just above the conspicuous yellow flower then flew to the next where the action would be repeated. I examined the flowers and found many small insects on them but I was not able to approach close enough to a dragonfly to determine if it was catching these.

18. Libellula vibrans Fabricius. Bayou near Tallulah, July 25. In the margin of woods at roadside near Tallulah, August 14.

19. Plathemis lydia Drury. Eagle Lake, July 4 and 18; August 12. Bayou seven miles southeast of Tallulah, July 25. Lake Bruin, July 26; August 8.

20. Perithemis domitia Drury. Alligator Bayou, June 20 and 21. Eagle Lake, June 20 and 29; July 4, 11, and 18; August 12. Bayou Roundaway, June 27; July 2 and 25. Bear Lake, July 18. Lake Bruin, July 26; August 28. Alligator Lakes, August 16.

21. Erythemis simplicicollis Say. Eagle Lake, June 20; July 4 and 11; August 12. Bayou Roundaway, June 27; July 30. Bear Lake, July 11 and 18. Lake Bruin, July 26; August 8. Bayou Macon, August 9 and 15. While following an individual of this species at Bayou Roundaway, July 30, I saw it struck from above and carried away into a cotton field by a robber fly. At Bayou Macon, August 9, a male of this species was captured in flight by a female of the Asilid, *Erax interruptus* Macq. (determined by Prof. J. S. Hine), which carried its prey to a bare spot on the ground several feet away where

both were captured. The dragonfly was still alive when taken from the net altho some of the contents of its thorax had been removed by the Asilid. A male of *simplicicollis*, taken at Bayou Roundaway, July 30, was eating a moth. A female taken at Eagle Lake, July 11, was resting on a stick eating another dragonfly, *Perithemis domitia*.

22. PACHYDIPLAX LONGIPENNIS Burmeister. Eagle Lake, June 20; July 4. Alligator Bayou, June 21. Bayou Roundaway, June 27. Bear Lake, July 18. Lake Bruin, July 26. Bayou Macon, August 15. Alligator Lakes, August 16.

23. CELITHEMIS EPONINA Drury. Lake Bruin, July 26; August 8.

24. BRACHYMESIA GRAVIDA Calvert. Lake Bruin, August 8. Several individuals of this species were seen patrolling the shores or resting on tips of sticks extending some distance from the surface of the water; a male was taken.

25. PANTALA FLAVESCENS Fabricius. Cotton field, seven miles northeast of Tallulah, July 7. Insectary grounds, July 7 and 27. Bayou seven miles southeast of Tallulah, July 25. Eagle Lake, August 12.

26. PANTALA HYMENAEA Say. Insectary grounds, July 20.

27. TRAMEA LACERATA Hagen. Cotton field seven miles northeast of Tallulah, July 9 and 17. Insectary grounds, July 20. Bayou seven miles southeast of Tallulah, July 25. Lake Bruin, July 26; August 8. Lawn in Tallulah, July 28. Eagle Lake, August 12.

28. TRAMEA ONUSTA Hagen. Cotton field seven miles northeast of Tallulah, undated. Insectary grounds, July 20. Air field, three miles east of Tallulah, August 1.

Back Volumes of the News.

The late Mr. J. C. Huguenin of San Francisco, a long-time subscriber to the NEWS, left some home-bound volumes of this journal from 1917 to the end of 1926. Mrs. Huguenin will be glad to receive offers for them. Such should be addressed to Mr. R. F. Sternitzky, 201 Charter Oak Ave., San Francisco, California.

The Entomology of Erasmus Darwin's "Botanic Garden."

By Harry B. Weiss, New Brunswick, New Jersey.

Erasmus Darwin, M.D., grandfather of Charles Darwin, had his carriage equipped for reading and writing, and composed much of his poetry while visiting patients. Among other things, he wrote "The Botanic Garden," a lengthy didactic poem, which, according to L. Rice-Oxley, "taught nothing and was not poetical." This work, published in London, 1791, consists of two parts, part one being entitled "The Economy of Vegetation" and treating of plant physiology, and part two, "The Loves of the Plants," dealing with plant sex. Part two had been published previously and anonymously at Lichfield in 1789. Both poems are accompanied by a galaxy of "philosophical notes" on heat, clouds, electricity, frost, iron, clay, comets, the steam engine, etc., and although the entire work is mainly of historical interest to botanists, the parts of the notes that refer to insects are reproduced because of their quaintness.

Of luminous insects, Doctor Darwin wrote as follows:

"There are eighteen species of Lampyris or glow-worm, according to Linneus, some of which are found in almost every part of the world. In many of the species the females have no wings, and are supposed to be discovered by the winged males by their shining in the night. They become much more lucid when they put themselves in motion, which would seem to indicate that their light is owing to their respiration; in which process it is probable phosphoric acid is produced by the combination of vital air with some part of the blood, and that light is given out through their transparent bodies by this slow internal combustion.

"There is a fire-fly of the beetle-kind described in the Dict. Raisonné under the name of Acudia, which is said to be two inches long, and inhabits the West Indies and South America; the natives use them instead of candles, putting from one to three of them under a glass. Madam Merian says, that at Surinam the light of this fly is so great, that she saw sufficiently well by one of them to paint and finish one of the figures of

them in her work on insects. The largest and oldest of them are said to become four inches long, and to shine like a shooting star as they fly, and are thence called Lantern-bearers. The use of this light to the insect itself seems to be that it may not fly against objects in the night; by which contrivance these insects are enabled to procure their sustenance either by night or day, as their wants may require, or their numerous enemies permit them; whereas some of our beetles have eyes adapted only to the night, and if they happen to come abroad too soon in the evening are so dazzled that they fly against every thing in their way."

On the subject "vegetable glandulation," he states that "The odoriferous essential oils of several flowers seem to have been designed for their defence against the depredations of insects, while their beautiful colours were a necessary consequence of the size of the particles of their blood, or of the tenuity of the exterior membrane of the petal," and tells of a philosopher "who, contemplating this subject thinks it not impossible, that the first insects were the anthers or stigmas of flowers; which had by some means loosed themselves from their parent plant, like the male flowers of Vallisneria; and that many other insects have gradually in long process of time been formed from these; some acquiring wings, others fins, and others claws, from their ceaseless efforts to procure their food, or to secure themselves from injury. He contends, that none of these changes are more incomprehensible than the transformation of tadpoles into frogs, and caterpillars into butterflies."

Concerning the Diptera, he says—"There is a curious circumstance belonging to the class of insects which have two wings, or diptera, analogous to the rudiments of stamens above described: viz. two little knobs are found placed each on a stalk or peduncle, generally under a little arched scale; which appear to be rudiments of hinder wings; and are called by Linneus, halteres, or poisers, a term of his introduction. A. T. Bladh. Amæn. Acad. V. 7. Other animals have marks of having in a long process of time undergone changes in some parts of their bodies, which may have been effected to accommodate them to new ways of procuring their food." Darwin,

from his writings, believed in the theory of evolution as afterwards expounded by Lamarck.

On the subject of insectivorous plants, he writes—"the viscous material which surrounds the stalks under the flowers of" the Catchfly *(Silene)* "is a curious contrivance to prevent various insects from plundering the honey or devouring the seed." "In the Dionæa Muscipula there is a still more wonderful contrivance to prevent the depredations of insects: The leaves are armed with long teeth, like the antennæ of insects, and lie spread upon the ground round the stem; and are so irritable, that when an insect creeps upon them, they fold up, and crush or pierce it to death. The last professor Linneus, in his Supplementum Plantarum, gives the following account of the Arum Muscivorum. The flower has the smell of carrion; by which the flies are invited to lay their eggs in the chamber of the flower, but in vain endeavour to escape, being prevented by the hairs pointing inwards; and thus perish in the flower, whence its name of fly-eater. In the Dypsacus is another contrivance for this purpose, a basin of water is placed round each joint of the stem." Of the Sun-dew, "The leaves of this marsh-plant are purple, and have a fringe very unlike other vegetable productions. And, which is curious, at the point of every thread of this erect fringe stands a pellucid drop of mucilage, resembling a ducal coronet. This mucus is a secretion from certain glands, and like the viscous material round the flower-stalks of Silene (catchfly) prevents small insects from infesting the leaves. As the ear-wax in animals seems to be in part designed to prevent fleas and other insects from getting into their ears. Mr. Wheatly, an eminent surgeon in Cateaton street, London, observed these leaves to bend upwards, when an insect settled on them, like the leaves of the muscipula veneris, and pointing all their globules of mucus to the centre, that they completely intangled and destroyed it. M. Broussonet, in the Mem. de l'Acad. des Sciences for the year 1784, p. 615, after having described the motion of the Dionæa, adds, that a similar appearance has been observed in the leaves of two species of Drosera."

On nectar and nectaries he says in part that "Many insects

are provided with a long and pliant proboscis for the purpose of acquiring this grateful food, as a variety of bees, moths, and butterflies: but the Sphinx Convolvuli, or unicorn moth, is furnished with the most remarkable proboscis in this climate. It carries it rolled up in concentric circles under its chin, and occasionally extends it to above three inches in length. This trunk consists of joints and muscles, and seems to have more versatile movements than the trunk of an elephant; and near its termination is split into two capillary tubes. The excellence of this contrivance for robbing the flowers of their honey, keeps this beautiful insect fat and bulky; though it flies only in the evening, when the flowers have closed their petals, and are thence more difficult of access; and at the same time the brilliant colours of the moth contribute to its safety, by making it mistaken by the late sleeping birds for the flower it rests on.

"Besides these there is a curious contrivance attending the Ophrys, commonly called the Bee-orchis, and the Fly-orchis, with some kinds of the Delphinium, called Bee-larkspurs, to preserve their honey; in these the nectary and petals resemble in form and colour the insects, which plunder them: and thus it may be supposed, they often escape these hourly robbers, by having the appearance of being pre-occupied."

The wax of the candle-berry Myrtle was attributed to insects. "The buds of the Myrica Gale possess an agreeable aromatic fragrance, and might be worth attending to as an article of the Materia Medica. Mr. Sparman suspects, that the green wax-like substance, with which at certain times of the year the berries of the Myrica cerifera, or candle-berry Myrtle, are covered, are deposited there by insects."

On the resemblance of some seeds to insects he has the following to say: "There is another plant, Medicago polymorpha, which may be said to assume a great variety of shapes; as the seed-vessels resemble sometimes snail-horns, at other times caterpillars with or without long hair upon them; by which means it is probable they sometimes elude the depredations of those insects. The seeds of Calendula, Marygold, bend up like a hairy caterpillar, with their prickles bristling outwards,

and may thus deter some birds or insects from preying upon them."

Upon the appearance of his "Botanic Garden," Darwin gained quite a favorable but ephemeral reputation. Apparently he was a much better physician and botanist than poet. Educated at Cambridge and Edinburgh, he began the practice of medicine at Nottingham in 1756. Because of his small number of patients he moved to Lichfield a year later, and here his practice grew and he met many distinguished people. In 1766 while botanising he accidentally met Rousseau at Wootton Hall, afterwards corresponding with him. It is said that he met Samuel Johnson once or twice and that their dislike was mutual. Although of a large build, he was quite energetic, both physically and mentally. By his first wife he had three sons, one of them, Robert Waring, being the father of Charles Darwin, and by his second, four sons and three daughters. Although he was kind to patients and servants and charitable to the poor, at times he was quite magisterial and ill-tempered to his children.

Darwin's poetry was patterned after that of Pope, whose style was passing out of favor. In three prose interludes inserted between the cantos of his "Loves of the Plants," he expounds his views on poetry and states that "the principal part of the language of poetry consists of those words, which are expressive of the ideas, which we originally receive by the organ of sight; and in this it nearly indeed resembles painting."

A clever parody on Darwin's "Loves of the Plants" appeared in the April 16, 1798, and succeeding numbers of the "Anti-Jacobin, or Weekly Examiner," a publication which supported Pitt's Government in the struggle against France and its Revolution.

Darwin's political tendencies were liberal: he favored the Revolution and corresponded with Rousseau. And so the parody served the double purpose of attacking the Jacobins while apparently being directed against Darwin's poor poetry. It was styled "The Loves of the Triangles, a Mathematical and Philosophical Poem," inscribed to Dr. Darwin and written by Ellis, Canning and Frere. As the purpose of the "Botanic

Garden" was "to enlist imagination under the banner of Science," the purpose of the "Loves of the Triangles" was to "enlist the Imagination under the banners of Geometry." Darwin was said to have admired the parody, which now serves to keep alive his otherwise forgotten "Loves of the Plants."

Andrew Crosse's Acarus.

Andrew Crosse, who dabbled in chemistry and electricity in his country home, Fyne Court, six miles from Taunton, made a discovery in 1837 that netted him considerable publicity. In an effort to manufacture crystals of silica, he mixed two ounces of powdered flint with six ounces of carbonate of potash, fused them in a strong heat, reduced the material to a powder and dissolved it in boiling water thereby obtaining potassium silicate. A part of this he placed in boiling water slowly adding hydrochloric acid to supersaturation. This fluid he subjected to continuous electric action through the intervention of a porous stone.

Failing to obtain the crystals of silica, he noted however on the 14th day after the beginning of the experiment, a "few small whitish excrescences projecting from the middle of the porous stone." On the 18th day, the projections were larger and terminated in seven or eight filaments. On the 26th day they took the form of perfect insects "standing erect on a few bristles which were their tails." On the 28th day they moved their legs, later detaching themselves from the stone and moving about. At the end of several weeks about 100 were present, some smaller ones with six legs and larger ones with eight. They were identified as belonging to the genus *Acarus* and called *Acarus crossii.*

Mr. Crosse at first was of the opinion that they had developed from eggs in the water. He repeated the experiment and the acari duly reappeared. Others tried it with similar results. Some believed that it was proof of spontaneous generation. Others asserted the impossibility of such a happening and heaped abuse on Mr. Crosse. Mr. Crosse himself maintained no hypothesis and discreetly said that he did so and so and so was the result. Although it has nothing to do with the *Acarus,* Mr. Crosse was twice married and died on July 6, 1855, in "the room in which seventy-one years before, he had been born." All of which is set forth in volume two of Chamber's "Book of Days," published originally in London, 1862-64.—Harry B. Weiss, New Brunswick, New Jersey.

Nineteen Synonyms in the North American Thysanoptera.*

By J. Douglas Hood, University of Rochester.

Through the kindness of Mr. J. R. Watson and the authorities at the U. S. National Museum it has been made possible for the writer to examine the types of a number of the Thysanoptera described recently from North America and to point out the synonymy given below. An exclamation mark (!) following a specific name indicates that at least one paratype of that species has been examined in the preparation of this paper; two such marks (!!) mean that the holotype itself has been studied.

Chirothrips floridensis var. *catchingsi* Watson ! = *C. mexicanus* Crawford !!

Scirtothrips owreyi Watson ! = *Frankliniella fusca* (Hinds), the Tobacco Thrips.

Dictyothrips floridensis Watson ! = *Echinothrips americanus* Morgan !

Haplothrips rabuni Watson ! = *H. graminis* Hood !!

Haplothrips querci Watson ! = *H. graminis* Hood !!

Haplothrips cassiae Watson ! = *Leptothrips mali* (Fitch)**.

Haplothrips harnedi Watson ! = *H.* (s. l.) *flavipes* (Jones) !!

Haplothrips oncco Watson ! = *H.* (s. l.) *flavipes* (Jones) ! !

Karynia (sic !) *weigeli* Watson = *H.* (s. l.) *flavipes* (Jones) ! !

Anthothrips dozieri Watson ! = *Haplothrips gowdeyi* (Franklin) !

Zygothrips wyomingensis Watson ! = *Haplothrips leucanthemi* (Schrank).

Hindsiana cocois Watson ! = *Haplothrips* (s. l.) *melaleuca* (Bagnall).

Cryptothrips adirondacks Watson ! = *Leptothrips mali* (Fitch) [typical] + *Liothrips citricornis* Hood !!

Cryptothrips pini Watson ! = *Leptothrips mali* (Fitch)**.

*Contribution from the Entomological Laboratory of Cornell University.

* *Floridan examples of this species are not quite typical, and the study of further material may show that they represent a valid subspecies. For this form Mr. Watson has furnished three names in as many different genera, namely, *Leptothrips aspersus macro-ocellatus*, 1913, *Haplothrips cassiae*, 1915, and *Cryptothrips pini*, 1915. The first has priority, and would take precedence, of course.

Trichothrips salicis Watson !! = *Cryptothrips rectangularis* Hood !!
Phlocothrips floridensis Watson ! = *Hoplandrothrips jenni* (Jones) ! !
Trichothrips drakei Watson ! = *Hoplothrips karnyi major* (Hood) ! !
Neocurhynchothrips Watson = *Trichothrips* Uzel.
Idolothrips fuscus Watson !! = *Magalothrips spinosus* Hood !!

The Nymph of Libellula incesta and a Key for the Separation of the known Nymphs of the Genus Libellula (Odonata).

By C. Francis Byers, Cornell University.

While working over the Odonata collection at Cornell University, the writer turned up a reared specimen and exuvia of *Libellula incesta*. The material bore the following label, "Spring Creek, Decatur Co., Ga. Emerged June 13, 1911. Coll. J. C. Bradley." The nymph of *Libellula incesta* has never been described, so on the basis of the above specimen the following description was made.

Libellula incesta Hagen. Nymph. Sex male. Total length 21 mm. Length of abdomen 11.5 mm. Hind femora 6 mm. Width of abdomen 6.5 mm. Lateral setae 5. Mental setae 9, the first five, from the side, long and close together, the fourth being the longest, the remaining four small and further apart. Median lobe decidedly pointed. Movable hooks long, straight and comparatively slender. Setae on the distal margin of the lateral lobes arranged in tufts of three for the most part.

The ninth abdominal segment as long on the ventral side as nine plus ten on the dorsal side. Dorsal hooks on abdominal segments 4-8 long and straight. Lateral hooks on abdominal segments 8 and 9 incurvate and sharp. Lateral abdominal appendages one-half the length of the inferiors.

The nymph of *L. incesta* closely resembles those of *L. axillena* and *L. auripennis*. The following key to the nymphs of *Libellula* of North America will help to separate it from these other species. In this key the genus *Libellula* is considered as consisting of *Ladona* and *Plathemis* as well as *Libellula* proper.

Key for the Separation of the Known Nymphs of the Genus Libellula.

1—Mental setae 0-3. The 10th abdominal segment well exposed. Appendages long and sharp, longer than the dorsum of 8 plus 9. (Ladona).....(2).
—Mental setae 8-13. The 10th abdominal segment partially contained within the 9th. Abdominal appendages short and stout, shorter than the dorsum of 8 plus 9 in most cases.....(3).
2—Mental setae 3 on each side.....*exusta* (syn. *julia*)*
—Mental setae wanting.....*deplanata.*
3—Front border of the median lobe of the labium crenulate. Head widest behind the eyes. (Plathemis).....*lydia.*
—Front border of the median lobe of the labium not crenulate. Head narrowed behind the eyes. (Libellula, sens. st.).....(4).
4—Dorsal hooks on abdominal segments 7 and 8 long and sharp, about one-third of the length of the segments that bear them, and much longer than the surrounding hairs, if any.....(5)
—Dorsal hooks normally present on abdominal segments 3-8, those on 7 and 8 rudimentary and hidden among scurfy hairs, or wanting.....(8).
—No dorsal hooks present on any of the abdominal segments.....*saturata.*
5—Lateral setae 5.....(6).
—Lateral setae 6, mental 8.....*cyanea.*
—Lateral setae 7, mental 10-11.....*luctuosa.*
—Lateral setae 8, mental 12-13.....*flavida?*
6—Mental setae 12-13. Lateral spines of abdominal segments 8 and 9 nearly straight. A black band on the head between the eyes.....*axillena?*
—Mental setae 8-10. Lateral spines more incurvate. No black band on head.....(7).
7—Segment 9 on the ventral side equal in length to segments 9 and 10 on the dorsal side. Setae on the distal margin of the lateral lobes of the labium arranged in groups of three. Lateral spines distinctly incurvate.....*incesta.*
—Segment 9 on the ventral side distinctly longer than 9 and 10 on the dorsal side. Setae on the distal margin of the lateral lobes normally arranged in groups of five. Lateral spines less incurvate.....*auripennis.*

*In spite of the arguments pro and con regarding the true status of the three forms of the old genus Ladona, much is still desired regarding this matter. For the present I have considered *deplanata* as a valid species and *julia* as a synonym of *exusta.*

8—Lateral setae 6, mental 8. ..... *forensis.*
—Lateral setae 7, mental 13. ..... *quadrimaculata.*
—Lateral setae 8-9, mental 12-13. ..... *pulchella.*
Unknown—*comanche, composita, jessicana, nodistica, subornata, semifasciata, vibrans.*

All the nymphs in the above key have been described by Dr. James G. Needham, excepting *L. incesta.* References to the original literature are to be found in R. A. Muttkowski's *Catalogue of the Odonata of North America.*

Descriptions of Coleoptera with Notes (Buprestidae and Cerambycidae).

By J. N. KNULL, Pennsylvania Bureau of Plant Industry.

BUPRESTIS STRIATA Fab. was found breeding and emerging from a hewn pine log which had been in an old log house in Clark's Valley, Pennsylvania. This indicates that seasoned lumber without bark is subject to infestation by this species.

CHRYSOBOTHRIS CHRYSOELA Ill. was found breeding in dead branches of bald cypress *(Taxodium distichum)* at Cape Henry, Virginia. A living pupa, which later transformed to an adult, was found in the sapwood on September 30th.

ACTENODES ARIZONICA n.sp.—Form and size of *A. mendax* Horn, and undoubtedly confused with it in collections, color greenish bronze. Head densely punctuate on vertex, becoming rugose on front, median line on vertex, clypeus truncate with obtuse tooth at middle, eyes prominent, separated on vertex by less than half their width at widest point.

Thorax twice as wide as long, narrower at apex than at base, sides sinuate posteriorly, disk convex, slight subbasal transverse impression, hind angles carinate, surface densely punctuate, punctures becoming more numerous laterally. Elytra wider than thorax, sides parallel to back of middle, then obtusely rounded, apices acute, side margin serrulate, surface scabrose, with a tendency to form transverse strigae. Beneath more shining than above, abdomen reticulate, last ventral truncate in female. Length 16 mm., width 6 mm.

Type a female labeled Tucson, Arizona, August 28, in the author's collection.

Superficially this species resembles *A. mendax* Horn, but the distance between the eyes on the vertex is much narrower, clypeal tooth well developed and elytral and thoracic sculpture is much coarser.

From *A. calcarata* Chev., which it resembles structurally, it can be separated by the lack of the two transverse metallic bands on the elytra, no prominent costae, and the coarser dorsal punctuation.

According to Schaeffer's key* the species would come after *A. calcarata* Chev.

ROMALEUM CORTIPHAGUS Craighead—The larva of this species was described by Dr. Craighead† and the above name suggested by him. In view of the fact that the author has reared a number of adults of this interesting species, it might be advisable to give a brief description of the insect.

Resembling *R. atomarium* Drury, although smaller and elytra more convex, brunneus, clothed throughout with irregular patches of cinereous pubescence. Antennae when laid back over dorsal surface, reaching considerably beyond the tips of the elytra in the male, and extending only slightly beyond in the female.

Thorax more globular than *atomarium*, disk with similarly placed callosities, irregularly densly punctured, punctures becoming larger laterally; coarser on female. Elytra with sides parallel, suddenly rounded at apex; apices truncate, bispinose, surface sparsely punctuate, becoming less numerous toward apex. Last ventral of male not as broadly rounded as in *atomarium*, last ventral of female rounded with at most only slight emargination; in female *atomarium* emargination is much deeper. Length 16 to 20 mm.; width 4.5 to 6 mm.

Description made from a male in author's collection, reared July 4 from the bark of chestnut oak *(Quercus prinus)* collected at Rockville, Pa., by the author. Six other reared specimens at hand.

ROMALEUM CYLINDRICUM n.sp.—Resembling *R. atomarium* Drury in form and size; brunneus, clothed above and below with cinereous pubescence. Eyes coarsely granulate, more widely separated on vertex than *atomarium*, lobe extending above antenna relatively narrower, antenna stout, scape clavate, second joint short, third longer than first two taken together, fourth shorter than third, fifth to ninth of about equal length, last two missing.

Thorax wider than long, very convex, narrower at base than at apex, sides rounded, surface irregularly finely punctuate; slightly raised laterally making an irregularly shaped area in

*Chas. Schaeffer—Jour. N. Y. Ent. Soc., Vol. 12, p. 209, 1904.

†F. C. Craighead—Dom. of Canada Department of Agriculture Technical Bulletin 27, page 69, 1923.

central portion, depression in front of scutellum. Scutellum triangular. Elytra slightly wider than thorax at widest point, much wider than thorax at base, sides parallel, gradually rounded in posterior third, apices truncate, bispinose. Abdomen finely punctured, last ventral broadly rounded, prosternum one-third width of front coxa, between front coxae; much wider in proportion than in *atomarium*. Length 20 mm., width 6 mm.

Type labeled Paradise Arizona, H. H. Kimball collector, in collection of the author. The author is indebted to Mr. A. B. Champlain for the specimen.

ELAPHIDION (ANOPLIUM) DUNCANI n.sp.—Robust, cylindrical, clothed with recumbent cinereous hairs. Eyes coarsely granulate, antenna reaching to beyond middle of elytra, without spines, scape thick, clavate, second to fifth joints inclusive campanulate, sixth to eleventh flattened, second short, third longer than fourth, fourth shorter than fifth, fifth to eleventh of about equal length, eleventh shorter than tenth.

Thorax longer than broad, cylindrical, slightly constricted at base, a slight lateral and basal swelling each side, disk irregularly punctured and tuberculate, brunneus hairs longer than recumbent cinereous pubescence, arising from each tubercle, or arising at the base of the tubercle, median line smooth. Scutellum rounded, densely pubescent. Elytra wider than thorax, sides parallel, truncately rounded, devoid of spines, disk irregularly punctured, punctures becoming sparse and of smaller size toward apex, a brunneus hair longer than recumbent cinereous pubescence arising from each puncture; many of the basal punctures with small tubercles. Ventral surface shining, appressed cinereous pubescence arising from densely placed minute punctures, longer brunneus hairs arising from large sparsely placed punctures. Legs stout, first posterior tarsal joint longer than two following joints taken together. Length 16 mm., width 4 mm.

Type a female collected at Globe, Arizona, by Mr. D. K. Duncan, in author's collection. The species is named for the collector, who kindly gave me permission to retain the specimen.

The author is indebted to Mr. W. S. Fisher for kindly comparing the specimen with the Casey collection and the North American material in the National Museum collection. Also to Prof. H. C. Fall, who compared it with his material.

PHYSOCNEMUM ANDREAE Hald. Was found breeding in

dead cypress *(Taxodium distichum)* trees which had been killed by the encroaching sand dunes, at Cape Henry, Virginia. Trees up to two feet in diameter had been infested. The larvae make irregular galleries between the bark and the sapwood, excavating part of each as they travel. These mines are often two feet in length and are tightly packed with granular frass. When the larva is mature it enters the sapwood and prepares a pupal cell. The upper end of the cell leads to the bark and is tightly packed with granular frass. The adult in emerging has merely to clear away the frass and gnaw a hole through the thin bark. Pupal cells were found on September 27th.

A New Species of Holcocera Predaceous on Mealybugs. (Micro-lepidoptera).

By ANNETTE F. BRAUN, Cincinnati, Ohio.

Holcocera phenacocci n. sp.

Labial palpi gray, tip of second segment white, third segment a little over half the length of the second; basal segment of antenna rather slender, pecten grayish white. Head and thorax gray. Scales of the fore wings whitish, minutely blackish-tipped, so that the general color effect is gray; amongst these minutely tipped scales are scattered deeply black-tipped scales; the latter become more numerous toward the apex and form a rather clearly defined black line around the extreme tip of the wing; all other marks obsolete. Cilia pale gray, marked with paler whitish lines around the apex. Hind wings paler than the fore wings, cilia whitish, with a faintly fulvous tinge. Legs gray, tarsal segments white-tipped. Expanse: 11 mm.

Type (♀), Avalon, Catalina Island, California, August, 1926, received from Prof. T. D. A. Cockerell, who writes that on opening a box containing specimens of the mealybug, *Phenacoccus colemani* Ehrhorn, the moth flew out. It may reasonably be inferred that the larva is predaceous on the *Phenacoccus*.

A male in the writer's collection from Alameda County, California, rather doubtfully associated with this species, has the basal segment of the antenna excised, and the upper of the pair of spots usually present at the end of the cell in this genus, distinct.

ENTOMOLOGICAL NEWS

PHILADELPHIA, PA., APRIL, 1927.

The Situation of Systematic Entomology.

At the Third International Congress of Entomologists at Zürich, in July, 1925. Dr. Walther Horn, of Berlin, read a paper on the distressing situation of systematic entomology with especial reference to conditions in Germany and some proposals for reform. The immediate incitement to this essay was the question frequently put to him: Why has the situation become so difficult in recent years? A very brief resumé of his answers may be of interest outside of the country of which he particularly spoke. He writes:

Some believe that they can adduce many causes which should bear the blame—the decline of power on the part of many to devote time and money to entomological purposes and which has often compelled the sale of their collections and libraries; the difficulties of the modern dwelling problem; the greater need of a pecuniary return for work done; a certain withdrawal of interest from scientific activities to richer fields; the inclination to sport and, last not least, the collecting of postage stamps and much more of the same sort. I willingly grant that the stone is rolling more quickly by reason of these circumstances, but I do not believe that any one of them is primarily responsible for the conditions. . . . The two primary factors which have caused the relative regression of systematic entomology in Germany and in the largest part of the rest of the world and which, if a reformation does not take place, will irresistibly do more, are, in my opinion, 1. The fact that systematic entomology rested for the most part on the shoulders of amateurs, who bore the load so long until systematics has become so gigantic that it is impossible for this burden to be carried by those who can be active in it only as an avocation

through their love of the subject. . . . 2. The entire modern trend of zoology which, in Germany, partly unconsciously, partly automatically, has separated itself more and more from taxonomy to attack the great biological sciences with their vast complexes of problems.

He discusses the amateurs, the descriptive entomologists of this group, the museums, the academies, the universities, applied entomology, the scientific publishing facilities and bibliography as affecting systematic entomology, concluding with "twelve theses for the reform of entomology in Germany." One result was the resolutions adopted by the Congress published in the NEWS for March, 1926, pages 92-93. Another was the action taken by the Deutsches Entomologisches Institut., as stated in the NEWS for March of this year, page 77.

Announcement of an Experiment.

Dr. Wm. M. Wheeler in his "Social Life Among the Insects" says in substance: We think it a wonderful thing that a wasp of a certain species will select a caterpillar or spider of a certain species, never varying, sting it, store it away and lay an egg on it. Why always the same species of game for a certain species of wasp? Dr. Wheeler points out that we take up the life cycle at the wrong place. Start with the egg. It hatches on a certain species of caterpillar. The grub eats the caterpillar and the smell and taste are firmly implanted in its memory. The grub metamorphoses into a wasp, but the nervous system does not undergo radical change. The wasp probably remembers the smell and taste of the grub it ate and searches until it finds another that answers the same description upon which to lay her egg. The particular species of caterpillar is not vital to the wasp since the egg can be removed and placed on a caterpillar of another species and does very well.

To carry Dr. Wheeler's thought one step further:

Let us transfer eggs laid by various wasps on specific caterpillars or spiders to different game, raise the wasp in each case and then give her the choice between the two species of game: The one she was raised on and the one her mother was raised on. If she selects the species she was raised on and

ignores the one her mother selected it is proven that memory lasts through the metamorphosis to a startling degree. This point is a very interesting one academically. The nearest experiment I have heard of was on food plants of Lepidoptera and I have no further literature on the point.

The practical application of this experiment which might well prove of great economic value would be this:

Transfer eggs of wasps laid on harmless or at least not economically harmful caterpillars or spiders to caterpillars that do enormous crop damage and "train" the wasps to search out these caterpillars. The food supply is there if only we can make the wasp overcome its memory of the food of its forefathers by substituting memory of the pest we want destroyed.

Dr. Paul Gilmer of the U. S. Biological Laboratory at Wichita now working on the apple-destroying coddling moth has kindly offered to share his equipment with me this Summer to attempt to carry out this experiment.

This is published in hopes that others may apply this principle to other pests. An attempt elsewhere might succeed when conditions here might prevent success.

CHAPMAN GRANT, Major, U. S. Infantry.

Entomological Literature

COMPILED BY E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published.

All continued papers, with few exceptions, are recorded only at their first installments.

Papers of systematic nature will be found in the paragraph beginning with (N). Those pertaining to Neotropical species only will be found in paragraphs beginning with (S). Those containing descriptions of new forms are preceded by an *.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

Papers published in the Entomological News are not listed.

4—Canadian Ent., Guelph. **10**—Proc., Ent. Soc., Washington. **11**—Deutsche Ent. Zeitschrift, Berlin. **12**—Jour. of Economic Ent. **14**—Ent. Zeitschrift, Frankfurt a. M. **17**—Ent. Rundschau, Stuttgart. **18**—Intern. Ent. Zeitschrift, Guben. **21**—The Entomologist's Record, London. **24**—Ann. Soc. Ent. France. **25**—Bull. Soc. Ent. France.

27—Boll. Soc. Ent. Italiana. 33—Bull. et An., Soc. Ent. Belgique. 39—The Florida Entomologist. 41—Bull. Soc. Ent. Suisse. 45—Zeit. f. Wissenschfl. Insektenbiol., Berlin. 51—Notulae Ent., Helsingfors. 59—Encyclopedie Entomologie, Paris. 69—Comptes R., Acad. Sci. Paris. 77—Comptes R., Soc. Biologie, Paris. 107—Biologisches Zentralblatt. 113—Jour. Agric. Research, Washington. 114—Ann-Epiphyties, Paris. 125—Verhandl. Zool.-Bot. Ges., Wien. 127—Archiv f. Entwickl. der Organis., Berlin. 130—Ohio, Jour. Sciences, Columbus. 131—Ent. Blätter, Berlin. 133—Jour. Experimental Zool. 141—Amer. Naturalist. 151—Oc. Pap. Boston Soc. Nat. Hist. 154—Zool. Anzeiger, Leipzig.

GENERAL.—Bethune-Baker, G. T.—Note on Dr. Verity's method of nomenclature. A sub-species, a race, a local form or a form! What are they? (21, xxxix, p. 10-11.) **Bremer, H.**—Ueber die tagezeitliche konstanz in schlüpftermine der imagines einiger insekten und ihre experimentelle beeinflussbarkeit. (45, xxi, p. 209-216.) **Case, E. C.**—Environment of tetrapod life in the late paleozoic of regions other than North America. (Carnegie Inst. Pub., No. 375, 211 pp., ill.) **Caullery, M.**—L'histoire des fourmis de Réaumur. (Revue Sci., Paris, lxv, p. 65-70, ill.) **Chamberlin, W. J.**—The army of silent tree killers. (Am. Forest. & Forest Life, Mar. 1927, p. 141-144, ill.) **Ferrière, C.**—La phorésie chez les insectes. (41, xiii, p. 489-496.) **Gibson, A.**—International entomology—retrospective and prospective. (12, xx, p. 47-62.) **Grassi, B.**—Commemorazione. (Atti dei Lincei. Mem. Cl. Sc. Fis., ii, p. xix-lxiii, port.) **Graves, P. P.**—Species, subspecies and race. (21, xxxix, p. 22-25.) **Greer, T.**—Nomenclature. (21, xxxix, p. 28-29.) **Haeckel, E.**—Dr. Roger Verity and nomenclature. (21, xxxix, p. 29-30.) **Howard, L. D.**—The needs of medical entomology. (141, lxi, p. 173-179.) **Manter, J. A.**—Charts and forms as aids in teaching economic entomology. (12, xx, p. 76-79.) **Nagel, P.**—Das rätsel der "trilobitenlarve." (131, xxii, p. 173-179, ill.) **Robinson, W.**—Water binding capacity of colloids a definite factor in winter hardiness of insects. (12, xx, p. 80-88, ill.) **Rogers, W. H.**—Lycaenidae and ants. (Vict. Nat., Melbourne, xliii, p. 276.) **Sibley et al.**—A preliminary biological survey of the Lloyd-Cornell reservation. Insect and some other invertebrates. (Bull. Lloyd Libr., No. 27, p. 87-247, ill.) **Tams, W. H. T.**—The classification of varieties and the application of the terms in present use.

(21, xxxix, p. 25-26.) **Tillyard, R. J.**—The principles of biological control in economic entomology. (Nature, cxix, p. 202-205.) **Trouvelot, B.**—Recherches de biologie appliquée sur la teigne des pommes de terre & ses parasites. . . Etude des conditions de pullation des insectes. (114, x, p. 1-132, ill., 1924.) **Turner, H. J.**—Notes on nomenclature. (21, xxxix, p. 11.) **Turner, H. J.**—Nomenclature. (21, xxxix, p. 30.) **Warren, B. C. S.**—Suggestions on nomenclature. (21, xxxix, p. 20-22.) **Wheeler, G.**—Note on varietal nomenclature. (21, xxxix, p. 27-28.) **Wightman, A. J.**—Notes on nomenclature. (21, xxxix, p. 26-27.)

ANATOMY, PHYSIOLOGY, ETC.—Agar, W. E.—The regulation of behaviour in water-mites and some other arthropods. (Jour. Comp. Psych., vii, p. 39-74.) **Campbell, F. L.**—Notes on silkworm nutrition. (12, xx, p. 88-90.) **Dubois, R.**—La torpeur nymphale et l'autonarcose carbonique. A propos d'une note de P. Portier et de Mlle de Rorthays sur "La composition chemique de l'atmosphère interne des cocons de Bombyx mori." (77, xcvi, p. 263-265.) **Handlirsch, A.**—Handbuch der zoologie. Insecta. Bd. 4, Lief. 4, p. 403-448, ill. **Harrison, J. W. H.**—Experiments on the egg-laying instincts of the sawfly, Pontania salicis, and their bearing on the inheritance of acquired characters, . . . (Proc. Roy. Soc., London, Biol. Sci., (B), ci, p. 115-126.) **Huxley, J. S.**—Discontinuous variation and heterogony in Forficula. (Jour. Genet., London, xvii, p. 309-327, ill.) **Lévy, R.**—Intoxication de l'ecrevisse par les venins de deux myriapodes chilopodes. Lithobius forficatus et Cryptops anomalans, p. 256-257. Action antitoxique du sang de Lithobius forficatus vis-a-vis du venin de la même espéce et vis-a-vis du venin de Cryptops anomalans, p. 258-259. (77, xcvi.) **Mavor, J. W.**—A comparison of the susceptibility to X-rays of Drosophila melanogaster at various stages of its life-cycle. (133, xlvii, p. 63-83.) **Mohr, O. L.**—The second chromosome recessive hook bristles in Drosophila melanogaster. (Hereditas, Lund, ix, p. 169-179.) **Rostand, J.**—Sur la greffe céphalique chez les insectes. (25, 1926, p. 237-238.) **Smirnov u. Zhelochovtsev.**—Einwirkung der nahrungsmenge auf die merkmale von Drosophila funebris. (154, lxx, p. 58-64, ill.) **Teodoro, G.**—Un metodo rapido e semplice per mettere in evidenza il secreto serico nel dotto escretore del seritterio. (27, lix, 2-4, ill.) **Timoféeff-Ressovsky, H. A. u. N. W.**—Genetische analyse einer freilebenden Drosophila melanogaster population. (127, cix,

p. 70-109, ill.) **Vignon, P.**—Sur la nervation primitive de l'aile des insectes et sur les changements que les orthoptères ont apportés au plan originel. (69, clxxxiv, p. 234-236, ill.) **Weber, H.**—Das problem der gliederung des insektenthorax. Die stigmenstellung. (154, lxix, p. 311-332, ill.) **Weed, A.**—Metamorphosis and Reproduction in apterous forms of Myzus persicae, as influenced by temperature and humidity. (12, xx, p. 150-157, ill.)

ARACHNIDA AND MYRIOPODA.—Baerg, W. J.—Tarantulas as pets. (Nature Mag., Mar. 1927, p. 173-176, ill.) **Brazil e Vellard.**—Contribuicao ao estudo do veneno das aranhas, 2d Mem. (Mem. Inst. Butantan, Sao Paulo, iii, p. 243-299, ill.) **Emerton, J. H.**—Spiders. (Bull. Boston Soc. Nat. Hist. no. 42, p. 3-8, ill.) **Giltay, L.**—La métamérisation du sternum des araignées. (33, lxvi, p. 322-324, ill.) **Hiley, H. H.**—Development of the male gonopods and life history studies of a polydesmid millipede. (130, xxvii, p. 25-43, ill.) **Kastner, A.**—Der bau des weberknechtes. (Mikro. für Naturf., Berlin, v, p. 41-44, ill.)

THE SMALLER ORDERS OF INSECTA.—Klingstedt, H.—Beobachtungen über die biologie, insbesondere das eierlegen von Limnophilus decipiens (Trich.) (51, vi, p. 118-120.) **Vignon, P.**—Sur les origines ancestrales des libellules. (69, clxxxiv, p. 301-303, ill.)

(N) ***Ewing, H. E.**—Descriptions of new gen. and sps. of Mallophaga, together with keys to some related genera of Menoponidae and Philopteridae. (Jour. Wash. Ac. Sc., xvii, p. 86-96.) ***McDunnough, J.**—A new Ephemerella from Illinois (Ephemeroptera). (4, lix, p. 10.) ***Needham, J. G.**—A baetine mayfly nymph with tusked mandibles. (4, lix, p. 44-47 ill.) ***Watson, J. R.**—New Thysanoptera from Florida. (39, x, p. 60-62.)

(S) ***Navas, R. P. L.**—Neue insekten (Neuropt.). (11, 1926, p. 428-431, ill.) ***Watson, J. R.**—A new Liothrips from Santo Domingo. (39, x, p. 59-60.)

ORTHOPTERA.—Chopard, L.—Sur l'existence de tympans fémoraux chez certains Gryliides. (25, 1926, p. 202, ill.) **Hood, J. D.**—Gryllus domesticus, as a household pest in Rochester, N. Y. (Gryllidae). (10, xxix, p. 22-23.)

HEMIPTERA.—Ekblom, T.—Morphological and biological studies of the Swedish families of Hemiptera-Heteroptera. (Zool. Bidrag, Uppsala, x, p. 31-179, ill.)

Knight, H. H.—Notes on the distribution and host plants of some North American Miridae. (4, lix, p. 34-44.) **Mallach, N.**—Bemerkungen zur lebensweise von Aphelocheirus montandoni (Naucor.). (11, 1926, p. 426-427, ill.) **Snodgrass, R. E.**—The head and mouth parts of the Cicada. (10, xxix, p. 1-16, ill.)

(N) ***Beamer, R. H.**—New species of Erythroneura (Cicadellidae). (4, lix, p. 30-31.) **Hottes, F. C.**—A note concerning the date of publication of two aphid genera. (Proc. Biol. Soc. Wash., xl, p. 47-48.) ***Knight, H. H.**—Descriptions of twelve n. sps. of Miridae from the Dist. of Columbia and vicinity. (Proc. Biol. Soc. Wash., xl, p. 9-18.) **Morrison, H.**—An apparently new sugar-cane mealybug. (113, xxxiii, 757-759 pp., ill.) **Tissot, A. N.**—The identity of the new citrus aphid, Aphis spiraecola. (39, x, p. 56-57.) **Vayssière, P.**—Contribution a l'étude biologique et systematique des Coccidae. (114, xii, p. 197-382, ill.)

(S) ***Larrousse, F.**—Etude biologique et systematique du genre Rhodnius (Reduviae). (Ann. de Parasitalogie Hum. et Comp., v, p. 63-88, ill.)

LEPIDOPTERA.—Crowell, M. F.—The European corn borer. The relation of the larvæ to submergence. (New Ham. Agric. Expe. Sta. Techn. Bull. 30, 19 pp., ill.) **Goldschmidt u. Fischer.** Erblicher gynandromorphismus bei schmetterlingen. (127, cix, p. 1-13, ill.) **Goldschmidt u. Katsuki.** Erblicher gynandromorphismus und somatische mosaikbildung bei Bombyx mori. (107, xlvii, p. 45-54, ill.) **Harrison, J. W. H.**—Melanism in the lepidoptera and its evolutionary significance. (Nature, London, cxix, p. 318.) **Hayward, K. J.**—Miscellaneous notes from Argentina. (21, xxxix, p. 18-20.) **MacAndrews, A. H.**—Biological notes on Zeiraphera fortunana and Ratzeburgiana (Eucosmidae). (4, lix, p. 27-29.) **Muller-Rutz, J.**—Weitere genitaluntersuchungen an kleinschmetterlingen. (41, xiii, p. 477-479.) **Reub, T.**—Ueber funktion der Sexualarmaturen bei lepidopteren (Rhop.) und die resultierende weiterentwicklung meines versuchten natürlichen systems der Dryadinae. (11, 1926, p. 431-440, ill.) **Stearns, L. A.**—The hibernation quarters of Laspeyresia molesta. (12, xx, p. 185-190, ill.) **Strand, E.**—Catalogue des microlépidoptères, que j'ai decrits jusqu'a l'année 1926. (18, xx, p. 371.) **Strand, E.**—Liste des rhopaloceres et grypoceres exotiques décrits dans

mes travaux jusqu'en 1926. (Bul. Soc. Zool., France, li, p. 397-418.) **Völker, U.**—Mitteilungen ueber das aufsuchen der raupen von für die jenaer kalkberge charakteristischen noctuiden. (**18,** xx, p. 378-384.)

(N) ***Barnes & Benjamin.**—Notes and new species. (**4,** lix, p. 4-10.) ***Bottimer, L. J.**—Notes on some lepidoptera from eastern Texas. (Jour. Agric. Res. xxxiii, p. 797-819, ill.) **Die Gross-Schmetterlinge der Erde.**—Fauna Americana. Lief. 179, 180. Vol. vii, p. 181-204. Von M. Draudt. ***McDunnough, J.**—Two new Canadian tortricids. (**4,** lix, p. 33-34, ill.)

(S) ***Boy, H. C.**—Eine neue Agrias-form. (**18,** xx, p. 344.) ***Pic, M.**—Trois hétéromères nouveaux. (**25,** 1926, p. 203-204.) **Schade, F.**—Entomologische skizzen aus Paraguay. Ceratocampiden. (**17,** xliv, p. 4.) ***Stichel, H.**—Vorarbeiten zu einer Revision der Riodinidae (Erycinidae). (**11,** 1926, p. 385-400.)

DIPTERA.—Chittenden. F. H.—Tritoxa flexa, the black onion fly (Ortalidae). (**4,** lix, p. 1-4, ill.) **Curran, C. H.**—Note on the identity of Conops brachyrhynchus. (**4,** lix, p. 32.) **Greene, C. T.**—The larva and puparium of Oedematocera dampfi. (**10,** xxix, p. 18-19, ill.) **Jancke, O.**—Ueber die brutpflege einiger malakostraken. (Arch. f. Hydrob., Stuttgart, xvii, p. 678-698, ill.) **Johnson, C. W.**—The infestation of bluebirds' nests by Protocalliphora. (Bull. Northeast. Bird-Band Assoc. iii, p. 1-3.) **Lundblad, O.** Zur kenntnis der flöhe. (**154,** lxx, p. 7-26, ill.) **O'Kane, W. C.**—Black flies in New Hampshire. (New Ham. Agric. Exper. Sta. Tech. Bull. 32, 23 pp., ill.) **Mercier et Villeneuve.**—Les muscles gubernateurs de la lunule chez Eristalis tenax. Dimorphisme sexual. (**69,** clxxxiv, p. 299-301, ill.) **Pavlovskij, E.**—Zur vergleichenden anatomie des männlichen geschlechtsapparats der flöhe. [in Russian] (Revue Russe Ent. xx, p. 5-15, ill.) **Rogers, J. S.**—Notes on the biology of Atarba picticornis. (Tipulidae.) (**39,** x, p. 49-52, ill.) **Roubaud et Colas-Belcour.**—Action des diastases dans le determinisme d'eclosion de l'oeuf chez le moustiques de la fièvre jaune (Stegomyia fasciata). (**69,** clxxxiv, p. 248-249.)

(N) **Aldrich, J. M.**—Notes on the dixiid genera Cordyligaster and Eucordyligaster. (Jour. Wash. Ac. Sci., xvii, p. 84-86.) ***Alexander, C. P.**—The crane-flies (Tipulidae) of New England: Second Supplementary list. (**151,** v, 223-231 pp.) ***Curran, C. H.**—The species of the Tachinid

genera related to Lydella, as represented in the Canadian national collection. (4, lix, p. 11-25.) *Curran, C. H.—A new species of Mallochiella (Milichiidae). (4, lix, p. 49-50.) Shannon, R. C.—Notes on and descriptions of syrphid-flies of the subfamily Cerioidinae. (Jour. Wash. Ac. Sci., xvii, p. 38-53.) Twinn, C. R.—Mosquitoes from Baffin Land. (4, lix, p. 47-49, ill.)

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OBITUARY.

I have received a letter from Mrs. Bezzi, announcing the death of her husband, Professor MARIO BEZZI, which occurred suddenly on January 14, 1927. He was about 59 years old. This is a great loss to Dipterology, especially as in his new position he expected to be able to do more than ever on the subject. J. M. ALDRICH, United States National Museum.

The *Journal of the New York Entomological Society* for December, 1926, contains an announcement of the death of Mrs. ANNIE TRUMBULL SLOSSON, on October 4, 1926, at her home, 26 Gramercy Park, New York City, followed by an appreciation of her work, entomological and otherwise, by William T. Davis. If Dr. Henry Skinner were alive, he, better than anyone else connected with the NEWS, could have expressed our regrets at the passing of Mrs. Slosson, just as he paid tribute to her living as "A Loved and Respected Entomologist," in our number for December, 1919. But Dr. Skinner crossed over before Mrs. Slosson and it devolves upon us to say that we too were helped by her collections and the free use of her material and were cheered and amused by her breezy letters. Here are a few sentences from one dated "February 28, '21," after a long gap in our correspondence: "I recognized the old familiar handwriting at once! I am very well now—for an old woman. Alas, my one *dilatatus* is of the inferior sex, a male, poor thing. And it is labelled simply 'Florida.' But I think you may be right about its being taken at S[uwanee] Springs, for I usually labelled my Ch[arlotte] Harbor finds more definitely. We shall never know! It is good to hear from you again. .....has gone and got engaged, infant that he seems to me. You will be surprised to hear that his choice is the 'loveliest creature ever made.' Ah, what it is to be young and have dreams."

It so happens that the same number of the *Journal* (page 370) mentions the receipt by the American Museum of Natural History of Mrs. Slosson's collection about November, 1925.

P. P. CALVERT.

MAY, 1927

ENTOMOLOGICAL NEWS

Vol. XXXVIII No. 5

JAMES H. B. BLAND,
1833-1911

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PHILADELPHIA, PA.
THE ACADEMY OF NATURAL SCIENCES.
Logan Square

Entered at the Philadelphia, Pa., Post Office as Second Class Matter.
Acceptance for mailing at the special rate of postage prescribed for in Section 1103,
Act of October 3, 1917, authorized January 15, 1921.

ENTOMOLOGICAL NEWS

published monthly, excepting August and September, by The American Entomological Society.

Philip P. Calvert, Ph.D., Editor; E. T. Cresson, Jr., Associate Editor.

Advisory Committtee: Philip Laurent, J. A. G. Rehn, Chas. Liebeck, J. Chester Bradley, Ph.D., Frank Morton Jones, John C. Lutz, Max Kisliuk, Jr.

The subscription price per year of ten (10) numbers is as follows:

United States and possessions . .	$3.00
Canada, Central and South America .	3.15
Foreign	3.25

Single copies 35 cents

ADVERTISING RATES: Full width of page. Payments in advance.

One issue, 1 in.,	$ 1.20,	2 in.,	$ 2.40,	half page,	$ 4.00,	full page,,	$ 8.00
Ten issues "	11.00,	"	20.00,	"	35.00,	"	70.00

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Of The American Entomological Society will be held at 7.30 o'clock P. M., on the fourth Thursday of each month, excepting June, July, August, November and December, and on the third Thursday of November and December.

Communications on observations made in the course of your studies are solicited; also exhibits of any specimens you consider of interest.

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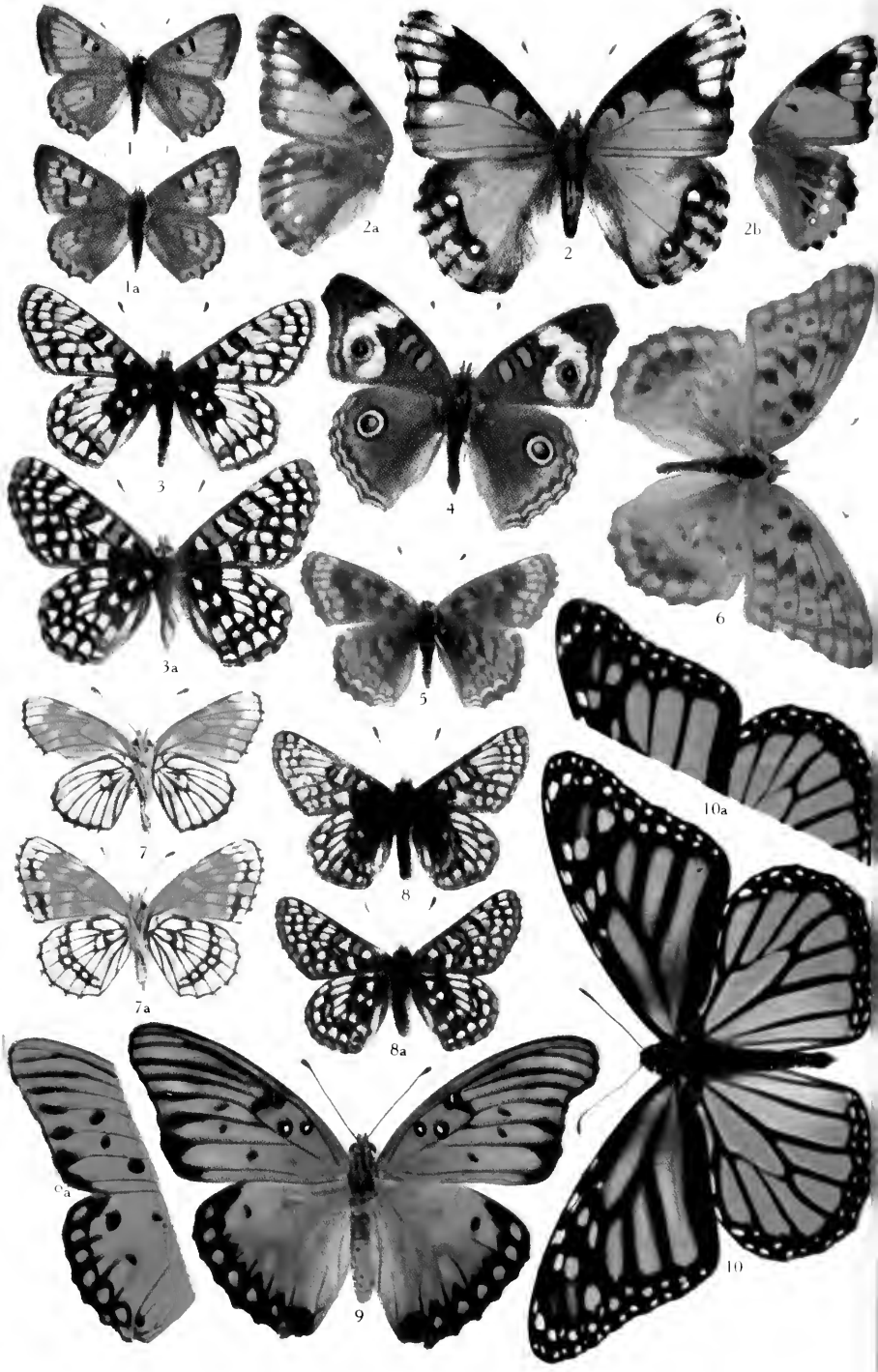

NEW RHOPALOCERA—GUNDER.

ENTOMOLOGICAL NEWS

VOL. XXXVIII MAY, 1927 No. 5

New Transition Forms or "abs" and their Classification (Lepid., Rhopalocera).

By J. D. GUNDER, Pasadena, California.

(With Plate II)

With reference to classification of Lepidoptera in America, I believe we consider a *species* as a prime group of individuals reproducing their own in kind. When a segregated nearly group or a separate far-away group is discovered whose individuals are constantly similar to, yet consistently atypical of, a prenamed group, we term this newer colony a *race*. The words race, variety and perhaps subspecies seem to be identical. Our modern check lists have shunned the old phrase subspecies; variety is somewhat vernacular and used too often in the popular collecting sense of signifing anything different, while race is definitely conclusive and self-explanatory, hence it has a more justifiable acceptance for scientific record and parlance. If existing along with and bred within a species or within a race, are found frequently and continually, deviating individuals which are, as a rule, practically counterparts of one another, then these kinds are called *forms*. Forms may be seasonal, sexual and I might say, evolutionally fixed. Individuals which occur irregularly within a species or within a race and which by change of color or by change of pattern graduate with persistent characteristic similarity from near parental type up to definitely limited variation away from the parental type are called *transition forms*, or are more generally known as "aberrations" or "abs."

The word "aberration" and its slang concept "sport" have always seemed to me to be early entomological misnomers. Their position in the classification of Lepidoptera is certainly not generally understood and their continued long usage, in place of the phrase "transition form," has led some collectors to

the belief that such specimens are like "freaks" of a "never-to-occur-again" type; whereas, "freaks" have a very different and definite status compared to transition forms. "Freaks" are rarely occurring malformed specimens which depart in some striking manner from their co-constituents due to harmful external agencies. For example, "freaks" are such specimens as: dwarfs (*Cyn. cardui minor* Ckll.); venation malformations (*Dryas cybele bartschi* Reiff. and *Dryas coronis baroni* Edw.); chrysalis burns (see note under No. 11 specimen described herewith); monstrosities and all other ill formations due to a host of unusual causes. Such specimens should not be named and have no place except it may be in the synonymy of their kind for record. Perhaps some day a "butterfly medical book" will appear to cure all ails for the little dears, so at that remote time, a classification of "freaks" will be in order!! Regarding *hybrids* it has been the custom to give names designating the different states of relationship in successive generations by graphically and numerically demonstrating the relationship of two parental lines. The scientific value of these records, made mostly among moths, remain to be seen, as more has been done in Europe that in America with these experiments. Very few hybrids exist by name in our catalogues of diurnals and these will probably be left in *statu quo* for some time to come.

Transition forms or "abs." are of great biological significance. By the frequency of their appearence, one genus may be said to be in a more rapid state of evolutionary change than another. By the aberrant design or the cycle of their color transition, one may foretell what their future witholds or what their past has hitherto left unveiled. Work on these forms can hardly be said to have commenced and the real need at the present time is to classify them into like groups. This would save a piling up of names in the future, fix present types, and at the same time form a basis of real indentification.

Regarding "ab." names. At the present time they are named by their degree of aberrancy; for example, if one row of spots on a specimen was absent, that individual received a name; if

two rows were absent on another like specimen, it also was given a name; if all the rows of spots were gone on a third specimen, that too was given a title. It is easy to see that all these specimens should be listed under *immaculism*, for they all vary in a like manner, only in different amounts, by degrees. Demonstrating my contention still further: if a specimen was partly black-shaded, on either wings, it received a name; if the upper wings only were all black on another, it got a name; if the lower wings only on still another were all black, it too was christened; and if again still another like specimen was found which was black all over, it was thought quite right to give it a special designation. But all these specimens should fall under one heading, to wit: *melanifusism*, and the name of the first named specimen, regardless of its degree of aberrancy, should, by right of nomenclatorial priority, represent this grade of transition forms, with all other names following in its synonymy. The *Nymphalinae* group show many "abs." listed and under proper classification these names will have to be dealt with in the future something like the following *Euphydryas* species, to wit:

Present Listing—

EUPHYDRYAS

No. 204 chalcedona *(Dbldy. & Hew.)*
ab. fusimacula *(Barnes)*
grundeli (Cool.)
ab. lorquini *(Oberth.)*
suprafusa Comst.
ab. supranigrella *Comst.*
ab. fusisecunda *Comst.*
ab. hemimelanica *Comst.*
ab. mariana *(Barnes)*
ab. omniluteofusca *Gunder*
ab. hemiluteofusca *Gunder*

Future Listing

EUPHYDRYAS

No. 204 chalcedona *(Dbldy. & Hew.)*
tr. form omniluteofusca *Gunder*
hemiluteofusca Gunder

tr. form fusimacula *(Barnes)*
lorquini (Oberth.)
grundeli (Cool.)
suprafusa Comst.
fusisecunda Comst.
tr. form mariana *(Barnes)*
supranigrella Comst.
hemimelanica Comst.

I find that all transition forms definitely divide into two general divisions, those which have "Change of color" and those which have "Change of pattern." There must have been "color" before "pattern," so I place it first, and arrange the sequence of order beginning with black in one and ending with black in the other. Thus:

	1. melanism *(to black)*
Change of color—	2. chromatism *(to any spectrum color)*
(pigmental)	3. albinism *(to white)*
	4. pellucidism *(to no color, iridescent)*
	5. immaculism *(lacking design)*
	6. Albifusism *(white radiation)*
Change of pattern—	7. chromatifusism *(color radiation)*
	8. melanifusism *(black radiation)*

The fact of color is the main thought to be kept in mind in an "ab." classification scale. Insects at the equator have practically acquired all the pigmental spectrum colors, while those in our temperate zone are either losing or gaining their share; so color change is a relatively frequent phenomenon among our American diurnals, as is maculation change, though it is less generally understood, there being so many hereditary complications. I have before me upper and under side photographs of 95% of the listed American "ab." types and I find they all fit easily into the above classification. No one species on earth at the present time can have representatives in all eight of the above divisions; even our most aberrant and commonly collected species among the *Euphydryas* can have at the most only three of four, possibly five, representatives in the cardinal grades. Each genus varies in this regard.

The numbers of the figures on Plate II correspond to the numbers placed in front of the species in the text. The size of all the specimens on the plate has been slightly reduced. I have adopted the abbreviation *tr. form*, for transition form, in place of "ab." not only for all the above given reasons, but because it gives to these new specimens and their predecessors an entomological rating more in accord with their true position; a rank by name which they have not held heretofore.

1. **Lycaena editha** Mead (fig. 1a, ♀), **vanduzeei** ♀ nov. tr. form (fig. 1).

Upper side. Primaries: normal, except for total absence of submarginal row of round black spots. Secondaries: as in primaries, this submarginal row is lacking except for a remnant or spot of reduced size opposite cell.

Under side. Normal. Maculation unchanged.

Classification: Transition form; immaculism; well developed degree.

Data: Holotype ♀; expanse 30mm.; Deer Park, Placer County, California; Type in coll. of the Calif. Acad. of Science, San Francisco, Calif. Named in honor of E. P. Van Duzee, San Francisco.

2. **Cynthia virginiensis** Dru., **simmsi** ♀ nov. tr. form (fig. 2).

This specimen is a parallel of *Cyn. cardui*, tr. form *elymi* Ramb. (half-fig. 2a) and of *Cyn. carye*, tr. form *muelleri* Letch. (half-fig. 2b) in that the region on both upper and under sides of the primaries near the costal margin from the cell is dark with apical white spots fused inward and the lower half of the wing above the inner margin is a clear, normal, red-brown color and free of the usual black designs. The veins of the upper side secondaries are more heavily darkened, especially through the limbal area; the round colored spotting is somewhat blurred; and the lines adjacent to the outer margin indistinct or lacking. On the under side of the secondaries, the ground color of the basal and discal areas is entirely blackish with only the white veins showing, very little of the complicated lattis-work designs in evidence; the two round spots are normal, perhaps somewhat blurred; the lines parallel and near to the outer margin absent or blended.

Classification: Transition form; melanifusism; degree very near final.

Data: Holotype ♀; expanse 52+mm.; Montreal, Canada, Sept. 12, 1913, (H. M. Simms); in coll. of H. M. & F. H. Simms, Stourbridge, Wor., England, to be donated as a gift to the British Museum, London, as its permanent future depository. One paratype ♀, (a lesser degree of *melanifusism*); Raleigh, North Carolina, 1898; in coll. of Am. Mus. of Nat. Hist., N. Y. Named for Mr. Harold M. and F. H. Simms, Stourbridge, Wor., England.

Note: The holotype specimen was mentioned, but unnamed, by Mr. H. M. Simms in the Ent. News, Vol. XXV, p. 33, 1914.

3. **Euphydras chalcedona** D. & H., race **olancha** Wright (fig. 3a, ♀), **malcolmi** ♀ nov. tr. form (fig. 3).

Rows of white spots on both primaries and secondaries of both wings elongated and fused or run-together through their respective interspaces, especially in the discal areas. Similar, for example, to *Euphy. phaeton*, tr. form *superba* Stkr. or *Euphy. chalcedona*, tr. form *fusimacula* Barnes, only in a less aberrant degree.

Classification: Transition form; albifusism; semi-final degree.

Data: Holotype ♀; expanse 44mm.; Casa Diablo, Mono County, California, June 22, 1925; in coll. of Author. Named for Mr. Geo. Malcolm, Los Angeles, Calif.

4. **Junonia coenia** Hbn., **wilhelmi** ♂ nov. tr. form (fig 4).

Typical specimens generally have two spots or ocelli on the upper side of the secondaries. This specimen only has one. The upper spot remains while the lower spot has entirely disappeared, otherwise the specimen is normal on both sides.

Classification: Transition form; immaculism; typical specimens are so constant regarding disappearance of spotting (not irregular spotting) that it is doubtful if a much further degree of immaculism will occur.

Data: Holotype ♂; expanse 44mm.; Los Angeles, California, Sept. 15, 1910, (Schrader); in coll. of Author. A paratype ♀; Los Angeles, Calif., Oct. 15, 1913, (Schrader);

in coll. of Los Angeles Museum, Los Angeles, Calif.; this paratype ♀ is well illustrated in the Bull. So. Calif. Acad. of Sci., Sept.-Dec. issue, 1926, pl. 1, fig. 9. Named in honor of Mr. Wilhelm Schrader of Los Angeles who has been experimenting with the *Junonia* group for years.

5. **Phyciodes orseis** Edw., **edwardsi** ♀ nov. tr. form (fig. 5).

Upper side. Discal and basal areas of both wings melanic inward from submarginal row of roundish red-brown spots (this is the first row following the lunate row at outer margin); reddish cell spotting slightly in evidence through this darkened area.

Under side. Normal, except for slight fusing of color through inner-half area on primaries.

Classification: Transition form; melanifusism; semi-advanced degree.

Data: Holotype ♀; expanse 38mm.; labeled California, no date given; in coll. of Wm. Barnes, Decatur, Illinois. Named in honor of W. H. Edwards.

Note: Normal specimens of this species, together with this tr. form (unnamed) are shown in Comstock's "Buttertlies of California."

6. **Euptoieta claudia** Cram., **dodgei** ♀ nov. tr. form (fig. 6).

Upper side. Primaries: cell spots enlarged and wholly black; row of normally lighter colored spots through center discal area become row of corresponding black shaded spots; lunate row and lines at outer margin fused black and not clearly cut. Secondaries: lines at outer margin which normally form clear cut lunate spots become broad, forming fused row of softly shaded spots; just following these, an area of dark fuscous which formerly comprised the position of the round black spots of normal specimens; all spotting of inner-half slightly blurred.

Under side. Primaries especially correspond with the change occurring on the reverse side, in having the cell spots entirely black and with the black row through the discal area. The maculation of the secondaries is slightly blurred, otherwise normal.

Classification: Transition form; melanifusism; of a sufficiently advanced degree to show the tendency of this type which is rare for such a constant species.

Data: Holotype ♀; expanse 60mm.; near Scribner, Dodge County, Nebraska, July, 1885; type in the coll. of Mr. E. A. Dodge, Santa Cruz, Calif., who at a later date may deposit same in the Acad. Coll. at San Francisco. I am pleased to name this specimen in honor of Mr. Dodge of Santa Cruz.

7. **Lemonias alma** Stkr. (fig. 7a, ♀), **koebelei** ♀ nov. tr. form (fig. 7).

Corresponds precisely with *Lem. fulvia*, tr. form *sinefascia* Wms. in lacking all transverse submarginal black lines on under side primaries and submarginal black spot-enclosing band on under side secondaries; however, the cell and basal area maculation remains the same except for absence of heavy black line reaching costal margin on under side secondaries. On the upper side the specimen is normal except for a slight suppression of white maculation throughout the yellow-brown color.

Classification: Transition form; immaculism; degree final as in *Lem. leanira*, form *obsoleta* Hy. Edw. for example.

Data: Holotype ♀; expanse 36mm.; Argus Mts., Inyo County, California, April, 1891; in Koebele coll. at Acad. of Sci., San Francisco, Calif. Named for the late Mr. Koebele of San Francisco.

Note: Regarding the species, it is to be remembered that *Lem. alma* Stkr. has the sub-basal black band, whereas *Lem. fulvia* Edw. is without this maculation. Their aberrations therefore differ in this respect.

8. **Euphydryas bernadetta** Leuss. (fig. 8a, orig. ♂ paratype ♯9), **leussleri** ♂ nov. tr. form (fig. 8).

Rows of white spots on both primaries and secondaries of both wings elongated and fused or run-together through their respective interspaces, especially in the discal areas. Similar, for example to *Euph. phaeton*, tr. form *superba* Stkr. or *Euph. chalcedona*, tr. form *fusimacula* Barnes, only in a less aberrant degree.

Classification: Transition form; albifusism; semi-final degree.

Data: Holotype ♂; expanse 37mm.; near Harrison, Sioux County, Nebraska, June 5, 1919; in coll. of Mr. R. A. Leussler, Omaha, Neb. Named in honor of Mr. Leussler who first discovered this species.

9. **Dione vanillae** L., race **insularis** Mayn. (part-fig. 9a, ♀), **fumosus** ♀ nov. tr. form (fig. 9).

Occasionally specimens occur, more often among females, where the color of the wings is a decided brown instead of the normal yellow reddish-brown. This pigmental change of color is more noticeable on the primaries and outer-half of secondaries; the inner-half of the secondaries along the costal margin retains the normal shade with perhaps a more reddish tint. All maculation remains unchanged.

Classification: Transition form; chromatism (color change from red-brown to brown, the next stage of which would be to black).

Data: Holotype ♀; expanse 77mm.; Los Angeles, Los Angeles County, California, Sept. 15, 1910; in coll. of Author.

Note: Western specimens seem to have this color change more than those from the East. Seitz in his Am. text says some So. Am. specimens are seasonal forms in this regard.

10. **Danaus menippe** Hbn. (cut-fig. 10a, ♀), **americanus** ♀ nov. tr. form (fig. 10).

Upper side. Distinguished from typical specimens on the primaries by having the veins very broadly black practically enclosing their interspaces. The ground color of both wings is a more yellow-brown, instead of red-brown and on the primaries this ground color is darker, being shaded over lightly with black scaling. On the secondaries, the ground color is generally lighter through the basal area and adjacent to the inner margin.

Under side. Ground color of primaries darker. Maculation unchanged.

Classification: Transition form; melanifusism; degree evidently near final, paratypes and others examined being similar.

Data: Holotype ♀; expanse 90mm.; Sunny Glen Ranch, Brewster County, Texas (Poling), July, 1926; in coll. of Author. One paratype ♀; Evanston, Illinois, 1905; in Comstock coll. at Los Angeles Museum, Los Angeles, Calif. (illustrated in Butterflies of California, pl. 17, f. 3, but erroneously labeled *fumosus* Hlst.) One paratype ♀; Provo, Utah (Spalding), July 26, 1909; in Barnes coll., Decatur, Illinois.

One paratype ♀; Santa Cruz, Calif., Oct. 15, 1917; in coll. of E. A. Dodge, Santa Cruz, Calif. The Monarch Butterfly is a native of North America, hence the appropriate designation of *americanus*.

11. (not illustrated) **Danaus menippe** Hbn., **nivosus** ♂ nov. tr. form.

The ground color of this specimen is entirely white on all surfaces, no red-brown in evidence. The maculation, veining, etc., remain unchanged and are as in all typical specimens.

Classification: Transition form; albinism; color change final.

Data: Holotype ♂: expanse 87mm.; Jefferson Barracks, Missouri, Aug. 21, 1908; in coll. of Author. A paratype ♀; Mt. Lebanon, Allegheny County, Pennsylvania, Oct. 2, 1921; in coll. of Carnegie Museum, Pittsburgh, Pennsylvania.

Note: I have examined syn. *pulchra* Stkr. at Field Museum, Chicago, and recently Mr. Gerhard kindly sent me photographs of both upper and under sides of it. This specimen is correctly synonymized with the species because the pattern of its partial white color malformation is of irregular disposition on the wings due to chrysalis burn, a malady probably affecting the pupa during its latter stage which results in maldisposition of the pigmental fluids. I also recently examined *fumosus* Hlst. at the Brooklyn Museum, Brooklyn, N. Y., and find it to be a perfectly good type for chromatism, a natural change of color to a darker or different shade. There are a number of examples of *fumosus* Hlst. around the country in collections and I have a fair one in my own. In naming the above nov. tr. form *nivosus*, I have taken into consideration the chance of artificial modification, such as bleaching or fading; neither of these two type specimens exhibit either of these indications. The Pittsburgh paratype was freshly caught and later personally mounted by Mr. Kahl. Albinism is of course a thousand times more common among the *Eurymus* for example, than it is among species of other genera.

For explanation of Plate II, see page 133, lines 1-3.

Some New Species of Coleoptera from Indiana and Florida.

By W. S. Blatchley, Indianapolis, Indiana.

In my collecting in recent years at Royal Palm Park in extreme southern Florida and other points in that State, as well as in southern Indiana, a number of apparently undescribed species of beetles have been taken, eight of which are characterized and named in the present paper. The types of all are in my private collection. The sequence followed is that of the Leng "Catalogne of the Coleoptera of America North of Mexico."

Family Orthoperidae.

Corylophodes flavo-ocellus sp. nov.

Rather broadly oval, convex. Above chocolate-brown, strongly shining, the middle of elytra with a large, rounded, common, sutural, yellowish spot; pronotum with a broad, pale, reflexed, hyaline border; head, antennae and legs dull straw-yellow; under surface reddish-brown, shining. Antennae, as in other members of the genus, 11-jointed, the five joints between the third and basal one of club short, gradually wider. Pronotum with front margin broadly rounded, concealing the greater part of head, its disk and that of elytra impunctate. Tibiae and hind margin of each ventral segment ciliate with a row of stiff seta-like hairs. Length .8 mm.

Royal Palm Park, Florida, April 7. Described from seven specimens beaten from the flowering branches of cabbage palmetto, *Sabal palmetto* (Walt.). Allied to *C. impunctatus* Casey, but that species is more narrowly oval, devoid of yellowish elytral spot, and with ventrals not ciliate. *Type* a male, Royal Palm Park, Florida, April 7, 1925.

Orthoperus aeneocollis sp. nov.

Broadly oval, convex. Head and pronotum a polished purplish-bronze; elytra black with a bluish tinge; antennae brownish, paler at base; legs and under surface piceous-brown. Head with vertex minutely sparsely punctate, its front concave, the clypeal suture deep; clypeus with a low, median, transverse tubercle. Pronotum twice as wide as long, sides margined, broadly curved, basal margin bisinuate, disk minutely sparsely punctate. Elytra conjointly broadly oval, suture not margined, disk distinctly, rather coarsely, thickly, shallowly punctate. Length .8 mm.

Royal Palm Park, Florida, December 7-March 29. Three specimens beaten from fallen dead leaves of the royal palm, *Oreodoxa regia* H.B.K., in the dense hammock on Paradise Key. *Type* from Royal Palm Park, March 29, 1925. The handsome purplish-bronzed head and pronotum, tuberculate clypeus and rather strong punctuation of elytra distinguish this from other known species of *Orthoperus*.

Family ELATERIDAE.

The genus *Melanotus* is represented in southern Florida by numerous species, several of which are as yet undescribed. Examples of all Florida species on hand were sent, in 1921, to R. H. Van Zwaluwenburg, then connected with the U. S. Bureau of Entomology, who was at that time making a critical study of this difficult genus, based mainly on the male genitalia. He returned them with the statement that three of them were very probably new species. A lack of time on my part has since prevented their description. They are therefore named in the present paper.

Melanotus simulans sp. nov.

Elongate, rather slender, sides subparallel. Pale chestnut-brown, shining, everywhere clothed with rather long, prostrate, whitish hairs. Antennae reaching middle of mesosternum, joint 2 subglobose, one-half as long as 3, the latter narrower and slightly shorter than 4. Head, excluding eyes, subquadrate, coarsely, rugosely punctate, front of clypeus broadly rounded.

Pronotum one-third longer than wide, sides parallel, hind angles unicarinate; disk notably convex, minutely, very sparsely punctate, the punctures separated by three or four times their own diameters, each bearing a whitish prostrate hair. Elytra at base not wider than pronotum, thence evidently, but feebly, tapering to apex, disk with rows of close-set rather fine punctures; intervals feebly convex, twice as wide as the strial punctures, each with two rows of minute punctures, from which arise the prostrate hairs. Ventrals finely, evenly aciculate-punctate. Length 9.2—9.4 mm.

Described from two males (one *type*) in the author's collection, taken at Dunedin, Florida, March 15, 1918. Of it Van Zwaluwenburg wrote: "This might be mistaken for *M. angustatus* (Erh.) were it not for the parallel sides of pronotum and the distinct genitalia, which are similar to, but longer than those of *M. morosus* Cand."

Melanotus obscuratus sp. nov.

Elongate, rather robust. Dark chestnut-brown, shining; antennae, pronotum, legs and base of elytra dull red or reddish-brown. Antennae reaching middle coxae, joint 2 subglobose, 3 one-half longer than 2, the two united two-thirds the length of 4. Head coarsely, densely, rugosely punctate; clypeus concave, its front margin broadly rounded.

Pronotum one-half longer than wide, sides parallel from base to apical third, thence feebly convergent or curved to apex; disk at middle strongly convex with sides declivent, finely and sparsely punctate, the punctures separated by twice their diameters; hind angles prolonged, not carinate, their tips truncate. Elytra as wide at base as pronotum, sides subparallel to apical third, thence feebly converging and slightly curved to apex; disk with rows of rather coarse, close-set punctures; intervals flat, only one-half wider than strial punctures, each with two rows of minute punctures, each bearing a rather short, fine yellowish hair. Under surface finely and sparsely punctate, each puncture bearing a prostrate whitish hair. Length 10 mm.

Type a male taken at Ormond, Florida, April 13, 1913. This was returned by Van Zwaluwenburg without comment and labelled "new species."

Melanotus piceatus sp. nov.

Elongate, robust for the genus. Piceous-brown, coarsely clothed with whitish hairs, these longer and prostrate on pronotum, shorter and inclined on elytra; legs and antennae a paler reddish-brown. Antennae reaching middle coxae, joint 2 subglobular, one-half as long as 3, the latter slender, subclavate, as long as 4. Head coarsely, densely rugosely punctate; front of clypeus very broadly rounded or subtruncate.

Pronotum one-fourth longer than wide, sides subparallel, feebly curved near apex; hind angles prolonged, slightly divergent and with a rather long and prominent median carina; disk coarsely and evenly punctate, the punctures dense on sides, on middle separated by more than their own diameters. Elytra as wide at base as pronotum, thence evidently feebly converging to apex; strial punctures of disk relatively small, separated by their own diameters; intervals flat, twice as wide as strial punctures, each with two irregular rows of minute hair-bearing punctures. Punctures of the under surface rather sparse and moderate in size, those of the last two ventrals elongate, coarse and crowded. Length 14—15 mm.

This is a rather common species about Dunedin, Florida, in spring, occurring on flowers of huckleberry and other low herbage and beneath pine blocks and other cover. Taken in copulation April 22. Superficially it resembles our common northern *M. fissilis* Say, but the pronotum is distinctly longer with sides more parallel, and disk more finely punctate. *Type* a male, taken at Dunedin, Florida, March 17, 1922.

In his notes commenting on the species of *Melanotus* sent him, Mr. Van Zwaluwenburg wrote: "I am inclined to think *M. depressus* and *M. paraumpunctatus* synonyms. The type of the latter is a female, of *depressus*, a male. The separating differences as stated in the original descriptions are apparently sexual." Both were described from Pennsylvania and on the same page[1] by Melsheimer, and if synonyms, the name *depressus* has priority.

Family Coccinellidae.

Scymnus pellio sp. nov.

Elongate-oval, convex. Black, moderately shining, thickly pubescent with short, stiff inclined yellow hairs; head, antennae, legs and two cross-bars on each elytron yellow; these bars widely separated, one extending from near the basal third of suture obliquely to near humerus, its outer end somewhat widened; the other on apical fourth, transverse, its inner end not reaching suture and widened to form a club-like mark or cross-bar; under surface piceous, last two ventrals reddish-yellow. Metacoxal line forming an oblique curve to the first ventral suture and joining the latter. Length 1.3 mm.

Type a male, swept from roadside herbage at Royal Palm Park, Florida, April 2, 1925. Belongs to Horn's group A[2] but differs from all other described members of the group in the position and form of the yellow markings of elytra.

Family Chrysomelidae.

In 1824 Thomas Say described[3] a *Colaspis 6-notata* and mentioned it as "inhabiting the United States and found in considerable numbers on the common Juniper in July." Say's

[1]Proc. Acad. Nat. Sci. of Philadelphia, II, 1844, p. 151.
[2]Trans. Amer. Ent. Soc., XXII, 1895, p. 87.
[3]Journ. Acad. Nat. Sci. of Philadelphia, III, 1824, p. 445; ibid, Leconte ed. II, 1859, 213.

species is listed in the Leng Catalogue as *Paria canella sexnotata* (Say). It occurs in numbers on Juniper in both Indiana and Florida, is not variable in color, occurs only on Juniper and, in my opinion, is a distinct and valid species. In recent years I have taken on Juniper in southern Indiana another form which, while resembling somewhat in color and markings the *sexnotata* of Say, differs widely in the sculpture of the pronotum and other characters, and which I now describe as

Paria juniperi sp. nov.

Oblong-oval, strongly convex. Head and pronotum reddish-brown, the former often with a vague, median, darker spot. Elytra dull yellow, each with three more or less distinct piceous spots; the basal one oblong, placed near and within the umbone; the others submedian and subparallel, sometimes coalescent, the apex of the inner one projecting behind the other; legs, under surface and basal half of antennae pale reddish-brown, the terminal antennal segments fuscous. Head finely, sparsely, rather unevenly punctate, the front with a short, median sulcus.

Pronotum three-fifths wider than long, side margins broadly curved, front angles obtuse, hind ones rounded; disk everywhere, except on lower flanks and near apex, deeply, coarsely, longitudinally striate-punctate. Elytra with nine rows of rather small punctures, these more or less evanescent on sides and near apex. Under surface sparsely, finely, unevenly punctate. Length 2.8—3 mm.

Crawford and Harrison Counties, Indiana, August 30-September 1. Frequent on Juniper on high wooded slopes near Wyandotte Cave. The sculpture of the pronotum recalls that of *Metachroma quercata* Fab., though the striae are much more coarse. In *P. sexnotata* (Say), the pronotum is finely and very sparsely punctate, and the lower surface of the body is in great part black. *Type* a male taken in Crawford County, Indiana, September 1, 1923. *Paratype* in collection of the Brooklyn Museum, Brooklyn N. Y. The genus *Paria* is sadly in need of revision, several of the forms as *sellata, opacicollis* and *sexnotata*, treated by Leng and others as varieties of *canella* Fab., having a distinct host plant and varying little if any in distinctive color and sculptural characters.

Aphthona schaefferi sp. nov.

Oblong-oval, convex. Color a nearly uniform testaceous or straw-yellow, moderately shining, the last antennal segment alone fuscous. Antennae slender, two-thirds as long as body, joints 2—4 subequal, each slightly shorter than 5—8, which are also subequal, pubescent and feebly clavate, 9—11 thicker, forming a loose club, 11 slightly longer than 10, its tip obtusely pointed.

Pronotum subquadrate, convex, very minutely and sparsely punctate; side margins broadly curved, feebly reflexed, slightly angulate at apical fourth and again near base. Elytra one-third wider at base than pronotum, conjointly elongate-oval; sides parallel to apical third, thence broadly rounded to apex; umbones small but distinct; disk of each elytron with nine rows of evident but small shallow punctures, these evanescent toward apex, the sutural row forking near base; intervals flat, smooth. Ventrals each with a transverse row of very fine punctures, each puncture bearing a slender prostrate hair. Length 2.1—2.3 mm.

Royal Palm Park, Florida, March 30, 1925. Described from 11 specimens taken by sweeping flowers of herbage along the margins of swales on Long Pine Key. It is evidently allied to the Texan *A. socia* Horn, but is larger, with pronotum not wider than long and with elytral punctures in distinct striae. Named in honor of Chas. Schaeffer of Brooklyn, New York, who, by his intensive and critical studies of *Donacia* and other genera of Chrysomelidae, has done much to advance our knowledge of this interesting family. *Type*, a male from Royal Palm Park, Florida.

Entomological Scrap-books of Dr. C. V. Riley.

Mrs. C. V. Riley, widow of Dr. Riley, predecessor of Dr. L. O. Howard as chief entomologist of the U. S. Dept. of Agriculture, has donated to the library of the National Museum the scrap-books of economic entomology which were kept by her husband in the period of his activity from 1865 to 1894. These volumes about one hundred in number contain many articles of great historical interest. In giving these books to the museum, Mrs. Riley wished to have them housed in the same place as the Riley collection of insects. (*Science*, Mar. 18, 1927.)

Concerning Phoresy in Insects.

By L. O. Howard, Washington, D. C.

In 1896, P. Lesne, of the Museum of Natural History in Paris, proposed the name *phoresie*, which has gradually come into use, to describe the carriage of small insects by larger insects without the actual feeding of the smaller upon the larger in the adult stage. The word has been adopted in its French form by several of the European writers, and I used it in the title of a little article in *Entomological News*, volume 34, page 90. It is proposed to give it the English form, *phoresy*. Apparently, in this form it has not occurred in the English language, although the word *phoresis* is used by electricians to express "the conduction of substances dissolved in a liquid through a membrane by means of a current."

Lesne's original observations which led to the coining of this word were made in Algeria in 1893 and were described by him in the Bulletin of the Entomological Society of France for March 25, 1896, pages 162-165. He found a little Borborid fly (*Limosina sacra*) sitting on the back of one of the dung-beetles in some numbers. Although perfectly able to fly, the little flies stayed on the backs of the beetles while the latter were industriously rolling their balls of dung. He could pick up one of the beetles in his fingers without disturbing the flies, but when he attempted to seize one of the latter it showed itself to be very agile. The flies were being transported involuntarily by the beetle to the place where the ball of dung was to be stored, after which, since their larvae are dung-feeders, they would lay their eggs in the dung. In his original article he mentioned several other insects which have somewhat similar habits, and proposed his word *phoresie* to be used for such transportation phenomena where one animal acts as a vehicle to another while at destination this relation ceases.

Of course, somewhat similar phenomena had previously been observed with other insects, notably the triungulin form of the larva of certain blister beetles. In this stage the larva is active, walks readily and attaches itself to the legs and hairs of bees

by which it is carried to their nests where it detaches itself and lives upon honey or other stored food. Considering the whole subject as then known, Lesne makes the interesting suggestion that this porterage may involve the beginning of the evolution of true parasitism and that the Hippoboscid parasites of birds and hairy animals may have begun in this way.

Since the publication of Lesne's paper a number of other comparable instances have come to light. C. T. Brues, for example, in the *Proceedings of the National Academy of Sciences* for February, 1917, describes a very interesting case where certain Scelionid egg-parasites of Orthoptera attach themselves as adults to adult female grasshoppers and are carried by them until they begin to lay their egg-masses, whereupon the adult parasites lay their eggs in the eggs of the grasshoppers. Later, L. Chopard, in the Annals of the Entomological Society of France for 1922, page 240, describes a similar habit on the part of a parasite, of the genus *Riela*, of the praying Mantis. The ovipositor is too feeble to penetrate the egg case of the Mantis, so the adult, by attaching itself to the Mantis, is carried about until the egg-laying begins and is able to oviposit in the Mantid eggs before the egg case is formed. J. Ghesquière, in a brief note in the Bulletin of Agriculture of the Belgian Congo for 1921, described the habits of an egg-parasite of a Coreid bug, which corresponded very closely to the case just described. And Ch. Ferrière, of Berne, Switzerland, has just described another case where an egg-parasite of a different family has acquired the same habit in relation to a Locustid in Java, as studied by Mr. Jacobsen.

The most striking case of phoresy of the type that occurs with the triungulin larva of blister beetles that has been described in recent years is the life history worked out in part by Clausen in Japan (See *Annals of the Entomological Society of America*, XVI, 1923, p. 195). This writer, it will be remembered, showed that *Schizaspidia tenuicornis* Ashm., a species of the very curious Chalcidoid family Eucharidae, lays its eggs by the thousands upon the buds of certain trees. From these

eggs come little larvae which attach themselves to the legs of ants and are carried by them to their nests where they become parasitic upon the larvae and pupae of the ants. This form of parasitic larva, which has been termed *planidium*, was of course discovered in the allied genus *Orasema* by Wheeler in 1907, and in 1912 by H. S. Smith in the larva of *Perilampus;* and hence in these three genera of parasitic Hymenoptera, and possibly also in certain of their relatives, we find this phenomenon of phoresy in the young larva instead of in the adult as in the cases described by Lesne, Brues, Chopard, Ghesquière and Ferrière.

An interesting paper has been published by the latter author in the *Mitteilungen der Schweizerischen entomologischen Gesellschaft*, 1926, p. 489-496, in which he mentions all of these papers, with the exception of the ones by Wheeler and H. S. Smith, and in which he discusses somewhat similar instances among the mites and certain other true insects, where, however, for the most part, the habit of true ectoparasitism is involved.

It seems to the writer that this is a very fascinating line of inquiry which will lead to the discovery of many interesting things. Not only is it worth while to think about the suggestions of Lesne and Ferrière as to the origin of the parasitic habit; but the type of phoresy first recorded by Brues may be found to be not at all rare, especially with the Scelionidae. It is not very likely that these little egg-parasites will often be found attached to the bodies of Orthoptera pinned in collections; but careful examination of living Locustidae may reveal them, and, as Brues' paper shows, they may be found possibly on Orthoptera placed at once into alcohol. Moreover, the study of the biology of the Hymenopterous parasites of the families Eucharidae and Perilampidae will doubtless show many phenomena similar to those studied by Wheeler, Smith and Clausen.*

*Although J. L. King has shown (Annals Entom. Soc. America, vol. 9, 1916, 309-321) that the first-stage larvae of the Dipteran *Pterodontia flavipes* are true planidia, they attach themselves to adult spiders into which they penetrate as internal parasites.

A New Generic Name for Enkrates of Burr (Dermaptera : Chelisochidae).

By James A. G. Rehn, Philadelphia, Penna.

A few years ago in discussing the genus *Chelisoches* as found in Africa, and particularly the species *Chelisoches flavipennis*, I pointed out[1] that a misidentification of Fabricius' *Forficula flavipennis* had made the generic name *Enkrates* Burr,[2] erected for that species, a synonym of the much older *Chelisoches*. As emphasized at that time, an analysis of the description of *flavipennis*[3] shows conclusively that the insect before Fabricius was the one later called *Forficula plagiata* by Fairmaire,[4] and not the one to which Burr presumed the name applied, the latter being the species first named *Sphingolabis variegata* many years later by Kirby.[5]

Burr designated the genotype for *Enkrates* as follows, "The only known species is *Enkrates flavipennis* Fabr., from West Africa," which indication was further amplified by the quotation of the original Fabrician reference. In consequence the fate of the generic name is entirely dependent upon the generic position of *flavipennis* Fabricius. As I have already demonstrated[6] this species is properly a member of the genus *Chelisoches*, and consequently *Enkrates* becomes a synonym of that older and much better known genus.

The genus characterized by Burr, and to which he intended to give a new generic name, by his erroneous specific determination remains unnamed. To supply this deficiency I propose the name *Eucnkrates*, taking as the genotype the species which Burr had erroneously considered Fabricius' *flavipennis*, *i.e. Sphingolabis variegata* Kirby. The synonymy of this species is as follows:

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[1]Bull. Amer. Mus. Nat. Hist., XLIX, pp. 382-383, 384-385, (1924).
[2]Trans. Entom. Soc. London, 1907, pp. 126, 131, (1907).
[3]Entom. Syst., II, p. 5, (1793). [Sex ?; Senegal.]
[4]In Thomson, Archives Entom., II, p. 257, pl. IX, fig. 3, (1858). [♀; Gaboon (West Africa).]
[5]Journ. Linn. Soc. London, Zoöl., XXIII, p. 526, (1891), [♀; Sierra Leone.]
[6]Bull. Amer. Mus. Nat. Hist., XLIX, pp. 383-385, (1924).

Euenkrates variegatum (Kirby)

1891. *Sphingolabis variegata* Kirby, Journ. Linn. Soc. London Zoöl., XXIII, p. 526. [♀; Sierra Leone.]
1903. *Chelisoches vittatus* Burr, Ann. & Mag. Nat. Hist., (7), XI, p. 274. [♂: Ogowe, West Africa (type locality); Oguega (Ogrugu), Niger River.[7]]
1904. *Chelisoches limbatus* Borg. Arkiv för Zoologi, I. p. 575, pl. 26, fig. 7. [♂, ♀; Bonge, Cameroons.]
1907. *Eukrates flavipennis* Burr, Trans. Entom. Soc. London, 1907. P. 132. (Not *Forficula flavipennis*, Fabricius.)

I have seen a single male of this species, from Bitje, Ja River, Cameroons, and in the collection of the Academy of Natural Sciences of Philadelphia. The species is one of the Western Forest Province, ranging from as far west as Sierra Leone, east to the Cameroons (Bonge) and French Congo (Ogowe), north to Southern Nigeria (Ogrugu).[7]

Undescribed Pselaphidae Collected by Dr. J. C. Bradley in Panama (Coleoptera).

By Frank C. Fletcher, Cornell University.

BIBRAX gen. nov. (Goniacerini.)

Head with a long antennal tubercle, antennae closely approximate at base, geniculate, eleven-segmented. Eyes very feebly developed, composed of but a single facet. Maxillary palpi very short, four-segmented, with the first segment extremely minute, visible only after dissection.

Prothorax unarmed, with basal transverse and lateral longitudinal sulci.

Elytra unarmed, humeri not prominent, discal and sutural striae present, base of each elytron bifoveate.

Abdomen with five visible dorsal and six ventral segments, strongly and broadly margined; first ventral long and fully visible from side to side. Posterior segments of male not emarginate or divided, but modified as described below, female segments simple.

[7]Or Ogrugru, as some authors have it. This record was originally given by Burr as Oguega, Niger River. I feel little doubt as to the correctness of my reference of it to Ogrugu. This locality is on the Anambara tributary of the Niger.

Legs moderate in length, middle coxae subcontiguous, hind coxae approximate, tarsi with a single claw and with a very slender hair-like appendage.

Genotype, Bibrax bradleyi sp. nov.

Bibrax bradleyi sp. nov.

♂. Uniform dark reddish-brown, opaque, legs and antennae slightly paler, palpi light yellow. Slightly depressed, narrowed anteriorly. Vestiture consisting of dense, erect golden pubescence, the hairs recurved at tip.

Head densely and rather coarsely punctured, on the tubercle the punctures become confluent making a rugose surface. Exclusive of the tubercle broader than long, dorsal surface beginning at basal one-fifth raised into a broad, medially slightly canaliculate convexity, from the anterior end of which arises the antennal tubercule; tubercule three-fourths as long as head, subconical, finely carinate dorsally, apex slightly expanded. Sides of head strongly depressed anteriorly. Eyes very feebly developed, consisting of but a single facet, situated on the projecting sides of the head about the middle. Antennae inserted under the tip of the tubercle, geniculate, about one-half as long as body including tubercle, densely clothed with golden recurved hairs which become straighter and longer as the tip is reached; first segment very long, three-fourths as long as the remainder of the antenna, slightly arcuate, second almost one-third as long as first, obconical, third longer than broad, obconical, almost half as long as second, fourth and fifth subequal, subovate, very little longer than broad, sixth to eighth almost globular, eighth slightly smaller than seventh, ninth to eleventh enlarged to form a club, eighth and ninth transverse, eleven as long as broad, narrowed and bluntly pointed at apex. Ventral surface of head grooved along the middle line, with a strong fovea at base; gula on either side convex, on the anterior or buccal margin armed with a strong, sharp, anteriorly pointing tooth. Palpi very short, first segment very small, visible only after dissection, second strongly arcuate, enlarged at apex, third ovate, slightly longer than broad, fourth five-ninths as broad as long, elongate-ovate, obtusely pointed at apex, obliquely truncate at base, with a short thick terminal appendage.

Prothorax convex, slightly broader than long, strongly narrowed behind the middle, with a deep basal fovea on either side and a median one, all connected by an ill-defined sulcus which on either side passes from the lateral foveae to apical three-fourths, forming prominent rounded lobes on the pro-

thoracic sides; median fovea connected with the base by a channel; no median sulcus. The entire surface densely and irregularly punctate, the lateral protuberances very finely punctured. Surface entirely covered with dense, erect, golden pubescence, the tips of the hairs recurved.

Elytra broader than long, regularly narrowed from apex, narrower at base than thorax, five-sevenths as long as abdomen, humeri not prominent. Surface convex, each elytron with two foveae at base, discal stria deep and broad in basal half, but from then on becoming fainter to apex, its bottom with a row of punctures; sutural stria broad and ill-defined, likewise provided for its entire length with a row of punctures.

Abdomen gradually narrowed from base to apex; first three, visible, dorsal segments equal, fourth longer; first four ventral segments about equal, the fourth flattened and shining in the middle, fifth longer than the others with a large, transverse, shining, and well-defined depression, last with a deep circular fovea apically. All dorsal segments strongly and longitudinally convex, their separation strongly marked; side margins limited within by a deep groove, the area between which and the edge very convex.

Legs moderately long, front and middle coxae subcontiguous, hind coxae approximate; all the femora clavate, the middle femora articulating close to the coxae; front tibiae arcuate, inflated, inner surface concave for the entire length, this concavity is polished and limited on either side by a fine carina, within which is a row of minute bristles; middle and hind tibiae straight. Third tarsal segment about two-thirds as long as second, provided with a single claw, but with a very slender hair-like appendage.

Length 2.5 mm. Breadth, .8 mm.

♀. In all respects similar to the male described above, except that the ventral segments are all evenly convex and lack depressions of any kind.

Described from one male and one female collected in April, 1924, by Dr. J. C. Bradley, on Barro Colorado Island, Gatun Lake, Canal Zone, Panama, and to whom I take pleasure in dedicating this very interesting little beetle.

Types in the collection of Cornell University, Holotype No. 766.1 ♂, Allotype No. 766.2 ♀.

Bibrax is a very isolated genus in the tribe Goniacerini and is not at all closely related to any other described genus. The strongly margined abdomen and eleven-segmented antennae necessitate placing it in the vicinity of the Ethiopian genus

Ogmocerus with which otherwise it has but little affinity. It differs from *Ogmocerus* in the much more strongly developed antennal tubercle, small eyes, male modifications of the abdomen, sub-contiguous middle coxae, and many other characters.

There is a very strong superficial resemblance to some of the Metopiini, particularly to *Metopicilus hirtus* (Reitt.) in the general facies, inflated front tibiae, small eyes, and the relative length of the last two tarsal segments, but the single claw, fully visible first ventral segment, equal number of segments in the two sexes, the undivided last segment in the male, and the type of modification of the last three in the same sex forbids any such association.

Raffray has shown (Ann. soc. ent. France, 1890. 59: 317) that the Goniacerini do not invariably possess three-segmented palpi as he first supposed, but for some reason he failed to indicate this in the generic and tribal characterizations in the *Genera Insectorum*, though four segments are figured in the palpus of *Ogmocerus giganteus*.

Euphalepsus panamensis sp. nov.

Form strongly ventricose; rufo-castaneous throughout, palpi light-yellow; pubescence rather sparse, pale, and recurved.

Head about as long as wide; frontal tubercles prominent, sides with a few large punctures posteriorly, otherwise the surface of the head is impunctate; front depressed, vertex with a scarcely noticeable depression; on a line passing through the posterior margins of the eyes there are on each side, two extremely minute pore-like foveae separated from one another only by a very thin lamina, the foveae being scarcely as large as the coarse punctures of the antennal tubercles. Eyes large, convex and prominent. Antennae with a gradually-formed club, first segment cylindrical, longer than the others, second subquadrate, longer than the remaining segments of the funicle, third obconic, about as long as wide, fourth to eighth transverse, gradually very slightly broader, these subequal in length, ninth and tenth transverse, eleven oblong-ovate, longer than the two preceding, the last three broader than the preceding forming a feebly differentiated club.

Prothorax gibbous, as long as broad, slightly narrowed at base, very much so at apex, much narrower than the elytra; basal portion with a transverse, deep and arcuate sulcus not dilated at middle; the sulcus connects on either side with a broad deep fovea from which a deep and well-marked sulcus extends anteriorly to half the length of the prothorax; a very

fine carina present between base of prothorax and the transverse sulcus.

Elytra strongly convex, much broader then long; base strongly quadrifoveate, with a sharp carina, which on either side extends on to the elytra in a well-marked humeral callus which ends abruptly and does not extend further as a carina; discal stria lacking, sutural stria entire; surface clothed with golden recurved hairs more sparsely placed than on the prothorax.

Abdomen equal in length to the elytra, regularly rounded to the apex; first dorsal segment longer, the rest subequal; a broad and deep fovea present on either side at the lateral margins of the base of the first dorsal segment.

Length 1.6 mm. Breadth .9 mm.

Described from one female specimen collected in April, 1924, by Dr. J. C. Bradley, on Barro Colorado Island, Canal Zone, Panama. *Holotype* in the collection of Cornell University, No. 767.

Panamensis is a member of Raffray's group II, containing three heretofore described species, namely, *rugipes* Raffray from Venezuela, *globipennis* Reitter from Mexico, and *humeralis* Raffray from Colombia.

From *rugipes*, *panamensis* is easily known by its much smaller size, by the very small and peculiarly formed foveae of the head, and by the transverse thoracic sulcus not being dilated or foveate at the middle.

From *globipennis* it differs in its much smaller size, noncarinate prothorax, the transverse ninth and tenth antennal segments, etc.

From *humeralis* to which it is most closely related, it may be distinguished by its smaller size, very feeble fovea of the vertex, the peculiar foveae of the head, and the absolutely smooth elytra.

Beneficial Insects Trapped in Bait-pails.

By S. W. Frost, Arendtsville, Pennsylvania.*

In operating bait-pails as traps for the adults of the oriental fruit moth (*Laspeyresia molesta* Busck.), many insects were captured including beneficial, injurious and forms otherwise

*Published by permission of the Director of the Agricultural Experiment Station as a part of Project No. 697. Contribution from the Department of Zoology and Entomology, The Pennsylvania State College No. 417.

classified. Some of the Lepidoptera and Coleoptera were, at times, so numerous that they interfered with the operation of the baits. A future paper will be devoted to rare and interesting insects recovered from bait-pails, but at present, beneficial insects are most important and have an economic bearing upon the problem of bait-pails as a means of control not only for the oriental fruit-moth but also for any pest where such baits may seem practical.

This paper is not confined to the predaceous and parasitic enemies of the oriental fruit-moth but to all beneficial insects that might be reduced in numbers through the use of liquid-baits. Comparatively few have been found in appreciable numbers and only species of Chrysopidae have been trapped in sufficient abundance to be concerned in the practical use of such baits. The insects show a decided preference for certain types of baits. Honey-bees, for example, prefer water or sugar solution, Syrphidae seem to like baits of low grade molasses, while Chrysopidae were taken abundantly in all baits but show a preference for sweet baits rather than water.

The insects in question were caught during the summer of 1926 from four hundred and thirty bait-pails placed in a peach orchard near Arendtsville, Pa. The baits consisted of various mixtures, chiefly sugar and molasses solutions, although several weak acids and other mixtures were used. They were duplicated at different times during the season so that a particular type of bait was in operation throughout the entire summer from May to November. Variations exist due to the age of the bait, dilution, etc. All baits were examined once a week and the insects strained from them and taken to the laboratory for further examination and classification.

Adalia bipunctata (L.) and other beneficial Coccinellidae were taken occasionally from baits but in numbers noticeably insignificant.

Syrphidae were trapped in comparatively small numbers. During the early part of the summer, *Ferdinandea dives* O. S. was fairly common while later in the season several other species were taken. In July a single specimen of *Volucella vesiculosa* Fab. was captured. Mr. Charles T. Greene has further identified specimens of *Syrphus ribesii* Linn., *Mesogramma*

polita Say and *M. marginata* Say, which were taken from bait-pails. None of the Syrphidae, however, were taken in abundance.

Honey-bees were found in bait-pails throughout the entire season, especially during the warmer parts of the summer in August and September. Their numbers were comparatively small. Many were trapped by sugar baits or by weak acids but only a very few by molasses baits. A set of five pails, containing a high-grade molasses bait, was placed in a small block of quince trees within a radius of ten feet from bee-hives. Only three bees were caught between May 5th and August 18th, although the baits were kept in prime by the addition of new molasses about every two weeks. It would seem, therefore, that molasses baits are entirely safe in the proximity of bee-hives.

A species of Hemerobiidae was found in bait-pails in small numbers during the latter part of the summer. As little is known concerning the feeding of the adults of this family, these records may prove interesting.

Several species of Chrysopidae were attracted to baits in large numbers, some pails caught as many as fifty during their operation. Three species: *Chrysopa nigricornis* Burm., *C. rufilabris* Burm., and *C. quadripunctata* Burm., were determined by Dr. Roger C. Smith. A fourth species may be included, *C. interrupta* but the loss of color due to the action of the bait and the preservative made it impossible to make an absolute determination. The majority of the adults were females. Smith (1922)* refers to a difference of opinion concerning the feeding of the adults and remarks that he found them to relish water and sugar solution. The enormous numbers captured by sugar and molasses baits, and on the other hand, the comparatively few captured by plain water, clearly shows that *Chrysopa* is readily attracted to sugar and molasses solutions.

An attempt was made to determine whether parasitic insects, especially the parasites of the oriental fruit-moth, were attracted by these baits, but the percentage of parasitism was low during 1925 and 1926 and few parasites were recovered

*Cornell Memoir 58:1328, 1922.

from baits. This phase of the problem needs further investigation.

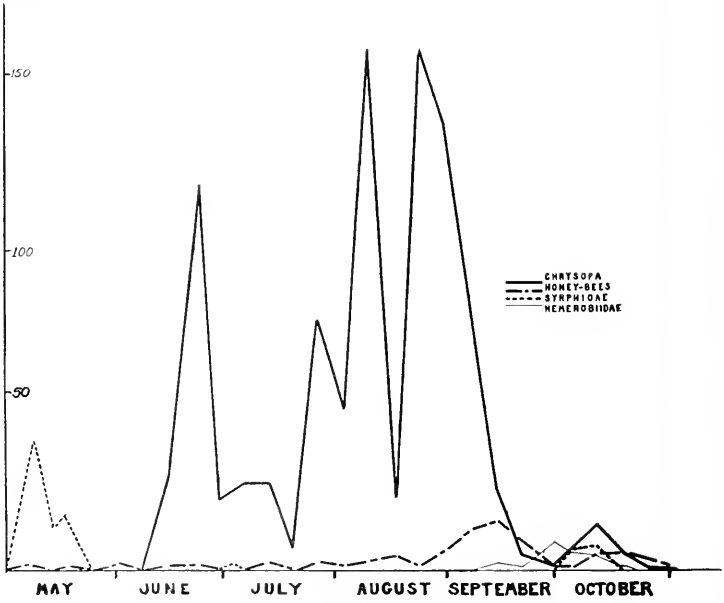

Chart showing the comparative numbers of beneficial insects trapped by baits.

Summary of Beneficial Insects Taken in Bait-pails in 1926.

INSECT	Low grade molasses 85 pails	High grade molasses 90 pails	Sugar baits 50 pails	Sodium[1] baits 100 pails	Acid[2] baits 60 pails	Misc.[2] baits 40 pails	Water 5 pails	Total Number Insects
Honey Bees	7	17	20	18	4	6	2	74
Syrphidae	64	1	0	11	0	0	0	79
Hemerobiidae	0	2	13	3	0	0	1	19
Chrysopidae	133	309	194	241	6	54	4	941

From these notes it is evident that bait-pails can be used with comparative safety without attracting beneficial insects in alarming numbers. While Chrysopidae were trapped in considerable numbers, it is not definitely known that the adults are predaceous. A further knowledge of the percentage of males and females trapped, as well as the number of gravid females caught, would be necessary to settle the point. Sugar baits should be avoided in the proximity of bee-hives.

[1] Consisting of 1 part molasses, 10 parts water with the addition of sodium salt as a preservative.

[2] These baits were continued for only a few weeks.

ENTOMOLOGICAL NEWS

PHILADELPHIA, PA., MAY, 1927.

Should Insect Collections be Passed on to Individuals?

By S. A. ROHWER, U. S. National Museum.

In the December number (pages 329-332) of *Entomological News*, under the title "Concerning the Insect Collection," Dr. Melville H. Hatch propounds the rather novel question as to whether it would not be advisable to pass on large collections from one individual worker to another. It is a rather interesting idea, but is probably stimulated by the enthusiasm of youth. It is very difficult to determine whether a man in the early twenties or thirties is going to continue investigations on any of his pet hobbies, and should he at this age elect to become a specialist in any particular group of insects, this desire would probably dominate his work for a number of years to come. But as time goes on, he might accept a position in some institution of such a character that it would be impossible for him to carry on intensive investigations in the line of activity he had chosen, and the collection which had been given to him for safekeeping by one of his predecessors would lie in a dormant condition and perhaps would not even be satisfactorily cared for for many years. It is very rare, when an individual elects a group in which he desires to become a specialist, that he is willing to admit he has to give up his work in this group because of the pressure of other duties; and I can foresee that should the plan suggested by Dr. Hatch be accepted and put into practice, we would see many of the larger collections in the hands of individuals who are no longer active but who always dream that they will some day get back to doing real work in their chosen field.

Another drawback to the suggestion made by Dr. Hatch is that a collection, when placed in the custody of an individual, is not as available to other workers as it is when it is placed in the custody of some public institution. Many of us can well

remember when certain specialists have wished to consult collections of individuals to examine the types and were told that they could do so only under the most rigid conditions and at certain specific times. This is, of course, a very serious drawback to placing collections in the hands of individual workers, because it does not lend itself to free investigation by other students and tends to make it possible for one individual to monopolize the work done on any particular unit.

Collections of insects that were formed as the basis of treatises or descriptions could hardly be considered as private property. They are rather the property of Science, and the holder of this collection is only the custodian, and as such he should not only satisfactorily preserve these specimens, but he should make them available for examination by other students of the same group.

Even with all the safeguards suggested by Dr. Hatch, it seems to me that the three considerations suggested above indicate very conclusively from the standpoint of science that it is undesirable to pass on collections from one individual to another. We will grant momentarily that it is certainly an advantage to the individual worker, but as suggested in my recent address before the members of the Entomological Society of America and as very aptly brought out by Dr. Hatch, the taxonomic work in the future must be done at institutions containing large collections rather than at the hands of individual investigators who cannot afford to build up or house an extensive collection. Institutions having the custodianship of extensive collections should be so well provided with space, equipment and personnel as to make it possible for young students to derive full benefit from these collections.

Entomological Expedition in Patagonia.

An entomological expedition in which the Departamento Nacional de Higiene, Buenos Aires ,and the British Museum of Natural History, London, participated, was recently effected in the little explored forested regions of northwestern Patagonia. The region investigated extended from Lago Nahuel Haupi, across the Andes to Port Mouatt, thence to Chiloe Island and from there northward into Chile to San-

tiago. The party consisted of F. W. Edwards (British Museum), M. F. Edwards, E. S. Shannon, R. C. Shannon (formerly of the Dept. of Agriculture, Washington, D. C.) and E. del Ponte (the last two being the members from the Dept. Nacion. de Higiene). An attempt was made to collect all orders of insects, but particular attention was given to the Diptera. Representatives of 58 families of this order were taken among which are many genera which are common only to Patagonia and New Zealand; some others are likewise common to these countries and to Tasmania and Australia as well. A more complete report will appear in the *Revista del Instituto Bacteriologico*, Buenos Aires. (*Science*, April 1, 1927.)

Prodiaphania, New Name for Diaphania Macquart (1843) Preoccupied (Dipt., Muscoidea).

The new generic name PRODIAPHANIA is here proposed for the muscoid genus *Diaphania* of Macquart, whose genotype is *Diaphania testacea* Macquart, of Australia, described in 1843, in the Dipteres Exotiques, II, 3, 277-8, pl. 14, f. 8. The name *Diaphania* was proposed by Hübner, in 1816, for a genus of Pyralidae (Lepidoptera), which preoccupies Macquart's use of it. CHARLES H. T. TOWNSEND.

Entomological Literature

COMPILED BY E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published.

All continued papers, with few exceptions, are recorded only at their first installments.

Papers of systematic nature will be found in the paragraph beginning with (N). Those pertaining to Neotropical species only will be found in paragraphs beginning with (S). Those containing descriptions of new forms are preceded by an *.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

Papers published in the Entomological News are not listed.

1—Trans., American Ent. Soc., Philadelphia. 9—Entomologist, London. 10—Proc., Ent. Soc., Washington. 17—Ent. Rundschau, Stuttgart. 21—The Entomologist's Record, London. 22—Bull. of Ent. Research, London. 26—Ent. Anzeiger, Wien. 28—Ent. Tidskrift, Upsala. 33—Bull.

et An., Soc. Ent. Belgique. 34—Mem. Soc. Ent. Italiana, Genova. 42—Ent. Meddelelser, Kjobenhaven. 50—Proc., U. S. National Museum. 59—Encyclopedie Entomologie, Paris. 60—Stettiner Ent. Zeitung. 64—Zeit. Oesterr. Ent. Ver., Wien. 69—Comptes R., Acad. Sci., Paris. 80—Lepid. Rundschau, Wien. 81—Folia Myrmec. et Termit., Berlin. 100—Proc. Acad. Nat. Sci., Philadelphia. 120—Ann., Naturh. Mus., Wien. 150—Jenaische Zeit. f. Naturwissenschaft. 154—Zool. Anzeiger, Leipzig.

GENERAL.—Cockerell, T. D. A.—Natural history [of Colorado]. Arthropods. (History of Colorado, Chap. 4, p. 172-185.) **Emery, C.**—Obituary and bibliography. (34, iv, p. 201-222, ill.) **Gribodo, G.**—Obituary and bibliography. (34, iv, p. 223-228.) **Hubault, E.**—Contribution a l'etude des invertébrés torrenticoles. (Suppl. Bul. Biol. Fr. et. Belg., ix, 388 pp., ill.) **Poche, F.**—Bemerkungen zu dem "report of the British national committee on entomological nomenclature." (26, vii, p. 11-15, cont.) **Scheerpeltz, O.**—Das abbilden entomologischer objekte und präparate. (26, vii, p. 3-7, ill, cont.) **Sevastopulo, D. G.**—Effect of naphthaline on larva. (9, lx, p. 66.) **Sich, A.**—On nomenclature. (21, xxxix, p. 42-43.) **Thurner, J.**—Einige interessante entomologische begebenheiten. (64, xii, p. 6-7.)

ANATOMY, PHYSIOLOGY, ETC.—Bledowski u. Krainska.—Die entwicklung von Banchus femoralis. (Bibl. Univ. Lib. Polonae, 1925, Fasc. 16, 50 pp., ill.) **Cappe de Baillon, P.**—La descendance des monstres doubles de Phasmides origine des intersexues. (69, clxxxiv, p. 625-626.) **Gerould, J. H.**—Studies in the general physiology and genetics of butterflies. (Quart. Rev. Biology, ii, p. 58-78, ill.) **Knoll, F.**—Insekten und blumen. Heft. 3. Die arumblütenstände und ihre besucher. Über den blütenbesuch der honigbiene. Die erfolge der experimentellen blütenökologie. (Abh. Z.—Bot. Ges., Wien, xii, p. 383-645, ill.) **Ljungdahl, D.**—Nagra puppbeskrivningar. (28, xlvii, p. 184-199, ill.) **McIndoo, N. E.**—Senses of the cotton boll weevil; an attempt to explain how plants attract insects by smell. (Jour. Agric. Res., p. 1095-1139, ill.) **Pruthi, H. S.**—The influence of some physical and chemical conditions of water on may-fly larvæ (Cloëon dipterum.). (22, xvii, p. 279-284, ill.) **Pruthi, H. S.**—Prothetely in insects. (Na-

ture, cxix, p. 391-392.) **Przibram, H.**—Kopftransplantationen bei insekten. (154, lxx, p. 166.) **Weber, H.**—Das problem der gliederung des insektenthorax. Das labialsegment und das grundschema das insektenthorax. (154, lxx, p. 105-126, ill.) **Wheeler, W. M.**—The physiognomy of insects. (Quart. Rev. Biology, ii, p. 1-36, ill.)

ARACHNIDA AND MYRIOPODA.—Cameron, A. E.—A local outbreak of the winter or moose tick, Dermacentor albipictus, (Ixodoidea) in Saskatchewan. (22, xvii, p. 249-257, ill.) **Verhoeff, K. W.**—Bronns Klassen und ordnungen des tier-reichs. Bd. 5, Abt. 2, Buch 2: Diplopoda, p. 129-480, ill.

(S) ***Roewer, C. F.**—Opilioniden aus süd-amerika. (Bol. Mus. Zool. Anat. Torino, xl, No. 34, 34 pp., ill.)

THE SMALLER ORDERS OF INSECTA.—(N) **Byers, C. F.**—An annotated list of the Odonata of Michigan. (Occ. Pap. of the Mus. of Zool. Univ. of Mich. No. 183, 1-15 pp., ill.)

ORTHOPTERA.—(N) ***Hebard, M.**—A remarkable new genus and species of decticid from Liberty County, Florida (Tettigoniidae). (1, liii, p. 1-4, ill.) **Hebard, M.**—Fixation of the single types of species of orthoptera described by Cyrus Thomas. (100, lxxix, p. 1-11.)

HEMIPTERA.—(S) ***Jensen-Haarup, A. C.**—Preliminary descriptions of new Hemiptera in the collections of the zoological museum of Copenhagen. (42, xvi, p. 41-56.)

LEPIDOPTERA.—Ander, K.—Om larven till Pyrrhia umbra. (28, xlvii, p. 79-82, ill.) **Meyrick, E.**—Hereditary choice of food-plants in the lepidoptera and its evolutionary significance. (Nature, cxix, p. 388.) **Röher, A.**—Ueber zweck und ursache der geselligen lebensweise bei raupen mancher schmetterlingsarten. (80, 1927, p. 52-56.) **Rocci, U.**—Ricerche sulle forme del gen. Zygaena. (34, iv, p. 154-176, ill.)

(S) ***Bouvier, E. L.**—Nouvelles contributions a la connaissance des Saturnidae. (59, (B) ii, p. 15-32, ill.) **Cockerell, T. D. A.**—A new subspecies of Papilio paeon. (10, xxix, p. 48.) ***LeCerf, F.**—Lépidoptères nouveaux du muséum d'histoire naturelle de Paris et notes diverses.

(59, (B) ii, p. 44-48, cont.) **Schuster von Forstner, W.**—Die falterwelt der Galapagos-Inseln. (17, xliv, p. 7.) **Spottau Eulau, O.**—Erinnerungen au Süd-Amerika [Another part of this work (pp. 50-64) has appeared with Insektenbörse for 1927, Nr. 6.]

DIPTERA.—Abbreviations of Muscoid characters.—In Supplementa entomologica, Nr. 14, p. 39-42, Dr. C. H. T. Townsend states under the above title "In future all muscoid descriptions and synopses by the author will be abbreviated according to the following list:" He then gives three pages of abbreviations. All students of diptera likely to use Dr. Townsend's papers should have access to this list. **Feuerborn, H. J.**—Ueber chaetotaxis und typus der larve und puppe von Psychoda. (154, lxx, p. 167-184, ill.) **v. Frankenberg, G.**—Verlagerung einer schwimmblase in den ausgestülpten pharynx bei der larve von Corethra. (154, lxx, p. 127-134, ill.) **Hertig & Hertig.**—A technique for artificial feeding of sandflies (Phlebotomus) and mosquitoes. (Science, lxv, p. 328-329.) **Johnson, C. W.**—Some remarks on questionable types. (10, xxix, p. 45-46.) **Kunike, G.**—Experimentelle untersuchungen über die möglichkeit der uebertragung der maul-und klauenseuche durch fliegen. (Centralb. Bakt. Par. u. Infekt., Jena, cii, p. 68-81.) **Petzold, W.**—Bau und funktion des hypopygiums bei den tachinen, unter besonderer berücksichtigung der kieferneulentachine (Ernestia rudis). (150, lxiii, p. 1-50, ill.) **Roubaud, E.**—Sur l'hibernation de quelques mouches communes. (25, 1927, p. 24-25.) **Shannon, R. C.**—On the characteristics of the occiput of the diptera. (10, xxix, p. 47-48.)

(N) ***Dyar & Shannon.**—The North Am. two-winged flies of the family Simulidae. (50, lxix, Art. 10, 54 pp., ill.) ***Kröber, O.**—Die Chrysops-arten Nordamerikas einschl. Mexicos. (60, lxxxvii, p. 209-353, ill.)

(S) ***Borgmeier, T.**—Phorideos myrmecophilos da Argentina. (Bol. Mus. Nac. R. d. Janeiro, ii, No. 3, p. 1-33, ill.) ***Brethes, J.**—(See under Coleoptera). ***Duda, O.**—Monographie der Sepsiden. Neotropische region. (120, xl, p. 79-95, ill.)

COLEOPTERA.—Falkenström, G.—Beiträge zur kenntnis der biologie der halipliden und der metamorphose von

Haliplus immaculatus. (28, xlvii, p. 1-28, ill.) **Kemner, N. A.**—Spinnende tenebrioniden-larven. (28, xlvii, p. 65-78, ill.) **Kemner, N. A.**—Zur Kenntnis der staphylinidenlarven. (28, xlvii, p. 133-170, ill.) **Richmond, E. A.**—Olfactory response of the Japanese beetle, Popillia japonica. (10, xxix, p. 36-44.) **Withycombe, C. L.**—The South American boll-worm of cotton (Sacadodes pyralis.) (22, xvii, p. 265-271, ill.)

(N) *Buchanan, L. L.—A review of Panscopus (Otiorhynchidae). (10, xxix, p. 25-36, ill.) **Tanner, V. M.**—A preliminary study of the genitalia of female coleoptera. (1, liii, p. 5-50, ill.)

(S) *Brethes, J.—Un coleoptere et un diptere nouveaux de la Georgie du Sud. (Com. Mus. Nac. Hist. Nat. Buenos Aires, ii, p. 169-173, ill.) *Chapin, E. A.—The beetles of the family Cleridae collected on the Mulford biological exploration of the Amazon basin. (50, lxxi, Art. 2, 10 pp.) *Kleine, R.—Neue gattungen und arten aus der familie Brenthidae. (60, lxxxvii, p. 354-372, ill.) *Kriesche, R.—Neue Lucaniden. (60, lxxxvii, p. 382-385.) *Marshall, G. A. K.—New injurious Curculionidae. (22, xvii, p. 199-218, ill.) *Moser, J.—Beitrag zur kenntnis der Melolonthiden. (60, lxxxvii, p. 198-208.) *Théry, A.—Recherches synonymiques sur les Buprestides et descriptions d'espèces nouvelles. (33, lxvii, p. 33-48, ill.)

HYMENOPTERA.—Bugnion, E.—Les pièces buccales, le sac infrabuccal et le pharynx des fourmis. (81, i, p. 59-71, ill.) **Karawajew, W.**—Ein fall von lateralem hermaphroditismus bei ameisen und ein fall defekter körperbildung. (81, i, p. 45-47.)

(N) **Bluthgen, P.**—Beiträge zur systematik der bienengattung Sphecodes. (Zool Jahrb., Syst., liii, p. 23-112, ill.) *Muesebeck, C. F. W.—A revision of the parasitic wasps of the subfamily Braconinae occurring in America, north of Mexico. (50, lxix, Art. 16, 73 pp., ill.)

(S) *Reichensperger, A.—Eigenartiger nestbefund und neue gastarten neotropischer Solenopsis-Arten. (81, i, p. 47-51.) *Rohwer, S. A.—Some scoliid wasps from tropical America. (Jour. Wash. Ac. Sci., xvii, p. 150-155.) *Santschi, F.—A propos du Tetramorium caespitum. (81, i, p. 52-58.) *Santschi, J.—Fourmis des Provinces Argentines

de Sante Fe, Catamarca, Santa Cruz, Cordoba et Los Andes. (Com. Mus. Nac. Hist. Nat. Buenos Aires, ii, p. 149-168, ill.)

SPECIAL NOTICES.

Acta Societatis Entomologicae Serbo-Croato-Slovanae. Volume one, number one of the new publication has just been received. As the titles and most of the text are in Russian, no records will be made in this bibliography.

Biologie der Tiere Deutschlands. Herausg. von Paul Schulze. Lief. 23, Th. 41: Strepsiptera von W. Ulrich. 103 pp., ill. This work should prove useful to students of this order.

Lepidopterologische Rundschau. This is a new journal issued with the Entomologischer Anzeiger published by Adolf Hoffmann, Wien.

Revista Chilena de Historia Natural, Volume XXX, 1926. Dr. Carlos E. Porter, Director and Editor.—The thirtieth volume of this important publication has recently appeared. It covers 533 pages and contains many illustrations. While articles on different branches of natural history are published in the volume, entomology seems perhaps to hold the principal place, and there are many notes on insects, usually rather short and of diverse character. Insects of a number of different orders are included. While the language for the most part is Spanish, English and French are also used, and the authors are by no means confined to South America. The present volume contains articles by Dr. Walther Horn of Germany and Father Navas of Spain. An interesting feature of the volume is the publication of a number of portraits of naturalists. The present volume contains especially good ones of Dr. R. A. Philippi, Prof. Carlo Emery, Dr. Carlos Spegazzini and Dr. A. Lipschutz. The volume is also of much interest from its department of scientific news, its series of notes from Doctor Porter's correspondence, and from its accounts of the proceedings of the Entomological Society of Chile, of the Chilean Academy of Natural Sciences and of the Chilean Society of Natural History. One must wonder at the indefatigable energy of Doctor Porter and must praise him for this tangible result of his long work.

L. O. Howard.

JUNE, 1927

ENTOMOLOGICAL NEWS

Vol. XXXVIII No. 6

JAMES H. B. BLAND,
1833-1911

CONTENTS

PHILADELPHIA, PA.
THE ACADEMY OF NATURAL SCIENCES.
Logan Square

Entered at the Philadelphia, Pa., Post Office as Second Class Matter.
Acceptance for mailing at the special rate of postage prescribed for in Section 1103, Act of October 3, 1917, authorized January 15, 1921.

ENTOMOLOGICAL NEWS

published monthly, excepting August and September, by The American Entomological Society.

Philip P. Calvert, Ph.D., Editor; E. T. Cresson, Jr., Associate Editor.

Advisory Committtee: Philip Laurent, J. A. G. Rehn, Chas. Liebeck, J. Chester Bradley, Ph.D., Frank Morton Jones, John C. Lutz, Max Kisliuk, Jr.

The subscription price per year of ten (10) numbers is as follows:

United States and possessions . .	$3.00
Canada, Central and South America .	3.15
Foreign	3.25

Single copies 35 cents

ADVERTISING RATES: Full width of page. Payments in advance.

One issue, 1 in.,	$ 1.20,	2 in.,	$ 2.40,	half page,	$ 4.00,	full page,,	$ 8.00
Ten issues "	11.00,	"	20.00,	"	35.00,	"	70.00

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MANUSCRIPTS. Address all other communications to the editor, Dr. P. P. Calvert, Zoological Laboratory, University of Pennsylvania, Philadelphia. Pa.

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. The receipt of all papers will be acknowledged. Proof will be sent to authors when requested. Twenty-five "extras" of an author's contribution, without change in form and without covers, will be given free when they are wanted; if more than twenty-five copies are desired *this should be stated on the MS.*

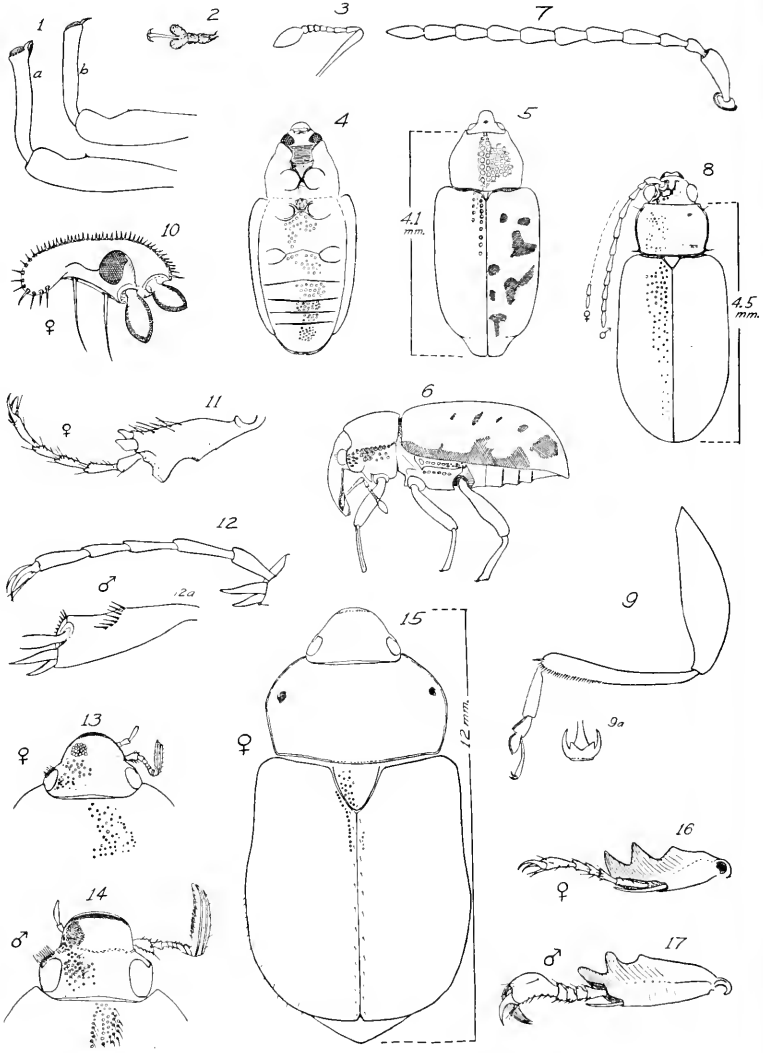
Owing to increased cost of labor and materials, no illustrations will be published in the NEWS for the present, except where authors furnish the necessary blocks, or pay in advance the cost of making blocks and pay for the cost of printing plates. Information as to the cost will be furnished in each case on application to the Editor. Blocks furnished or paid for by authors will, of course, be returned to authors, after publication, if desired.

STATED MEETINGS

Of The American Entomological Society will be held at 7.30 o'clock P. M., on the fourth Thursday of each month, excepting June, July, August, November and December, and on the third Thursday of November and December.

Communications on observations made in the course of your studies are solicited; also exhibits of any specimens you consider of interest.

The printer of the NEWS will furnish reprints of articles over and above the twenty-five given free at the following rates: One or two pages, twenty-five copies, 35 cents; three or four pages, twenty-five copies, 70 cents; five to eight pages, twenty-five copies, $1.40; nine to twelve pages, twenty-five copies, $2.00; each half-tone plate, twenty-five copies, 30 cents; each plate of line cuts, twenty-five copies, 25 cents; greater numbers of copies will be at the corresponding multiples of these rates.



MICRALCINUS KALMBACHI, 1-6; HALTICA LUDOVICIANA, 7-9; OCHROSIDIA NIGRICOLLIS, 10-17.—BUCHANAN.

ENTOMOLOGICAL NEWS

VOL. XXXVIII JUNE, 1927 No. 6

Notes on Some Light-Attracted Beetles from Louisiana (Coleop.).

By L. L. BUCHANAN, U. S. Biological Survey.

(Plate III.)

The following notes are based on a large assortment of light-attracted beetles, collected by E. R. Kalmbach, of the Biological Survey, during the summer of 1925[1]. All of the material was picked up under a single light on the outskirts of Gueydan, a small town about 30 miles from the Gulf Coast, in southwestern Louisiana. The collection probably contains a good proportion of the night-flying beetles of this locality, and offers a fine illustration of the possibilities of light collecting under favorable conditions.

Several hundred thousand specimens of beetles[2], representing more than 250 species of 34 families, were secured in about two dozen visits to the one light, during the period from early in May to late in August. Approximately one-fifth of the species taken are represented by good series, ranging in number of individuals from 8 or 10 up to many thousands each. The Carabidae, especially in the Clivini and the smaller Harpalini, outnumbered any other family in species and individuals, followed by the Dytiscidae, Hydrophilidae, Curculionidae, Scarabaeidae, Anthicidae, Staphylinidae, Chrysomelidae, Heteroceridae and Elateridae.

Of the species which came regularly and abundantly, *Lissorhoptrus simplex*, the rice water-weevil, probably heads the

[1]Many Hemiptera and a few Diptera, Hymenoptera and Orthoptera also were taken. Fortunately for the condition of the specimens of these orders, Lepidoptera were rarely encountered.

[2]It should be noted that Mr. Kalmbach kept, for each evening's representation, a sample only of the immense swarms that sometimes came to the light; the total number attracted, therefore, must have reached figures well into the millions. The subject of notable aggregations of insects is covered in an interesting article by Charles T. Brues, American Naturalist, LX, No. 671, Nov.-Dec., 1926, pp. 526-545.

list; one night's catch of this beetle numbered several thousand individuals. Others which appeared in profusion are:—*Enochrus ochraccus*, *Berosus* spp., *Celina angustata*, *Laccophilus* sp., *Bidessus* spp., *Monocrepidius bellus*, *Eulimnichus ater*, *Ataenius* and *Aphodius* spp. and *Anthicus* spp. Unusual features of the collection as a whole are the dominance of aquatic, subaquatic and epigeal forms; the scarcity of certain arboreal groups ordinarily met with at light,—such as the Cerambycidae, of which a single species only, *Stenodontes dasystomus* Say, was taken; and the presence of one species of *Sphenophorus (ludovicianus* Chttn.), the only record known to the writer of a member of this genus coming to light.

It is not desirable to go into detail here regarding most of the species, but three of them which happen to be little known or of more than usual taxonomic interest, are figured and briefly discussed.

Cyclocephala robusta Lec., a Scarabaeid described from Texas in 1866 but apparently not recently recognized, was collected at Gueydan in small numbers about equally divided between the sexes. Horn (71-336) states that *robusta* is the same as *nigricollis* Burmeister (47-54), basing the synonymy on an examination of typical specimens of *nigricollis* sent him from Europe by Leconte. Casey omits the Burmeister and Leconte names in his 1915 review of the Dynastinae, and Leng (18-260) lists both as unrecognized forms of *Spilosota* Csy. The rejection of Horn's synonymy, and the uncertainty regarding the systematic position of *nigricollis* and *robusta* are probably due, in large part, to the pronounced sexual differences which will be described later. The Gueydan species fits *robusta*, according to a comparison Mr. Banks kindly made with the Leconte type, and so far as I can see it agrees also, in all essentials, with Burmeister's description of *nigricollis*. It is significant that Burmeister mentions particularly the dark color and shining surface of his species, two very characteristic features which contrast strongly with the pallid coloration of the other *Cyclocephala*, most of which are now placed with *Ochrosidia* and *Spilosota*. The foregoing considerations leave no reasonable doubt that Horn's synonymy is correct, and that *nigricollis*

Burm., with its synonym *robusta* Lec., should be reinstated as a valid species in the North American list.

The generic position of *nigricollis*, however, is not clear. It belongs with either *Spilosota* or *Ochrosidia*, differing from the former in the shape of clypeus, dark color and more rounded ligular apex; and from the latter in the more widely separated middle coxae, darker color, and in its special combination of characters. Though there is little choice between the two generic assignments, it is perhaps better to place *nigricollis* provisionally with *Ochrosidia*, which already includes a considerable diversity of structural detail, rather than with the smaller and more sharply defined genus *Spilosota*. Granting the inclusion of *nigricollis* in *Ochrosidia*, the species will form the type of an additional section,—"Section C",— of Casey's Group I (15-142) as follows:—

Body stout; pronotum margined at base, the margin often more or less interrupted at middle; hind tarsi as in Section A; larger claw of anterior male tarsi simple, *i.e.*, uncleft; ♂ hairy, ♀ glabrous, above; color above, at least on elytra, darker than in any other *Ochrosidia*, ranging from reddish-brown to nearly black, pronotum paler. Section C. *nigricollis* Burm. (syn. *robusta* Lec.) Tex.; La.

Ochrosidia nigricollis Burmeister. Body robust, a little stouter and more convex in the ♀; more shining above, and with slightly coarser punctuation than in *villosa* or *immaculata*; ♂ darker above in general than ♀; head generally black or dark reddish, clypeus a little paler, pronotum in ♀ clear rufous except for the submarginal dark spot, in ♂ generally marked with a large dark cloud each side of middle in addition to the marginal spots. Elytra reddish to nearly black, a little paler than vertex of head.

Dorsum of ♂, including the pygidium but excluding the clypeus, clothed with fine erect hairs which vary from one-half to three-fourths length of scutellum; dorsum of ♀ glabrous except for some short hairs along sides of elytra, and a widely spaced row along sutural interval. Pronotum margined across base, the margin sometimes complete, but generally more or less interrupted, rarely entirely absent, at middle. Ligula oblong, sides subparallel from near base to apical fifth where they converge to the rounded or subtruncate apex. The

apical ligular lobes, so distinct in *immaculata*, etc., are here at most very feebly developed.

Length. 10- 12 mm. Sexual differences affecting the head, eyes, antennae and legs are figured.

HALTICA LUDOVICIANA Fall, another beetle taken by Mr. Kalmbach, is of some interest on account of its close superficial resemblance to certain *Luperodes*, such as *L. meraca*.

The ♂ is smaller than ♀, with the antennae relatively a little longer, and with the apical margin of the last ventral segment very feebly produced, at middle third, in a broadly rounded, transversely impressed lobe. The third and fourth tarsal segments, and the tips of first and second, are dusky. Length, 4.25-5.25 mm.

The Curculionid genus MICRALCINUS is represented in the Gueydan collection by two examples of an undescribed species, and is brought to notice here chiefly to point out its true antennal structure. Leconte (76-235) in describing *Micralcinus*, does not state the number of funicular segments, but assumably knew it to be 7, since he included his genus in the Ithypori with genera having a 7-segmented funicle. Blatchley did not have specimens but, believing the number to be 6, transfers the genus from the Ithypori to the Cryptorhynchini, placing it next *Tylodcrma* (16-488 and 494). As a matter of fact, the funicle is distinctly 7-segmented, both in the new species and in M. *cribratus* Lec., of which there is a small series in the National Museum collection. The organization of the body in general is also of a normal Ithyporid type, the shape of the scrobe and, more particularly, the structure of pro- and meso-sternum being diagnostic. In view of these facts, it is clear that *Micralcinus* belongs, as Leconte placed it, in the vicinity of *Conotrachelus*. It differs from any other of our Ithyporid genera in its free and simple claws, protuberant mesosternum, flat elytral intervals, and strongly developed prothoracic ocular lobes. The anterior coxae are narrowly separated,—about as in *Conotrachelus crataegi*.

External sexual differences of *Micralcinus*, taken from *M. cribratus* Lec, are;—♂ with a concavity at base of abdomen, and with fore tibiae distinctly arcuate; ♀ with the last abdominal segment deflexed upward (as in *Apion*) and arcuately flattened across apical fifth; legs shorter and stouter.

The two species are separated as follows;—

1. Femora unarmed; sides of pronotum subparallel in basal two-thirds; Florida ..... *cribratus* Leconte
2. Femora with a small tooth; sides of pronotum slightly converging from middle to base; Louisiana. *kalmbachi* n. sp.

Micralcinus kalmbachi, new species.

Length, 4.1 mm. (prothorax and elytra); width, 2 mm.; length of prothorax, 1.09 mm., width, 1.3 mm. Body oblong, ground color reddish, the elytra irregularly marked with black blotches. Vestiture of narrow, white, prostrate, scale-like hairs. Prothorax cribrately punctured.

Beak sub-cylindrical, evenly curved, rugosely punctured, bluntly carinate above, coarsely foveate between the eyes, very feebly set off from head; vestiture fine, sparse, and lying transversely. Head coarsely and closely punctured, the hairs shorter and closer than on beak. Eyes moderately convex.

Punctures of pronotum nearly meeting along middle, vestiture very sparse, but longer, especially at sides, than on beak or elytra. Elytra with humeri rounded, more prominent than in *Tyloderma foveolata*, less so than in *Conotrachelus naso*. Strial punctures large and close, the striae themselves not defined except on declivity; intervals nearly flat, the sutural slightly elevated on declivity. Scales 6 or 8 times longer than broad, prostrate except for an unevenly spaced, inclined row along alternate intervals (beginning with sutural), condensed in a patch at base of 3rd interval, and showing a tendency to form spots or transverse bands. The scales are unevenly distributed, being contiguous or slightly overlapping in a few places, widely separated in others, and extremely minute and sparse on the black areas. The black areas differ in size, shape and position on the two elytra, though the spot on declivity and the broad streak along margin from base to near apex appear to be more constant.

Under surface darker than above, vestiture, which is of hairs rather than scales, less appressed than above. Punctures large, not very dense, smaller and denser on 5th segment, —in no place approaching the size of the pronotal punctures. Tibiae nearly straight, shorter than femora. The femoral tooth, more strictly a denticle, is most prominent on the posterior legs, and hardly visible on the front pair.

2 ♀♀, Gueydan, Louisiana, Aug. 5, 1925, at light. E. R. Kalmbach.

Type, Cat. No. 40101, U. S. National Museum. Paratype in collection Biological Survey.

The mesosternal protuberance differs in the two examples, having its anterior face nearly perpendicular in the type, but slightly produced forward at apex, and consequently sloping backward in profile, in the paratype. In *cribratus* Lec. the sides of the elytra are a little more convergent apically, and the legs (♀) stouter, than in *kalmbachi*.

EXPLANATION OF PLATE III.

Figs. 1, 2, 3, 4, 5, and 6:—*Micralcinus kalmbachi*, n. sp. *1a*, posterior leg; *1b*, anterior leg. 2, anterior tarsus.

Figs. 7, 8, and 9:—Enlarged antenna, dorsal view of body, and posterior leg of *Haltica ludoviciana*.

Figs. 10 to 17 inclusive:—*Ochrosidia nigricollis*. 10, end view of tip of posterior tibia of ♀; 11, posterior tibia and tarsus of ♀; 12, same of ♂; 16, anterior tibia and tarsus of ♀; 17, same of ♂.

Collecting Experiences in Ecuador.

EDITOR ENTOMOLOGICAL NEWS:

Huigra, Ecuador,
Feb. 14th, 1927.

In response to your request for a letter for the NEWS, descriptive of my trip, and collecting experiences, during the three and a half months I have spent in this interesting "country of revolutions," I shall try to give you a brief account of my experiences in Ecuador.*

After awaiting the arrival of Mr. W. J. Coxey, of your city, who joined me in Guayaquil to make the trip with me through Ecuador, we took train to Huigra. I had letters of introduction to J. C. Dobbie, president of the Guayaquil & Quito Railway Company and also to Mr. F. J. White, Mr. Dobbie's assistant, who have their offices here. It happened that we met these gentlemen on the train going up and after presenting my letters, an invitation to tea the following afternoon and a game of tennis was extended. The next day we called at Mr. Dobbie's office and he presented us with letters giving us free transportation over

* See the NEWS for December, 1926, pages 325-328. Mr. Coxey's narrative of his expedition has been published in the *Year Book of the Academy of Natural Sciences of Philadelphia* for 1926, pp. 5-20, with photographic illustrations.—ED.

the entire line and furnished us with a gravity car to take our baggage to Kilometer Post No. 99, where we established our camp alongside of the railway track in a good collecting locality. Our camp was made a flag station and we could flag any and all trains at any time, which made it very easy to reach good collecting localities either up or down the track, and then flag any train available to return to camp. We spent ten days here and secured some good things. We then returned to Huigra and I went on to Quito, while Mr. Coxey remained a few days in Huigra.

Enroute to Quito one enjoys some beautiful scenery, picturesque huts and villages; quaint Indian venders visit the train to sell fruits, etc., but the crowning features of the trip are the superb views one gets (if it is clear) of Cotopaxi, Tunguragua, and the mighty Chimborazo towering something over 20,000 feet above sea level and the second highest mountain in South America. All the above are snow-capped and Tunguragua is an active volcano.

In Quito, one evening just before dinner, I was startled by loud shouting, the firing of rifles and crashing of glass. On looking out I saw thousands of men filling the streets who were being driven by mounted soldiers in front of them. These men, mostly students, remonstrated with clubs and stones, while the soldiers used their swords frequently and now and then a gunshot was heard. It lasted but two hours with one man killed and several injured and was one of those frequent uprisings which spring up here at a moment's notice.

On my return from Quito I stopped at Riobamba to visit friends and outfit with provisions, etc., for my trip into the interior. I had secured two men in Quito to accompany me and they arrived on the 16th of November on which day we left Riobamba with six burros for cargo and a mule which I rode, my two men and two Indian drivers going on foot. The first day was through a sandy desert-like country with much cactus, sand dunes and other desert characteristics. That night we slept in a schoolhouse and were off next day at 5 A. M. We crossed a very rickety bridge over which the burros had to be literally dragged; all cargo was unloaded and carried

across by hand. Our next difficulty was in passing with safety through a canyon near the foot of Tunguragua. The walls of this canyon were 100 to 150 feet high and composed of boulders, large and small, embedded in fine loose volcanic ash. The canyon was from 10 to 50 feet wide at the bottom where our trail led, and the wind whistled down it with great force, carrying a blinding cloud of volcanic ash as it went. The wind formed the canyon as no water ever flows in it and as the wind blew away the loose volcanic ash from around the boulders imbedded in the side walls these boulders came crashing down at intervals so numerous as to make it dangerous to pass, but there was no other way. You may imagine how I felt in a blinding dust storm groping along with boulders dropping in front and behind me, any one of which would have killed me had it struck me. I got through with safety as did also all the burros and all my men but one. One poor Indian driver was struck and had to be carried up out of the canyon, but after an hour's delay he recovered and we went on. One boulder struck a wooden box on the back of a burro and broke the half-inch-thick boards, but no really serious accident occurred, so we arrived in the small village of Baños that night at 7 o'clock very tired and for my part sore and lame, as I was not used to mule riding.

We rested a day in Baños and I collected a few things nearby, visited a beautiful waterfall which drops some 300 feet, and not 50 feet from this a large hot spring gushes forth and at about 100 feet the other side of the falls is some of the finest mineral water I ever drank. After a day's rest we went on to Yunguilia where I stopped ten days to collect, but collecting was not very good, so I took six mules and went on two days further to Mera where I stayed three weeks. Here, one evening at dusk, as I was busy at my table with sorting and papering the day's catch, I heard shouting and saw six men chasing a man who was carrying a large cutlass. On inquiry I learned that the man they were after had almost cut a man's head off. Sure enough, a moment later two women came leading this poor fellow to me for medical aid. This terrible gash gaped some three inches wide open, with the

blood spurting from arteries in all directions. The sight sickened me, I was no doctor and knew very little of what should be done, but there was no time to lose, so we laid the poor fellow down on a dirt floor and with the crude instruments and knowledge I had I set to work. I first bathed the entire wound in iodine and with alcohol, then dipping my butterfly forceps in iodine I caught the arteries one by one, pulled them out and tied each with a thread soaked in iodine. Then with needle and thread, dipped in iodine, I sewed up the great gaping wound and I had no idea the human hide was so tough. I broke four needles on the job and had to use the spool to force the needle through each stitch. After this another bath in iodine and cotton and bandages completed the job. I expected to hear any time he was dead, as the bone supporting the head could be plainly seen, so deep was the cut, but the night passed and he still lived. I called to take his temperature and read his pulse. I gave him a laxative and his brother got four Indians to carry him over the rough trails three-days' journey to Ambato to the clinic. After two weeks this poor fellow sent me a letter, thanking me for what I had done and the doctor added a note stating that the man would live, and he did, for I saw him in Ambato three months later on my return from the Oriente district.

Collecting in and about Mera was only fair though I did get one or two very good things, the prize being the large white *Morpho fruhstorferi*. After three weeks in Mera I sent one of my men two days' journey to Canelos to secure eight Indians to carry my cargo on to Puyo. We left at 9 A. M. but the trails were very bad and the walking was difficult and night overtook us before we reached our destination, so the Indians cut palm leaves and made a rude shelter to keep the rain off. On other palm leaves, which were spread on the ground for a bed, I laid down in soaked clothing without food, light, or even a smoke and spent the night wondering if I would get sick from my experience. Next day we were off at daylight, wading through mud and water in places knee deep and in one place one Indian sank in so deep that he could not extricate himself with the 75-pound pack he was carrying and had

to be pulled out. It rained torrents all the way and we arrived at 9 o'clock that morning in Puyo, pretty well tired out and soaked through and through. A delay of two days here was needed to secure other Indians and two canoes to go on to Indillyama, a one-day trip down the Pindo and Puyo rivers where we arrived safely after one or two exciting moments while shooting the rapids.

At Indillyama we secured eight other Indians for another hike over the mountains to Canelos. The trail followed a knife-like ridge a good share of the way and was better than the Puyo trail, but it rained all day and we had to cross three rivers which were high because of much rain and we were soaked up to our waists in crossing them. The Indians had gone on ahead and one of my men, who said he knew the trail, got lost and we were wandering about, yelling and shouting for help, when we gave up and had just completed a sort of rude shelter of leaves under which to spend the night, when an Indian came along and guided us across the river and to Canelos which was only a short distance farther down and which we reached at 7.30 P. M.

At Canelos another wait of two days was necessary to secure Indians and two canoes to take us three days down the Bobanaza River to my objective, Sarayacu, where I camped for one month and collected. I was unfortunate in striking the rainy season here, which made it difficult to get around, and secured only a small portion of what might be taken here if one could have sunshine. Out of three months I had but three three days of sunshine, with now and then a day when the sun would break through the clouds for from ten to twenty minutes at a time, two or three times a day. Such weather conditions considerably reduced the number of specimens I might have taken, but I shall never regret my trip as I passed through some very beautiful country along the Pastaza River. At Puyo one can take a canoe down the Pindo two hours to reach the Pastaza and then twenty-eight days down this and the Marañon to the mighty Amazon and Iquitos and then by steamer to Para and on to New York.

On my return it required four days to reach Canelos from

Sarayacu, as the canoes had to be poled up against the current. One day our canoe was passing under an overhanging tree and a small green snake dropped into it and almost into my lap. I brushed it out into the river. Another beautiful snake we saw crossing the river. Its colors were red, black and white bands and it was some four feet long. I secured a small monkey about 4 inches high with its tail twice that length from an Indian and paid him 5 barras of cloth for it. Everything has to be paid for with needles, cloth, mirrors, handkerchiefs, beads, earrings, finger rings, necklaces and other trinkets in dealing with the Indians, as they do not know the value of money.

When we arrived at Canelos on my return we secured eight Indians to each of whom I gave ten yards of cloth to take my cargo to Baños, an eight-days' trip. They took my cargo to Puyo, one day from Canelos. On getting up in the morning I found all my Indians had departed, taking the cloth with them. This delayed me three days more to obtain other Indians who took my things to Mera, where I secured mules to return to Baños and then to Pilileo where I got the train to Ambato and on to Riobamba next day. After a couple of days in Riobamba packing up things I had left there and visiting friends, I came on to Huigra where I have stopped another two days to see and thank railway officials and friends who had extended courtesies to me.

Tomorrow I leave for Guayaquil and on the 17th expect to take a Peruvian steamer to Buenaventura, Colombia, where I take train one day to Cali, collect there two weeks, then steamer to Cartago, mules to Ibague, across the Quindo pass and then train for Bogota, auto to Muzo where I expect to see the Government emerald mines and collect. Returning to Bogota, I take river steamer down the Magdalena River to Barranquilla and on to Puerto Columbia in train, where I get my boat to New York and the good old U. S. A. I will be able to give you a more detailed account of my trip when I see you in Philadelphia, as I expect to stop there a day or so on my return.

Very sincerely,

A. F. PORTER.

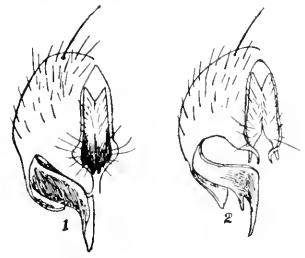
A New Species of the Genus Fannia R.-D. from North America (Diptera, Anthomyiidae).

By J. R. Malloch, U. S. Biological Survey.

For the past 30 years *Fannia fuscula* Fallen has been accepted as the name of a moderately common species occurring in this country. Recently when making some identifications in the genus I noticed that the hypopygium of this species did not agree exactly with that of European examples of the true *fuscula* and dissection of the two forms shows that they are evidently distinct species. The new one is described below.

Fannia americana sp. n.

♂ Similar to *fuscula* in every particular except in the structure of the male hypopygium. In *fuscula* (Fig. 1) the superior forceps are separated from the main part by a very narrow slit and have no small tooth at the curve on under side, the process along the basal half of the forceps on the upper side appears like a raised rim in dry specimens and there is no evident separation between it and the forceps; in cleared specimens this process is seen to be rather stout, and rounded at apex, and the central bifid dorsal plate terminates in a pair of black approximated points, with the sides irregularly sloping off and also blackened. In *americana* (Fig. 2) the forceps are more curved, sharper at apices, and have a small tooth at curve on under side; they are widely separated from the main portion by a rounded opening, the process along upper margin of latter is slender and curved, and the bifid dorsal plate is deeply split at apex, the apical arms being divergent, sharp at apices, and not blackened. The figures present one side of hypopygium from below.



Length, 5.5-6.5 mm.

Type, Pimmit Run, Virginia, June 2, 1923 (J. M. Aldrich). *Type* in United States National Museum. Paratypes, Virginia, near Plummers Is., June 2, 1916; Glencarlyn, Virginia, June 17, 1917 (W. L. McAtee); same locality, June 11, 1925 (J. R. Malloch); Glen Echo, Maryland, July 23, 1921 (J. R. Malloch).

I have seen *fuscula* Fallen from Bar Harbor, Maine.

Some Coleoptera of the North Saskatchewan Headwaters—Canadian Rocky Mountains.

By J. Monroe Thorington, M. D., Philadelphia, Penna.

During the course of several mountaineering expeditions to the icefield sources of the North Saskatchewan and Athabaska rivers, the writer and his companions have noticed the abundance of insect life to be seen during traverses of many of the higher snowfields. Our attention was arrested by this while at the Freshfield icefield (1922), on the Columbia icefield (1923), and, to a lesser extent, on the Hooker and other icefields adjacent to Athabaska Pass (1924).

The Columbia icefield, the largest in the Rocky Mountains of Canada, contains approximately one hundred and twenty-five square miles, and is situated on the Continental Divide (Alberta-British Columbia) in Latitude 52° 12'. It forms a compact triple-divide, draining to the Columbia, Saskatchewan and Athabaska river systems. During the course of two crossings of this field, we found numerous moths and beetles on the snow, at 10,000 feet and above, carried up there by air-currents. The insects were alive, although torpid from cold, and appear to be a dependable source of food supply for small birds that one sees wheeling and darting about. Due to their small size and generally dark color, the insects absorb heat and melt small pits in the snow surface from which they are unable to extricate themselves.[1]

No systematic attempts were made at collecting during these years; we were not entomologists, but were primarily interested in topography and the self-sufficient ends of mountaineering sport. However, during the course of an expedition to Glacier Lake, in July, 1926, the interest of the North Saskatchewan valleys as a relatively unstudied area induced us to make such scientific observations as our somewhat limited knowledge permitted. Geology, glacial motion, botany, color and motion-picture photography and entomological collecting were among our objectives.

A portion of the data obtained has been published elsewhere.[2]

[1] *The Glittering Mountains of Canada*, J. Monroe Thorington (Lea, 1925), p. 89.

[2] *The Mountains of Glacier Lake*, J. Monroe Thorington; Alpine Journal xxxix, May, 1927. *The Lyell and Freshfield Glaciers, Canadian Rocky Mountains*, J. Monroe Thorington; Smithsonian Miscellaneous Collections, Vol. 78, No. 6, 1927.

The purpose of the present paper is to report the coleoptera obtained, as, owing to lack of facilities and time, no other order of insects was collected.

Leaving Lake Louise, on the Canadian Pacific railroad, on June 30, we proceeded northward by the Bow (South Saskatchewan) valley and encamped on the slopes of Mt. Hector, reaching Bow Lake on the following morning. On July 2 we crossed Bow Pass to the North Saskatchewan, making camp at the upper Wildfowl Lake (4800 feet). Here were obtained *Nestoleptura crassipes* Lec. and *Monochamus monticola* Csy. The ground is made up of gravel and small stones, with a sparse growth of bush and jack-pine.

On July 3 we reached the forks of the Saskatchewan, camping by the river not far below and across from the Glacier Lake stream. The elevation is about 4200 feet, the soil being glacial sand and gravel. Several species of *Bembidion* were obtained here.

Next day we reached the flats at the upper end of Glacier Lake, where we maintained a base camp until July 14. The elevation is 4800 feet. At this camp were collected *Opisthius richardsoni*, Kby., *Notiophilus borealis* Harr, and the rare palaearctic Carabid *Miscodera arctica* Payk. In addition we secured *Cryptohypnus nocturnus* Esch., *Magdalis* sp., *Acmaeops pratensis* Laich., *Neoclytus muricatulus* Kby., *Chrysobothris trinervia* Kby. and *Anthaxia aenogaster* Cast. The Buprestids and Cerambycids were taken on fresh-cut timber, their activity and speed making them difficult to capture.

A high camp, 7000 feet, was made above the north lateral moraine of the Lyell glacier on July 4, serving for climbs on the icefield until July 9. The ground was a carpet of heather, interspersed with boulders and storm-twisted pines. *Nebria hudsonica* Lec., *Xylotrechus montanicus* Csy. and *Lepyrus colon* L. were found.

On the Lyell icefield, at 10,000 feet, only Cerambycids were seen, but they were very common. *Criocephalus productus* Lec. and *Leptura pedalis* Lec., were collected on July 6, during an ascent of Mt. Lyell.

On July 12, from a bivouac in the angle between the Mons and Lyell glaciers, the ascent of Mt. Forbes (11,902 feet) was

made. No coleoptera were encountered, but large aphids were noticed on the snow above 11,500 feet.

On the Freshfield glacier, during the course of measurements on ice motion, on July 15, several specimens of *Pachyta liturata* Kby. were found. That birds do not take them from bare ice is evidenced by the fact that many of these Cerambycids were dead and partially decomposed. On the upper snowfields, however, the specimens were almost invariably alive, and birds frequently in evidence.

Returning to the Saskatchewan valley, on July 16, we camped on Howse river, at 4300 feet, above the Glacier Lake stream. Here the ground was mossy and green, with timber and many flowers. *Platynus* sp., *Thanasimus undulatus* Say., *Judolia sexmaculata* L. and *Syneta carinata* Mannh. were found here.

Ordinary collecting methods were used throughout this expedition, although the technique employed on the icefields is believed to be unique. We were a mountaineering party, four on a rope, with definite objectives which permitted but infrequent halts if they were to be successfully attained. At such times a collector can not expect much sympathy from other members of the party. The writer, therefore, soon became adept in manipulating the climbing rope and a cyanide bottle with the left hand, while the ice-axe in the right served to slice out a small block of snow in which the desired specimen was seen. The snow was lifted from the axe blade and the insect transferred to the killing-bottle, the entire operation completed without retarding the progress of the climbers.

The Coleoptera taken at the higher levels were exclusively Cerambycids. These are strong in flight and, from their distribution on the snowfields, appear to have come chiefly from the Alberta side of the Continental Divide. Their association with moths, aphids, butterflies and wood-borers, with exclusion of other coleoptera, as typical of the insect life on the snowfields, is of interest.

While, with the exception of *Miscodera arctica*, no very unusual specimens were secured, yet the data obtained add to the knowledge of distribution through an interesting area practically

unknown to collectors. In all, one hundred and sixty Coleoptera were brought back in good condition. Mr. Frank R. Mason has kindly identified and classified them as follows:—

CARABIDAE.

Opisthius richardsoni Kby. Glacier Lake, 4800 feet, July 5.
Notiophilus borealis Harr. Glacier Lake, 4800 feet, July 5.
**Miscodera arctica* Payk. Glacier Lake, 4800 feet, July 5.
Nebria hudsonica Lec. Glacier Lake, 7000 feet, July 9.
Bembidion, several species. Saskatchewan Forks, 4200 feet, July 3.
Platynus sp. Saskatchewan River, 4300 feet, July 16.

CLERIDAE.

Thanasimus undulatus Say. Saskatchewan River, 4300 feet, July 16.

ELATERIDAE.

Cryptohypnus nocturnus Esch. Glacier Lake, 4800 feet, July 5.

BUPRESTIDAE.

Chrysobothris trinervia Kby. Glacier Lake, 4800 feet, July 5.
Melanophila fulvoguttata Harris. Glacier Lake, 4800 feet, July 5.
var. *drummondi* Kby. Glacier Lake, 4800 feet, July 5.
Anthaxia aencogaster Cast. Glacier Lake, 4800 feet, July 5.

CERAMBYCIDAE.

Criocephalus productus Lec. Lyell Icefield, 10,000 feet, July 6.
Pachyta liturata Kby. Freshfield Glacier, 6500 feet, July 15.
**Judolia sexmaculata* L. Saskatchewan River, 4300 feet, July 16.
Nestoleptura crassipes Lec. Wildfowl Lake, 4800 feet, July 2.
Monochamus monticola Csy. Wildfowl Lake, 4800 feet, July 2.
**Acmaeops pratensis* Laich. Glacier Lake, 4800 feet, July 5.
Neoclytus muricatulus Kby. Glacier Lake, 4800 feet, July 5.
Xylotrechus montanicus Csy. Glacier Lake, 7000 feet, July 9.
Leptura pedalis Lec. Lyell Icefield, 10,000 feet, July 6.

CHRYSOMELIDAE.

Syneta carinata Mannh. Saskatchewan River, 4300 feet, July 16.

CURCULIONIDAE.

Lepyrus colon L. Glacier Lake, 7000 feet, July 9.
Magdalis sp. Glacier Lake, 4800 feet, July 5.

(Palaearctic species are marked with an asterisk.)

Undescribed Species of Crane-flies from the Eastern United States and Canada (Dipt.: Tipulidae). Part IV.

By Charles P. Alexander, Massachusetts Agricultural College, Amherst, Massachusetts.

In the present installment under this general title, four undescribed species of the genus *Tipula* from the Southeastern United States are discussed. As before, all of these species were collected by my friend, Professor J. Speed Rogers, to whom my sincere thanks are extended for the privilege of examining this important series. The types have been returned to Professor Rogers.

Tipula osceola sp. n.

Belongs to the *tricolor* group; allied to *T. sayi* Alexander and *T. ludoviciana* Alexander; antennae of male relatively long, the flagellar segments very strongly constricted so as to appear binodose.

♂. Length about 14 mm.; wing 12.5 mm.; antenna about 5 mm. ♀. Length about 20 mm.; wing 17-18 mm.

Frontal prolongation of head light gray above, darker laterally, the nasus slender; palpi brownish black. Antennae (♂) relatively elongate, conspicuous, the segments strongly constricted so as to appear binodose; scape pale, the basal segment pruinose; first flagellar segment simple or nearly so, obscure yellow; second flagellar segment feebly bicolorous, the apex and constricted portion being pale, the remainder black; the succeeding two or three segments have the extreme apex pale; the remainder of the organ black. In the female, the flagellar segments are simple or very nearly so but the individual segments are strongly constricted at the incisures. Head light gray with a broken capillary brown median vitta.

Mesonotal praescutum buffy, the lateral margins gray, the disk with three brown stripes that are narrowly margined with darker brown, the median stripe further divided by a capillary dark brown vitta; lateral stripes more nearly entire; scutum buffy, with brown marks on the lobes, the caudal margin and remaining sclerites of the mesonotum clear light gray pruinose; scutellum with a very tenuous capillary brown median line. Pleura gray. Halteres elongate, the stem brownish yellow, the knob dark brown.

Legs with the coxae light gray pruinose; trochanters brownish yellow, more sparsely pruinose; femora yellowish brown, gradually darkening, the distal third or more black; remainder of legs black.

Wings of the general pattern of *T. sayi*, the dark brown costal margin followed by a whitish area of nearly equal width, the remainder of the wing strongly suffused with paler brown. Venation: Distal section of R_2 entire but very pale; vein *2nd A* long, the cell correspondingly narrow.

Abdominal tergites brownish yellow, the lateral margins of the segments sparsely pruinose; basal impressions black; sternites similar; hypopygium pale. Male hypopygium with the lobe of the tergal region very broad, entire. Outer dististyle pale. Abdomen of female more elongated. Ovipositor with the tergal valves long and slender.

Habitat.—Florida. *Holotype:* ♂, Gainesville, Alachua County, November 22, 1925 *(J. S. Rogers)*; No. 192. *Allotopotype:* ♀, November 10, 1923; No. 101. *Paratopotypes:* 8 ♂♀, October 27, 1923—November 22, 1925 *(J. S. Rogers)*.

Tipula maculipleura sp. n.

Belongs to the *tricolor* group; closely allied to *T. floridensis*, Alexander; thoracic pleura conspicuously marked with brown.

♂. Length about 15mm.; wing about 17 mm.

Generally similar and very closely allied to *T. floridensis*, differing especially in the coloration and details of structure of the male hypopygium.

Antennae bicolorous; wing-apex entirely darkened; whitish fascia at the cord not entirely traversing the wing.

Thorax yellowish, with conspicuous brown markings, including the following areas on the pleura: A large spot on the cephalic half of the anepisternum; ventral half of the sternopleurite and the propleura. The body of the type is discolored and it cannot be stated whether the pleura is heavily pruinose, as is usual in the group. Wings very similar to *floridensis;* cell *C* broader and more yellowish.

Abdominal tergites dark, the lateral margins of the segments broadly pale, the caudal margins more narrowly of this color; eighth tergite with the caudal margin broadly buffy. Male hypopygium with the ninth tergite dark, the caudal margin produced into an elongate median lobe that is a little narrowed shortly before the truncated or subtruncated apex; surface of this lobe with microscopic gray setulae; median area of the basal half of the lobe slightly elevated into a linear ridge.

Habitat.—Tennessee. *Holotype:* Allardt, Fentress County, altitude 1650 feet, June 14, 1924 *(J. S. Rogers)*; No. 28.

The only other regional member of the *tricolor* group with the thoracic pleura conspicuously marked with brown is *T. subcluta* Johnson, an otherwise very distinct species.

Tipula synchroa sp. n.

♂. Length about 7.5-8.5 mm; wing 7.8-9.5 mm. ♀. Length 9-11 mm.; wing 9.5-10 mm.

Generally similar to *T. annulicornis* Say, differing chiefly in the fact that the two sexes are similar in color, not dimorphic as in the last-named species. Antennae (♂) elongate, bicolorous, the basal portions of the segments being black, the distal portions yellow.

Mesonotal praescutum almost uniformly light brown, with a capillary darker brown median vitta. Wings a little more tinged with brown than in the males of *annulicornis* but less darkened than in the females of the same species.

Abdominal segments yellowish brown or light brown, the caudal margins of the segments narrowly brownish black. Median lobe of the ninth tergite of the hypopygium somewhat less compressed.

Habitat.—Florida. *Holotype:* ♂, Gainesville, Alachua County, March 4, 1922 *(J. S. Rogers)*; No. 18. *Allotopotype:* ♀, March 18, 1922; No. 29. *Paratopotypes:* ♂, September 15, 1923, No. 86; ♀, March 10, 1923, No. 64.

Tipula oxytona sp. n.

Allied to *T. georgiana* Alexander, differing especially in the coloration of the body and wings and the pointed posterior lobes of the inner dististyle of the male hypopygium.

♂. Length about 10-11 mm.; wing 11-12 mm.

Frontal prolongation of the head relatively elongate, shiny brownish yellow; nasus lacking; palpi dark brown, the basal segment paler. Antennae with the scapal segments yellow, the flagellar segments dark brown. Head suffused with brown, darker medially, the orbits more buffy.

Mesonotal praescutum brownish buffy, with three conspicuous brown stripes that are slightly margined laterally with darker brown; an ill-defined capillary brown median vitta; in some specimens, the anterior end of the median stripe is paler and in others all of the praescutal stripes are poorly-defined except for the narrow darker margins and median capillary vitta; scutal lobes buffy, largely concealed by two confluent brown areas; scutellum brownish testaceous, darker medially; postno-

tum brown, sparsely pruinose. Pleura pale whitish gray pruinose, the anepisternum and sternopleurite indistinctly variegated with darker. Halteres pale, the knobs brown.

Legs with the coxae and trochanters pale; femora brownish yellow, the tipe narrowly dark brown; tibiae brown, the tips scarcely darkened; tarsi passing through brown to brownish black.

Wings with a faint brownish tinge, the stigma brown; costal region brownish yellow; wing-base and a seam along *Cu* similarly colored; obliterative area crossing cell *1st* M_2. Venation: Petiole of cell M_1, about two-fifths to one-half the cell.

Abdomen brownish yellow, the caudal and especially the lateral margins of the tergites paler. Male hypopygium large and conspicuous, constructed much as in *georgiana*. Ninth tergite with the lateral lobes strongly incurved, the shiny median lobe obtusely rounded. Posterior lobes of the inner dististyle produced caudad into long conspicuous flattened blades that run out into subacute points, very different in shape from the short, broad, obtuse blades of *georgiana*.

Habitat.—Florida, *Holotype:* Marion County, April 4, 1926 *(J. S. Rogers);* No. 4. *Paratopotype:* ♂; *paratypes:* 3 ♂♂, Gainesville, Alachua County, February 12-14, 1922 *(J. S. Rogers);* Nos. 3, 4.

Los Angeles Butterfly Show.

The Sixth Annual Butterfly Show of the Lorquin Entomological Society of Los Angeles, California, was held in the Los Angeles Museum of History, Science and Art during the month of March. Fifteen thousand specimens were on display, loaned from nineteen private collections. Among other interesting exhibits was a collection of blown butterfly eggs mounted for microscopic study. Interest in the show rivalled that aroused by the Los Angeles wildflower shows, and over 56,000 people attended. Splendid publicity was given by the Los Angeles newspapers.

JOHN S. GARTH, *Secretary, Lorquin Society.*

Fernald Entomological Club.

The old Fernald Entomological Club was reorganized, with Dr. W. E. Hinds as president and Perez Simmons as secretary, on New Year's Eve in the Hotel Normandie, Philadelphia. The speaker of the evening was Dr. H. T. Fernald. There are no dues, and all entomologists who have worked under the Fernalds constitute the membership.

ENTOMOLOGICAL NEWS

PHILADELPHIA, PA., JUNE, 1927.

Does Familiarity Breed Contempt?

In the *Proceedings of the Entomological Society of Washington* for November, 1926, Mr. W. L. McAtee writes:

"Nomina conservanda have been adopted for the chief purpose of preserving familiar names . . . Getting at the root of the thing, what virtue is there in familiarity? Certainly there is no real value in preserving a familar name unless it embodies a definite concept. . . . Taxonomists can develop their own field according to their own best judgment, ignoring nomina conservanda which in consequence will eventually pass into the realm of forgotten things."

The assumption made in some quarters (we will not say by Mr. McAtee) that taxonomists or any other brand of naturalists, can ignore the work of the brands other than their own is extremely short-sighted and disastrous. Taxonomists are not the only ones who must use technical taxonomic terms. The taxonomist who wishes to improve his classification must frequently review the work of anatomists dealing with the same group in which he is interested, to determine whether the latter have found characteristics, hitherto unused in systematic zoology but which may well be employed in his field. If now a generic name whose original application to one, or at most two, species, like *Calopteryx* Leach 1815, has been in use for many years and has been frequently quoted by anatomists, embryologists and other non-taxonomists so that it is familiar to them and to taxonomists as well, has it not a definite concept behind it? *Calopteryx* (emended by Burmeister 1839 to *Calopteryx*) was formed out of *Agrion* Fabricius 1775, and *Calopteryx* and *Agrion* were used side by side and became, not later than 1850, the origins of tribal and soon (1853) subfamily names, Calopteryginae and Agrioninae.

In 1890, Kirby, by emphasizing Latreille's fixation of *virgo* Linnaeus (the species on which *Calopteryx* was based) as the "example" of *Agrion*, reduced *Calopteryx* to synonymy and, by

necessity, was compelled to propose a new name, *Coenagrion*, for the definite concept which *Agrion* had represented since 1815.

A decade or more passed before Kirby's example was followed to any extent, even by the taxonomists. In the last seventeen years, aided by a decision of the International Commission on Zoological Nomenclature, it has found wider acceptance.

Without arguing the question of priority vs. conservation, it must at least be admitted that he who searches zoological literature for all sorts of information on *Agrion* and Agrioninae (or Agrionidae, as the former subfamily has by some been raised to family rank) must, with increasing years, as he finds item after item, constantly inquire—Does this apply to *Agrion* of 1815 to say 1900 or to *Agrion* since 1910? Kirby admitted "the resulting confusion." Has the application of the law of priority brought any clearer concept to the name *Agrion?* Did not the *familiar* usage of 1815-1890 have a decided virtue? Can Mr. McAtee blame a taxonomist who admits a nomen conservandum under circumstances which, in his "own best judgment," appears on a number of grounds to be preferable to a strictly prior name?—P. P. Calvert.

Personals.

Dr. L. O. Howard, Chief of the Bureau of Entomology, U. S. Dept. of Agriculture, has been elected an honorary member of the New York Entomological Society.

Dr. Charles Joseph Gahan has retired, under the age limit, from the Keepership of the Entomological Department of the British Natural History Museum. Major E. E. Austen, Deputy Keeper, has been appointed to the Keepership.

Additions to the U. S. National Museum.

Dr. William Schaus recently donated to the National Museum a valuable collection of 10,000 specimens of moths, most of them from Bolivia, which were purchased by him from a collector of that country. (*Science*, April 22, 1927.)

The older amateur entomologists of the District of Columbia remember Henry F. Schoenborn very well indeed. He was a business man in Washington who had a large collection of Lepidoptera and was much interested in

entomology in general. His collection was cared for admirably. His technique in mounting and labeling was excellent. While not a founder of the Entomological Society of Washington, he joined at an early date, and was a warm friend and associate of Doctor Schwarz, Theo. Pergande, Otto Lugger, Otto Heidemann, and John B. Smith. He was born in Suhl, Thuringia, Germany, in 1833, and died in Washington in 1896. Very recently his surviving daughter and son, Miss Theresa F. and William E. Schoenborn have donated the collection to the U. S. National Museum. It includes about ten thousand specimens. They represent to a large extent the local fauna, but there are also very many European species.

L. O. HOWARD.

Entomological Literature

COMPILED BY E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published.

All continued papers, with few exceptions, are recorded only at their first installments.

Papers of systematic nature will be found in the paragraph beginning with (N). Those pertaining to Neotropical species only will be found in paragraphs beginning with (S). Those containing descriptions of new forms are preceded by an *.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

Papers published in the Entomological News are not listed.

4—Canadian Ent., Guelph. **5**—Psyche, Cambridge, Mass. **7**—Ann., Ent. Soc. America, Columbus, Ohio. **8**—Ent. Monthly Mag., London. **9**—Entomologist, London **10**—Proc., Ent. Soc., Washington. **13**—Jour. of Ent. and Zoology, Claremont, Cal. **14**—Ent. Zeitschrift, Frankfurt a. M. **15**—Insecutor Inscitiae Menstruus, Washington. **17**—Ent. Rundschau, Stuttgart. **18**—Intern. Ent. Zeitschrift, Guben. **20**—Societas Entomologica, Stuttgart. **21**—The Entomologists's Record, London. **24**—Ann. Soc. Ent. France. **25**—Bull. Soc. Ent. France. **45**—Zeit. f. Wissenschfl. Insektenbiol., Berlin. **48**—Wiener Ent. Zeitung. **49**—Ent. Mitteilungen, Berlin. **50**—Proc., U. S. National Museum. **55**—Pan-Pacific Ent., San Francisco. **56**—Konowia, Wien. **59**—Encyclopedie Entomologie, Paris. **70**—Entomologica Americana, Brooklyn. **72**—Revue Russe d'Entomologie. **77**—Comptes R., Soc. Biologie, Paris. **79**—Koleopterolog. Rundschau, Wien. **107**—Bio-

logisches Zentralblatt. 109—Ann. Hist. Nat. Mus. Nat., Hungarici. 118—Die Naturwissenschaften, Berlin. 119—Proc., Nat. Acad. Sci., Washington. 122—Zeit. f. Morph. u. Oekol. Tiere, Berlin. 133—Jour. Experimental Zool.

GENERAL.—Aldrich, J. M.—The limitations of taxonomy. (Science, lxv, p. 381-385.) **Bethune-Baker, G. T.**—Dr. Verity and nomenclature. (21, xxxix, p. 49-51.) **Bird, R. D.**—Preliminary ecological survey of the district surrounding the entomological station at Treesbank, Manitoba. (Ecology, viii, p. 207-220, ill.) **Frison, T. H.**—A list of the insect types in the collections of the Illinois State Natural History Survey and the University of Illinois. (State of Illinois Dept. of Regis. and Educ., Bull. xvi, p. 137-309.) **Handlirsch, A.**—Handbuch der zoologie, Bd. 4, Lief. 5. **Hayes, W. P.**—Prairie insects. (Ecology, viii, p. 238-250, ill.) **Hesse, E.**—Entomologische miscellen. II.[Species of several orders treated]. (45, xxii, p. 19-30.) **Horn, W.**—Et meminisse et vaticinari liceat. Ueber infernale entomologen. (49, xvi, p. 1-6.) **Janson, O.**—Obituary. (9, lx, p. 72.) **Lederer, G.**—Neue wege in der tierhaltung und -Züchtung. (14, xxxxi, p. 1-4, cont.) **Meissner, O.**—Coenobiose an brennessel. II. (20, xlii, p. 13-14.) **Morin, H.**—Seltsame tiergestalten. (Kosmos, xxiv, p. 169-171, ill.) **Rebler, W.**—Weitere lichtfangergebnisse. (18, xxi, p. 9-12.) **Stiles, C. W.**—Sixty-one names under consideration for inclusion in the official list of generic names. [Scorpionidea, Araneae, Acarina, Thysanura, Orthoptera, Isoptera, Corrodentia, Anoplura, Hemiptera, Dermaptera, Siphonaptera.] (Science, lxv, p. 471-472.) **Thorpe, W. H.**—Phytophagic or biological races in insects. (Nature, cxix, p. 602). **Van Duzee, E. P.**—Reinforced generic names. (55, iii, p. 151.) **Wolcott, G. N.**—An animal census of two pastures and a meadow in northern New York. (10, xxix, p. 62-65.)

ANATOMY, PHYSIOLOGY, ETC.—Abbott, C. E.—The effects of monochromatic light on Formica dakotensis specularis. (7, xx, p. 117-122, ill.) **Comas, M.**—Sur l'origine des pigments des larves de Chironomus. (77, xcvi, p. 866-868.) **Demerec, M.**—Magenta-alpha, a third frequently mutating character in Drosophila virilis. (119, xviii, p. 249-253.) **Harrison, J. W. H.**—Hereditary choice of food plants in the lepidoptera and its evolutionary significance. (Nature, cxix, p. 562-563.) **Hersh, A. H.**—Temperature effects in reciprocal crosses of the bar series

of Drosophila. (133, xlvii, p. 227-250.) **Hertz, E.**—Ueber intrazellulare symbiose bei holzfressenden käferlarven. (122, vii, p. 279-305, ill.) **Hetschko, A.**—Geschichtliches über die wechselbeziehungen zwischen blumen und insekten. (48, xliii, p. 172-178.) **Hilton, W. A.**—The muscular sense of invertebrates. (13, xix, p. 75-76.) **Huxley, J. S.**—Further work on heterogonic growth. (107, xlvii, p. 151-163, ill.) **Kennedy, C. H.**—Some non-nervous factors that condition the sensitivity of insects to moisture, temperature, light and odors. (7, xx, p. 87-106.) **MacKay, D. A.**—Respiration of insects. (Science, lxv, p. 446.) **Payne, N. M.**—Two factors of heat energy involved in insect cold hardness. (Ecology, viii, p. 194-196.) **Pulikovsky, N.**—Die respiratorischen anpassungserscheinungen bei den puppen der simuliiden. (122, vii, p. 384-443, ill.) **Rabaud, E.**—L'instinct maternel chez quelques araignées. (77, xcvi, p. 779-780.) **Rostand, J.**—Nouvelles expériences sur la greffe céphalique chez les insectes. (25, 1927, p. 95-96.) **Roubaud, E.**—Les formes diverses de l'hétérodynamie chez les insectes à plusieurs générations. (25, 1927, p. 61-64.) **Steopoe, I.**—La Spermatogenese chez Ranatra linearis. (77, xcvi, p. 1030-1031, ill.) **Stern & Bridges.**—The mutants of the extreme left end of the second chromosome of Drosophila melanogaster. (Genetics, xi, p. 503-530.) **Sunder Lal Hora.**—The mechanism of the so-called "posterior sucker" of a simulium larva. (Nature, cxix, p. 599-600.) **Voinov, V.**—Sur l'existence d'un tissu mésenchymateux vacuolaire dans les larves de Chironomus. (77, xcvi, p. 1015-1017, ill.) **Walton, L. B.**—The polychaete ancestry of the insects. I. The external structure. (Am. Nat., lxi, p. 226-250, ill.) **Werner, E.**—Die ernährung der larve van Potosia cuprea. Ein beitrag zum problem der celluloseverdauung bei insectenlarven. (122, vi, p. 150-206, ill. 1926.) **Zavrel, J.**—Influence de la glande thyroide sur l'accroissement des larves des Chironomides. (77, xcvi, p. 1087-1089, ill.)

ARACHNIDA AND MYRIOPODA.—**Gabritschevsky, E.**—Experiments on color changes and regeneration in the crab-spider, Misumena vatia. (133, xlvii, p. 251-267, ill.) **Gerhardt, U.**—Weitere untersuchungen zur biologie der spinnen. (122, vi, p. 1-77, ill 1926.)

THE SMALLER ORDERS OF INSECTA—**Byers, C. F.**—An annotated list of the Odonata of Michigan. (Occ. Pap. Mus. Zool. Univ. Mich., No. 183, 16pp.) **Effenberger,**

Dr.—Neureclipsis bimaculatus, eine planktonnetze spinnende köcherfliegenlarve. (Mikrokosmos, xx, p. 152-154, ill.) **Herfs, A.**—Oekologische untersuchungen an Pediculoides ventricosus. (Zoologica, Berlin, xxviii, Hft. 74, 68 pp., ill.) **Seemann, T. M.**—Dragonflies, mayflies and stoneflies of Southern California. (**13**, xix, p. 1-72, ill.) **Stewart, M. A.**—A note regarding Trichopsylla lotoris and Neopsylla striata. (**15**, xiv, p. 167.)

(N) ***Cockerell, T. D. A.**—A new fossil dragonfly from the eocene of Colorado. (**9**, lx, p. 81-82, ill.) **Hood & Williams.**—A synopsis of the thysanopterous family Urothripidae. (**7**, xx, p. 1-8, ill.) **Morton, K. J.**—Aeschna subarctica in Europe. (**8**, lxiii, p. 86-89, ill.) **Needham, J. G.**—The rocky mountain species of the mayfly genus Ephemerella. (**7**, xx, p. 107-117, ill.)

ORTHOPTERA.—Crampton, G. C.—The abdominal structures of the orthopteroid family Grylloblattidae and the relationship of the group. (**55**, iii, p. 115-135, ill.) **Imms, A. D.**—On the affinities of the Grylloblattidae. (**5**, xxxiv, p. 36-39.) **Maskell, F. G.**—The anatomy of Hemideina thoracica. (Trans. & Proc. N. Zeal. Inst., lvii, p. 637-670, ill.) **Pearson, N. E.**—A study of gynandromorphic katydids. (Am. Nat., lxi, p. 283-285.) **Ramme, W.**—Die eiablage von Chrysochraon dispar. (**122**, vii, p. 127-133, ill.)

HEMIPTERA.—Champlain & Kirk.—The seventeen year locust. (Nature Mag., May 1927, p. 288-290.) **McAtee, W. L.**—Cicadidae of the vicinity of Washington, D. C. (**10**, xxix, p. 70-72.) **Patch, E. M.**—Two currant aphids that migrate to willow-herbs. (Maine Agric. Exper. Sta., Bull. 336, p. 1-8, ill.) **Voinov, D.**—Le vacuome dans les cellules genitales males de Notonecta glauca. (**77**, xcvi, p. 1017-1019, ill.)

(N) ***Deay, H. O.**—A new species of Deltocephalus (Cicadellidae.) (**4**, lix, p. 55.) **Downes, W.**—A new species of Drakella (Tingitidae.) (**4**, lix, p. 60.) **Drake & Harris.**—Three n. sps. of Enicocephalidae. (Ohio J. Sci., xxvii, p. 102-103.) **VanDuzee, E. P.**—Notes on western Aradidae. (**55**, iii, p. 139-142.)

LEPIDOPTERA.—Babcock, K. W.—The European corn borer, Pyrausta nubilalis. A discussion of its seasonal history in relation to various climates. (Ecology, viii, p. 177-193.) **Barnes & Benjamin.**—On some names generally

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(S) ***Mitchell, T. B.**—New West Indian Megachile. (5, xxxiv, p. 47-57.)

SPECIAL NOTICES.

Revision der termiten afrikas. III. Monographie, Von Y. Sjöstedt. [K. Svenska Vet. Akad. Handl., (3), iii, No.) 419 pp., ill.]. This monograph will probably be useful to some American students of this order.

Butterflies of California: a popular guide to the knowi-

edge of the butterflies of California, embracing all of the 477 species and varieties at present recorded for the state. By John Adams Comstock. Illustrated with 63 full page color plates showing all of the species known to inhabit the state, and the majority of those occurring in the Southwest, together with half-tone and line illustrations depicting the life histories of western butterflies. Published by the Author $15.00.

This work will be found to be a valuable addition to the library of the students of this order, and should be in all western libraries.

The Lepidoptera Named by George A. Ehrmann. By W. J. Holland (and in part A. Avinoff). Annals, Carnegie Museum, Vol. XVII, No. 2, 1927.—This paper of 64 pages and six plates of photographic reproductions of Ehrmann's types is a decidedly valuable contribution to our knowledge of Lepidoptera. It contains a list of Ehrmann's writings, comments, sometimes at considerable length, on his species, and gives in addition new information on some allied forms. A large proportion of the names become synonyms, and now those which are not such can be correctly identified by the student. The fact that these species have previously been generally mis-identified in the literature again proves that most published descriptions, unless accompanied by good figures, are practically worthless. It is obviously impossible for workers to visit all of the museums in which types are deposited, and we therefore owe Dr. Holland another debt for clearing up this particular set of puzzles. Dr. Avinoff, an authority on the *Parnassiidae*, has written that portion which deals with Ehrmann's species of *Parnassius*.—R. C. Williams, Jr.

Doings of Societies.

The American Entomological Society.

A stated meeting was held January 27, 1927, in the hall of the Academy of Natural Sciences of Philadelphia, Mr. R. C. Williams presiding. Eleven members and visitors were present.

The Treasurer's report was read and given to the Finance Committee for auditing.

In an informal report for the Curator, Mr. Cresson mentioned some of the recent improvements in the rooms of the

Entomological Department. Miss Louise Knobel was elected a resident member.

After reading the nominations for officers and committees made at the December, 1926, meeting, it was moved and seconded that the recording secretary cast a ballot electing these nominees. They are as follows: *President*, Roswell C. Williams, Jr.; *Vice-President*, Philip Laurent; *Treasurer*, Ezra T. Cresson, Jr.; *Corresponding Secretary*, James A. G. Rehn; *Recording Secretary*, R. J. Titherington; *Librarian*, E. T. Cresson, Jr.; *Curator*, W. J. Coxey.

Committees: *Finance*, M. Hebard, W. J. Coxey, F. R. Mason; *Publication*, J. A. G. Rehn, P. P. Calvert, M. Hebard; *Library*, F. M. Jones, W. J. Coxey, F. R. Mason.

Mr. Williams read a notice of the death of Annie T. Slosson, well-known entomologist.

Mr. Carl Hg presented, through Mr. Williams, six specimens of *Autoserica japonica* (Match.)

Mr. Hornig gave an address on "The Mountains of Silesia," illustrated by lantern slides.

R. J. Titherington, *Recording Secretary.*

OBITUARY.

The death of William Lochhead, professor emeritus of entomology and zoology in Macdonald College, McGill University, Montreal, Canada, on March 26, is announced in *Science* for April 15. He was born at Listowel, Ontario, April 3, 1864, and studied at McGill (A.B. 1885) and at Cornell (1886-87, M.S. 1895). He taught successively at Galt Collegiate Institute (1889-1894), London Collegiate Institute (1896-1898) and Ontario Agricultural College (1898-1905), where he was professor of biology, and held the same chair at Macdonald College from 1905 until a few years ago, when he retired on account of ill health. His work was chiefly in economic entomology, especially on scale insects, the Hessian fly, pea-weevil and orchard insects, as well as on fungi of economic importance. In 1919 he published an excellent *Class Book of Economic Entomology, with special reference to the economic insects of the northern United States and Canada*, distinguished for the clear, compact and methodical arrangement of its subject matter; a review will be found in the News for July, 1919, page 209.

Frank R. Mason, collector of Coleoptera, member of the American Entomological Society, died rather suddenly on May 28, 1927, at his home 5533 Pulaski Avenue, Germantown, Philadelphia.

JULY, 1927

ENTOMOLOGICAL NEWS

Vol. XXXVIII No. 7

JAMES H. B. BLAND,
1833-1911

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PHILADELPHIA, PA.
THE ACADEMY OF NATURAL SCIENCES,
Logan Square

Entered at the Philadelphia, Pa., Post Office as Second Class Matter.
Acceptance for mailing at the special rate of postage prescribed for in Section 1103, Act of October 3, 1917, authorized January 15, 1921.

ENTOMOLOGICAL NEWS

published monthly, excepting August and September, by The American Entomological Society.

Philip P. Calvert, Ph.D., Editor; E. T. Cresson, Jr., Associate Editor.

Advisory Committtee: Philip Laurent, J. A. G. Rehn, Chas. Liebeck, J. Chester Bradley, Ph.D., Frank Morton Jones, John C. Lutz, Max Kisliuk, Jr.

The subscription price per year of ten (10) numbers is as follows:

United States and possessions . .	$3.00
Canada, Central and South America .	3.15
Foreign	3.25

Single copies 35 cents

ADVERTISING RATES: Full width of page. Payments in advance.
One issue, 1 in., $ 1.20, 2 in., $ 2.40, half page, $ 4.00, full page, $ 8.00
Ten issues " 11.00, " 20.00, " 35.00, " 70.00

SUBSCRIPTIONS AND ADVERTISEMENTS. All remittances, and communications regarding subscriptions, non-receipt of the NEWS or of reprints, and requests for sample copies, should be addressed to Entomological News, 1900 Race St., Philadelphia, Pa.

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MANUSCRIPTS. Address all other communications to the editor, Dr. P. P. Calvert, Zoological Laboratory, University of Pennsylvania, Philadelphia, Pa.

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. The receipt of all papers will be acknowledged. Proof will be sent to authors when requested. Twenty-five "extras" of an author's contribution, without change in form and without covers, will be given free when they are wanted; if more than twenty-five copies are desired *this should be stated on the MS.*

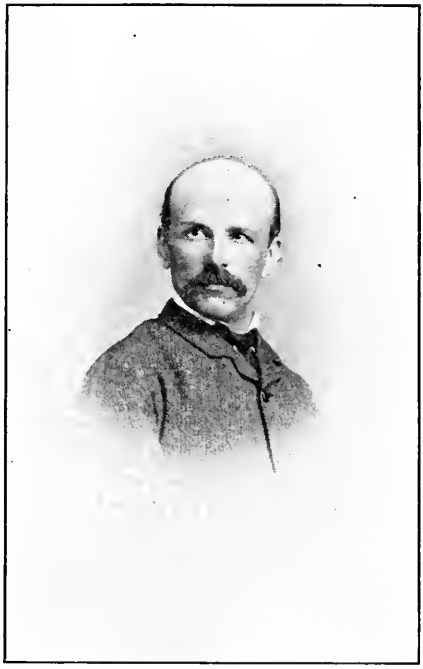
Owing to increased cost of labor and materials, no illustrations will be published in the NEWS for the present, except where authors furnish the necessary blocks, or pay in advance the cost of making blocks and pay for the cost of printing plates. Information as to the cost will be furnished in each case on application to the Editor. Blocks furnished or paid for by authors will, of course, be returned to authors, after publication, if desired.

STATED MEETINGS

Of The American Entomological Society will be held at 7.30 o'clock P. M., on the fourth Thursday of each month, excepting June, July, August, November and December, and on the third Thursday of November and December.

Communications on observations made in the course of your studies are solicited; also exhibits of any specimens you consider of interest.

The printer of the NEWS will furnish reprints of articles over and above the twenty-five given free at the following rates: One or two pages, twenty-five copies, 35 cents; three or four pages, twenty-five copies, 70 cents; five to eight pages, twenty-five copies, $1.40; nine to twelve pages, twenty-five copies, $2.00; each half-tone plate, twenty-five copies, 30 cents; each plate of line cuts, twenty-five copies, 25 cents; greater numbers of copies will be at the corresponding multiples of these rates.



René Martin

avocat

Le Blanc (Indre)

ENTOMOLOGICAL NEWS

VOL. XXXVIII JULY, 1927 No. 7

René Martin.

(Portrait and Autograph, Plate IV).

René Martin, well known French student of the Odonata, died at Villa Alemana, a small village between Valparaiso and Santiago, Chile, August 20, 1925. His death was briefly announced at the meeting, on October 14, 1925, of the Entomological Society of France, of which he had been a member since 1891. As his taxonomic work concerned the North American fauna as well as that of other parts of the globe, and as no biographical notice in any entomological journal is known to the writer*, it seems appropriate that some account of his life and entomological researches should appear in the NEWS. Thanks to the kindness of his daughter, Madame Montané-Martin, I have received a copy of a biographical notice by his long-time associate, M. Raymond Rollinat (*Le Journal du Departement de l'Indre* of, apparently, July 23, 1926). Before me lie seventy-one letters and cards from M. Martin to myself from June 26, 1890, to July 14, 1922. From these sources and from his published papers the following is derived.

René Martin was born at Châtellerault, department of Vienne, France, June 5, 1846, of a family some of whose members had filled public offices. He attended the Lycée of Versailles from 1859 to 1866 and studied law at Paris from 1866 to 1870. In the war of 1870-71 he served in the fourth battalion of the garde mobile of Vienne during the campaign of the Loire under General Chanzy. On October 10, 1871, he married Mlle. Marie Falchéro, and as her property was located in the adjoining department of Indre, to the east, he removed to Le Blanc in 1872. Here, from 1876 to 1907, he was *avoué*,[1]

*Not until the present article was in page proof, did I learn of the obituary in Ann. Soc. Ent., France xcvi, pp. 27-30.

[1] So Rollinat, *l. c.*, although M. Martin often signed his letters to me with "avocat" following his name. "In France . . . there is, however, a distinction between *avocats* and *avoués*. The latter, whose number is limited, act as procurators or agents, representing the parties before the tribunals, draft and prepare for them all formal acts and writings, and prepare their lawsuits for the oral debates. The office of the *avocat*, on the other hand, consists in giving advice as to the law, and conducting the causes of his clients by written and oral pleadings. The number of *avocats* is not limited . . ." (Encyc. Brit. (13) I, p. 241. 1926).

and here he devoted much time to the study of the vertebrates, the Lepidoptera, the Neuroptera (in the Linnean sense) and especially the Odonata; the nearby forests of Boischaut and marshes of la Brenne furnishing him with much material. Here too, from August 8 to 10, 1895, I had the pleasure of visiting him and his family and of making some collecting trips for dragonflies with him. The population of Le Blanc in 1891 was about 7400.

Our correspondence, translated here as elsewhere, had begun with his letter of June 26, 1890:

I have seen in "Entomological News" that you ask for Odonata of Europe. I shall be very happy to enter into relations of exchange with you. I have almost all, if not all the species of France and vicinity and I can send you them in such quantity as you desire. For example, I take here in numbers *Gomphus simillimus, graslini, uncatus.*

I eagerly accepted his proposal and our exchanges of specimens and of publications continued until 1922, although with a long interruption previous to and during the world war. In my first letter to him I asked for five males and five females of each species. He on his part would be content with two specimens of each sex, but in a few years requested a larger number for his other correspondents. On October 31, 1890, he wrote:

Indeed the only French species which I have not taken myself are *Epitheca bimaculata, Macromia splendens, Gomphus flavipes* and *serpentinus, Nehalennia speciosa.* All the other species I have found in the department of Indre and the surrounding departments. I even have the conviction that I shall discover *Macromia splendens* here, which inhabits la Charente, but up to the present my efforts have not been crowned with success.

At the beginning of January [1894] I went to pass four days in Belgium, solely to visit the collections of M. de Selys-Longchamps. I spent three days with him at Liège and I examined his splendid collections to the bottom. I believe no other collection is as rich, nevertheless I was astonished how many species were lacking even of those described by him . . . notably *Oligoeschna modigliani,* of which only a dozen specimens are known in collections according to M. de Selys. I have kept 4

of them, I have sent him 2 (he had none) and I send you 2 (letter of Jan. 30, 1894).

I made a trip into Italy, but I took only common species except that in the south of France I captured a single specimen of *Somatochlora alpestris*. At Genoa I visited the museum, but there was nothing great there except the collection made by M. Fea in Burma which is beautiful. M. Fea showed it to me in detail. (Letter of Sept. 27, 1894).

I remark that some collections which I have studied have nothing in insects of your country. North America, so rich, is not represented and indeed I myself have received nothing from there except from you (Dec. 5, 1894).

In later years, of course, the number of his correspondents increased and included Professors D. S. Kellicott and J. G. Needham, Miss Mattie Wadsworth and Mr. E. B. Williamson.

On March 28, 1896, Mr. Robert McLachlan wrote:

In the beginning of last month I had a hurried visit from M. Martin. He arrived in London on Monday evening—spent the Tuesday with me—the Wednesday at the British Museum and returned same evening. He had never been in England before, But I had met him in Paris a few years ago.

Somewhat more than a year later, M. Martin wrote:

It is with difficulty that I write to you, for two months ago I was the victim of a serious accident of the chase. In taking a gun into my carriage I received two shots point blank; one finger of the right hand was carried away and the left arm pierced in several places so that I was near death. Happily I am much better (Aug. 16, 1897).

On February 4, 1899, Mr. McLachlan wrote:

M. Martin spent the day here on Wednesday last. He looks none the worse for his gun accident. He is certainly getting together a big collection of Odonata and very rapidly, for he says he has over 1200 species.

In 1900, sometime previous to November, Madame Martin died. She was a very pleasant person who spoke English well, having lived in Guernsey for some years. I still preserve the record of her farewell when I left Le Blanc—that I must repeat my visit to them when next I came to France—an opportunity that never presented itself.

That to this loss was soon added another is evidenced by his letter of December 13, 1900:

I am truly desolated for I learned, the day before yesterday, of the death of our friend, M. de Selys-Longchamps. His decrease, although it was to be expected at any time, on account of the age of our old master, has deeply afflicted me.

The next letter refers to the plans for the proposed catalogue of the Selys collections:

I have arrived from Liège where I looked over the collection of our friend M. de Selys. I found there MM. Ris and Förster, whom you know. The question is that of making a general history of the Odonata in honor of M. de Selys, based on his collection. M. Ris is charged with the Libellulinae, I with the Cordulinae and the Aeschninae, Förster with the Agrioninae. There are no collaborators as yet for the other families. Much was said of you and it was regretted that you are so far from Europe. One would have liked to ask you to take the Gomphinae or the Calopteryginae. In any case, all will have much recourse to you, if you will, especially Ris and I. MM. de Selys are willing to spend considerable money in order to have a very beautiful publication (April 7, 1901.)[2]

Under the date of January 11, 1902, M. Martin asked for duplicates of American Cordulines "for I am occupying myself

[2] It seems not inappropriate to print here certain other letters to me, although not from M. Martin, which bear upon this undertaking, on account of their historical interest.

Mr. Robert McLachlan wrote from London, 20 May, 1901: As to M. de Selys. To my utter surprise I found he had left *me* a considerable sum of money in return for which I was to work out the collections. This was uttterly and totally impossible and I at once renounced all right to the money. From what I know of the collections I don't think any of the parties quite realize what they have undertaken to do.

Baron Walter de Selys wrote on March 22, 1901: In view of the persistent refusal of Mr. McLachlan, a refusal founded, unhappily, on the state of his health (invincible insomnia), M. le Dr. Ris has been willing to accept the scientific direction of the work to be done for the publication of a methodical (and iconographie?) catalogue, with diagnoses of the new forms, of the collection of Odonata left by my father. My father, by his will, has imposed upon me, in spite of my incompetence, the heavy burden of the *administrative* direction (if I can so call it). Independently of my nephew Maurice, still an absolute novice in this branch and whose rôle in consequence can at first be only secondary, we believe we can count for the present in the number of collaborators of the projected work, MM. René Martin and Foerster. If the Atlantic had not separated you from us we would not have been wanting in calling upon your collaboration also . . .

with the work on the Cordulines of the De Selys Collection;" on September 9, 1904, that his collaboration on the *Genera Insectorum* of M. Wytsman had been requested and on December 27 that his revision of the Aeschnines of the Selys collection was approaching completion, followed by other letters asking for information on certain North American species of this group, and giving and offering any assistance I might desire in the preparation of the Odonate part of the *Biologia Centrali-Americana.*

Then came his removal to Paris.

A word to advise you that I am leaving the town of Le Blanc for a while. I am going to live in Paris and take my collections there. My new address is Rue du Chemin Vert 78. (April 26, 1908.)

From Paris, March 29, 1909, he wrote: "I am occupying myself at this moment with the Calopterygines of the Selys collection;" on June 10, 1911, from 20 Rue d'Angoulême, in the same city: "I am about finishing the manuscript of the Calopterygidae of the Selys collection," and on March 31, 1912, that he had finished it. At this date he referred to his wish, communicated also to Mr. E. B. Williamson, to sell his principal collection of Odonata. On behalf of the Academy of Natural Sciences of Philadelphia, Dr. Henry Skinner went to the rooms in the Rue d'Angoulême in August, 1912, after the meeting of the Second International Congress of Entomology at Oxford. It is to this that M. Martin refers in his card of September 3:

I have received the visit of the Doctor and his daughter; he glanced for a long while (il a jeté un long coup d'oeil) at my collection.

Dr. Skinner made an unfavorable report so that no further steps were taken either by the Academy or Mr. Williamson to secure the collection. It remained unsold in 1920 when M. Martin was preparing to go to Chile, and he was still anxious to dispose of it. In a letter of April 15 of that year he wrote: "It contains many types and at least 1600 species."

In two letters from Chile he mentioned:

I have given my collection to the Paris Museum. I have kept 1. All the group of *Lestes* of which I am making a monograph, 2. A series of types of South America, 3. The Odonata of Chile (April 17, 1921). I have here a part of my collection, the group of *Lestes*, . . . and a certain number of types of South America. I have left at Brussels my manuscript on the Calopterygids of the Selys collection and that on the genera of Gomphines. They will appear, I am told, when the price of paper and printing ink will permit (Jan. 8, 1921).

The world war was chiefly responsible for a gap of nearly eight years in our correspondence. In his letter of April 15, 1920, he says:

Of my four sons, I have lost two [Louis and Antoine] in the war.[3] My daughter married, a year and a half ago, a Frenchman established in Chile, who came to fight in France and she leaves next September for Chile. I am going to accompany her and I will spend at least a year, perhaps two, in central Chile. I am going to study the fauna of that country and pass my time collecting Odonata . . . I have not received many insects during the war other than several boxes of Odonata from Tonkin and some sent by my son, administrator of the colonies in West Africa, who has collected for me in a great part of [that region]. He has sent me especially some remarkable Gomphines and I have been able to found several new genera.

In the first letter which he sent me from South America he wrote from Villa Alemana, Province of Valparaiso:

I have been in Chile a month, in a wild country surrounded by denuded hills and, farther away, high mountains. For six months not a drop of rain has fallen and the dryness is frightful. The heat is torrid. Every day about eleven o'clock in the morning a wind arises, often very violent, while the sun is shining, and continues until six in the evening. So I have found relatively few insects, 40 or 50 species of Coleoptera, 20 of Lepidoptera, 50 of other orders. Happily one owner had made a dam in a little brook now dry, about 2 or 3 kilometers from my home, and above this dam is a pretty little shady pond and I go there almost every day. Besides I have made three trips into the mountains. (Jan. 8, 1921).

[3] M. Rollinat tells us that the other two sons, Hubert and Jacques, the latter an administrator in French Central Africa, also took part in the war.

For four and a half months I have collected almost every day and I begin to know the country very well, but winter is beginning, the Odonata, excepting *Aeschna diffinis*, disappear and I fear I shall not find many more until August. I have several hundred species of Coleoptera, as many Hymenoptera, Hemiptera, etc., and only 19 species of Odonata. There are a few diurnal Lepidoptera but they, excepting *Colias* and *Vanessa*, disappeared some days ago, but in revenge the nocturnal Lepidoptera are transforming at this instant. Life in Chile is not disagreeable. I have visited the museum of Valparaiso which is nothing: 200 poor birds, 2 cases of insects without names and 7 Odonata. That of Santiago is good. There is quite a complete collection of Chilean birds and a certain number of Chilean insects. There is almost nothing outside of the zoology of Chile. I have determined their Odonata, a hundred specimens of which, as I have told you, 8 or 9 are remarkable species. (April 17, 1921).

After a terrible drought we have now inundations and I fear I shall hardly find Odonata until next September (May 9, 1921).

Among the Fathers of the Sacred Heart of Santiago he found congenial collectors of insects and took part in the formation of an entomological society in that city in 1922. Many notes and questions on the Chilean dragonflies occupied his letters of these two years; the last that I have is dated July 14, 1922.

M. Rollinat tells us that by a letter which M. Martin dictated to his daughter January 4, 1924, he learned that his friend had been very ill since the beginning of the preceding year. He had been stricken with cerebral congestion followed by two later attacks. He spoke and walked with difficulty, his sight was very feeble, his faculties could no longer be applied to scientific researches and this distressed him extremely. His condition was irremediable and he passed away on August 20, 1925.

M. Rollinat, in his biographical notice already cited, gives a list of titles of Martin's writings, arranged according to the journals in which they appeared, but without quoting volumes or dates. The entomological papers deal with the Trichoptera, Perlidae and Lepidoptera of France, as a whole or in part, but are concerned chiefly with the Odonata. Of these last, 42 are known to me, but my list is not complete, to judge from that

given by M. Rollinat; 5 relate to the French fauna (1888-89), 1 to that of Cyprus (1894), 1 to Turkey (1921), 1 Syria (1909), 1 Algeria (1901), 4 West Africa (1905-1912), 2 East Africa (1907, 1915), 2 Africa in general (1910, 1912), 1 Seychelles (1896), 2 Indo-China (1904, 1910), 1 New Guinea (1908), 1 Australia (1901), 1 Colombia and Ecuador (1896), 1 Argentine and Paraguay (1896), 2 to Chili (1921, 1924); 6 contain descriptions of new species and varieties from various, often widespread, localities, including a number in South America (1895, 1898, 1900, 1902, 1907, 1921); 1 gives data on the hibernation of *Sympecma fusca* in the imago stage in France (1887), 4 list birds in whose stomachs Odonata have been found in different parts of the world (1891, 1910, 1911); 1 mentions Odonata found destroying injurious insects (1897); 2 are of monographic nature, on the Cordulines (1906) and the Aeschnines (1908-09) respectively, in the Catalogue of the zoological collections of Baron E. de Selys Longchamps, and 1 treats of the Aeschninae in Wytsman's *Genera Insectorum* (1911), the only group of Odonata which has appeared in that series. Alone, or in collaboration with M. Rollinat, he also published on the vertebrates of the department of Indre, France. Reference to the *Zoological Record* for the years above quoted will enable those interested to find the journals in which these papers were published.

Martin's work on the Odonata was mainly descriptive taxonomic. He described 165 species or subspecies and 18 genera as new. In his monographic works he adhered rather closely to the schemes of classification proposed by de Selys. Of his fascicule on the Cordulines in the Selys Catalogue, he wrote: "This fasciculus is almost a reproduction of de Selys' Synopsis; the Aeschnines, on the contrary, will be a complete monograph of the family" (Feb. 18, 1907). Nevertheless his *Cordulines* was a direct stimulus to the new arrangements suggested by Mr. E. B. Williamson[4] and Prof. J. G. Needham.[5] In the Aeschnines he appears to have overlooked a number of characters by which species in the genera allied to *Gynacantha* may be distinguished from each other, resulting in the association of a number of species under one specific name,[6] while his

arrangement of genera has been modified by Prof. Walker.[7]

M. Martin played an important part in the distribution of specimens of both imagos and larvae of Odonata from diverse parts of the world to those engaged in their study. He collected the exuviae of the French species assiduously, yet never published anything but general statements on the early stages of these insects. In him there passed away a man of great kindliness and willingness to help his correspondents.

"To my good friends and mentors in Odonatology, M. René Martin and Dr. F. Ris, I dedicate this book in memory of many kindnesses received from them," is the inscription in Dr. R. J. Tillyard's *Biology of Dragonflies*. PHILIP P. CALVERT.

(The photograph reproduced on Plate IV is of 1904, the autograph of June 30, 1891.)

Rocky Mountain Conference of Entomologists.

Notices have been sent out to the effect that the Fifth Annual Meeting of the Rocky Mountain Conference of Entomologists will be held August 15 to 20, 1927, in Pingree Park, as have the previous meetings. The entire week will be spent in the mountains, making the occasion a combination of pleasure and business. The program will be arranged so that all can have time for collecting and pleasure trips. All members of the family are invited. Transportation to the Park, which is about 50 miles from Fort Collins, will be available and the expense for the accommodations for the week will be at actual cost. Besides the regular papers, the topics of which will be announced later, there will be two symposiums, one on "Problems in Apiculture", and the other on "The History of and Recent Developments in Economic Entomology." Details in regard to arrangements will be sent out to anyone interested. If it is at all possible for any of the entomologists reading this notice to be in attendance, they should get in touch with the secretary at an early date.

GEORGE M. LIST, *Secretary*,
Rocky Mountain Conference of Entomologists,
Colorado Agricultural College, Fort Collins, Colo.

[4] Ent. News, xix, pp. 428-431, Nov., 1908.
[5] Annals Ent. Soc. Amer. i, pp. 273-280, Dec., 1908.
[6] See Williamson, Misc. Publ. No. 9, Univ. Mich. Mus. Zool., pp. 8-11, July 2, 1923.
[7] The N. Amer. Dragonflies of the genus Aeshna, pp. 15-25, 1912.

Acetropis americana, a New Species of Miridae from Oregon (Hemiptera).*

By Harry H. Knight, Ames, Iowa.

The species here described represents the first *Acetropis* recorded from the Nearctic region. Four species of the genus have previously been known, all from the Palaearctic region.

Acetropis americana new species.

Allied to *carinatus* H.S., but easily distinguished by the nonprojecting frons and feebly developed median carina of the pronotal disk. Very finely and minutely pubescent, similar to *carinatus* in this respect.

♂. Length 8 mm., width 2.1 mm. Head: width 1.02 mm., vertex .50 mm,; apex of frons at base of tylus only moderately prominent, not projecting as in *carinatus*; vertex rather sharply depressed; brownish to black, base of vertex pale each side of median line, a pair of smaller spots each side of frons near front margin of eyes. Rostrum, length 3.1 mm., reaching to middle of third ventral segment, brownish to black. Antennae: segment I, length .81 mm., brownish black, set with short, stiff, black hairs; II, 2.76 mm., cylindrical, or very slightly thicker apically, black; III, 1.57 mm., black, only very slightly more slender than II; IV, .74 mm., black.

Pronotum: length 1.06 mm., width at base 1.81 mm.; median carina of disk apparent but not prominent; expanded lateral margins reflexed to a vertical position on basal half but changing to near a lateral position at anterior angles. Scutellum much as in *carinatus*.

Hemelytra pale to brownish, longer than in *carinatus;* cuneus also much longer, its base starting at a point just above apex of genital segment. Membrane uniformly fusco-brownish, veins yellowish brown, a calloused line bordering vein near apex of larger areole, its length equal to half the length of cuneus. Legs fusco-brownish, tarsi and apices of tibiae blackish.

♀. Length 7.4 mm., width 3 mm. Head: width 1.06 mm., vertex .61 mm.; color rather uniformly yellowish. Rostrum, length 3.25 mm., reaching upon third ventral segment, yellowish, brownish on apical half. Antennae: segment I, length .95 mm., yellowish, set with short bristles; II, 3.55 mm., yellow-

*Contribution from the Department of Zoology and Entomology, Iowa State College, Ames, Iowa.

ish, ventral surface and the apical one-fifth black; III, 1.7 mm., black; IV, .77 mm., black.

Pronotum: length 1 mm., width at base 1.8 mm.; basal margin nearly transverse, lateral margins more sharply reflexed at anterior angles than in the male; median carina scarcely apparent; a black spot in the depression near anterior angles, a slight but apparent brownish ray behind each callus. Scutellum pale yellowish, slightly more convex than in the male.

Hemelytra of a rather uniform dull white color, opaque; embolar margins strongly reflexed like the lateral margins of the pronotum; cuneus only slightly deflexed; corium with an obsolete brownish stripe apparent on outer apical half. Membrane abbreviated, scarcely extending beyond apex of cuneus, pale or with a tinge of brownish, basal half of larger areole invaded with the same opaque white pigment as that of the corium. Legs and ventral surface rather uniformly yellowish, tarsi blackish.

Holotype: ♂, July, Corvallis, Oregon (A. C. Burrill); author's collection, *Allotype:* ♀, June 26, 1926, Corvallis, Oregon (C. J. Drake). *Paratypes:* ♂, taken with the type. 2♀, taken with the allotype.

Dr. Drake states that the female specimens were swept from dry grass, probably a wild oat grass. Apparently the season for this species was nearly over, since he took only three females during several minutes of sweeping the dry grasses.

As may be noted in the description, the female has a very different aspect from the male, but the same is true of the Palaearctic species, where two of the four species have each received names for both sexes. The female of *americana* agrees with the male in having the median pronotal carina nearly obsolete, the scarcely projecting frons, and in having similar pubescence.

Acetropis americana represents the migration into the Nearctic region of a genus which is primarily Palaearctic in distribution. It is another example of those forms which must have reached this continent by way of the Alaskan land connection, but at such a remote period that there has since been time to develop a species distinct from the original common ancestor.

Dru Drury, Silversmith and Entomologist of the Eighteenth Century.

By Harry B. Weiss, New Brunswick, New Jersey.

The same year that Jonathan Wild, notorious "fence," public thief-taker, director and associate of thieves and a thief himself, was ushered out of this world by the executioner, Dru Drury was ushered in. Or, as the Dictionary of National Biography has it, Dru Drury was born February 4, 1725, in Wood Street, London. He was about three and a half months old when Wild made his ungraceful exit at Tyburn. Dru was one of eight children which his father had by one of his four wives, Mary Hesketh, and the only one who lived, the other seven dying young. His father was a silversmith, and Dru, in addition to being educated with some care, helped him in the business.

During the reign of Queen Anne, at which time Dru's father was active, much attention was given to the work of silversmiths and considerable success was achieved in design and execution. In fact, the Eighteenth Century opened with a dazzling display of silversmiths' art. This period soon passed, however, and was succeeded by one, lasting until the close of the century, in which much skill was expended upon ornamental gewgaws and upon the elaboration of snuff boxes, watches, clasps, etc. Detail and rococo style were rampant in gold and silver work, especially in France. Dru must have been familiar with the productions of this period and may have had some share in creating them. Brought up in an atmosphere of gold and silver art work and being of an enquiring mind, he probably was familiar with the work of the various famous artists in the precious metals.

In 1748, when he was twenty-three years old, two important things happened to him. He married Esther Pedley on June 7 and his father retired, relinquishing the business to him. By his marriage to Miss Pedley, a daughter of his father's first wife by her former husband, he came into the possession of several houses in London and Essex, together with the annual income of between £250 and £300 which they brought. About this time he became interested in entomology and the formation of

a collection. It was his custom for many years to insert advertisements in foreign papers, appealing for specimens to be either purchased or exchanged for others. In 1767 he met Fabricius, who was then in London, through Doctor Solander of the British Museum. Later, from 1772 to 1775, when Fabricius spent the winters in Copenhagen and the summers in London, Drury frequently met him and talked shop. Kirby and Linnaeus also thought highly of Drury, and named insects after him.

In 1770 Drury published the first of his three volumes of "Illustrations of Natural History," the title page bearing the following statement: "Illustrations of Natural History wherein are exhibited Upwards of Two Hundred and Forty Figures of Exotic Insects, According to their different Genera; Very few of which have hitherto been figured by any Author, Being engraved and coloured from Nature with the greatest Accuracy and under the Author's own Inspection, On Fifty Copper-Plates. With a particular Description of each Insect; Interspersed with Remarks and Reflections on the Nature and Properties of many of them. By D. Drury. To which is added A Translation into French. London: Printed for the Author, and sold by B. White, at Horace's Head in Fleet-street 1770."

According to the somewhat long-winded preface Drury was very religious and considered natural history and theology as inseparable. The text, which includes descriptions, localities, habits of some species, etc., is accompanied by fifty colored plates by Moses Harris, mostly illustrative of the Lepidoptera, although some plates are devoted to the Coleoptera, Orthoptera, Hymenoptera and Neuroptera. Volume II appeared in 1773 and volume III in 1782. More than two-thirds of all the illustrations are of Lepidoptera, and the majority of the plates were drawn and engraved by Harris. Some of the plates in the last volume were done by another artist.

Drury's work was well received by contemporary scientists. The Rev. William Kirby spoke of it as an "Opus entomologicus splendidissimus." Adrian Hardy Haworth, student of birds, plants and insects, author of many papers on natural history, who later founded, in 1802, the Aurelian Society which never

reached a membership of twenty, and who, upon its termination in 1806, was the leader in establishing the Entomological Society of London, afterwards absorbed by the Zoological Club of the Linnæan Society, called Drury's books "a most beautiful and valuable work on entomology." Sir James Edward Smith, physician and naturalist, author of several botanical publications and co-author with Abbot of the "Natural History of the rarer Lepidopterous Insects of Georgia," creator and first president of the Linnæan Society, said, "the exquisite work of Drury displays the complete insect in a degree of perfection that leaves nothing to be desired." In addition, it received praise from Linnaeus and Fabricius. In 1785, it was in part translated into German and annotated by G. W. F. Panzer.

In 1837, Henry G. Bohn, of London, published a new edition, edited with notes by Westwood and "brought down to the present state of Science, with the systematic characters of each species, synonyms, indexes and other additional matter," under the title "Illustrations of Exotic Entomology containing upwards of six hundred and fifty Figures and Descriptions of Foreign Insects." In the preface Westwood acknowledges the value of Drury's figures.

Drury purchased in 1771 the shop and stock of a silversmith at 32 Strand, where for some years he made nearly £2000 per year. Six years later, however, he failed, it is stated, through no fault of his own; but with the assistance of his creditors, whose confidence he possessed, he was able to start in business again the next year. Perhaps this failure was responsible for the long period that elapsed between the publication of volumes II and III of his "Illustrations of Natural History."

In 1787, after he had been married thirty-nine years, his wife died. He had seventeen children by her, but only three survived him, the rest dying young. The death rate among children in London during Drury's early married life was high, although it gradually declined later. One London writer said in 1757 that the diseases of infants recorded as "convulsions and chrysoms" were at their height between 1728 and 1757. "In and about London, a prodigious number of children are cruelly

murdered by those infernals called nurses. These infernal monsters throw a spoonful of gin, spirits of wine or Hungary water down a child's throat, which instantly strangles the babe. When the searchers come to inspect the body, and inquire what distemper caused the death, it is answered 'convulsions.' This occasions the articles of convulsions in the Bills so much to exceed all others." Although the causes of the deaths of Drury's children are not known, it is probable that they, like other children, suffered from the care, knowledge and sanitation customary and in existence at that time.

After Drury had been adding to his collection for 25 years and during that time spending upon it a total of no less than £4000, it contained in 1788, according to Westwood, 9,578 specimens representing 8,370 different species. Of this latter number, 2,136 belonged to the Coleoptera, 778 to the Hemiptera, 2,148 to the Lepidoptera, 171 to the Neuroptera, 533 to the Hymenoptera, 402 to the Diptera, 96 to the Aptera and over 2,000 to an English collection. Drury's collection was the richest and most complete of its time and quite famous. Donovan, naturalist, author, fellow of the Linnæan Society, and wealthy until he was nearly ruined by his booksellers, spoke of Drury's "noble and very magnificent collections." Smeathman was one of his best collectors, and in the preface of volume III of Drury's work frequent mention is made of Mr. Smeathman's observations.

Drury retired in 1789, at the age of 64, and turned his business over to his son. From then on he spent his time between London and Broxbourne. At Broxbourne he amused himself by collecting insects, fishing, gardening, making wines from various fruits and by experiments in distillation. He added to his collection, until at the time of his death, it contained some 11,000 species. About 1800 he published a small paper of about three pages entitled "Directions for Collecting Insects in Foreign Countries" which he sent all over the world and which was translated into several languages. Hagen says that Drury offered one sixpence for every insect the size of a honeybee or

larger. Drury corresponded with Pallas,* the German naturalist, traveler, and explorer in Russia for the empress Catharine, and with the younger Linnaeus, Charles, said to have been abominated by his mother and subjected from childhood to amazing unmaternal attention.

Drury's speculations concerned with the possibility of obtaining gold led him to induce many travelers to join his proposals, which usually turned out unsatisfactorily to all parties. In 1801 he published "Thoughts on the Precious Metals, particularly Gold, with directions to Travelers, &c, for obtaining them, and selecting other natural riches from the rough diamond down to the pebble-stone. According to this he was an F. L. S., and "goldsmith to her majesty." The directions are varied and extend from "clothing and diet to crystallography."

He finally moved to Turnham Green and his health became very poor. He died of stone, December 15, 1803, and was buried in the church of St. Martin's-in-the-Fields, London. His collection was sold at auction on May 23, 1805, many insects being bought by Donovan, although various lots were purchased by Mac Leay, Kirby, General Davies, G. Humphrey and others. The total amount obtained for the insects was a little over £614, and his cabinets, books and copper plates brought about £300 more. Mac Leay paid £8 for 13 species of *Buprestis,* Donovan £4 and one shilling for "*Sphinx convolvuli*, and eight others," and various amounts are recorded for other purchases.

It is written that Drury was a man of high honor, of upright character and quite religious. These, however, are not uncommon virtues, and his chief claim to fame lies in his authorship of the three volumes of "Illustrations of Natural History," especially the colored plates which were done by Moses Harris. Drury apparently was one of the well-to-do enthusiastic amateurs, who occasionally flourish in entomological circles, riding their hobbies furiously, spending their money lavishly, or what appears to be so to those not so well off financially, acquiring a profound knowledge of their subjects and occasionally mak-

*Prof. T. D. A. Cockerell in his interesting article, "Dru Drury, An Eighteenth Century Entomologist," (Scientific Monthly, vol. XIV, Jan., 1922) includes extracts from some thirty letters which Drury wrote to Pallas, Moses Harris, Linnaeus, etc.

ing more contributions to science than some of their professional and supposedly more erudite brothers, but withal, because they are not within the official circle, often not gaining quite the recognition they deserve. Drury collected earnestly and actively, and his cabinet, containing as it did many unique specimens, excited the interest and admiration of contemporary entomologists and led to contacts and correspondence with them.

Drury lived in an age of numerous social distinctions. Various trades had their own customs, their own localities, and lines were drawn more or less successfully between the different classes of workers and trades. As the owner of a successful silversmith's shop, Drury supplied some of the wants of a large luxury-liking population and undoubtedly enjoyed some local distinction, perhaps more than local if he were "goldsmith to her majesty." As a London business man he was familiar with the outward aspects of the city, so interestingly described early in the century in Gay's "Trivia": dandies in gilded chairs, Pall Mall with its perfumed shops and decorated windows, the fruit market of Covent Garden, Billingsgate fish-wives hawking their wares, untidy butchers with greasy trays, vendors of mackerel, plums, pears and other seasonable foods, shoplifters, cutpurses, card sharpers, pickpockets being chased through the crowd, chimney sweeps leaving sooty stains in their wake, brewers unloading their wares into cellars, gayly dressed ladies on the Mall, poor wretches in the pillories, drunken chairmen, Thames street stinking with the smell of stale fish, tallow making and piles of cheese, Drury Lane infested by "fair recluses" and other sights and sounds incidental to London life. As a prosperous silversmith and living so close to them, such sights and sounds probably fascinated him not at all, and some may have offended his religious sensibilities. Nevertheless, he contributed his share to and was part of the encompassing atmosphere of the time. Although his entomological descriptions may have lacked scientific precision, his work had a part in advancing the science and in adding to the then existing knowledge of insect distribution. Entomology owes much to its amateurs.

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Collecting Experiences (Lepid. : Noctuidae).

By Alex K. Wyatt, Chicago, Illinois.

In the course of an active collecting experience of over thirty years, it is inevitable that one will experience an occasional thrill, whether it be caused by an unusual discovery or an untoward incident, that creates a bit of excitement at the time.

One such thrill occurred to my friend and fellow collector, Mr. Emil Beer, in July, 1926, on a trip to Hessville, Indiana, after larvae of *Papaipema inquaesita*. Hessville was formerly one of our favorite collecting places, but much of the territory now has been subdivided and sold. It was originally a series of sandy, partly wooded ridges, separated by sloughs. Parts of these sloughs, patches of timber and a few waste spots still remain.

On a bright July day, that country is hot, very hot, and in a wet summer such as we had in 1926, mosquitoes are myriad in number. Digging for larvae of *inquaesita* in the roots of the sensitive fern is hard work at any time and particularly so under such conditions. Friend Beer persevered however and found a dozen or more. Hot, sweaty and tired and with a long three-hour ride on the street cars in prospect, he trudged off toward the highway.

It was nothing unusual and only a good *Papaipema* collector's habit to give just a little more than an ordinary glance at some royal ferns along the path. All feeling of lassitude disappeared in an instant, for the evidence of *Papaipema* was unmistakeable. As luck would have it, the first larva was crushed in making a closer examination. Two other roots showed signs of larvae and were dug up and bagged. It was too late to make a more extended search but the thought of having again found *P. speciosissima* made him feel fully repaid for the strenuous labor of the day. Later it developed that he was doubly repaid because four specimens developed from the two root clumps, instead of the two he expected. Incidentally it might be stated that the roots of the royal fern, *Osmunda regalis,* are exceedingly hard and tough and without a hatchet or similar instrument, it is a difficult job to dig one up.

The food plant of *P. speciosissima* was first discovered by Mr. Otto Buchholz of Elizabeth, New Jersey as mentioned by Mr. Henry Bird in describing the life history (Can. Ent. XLVII p. 145). I found a single larva at Hessville in 1914 and succeeded in rearing it to maturity. Diligent search for several years thereafter failed to turn it up again, probably due to extensive fires which occurred about that time.

A male and a female of the four specimens bred in 1926 by Mr. Beer were of the usual form with the ordinary spots white. The other pair was without white markings. This unmarked form, or rather dark spotted form, seems to be rare. Buchholz, who reared *speciosissima* in considerable numbers, found only two without white spots and it seems odd that of only four specimens found together here, two should be of this form. The one I bred in 1914 was a white spotted male.

A New Form of Papaipema speciosissima (Lepid.: Noctuidae).

By Alex K. Wyatt and Emil Beer.

The dark spotted form of *Papaipema speciosissima* mentioned in the preceding article has never been named and with the approval of Mr. Henry Bird, our mentor in the study of

the Papaipemae and their life histories, we propose for it the name "regalis." It is a truly royal species, its large size and bright color setting it out prominently among its congeners.

Papaipema speciosissima, G. & R., form **regalis**, new form.

Size, color and maculation similar to the typical form, except that the usual white marked reniform, orbicular and claviform are replaced by dark spots varying in depth of color from a purplish shade concolorous with the darker portions of the subterminal area, to a deep sooty black. Expanse, 47 to 55 mm.

Type male in collection A. K. Wyatt, from Hessville, Indiana, bred September 5, 1926.

Paratypes in collections Emil Beer, Dr. Wm. Barnes and Otto Buchholz.

Described from male type and four paratypes, 1 female IX-21, Hessville, Indiana; 1 female VIII-14, N. Arlington, New Jersey; 1 male IX-30 and 1 female IX-14, Hudson County, New Jersey.

Mr. Henry Bird writes that he has seen a very black spotted specimen, taken at light, at Buffalo, New York.

Congeneric and Intergeneric Pederasty in the Scarabaeidae (Coleop.).

By W. P. Hayes, University of Illinois.*

Berlese in his recently issued second volume of *Gli. Insetti* summarizes (p. 503) briefly the present knowledge of sexual perversion among insects in which homosexual coupling occurs among individuals of the same sex and belonging to the same species and among males of different species, as well as heterosexual instances of mating between males and females of different species, genera and even families. He points out that these physiological abnormalities do not occur frequently. Certain pairings are obviously infertile but in others, such as interspecific or intergeneric crossings, fertilization results in the production of hybrids, advantage of which is taken to further the work of insect geneticists.

*Contribution No. 108 from the Entomological Laboratories of the University of Illinois.

Berlese cites the following cases of the crossing of males and females belonging to different species in which the production of hybrids is not possible: Among congeneric species—*Melasoma populi* and *M. aenea; Cryptocephalus labiatus* and *C. nitidus; Melolontha melolontha* and *M. hippocastani.* Among species belonging to different genera he notes—*Strophosomus coryli* and *Sciaphilus asperatus; Phosphaenus hemipterus* and *Lampyris noctiluca; Epicometis* and *Anisoplia villosa.* These pairs of species belong in the same family, but interfamily crossing may occur as has been noted by the mating of *Donacia simplex* (Chrysomelidæ) and *Attelabus coryli* (Curculionidæ) and that of *Rhagonycha (Telephorus) fulva* (Cantharidæ) and *Clytanthus varius* (Cerambycidæ).

Homosexual perversion, in which members of the same sex are attracted to each other, is said by Berlese to be not rare, and occurs in such insects as *Bombyx mori,* in which the cause for such a condition is attributed by him to some special condition, such as a lack of females or a debility of the male. A case of homosexual perversion is recorded by DeKerville[1] who notes and figures the apparent mating of two males of *Melolontha vulgaris,* F. and cites three similar cases of the same species recorded by Laboulbene (1859), Maze (1884) and Noel (1895). DeKerville describes one male as assuming the "*role actif*" and the other assuming the "*role passif.*"

The writer has frequently observed two interesting types of pederasty (abnormal sexuality) in the species *Ochrosidia (Cyclocephala) immaculata* (Oliv.) during the course of life history studies in Kansas. Quite often males of this species were observed to attempt mating with males of the same species and in several instances the genital organs of the active males were inserted within the anal opening of the passive male. The active specimen clung tightly to the edges of the elytra of the passive male and was carried about in the rearing cages in which they were confined.

More interesting acts of this nature were observed several times during June and July, 1920, in which males of *Ochrosidia immaculata* Oliv. were seen to be vainly attempting to mate

[1] DeKerville, H. G. Perversion sexuelle chez des Coleopteres males. Bull. Soc. Ent., France for 1896, p. 85.

with males of *Polyphylla hammondi* Lec. a species nearly three times as large as the *Ochrosidia* which always took the active rôle. The tarsi of the latter species were firmly clasped under the elytra of the *Polyphylla* and frantic efforts were made to effect a coupling. The *Ochrosidiae* were persistent in their attempts, often remaining on the *Polyphylla* for 15 or more minutes. These abnormal conditions were always noted to occur in large collecting tins in which large numbers of various species of Scarabæidæ had been collected the previous evening. In each case females were always present but were ignored by the males.

A similar case occurring between two species of different genera has previously been recorded by the writer[2] in which a male *Catalpa lanigera* Linn. was noted attempting to mate with a male *Pelidnota punctata* Linn.

DeKerville (loc. cit) points out the two possible conditions under which such perversion occurs and designates them as *pederastic par goût and pederastic par nécessité*. The instances here recorded were apparently those of choice and not of necessity since females were generally present. *Pederastic par goût* may be defined as coupling between males in the presence of unfertilized females while *pederastic par nécessité* results from the absence of females.

It is apparent that the above terms have some justification in their use, but a more needed set of terms is desired to distinguish the types of homosexuality within the species from those occurring between different genera and accordingly the descriptive term *congeneric pederasty* is proposed for homosexuality of individuals belonging to the same species, such as has just been cited for *Ochrosidia* males, and *intergeneric pederasty* where it occurs between species of different genera as cited in the case of *Ochrosidia* and *Polyphylla*. So far as the writer is aware no cases are recorded of homosexual perversion between species of different families, but if males and females of such diverse groups can cross as quoted above from Berlese, it is not unreasonable to suppose that individuals of the same sex might attempt interfamily pederasty.

[2] Hayes, W. P. A comparative study of the life history of certain phytophagous scarabaeid beetles. Kans. Agr. Exp. Sta., Tech. Bull. 16, p. 99, 1925.

ENTOMOLOGICAL NEWS

PHILADELPHIA, PA., JULY, 1927.

Figures and Descriptions.

THE EDITOR, ENTOMOLOGICAL NEWS: The policy almost universally followed by editors of Entomological Journals in America of charging the author for plates and figures puts a premium on the publication of unidentifiable descriptions. It would be better if the editors would make a charge of at least $5.00 a species for all descriptions unaccompanied by adequate figures and use this money to pay for the plates of those authors who have enough energy and interest in the subject to prepare suitable figures. The present system places a premium on superficial work and imposes a penalty on thorough work.—C. R. CROSBY, Ithaca, New York.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE

Personals.

The following announcements concerning entomologists have appeared in *Science* of May 13 to June 10, 1927:

Prof. W. M. Wheeler has been awarded the Dollfus prize of the Entomological Society of France.

Prof. G. H. F. Nuttall, of Cambridge University, who delivered the annual public lecture of the Entomological Society of America in Philadelphia, in December, 1926, has been made professor *honoris causa* in the University of Strasbourg.

Miss Edith W. Mank, of Lawrence, Massachusetts, has been awarded by the Boston Society of Natural History a second Walker prize in Natural History, of fifty dollars, for a manuscript entitled "The Life History of *Baris scolopacea* Germ. (Coleop.)

Edwin H. Bryan, Jr., formerly entomologist on the staff of Bishop Museum, Honolulu, has succeeded Dr. Stanley C. Ball as curator of collections.

Dr. Melville H. Hatch has been appointed assistant professor of zoology at the University of Washington.

Dr. R. J. Tillyard has been elected an honorary member of the Entomological Society of Belgium.

Dr. Wardle, lecturer in economic entomology in the University of Manchester, will offer advanced courses in the division of entomology, University of Minnesota, next year.

Dr. Karl Jordan, permanent secretary of the International Congresses of Entomology has been visiting entomological centres in the eastern United States.

Collecting Expeditions.

Dr. J. M. Aldrich will collect Diptera in half a dozen States west of the Great Plains this summer.

Mr. J. O. Martin and Mr. E. P. Van Duzee, of the California Academy of Sciences, will collect insects, especially Coleoptera and Hemiptera, in the Panhandle of Texas, and in the Sierra Nevadas, respectively. Prof. George Haley, of St. Ignatius College, San Francisco, and Mr. G. C. Harrold, of Winnipeg, will collect insects and other animals on Nunivak Island, Bering Sea, under the auspices of the same Academy. (*Science*, June 3, 10, 1927.)

An entomological survey especially of the islands of the Pacific is being planned by the Bishop Museum, Honolulu, and the Hawaiian Sugar Planters Association, with the probable coöperation of other groups. Dr. C. F. Baker is to be the scientific head of the survey, with headquarters in Honolulu. (A. L. Dean in *Science*, June 10, 1927.)

The 1000th Meeting of the Jugatae.

The One Thousandth Meeting of the entomological society of Cornell University was held on Saturday, May 28th. This society, under the name Jugatae, was founded on February 26, 1897, and its members are chiefly graduate students in entomology and members of the department of entomology.

Recent Additions to the British Museum.

E. Brunetti recently presented to the department of entomology of the British Museum of Natural History a collection of some 60,000 specimens of Diptera, especially rich in Indian and North American material. The collection is the result, in part, of the entomological collecting done by Mr. Brunetti during the last forty years. The same department has also received, under the terms of the will of the late Lieutenant-Colonel F. R. Winn Sampson, a collection of insects of the group Scolytidae (bark-beetles). The collection consists of some 11,000 insects and 1400 microscopic preparations, and the bequest includes a selection of books, pamphlets and two microscopes. (*Science*, March 4, 1927.)

Entomological Literature

COMPILED BY E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published.

All continued papers, with few exceptions, are recorded only at their first installments.

Papers of systematic nature will be found in the paragraph beginning with (N). Those pertaining to Neotropical species only will be found in paragraphs beginning with (S). Those containing descriptions of new forms are preceded by an *.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

Papers published in the Entomological News are not listed.

1—Trans., American Ent. Soc., Philadelphia. 4—Canadian Ent., Guelph. 5—Psyche, Cambridge, Mass. 6—Jour., New York Ent. Soc., New York. 8—Ent. Monthly Mag., London. 10—Proc., Ent. Soc., Washington. 11—Deutsche Ent. Zeitschrift, Berlin. 12—Jour. of Economic Ent. 14—Ent. Zeitschrift, Frankfurt a. Main. 16—The Lepidopterist. 17—Entomologische Rundschau, Stuttgart. 18—Intern. Ent. Zeitschrift, Guben. 19—Bull., Brooklyn Ent. Soc. 21—The Entomologist's Record, London. 23—Boll., Laboratorio Zool. Gen. e Agr., Portici. 24—Ann. Soc. Ent. France. 25—Bull. Soc. Ent. France. 26—Ent. Anzeiger, Wien. 39—The Florida Entomologist. 43—Proc. Ent. Soc. British Columbia. 44—Zeit. f. Wissenschf. Insektenbiol., Berlin. 49—Ent. Mitteilungen, Berlin. 51—Notulae Ent., Helsingfors. 58—Ent. Berichten, s'Gravenhage. 59—Encyclopedie Entomologie, Paris. 61—Proc., California Acad. Sci. 63—Deutsche Ent. Zeitschr., "Iris," Dresden. 79—Koleopterolog. Rundschau, Wien. 80—Lepid. Rundschau, Wien. 81—Folia Myrmec. et Termit., Berlin. 103—Proc. Zool. Soc. London. 111—Archiv f. Naturgeschichte, Berlin. 131—Ent. Blätter, Berlin. 137—Archiv f. Zoologi, Stockholm. 138—American Mus. Novitates. 139—Bull. Southern Cal. Acad. Sci., Los. Angeles.

GENERAL.—Bodenheimer, F. S.—Ueber regelmässigkeiten in dem wachstum von insekten. I. Das längenwachstum. (**11**, 1927, p. 33-57, ill.) **Brues, C. T.**—Animal life in hot springs. (Quar. Rev. Biol., ii, p. 181-203, ill.) **Brues, C. T.**—Observations on wood-boring insects, their parasites and other associated insects. (**5**, xxxiv, p. 73-90.) **Cappe de Baillon, P.**—Recherches sur la tératologie des insectes. (**59**, (A), viii, 287 pp. ill.) **Comstock, J. A.**—Protective

coloration and mimicry. (139, xxvi, p. 1-4, ill.) **Forbes, S. A.**—The general entomological ecology of the Indian corn plant. (Ill. Dept. of Regis. and Educ. Bull., xvi, p. 447-457.) **Gebien, H.**—Sollen spezialsammlungen von insekten in museen gesondert aufgestellt werden? (11, 1927, p. 26-31.) **Horn, W.**—Et. meminisse et vacicinari liceat. Ueber infernale entomologen II. (49, xvi, p. 93-98.) **Keiffer, H. H.**—[Remarks on the California Academy of Sciences expedition to the Revillagigedo Islands, Mexico.] (Proc. Pac. Coast Ent. Soc., ii, p. 67-69.) **Knisch, Alfred.**—Ein nachruf von F. Heikertinger. (79, xiii, p. 86-88.) **Knoch, V.**—Alte und neue bekämpfungsmethoden gegen insektenschädlinge. (18, xxi, p. 33-35.) **Legewie, H.**—Hauptprobleme des insektenstaates. I. Geschlechtsbestimmung, verwandtschaftsverhältnisse und staatenbildung. (11, 1927, p. 1-25.) **Lochhead, W.**—Obituary. (4, lix, p. 121-122.) **McAtee, W. L.**—Notes on insect inhabitants of bird houses. (10, xxix, p. 87-90.) **Martin, Rene.**—Notice nécrologique par L. Berland. (24, xcvi, p. 27-30.) **Meyrick, E.**—Phytophagic or biological races in insects. (Nature, cxix, p. 782.) **Mueller, A. Julius.**—Obituary notice by F. Heikertinger. (79, xiii, p. 89.) **Poche, F.**—Was verstehen die internationalen nomenklatur-regeln unter binärer nomenklatur? (14, xxxxi, p. 81-84, cont.) **Puengeler, Rudolf.**—Obituary. (63, xli, p. 1-4, port.) **Richmond, E. A.**—A new phototropic apparatus. (12, xx, p. 376-382, ill.) **Rohwer, S. A.**—The need for definitely indicating new synonymy and new combinations in taxonomy. (Science, lxv, p. 526.) **Schroeder, C.**—Handbuch der entomologie. (Lief. 25-26, p. 481-610, ill.) **Schumann, E.**—Zum industriemelanismus. (18, xx, p. 443-444.) **Wade, J. S.**—Some insects of Thoreau's writings. (6, xxxv, p. 1-20, ill.) **Walther, H.**—Ueber melanismus. (63, xli, p. 32-49.) **Weiss, H. B.**—Sir John Hill's "Decade of Curious Insects." (6, xxxv, p. 83-88, ill.) **Weiss, H. B.**—Insects captured in the lookout stations of New Jersey. (New Jersey Dept. of Agric. Circ. 106, 3-21 pp. ill.) **Weiss, H. B.**—Thomas Moffett, Elizabethan physician and entomologist. (Sci. Monthly, June, 1927, p. 559-566, ill.) **Wolff, M.**—Ueber die mikroskopische untersuchung genadelter objekte und ein neues universalmikroskop für entomologische zwecke. (131, xxiii, p. 36-40, ill.)

ANATOMY, PHYSIOLOGY, ETC.—**Eggers, F.**—Nähere mitteilungen über das johnstonsche sinnesorgan

und über das ausweichvermögen der taumelkäfer. (Zool. Anz., lxxi, p. 136-156, ill.) **Golowinskaja, X.**—Das auftreten von mosaikformen bei Lymantria dispar unter dem einfluss ultravioletter strahlen. (Biol. Zentralbl., xlvii, p. 193-201, ill.) **Hasebroek.**—Tatsachen und kritik in fragen des industrie-und grosstadtmelanismus. (**18,** xxi, p. 25-30, ill.) **Hepp, A.**—Eulenfalter mit löchern in den flügeln. (**80,** i, p. 93.) **Jones & Hepburn.**—Observations on the pitcher plant liquor of the Sarraceniaceae. (Trans. Wagner Free Inst. Sci., Phila., xi, p. 35-48.) **Ju-Chi Li.**—The effect of chromosome aberrations on development in Dros. melanogaster. (Genetics, xii, p. 1-58.) **Spooner, C. S.**—A study of the catalase content of codling moth larvae. (State Ill. Dept. of Regis. and Educ. Bull., xvi, p. 443-446, ill.) **Wen, D.**—Precocita di sviluppo e tendenza alla partenogenesi nei bachi da seta (Bombyx mori) di razza gialla indigena. (Bol. Soc. Nat., Napoli, xxxvii, p. 135-163, ill.)

ARACHNIDA AND MYRIOPODA.—Berland, L.—Le venin des araignées. (Rev. Sci., lxv, p. 267-271, ill.) **Folkmanova, B.**—Einführung neuer unterscheidungsmerkmale in die systematik der Lithobiiden. (Zool. Anz., lxxi, p. 181-192, ill.) **Locket, G. H.**—Observations on the mating habits of some web-spinning spiders. (**103,** 1926, p. 1125-1146, ill.) **Stiles & Hassall.**—Key-catalogue of the crustacea and arachnoids of importance in public health. (U. S. Hyg. Lab. Bull., 148, p. 197-289.) **Thor, S.**—Vorläufige revision der gattung Hygrobates mit phylogenetischen bemerkungen. (Norsk Ent. Tids. ii, p. 118-148, ill.)

(N) ***Oudemans, A. C.**—Acarologische Aanteekeningen LXXIV. (**58,** vii, p. 176-180.) **Strand, E.**—Catalogue des Arachnides que j'ai decrits jusq'à l'année 1926. (**111,** 1925, A, hft. 8, p. 1-61.)

(S) ***Oudemans, A. C.**—Notizen über acari, (Oribatidae). (**111,** 1925, A, hft. 8, p. 120-147, ill.)

THE SMALLER ORDERS OF INSECTA.—Byers, C. F.—Notes on some American dragonfly nymphs (Odonata, Anisoptera). (**6,** xxxv, p. 65-74, ill.) **Pearman, J. V.**—Notes on Pteroxanium squamosum and on eggs of the Atropidae (Psocoptera). (**8,** lxiii, p. 107-111, ill.) **Ryvez.**—L'entomologie des mouches a triutes. Les insectes neuropteres. (La Nature, 1927, p. 460-461, ill.) **Snyder, T. E.**—Termites modify building codes. (**12,** xx, p. 316-321, ill.)

(N) *Banks, N.—Revision of the Nearctic Myrmeleonidae. (Bull. of the Mus. of Comp. Zool. lxviii, 3-84 pp., ill.) *Handschin, E.—Collembolen aus Costa Rica. (49, xvi, p. 110-118, ill.) *McDunnough, J.—Notes on the species of the genus Hexagenia with description of a new species (Ephemeroptera). (4, lix, p. 116-120.)

(S) *Esben-Petersen, P.—New and little-known species of Mecoptera and Neuroptera in the Zoological Museum of Helsingfors. (51, vii, p. 13-18, ill.) *Longinus Navas, R. P.—Insecta nova. (Mem. Acad. Sci. N. Lincei, (2), ix, p. 101-110, ill.)

ORTHOPTERA.—Crampton, G. C.—The thoracic sclerites and wing bases of the roach Periplaneta americana and the basal structures of the wings of insects. (5, xxxiv, p. 59-72, ill.) Burr, M.—Note on the antiquity of some orthopterous groups. (21, xxxix, p. 75-77.) Fry, H. J.—Grasshopper culture in the laboratory. (6, xxxv, p. 41-50, ill.) Morse, A. P.—Another vagrant grasshopper. (5, xxxiv, p. 134.)

(S) *Hebard, M.—Studies in the Tettigoniidae of Panama. (1, liii, p. 79-156, ill.)

HEMIPTERA.—Abbott, C. E.—The reaction of Datana larvae to sounds. (5, xxxiv, p. 129-133.) Hungerford, H. B.—The life history of the creeping water bug, Pelocoris carolinensis (Naucoridae). (19, xxii, p. 77-82, ill.) Ivanov, S. P.—Beiträge zur kenntnis des geschlechtsapparats der Homoptera Cicadoidea. [Russian] (Revue Russe D'Entomologie, xx, p. 210-227, ill.) Kerkis, J.—Zur kenntnis des inneren geschlechtsapparates der wasserbewohnender Hemiptera-Heteroptera. [Russian] (Revue Russe D'Entom., xx, p. 296-307, ill.) Knight, H. H.—On the Miridae in Blatchley's "Heteroptera of Eastern North America." (19, xxii, p. 98-105.) McGregor & Newcomer.—The true identity of the citrus mite. (12, xx, p. 429.) Reinhard, H. J.—The influence of parentage, nutrition, temperature, and crowding on wing production in Aphis gossypii. (Texas Agric. Exper. Sta. Bull. no. 353, p. 5-19.) Schneider-Orelli und Leuzinger.—Untersuchungen über die virginoparen und sexuparen geflügelten der blutlaus des apfelbaumes. (Vierteljahrs. Naturf. Ges. Zürich, lxxi, Beibl. No. 9, 84 pp., ill.) Waterston, J.—On the crop contents of certain Mallophaga. (103, 1926, p. 1017-1020, ill.)

(N) Ball, E. D.—The genus Clastoptera (Cercopidae). (4, lix, p. 103-112.) Downes, W. A.—A preliminary list of

the Heteroptera and Homoptera of British Columbia. (43, 1927, 5-22 pp.) **Hungerford, H. B.**—Trichocorixa and not Corixa for the genus of Corixidae found in America. (19, xxii, p. 96.) **Poisson, R.**—Sur la systematique des Corixidae remarque sur Neocorixa (non Arctocorisa) vermiculata. (25, 1927, p. 74-75.)

(S) ***Dozie, H. L.**—A new Fulgorid from Porto Rico. (6, xxxv, p. 53-54, ill.) ***Drake, C. J.**—Two undescribed Tingitids from Mexico. (19, xxii, p. 116-117.) ***Schmidt, E.**—Neue zikaden-gattungen und arten. (111, 1925, A, hft. 8, p. 147-159.)

LEPIDOPTERA.—**Bird H.**—The fern-feeding species of Papaipema. (4, lix, p. 92-96.) **Hepp, A.**—Biologische beobachtungen (Grossschmettelinge). (80, i, p. 79-80.) **Kosminsky, P.**—Die entwicklung der antennen bei intersexuellen weibchen von Lymantria dispar. (Biol. Zentralbl., xlvii, p. 243-249, ill.) **Lenz, F.**—Ueber die zucht der gabelschwanzarten. (18, xxi, p. 17-22.) **Zikán, J. F.**—Biologie der Heliconisa-arten (Saturnid.). (11, 1927, p. 58-82, ill.)

(N) **Ainslie, G. G.**—Additions and corrections to the list of the Crambinae of Florida. (39, xi, p. 12-14.) ***Barnes & Benjamin.**—A new race of Arctia caja. (139, xxvi, p. 5.) ***Cassino, S. E.**—Some new Geometridae. (16, iv, p. 57-72.) ***Cassino, S. E.**—New Geometrids. (16, iv, p. 73-80.) ***Chermok, F.**—New forms of Lepidoptera. (19, xxii, p. 118-119.) ***Cockerell, T. D. A.**—A new aberration of Basilarchia weidemeyrii. (139, xxvi, p. 5.) **Criddle, N.**—Lepidoptera reared in Manitoba from poison ivy. (4, lix, p. 99-101.) ***Forbes, W. T. M.**—The genus Melinaea with a description of a new species (Ithomiinae). (6, xxxv, p. 23-36, ill.) ***Hill, C. A.**—Three new moths from the southwest. (139, xxvi, p. 6-7.) ***Morrill, A. W.**—Description of a new cotton infesting species of Bucculatrix. (10, xxix, p. 94-97, ill.)

(S) ***Biedermann, R.**—Descriptions de Rhopalocères Américains nouveaux. (59, (B), Lep., p. 59-68, ill.) ***Hering & Hopp.**—Neue Limacodiden aus Südamerika. (63, xli, p. 4-9, ill.) **Hoffmann, F.**—Entomologisches allerlei aus Brasilien. (14, xxxxi, p. 50-53, cont.) ***LeMoult, E.**—Description de formes peu connues ou nouvelles des genres Papilio, Agrias, Morpho et Teracolus. (59, (B), Lep., p. 69-72.) ***Niepelt, W.**—Neue exotische Rhopaloceren. (18, xxi, p. 49-53.) **Schade, F.**—Entomologische skizzen aus Paraguay. IV. Sphingiden. (17, xliv, p. 20.) ***Schaus, W.**—New species of lepidoptera from South America. (10, xxix, p. 73-82.)

DIPTERA.—Cole, F. R.—A study of the terminal abdominal structures of male diptera. (61, xvi, p. 397-499, ill.) **Perfiljev, P.**—Zur anatomie der Phlebotomusarten. [Russian] (Revue Russe D'Entom., xx, p. 308-319, ill.)

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A Note on the New Species in Tillyard's "Insects of Australia and New Zealand."

In my recent review (Ent. News, 38: 92-93, 1927) of Tillyard's "Insects of Australia and New Zealand," I took occasion to criticize the use of the abbreviation "N.sp." found frequently throughout the text and since it may lead to confusion in the future, opportunity is here taken to record Dr. Tillyard's explanation of its use expressed in a letter to the writer. Since the majority of instances in which "n.sp." occurs are in error and in view of the fact that two new species are described in the text, Dr. Tillyard's statement seems worthy of note. The following is taken from his letter: "May I remark about your criticism *re* the use of 'n.sp.' in my book. I planned the book thirteen years ago (the Australian portion) and began to write it in 1923. In selecting types for illustration, I found there were none available in certain large groups, *e.g.*, in most families of Thysanura, so I took available undescribed species, and drew and described them in my Mss., calling them *n.sp. until published. All but two were published before 1926.* [Italics by Tillyard.] The publishers, during my absence, failed to remove the words 'n.sp.' and replace them by 'Till.', though they were duly notified. There is not a single 'n.sp.' in the book which has not been described; you will find, for instance, *Nesomachilis maoricus* Till. and other Thysanura described in Part I of my 'Primitive Wingless Insects' under the reference given at end of the chapter on Thysanura. I worked off all the 'n.spp.' before the book was published, with two exceptions only, viz. *Apachyus australis* (Dermaptera) and *Austromicron zygopterarum* (Hymenoptera): both of these are actually described in appendices in the book. Had I not been travelling in America and Europe last year, this little error about 'n.sp.' and other slips in publishing would not have been allowed to occur; it was my bad luck not to see the final proofs."—Wm. P. Hayes, University of Illinois.

Doings of Societies.

The American Entomological Society.

Meeting of February 24, 1927, in the hall of The Academy of Natural Sciences of Philadelphia, with Mr. R. C. Williams in the chair. Thirteen members and visitors were present.

The death of Dr. Mario Bezzi, a corresponding member of the Society, was announced. A motion that the Corresponding Secretary send a letter of condolence to Mrs. Bezzi was approved.

A letter from the Jubilee Committee for the celebration of 40 years of scientific work of Mr. Andreas Semenov Tian-Shansky of the Zoological Museum of the Academy of Sciences of the U. S. S. R., was read, inviting the Society to participate.

It was moved and seconded that the President appoint a committee of three to consider a program of collecting trips for the Spring and Summer of 1927.

Dr. Harry Allen was elected a resident member of the Society.

Mr. Coxey gave the communication of the evening, speaking on his recent trip to Ecuador. Many excellent lantern slides and photographs illustrated his talk.

ROBERT J. TITHERINGTON, *Recording Secretary.*

The Kansas Entomological Society.

The third annual meeting of the Kansas Entomological Society was held at Lawrence, Kansas, April 14, 1927. The session was called to order by President Roger C. Smith in Dyche Museum with twenty-two members present. After the introduction of the new members, interesting reports were given, together with exhibitions of material, on new and interesting records of Kansas insects. The report of the committee on a "State List of Kansas Insects" was then made and the meeting adjourned until 2:00 p. m.

In the afternoon an informal report was made by Professor J. W. McColloch on the 1927 outlook for insect injury in Kansas. Along with the discussion on the Hes-

sian fly and the chinch bug, Professor McColloch stated that termites are becoming increasingly numerous in the State. The Society went on record as in favor of a building code which would minimize injury from this pest.

Mr. Schenk gave a very interesting report on calcium cyanide dust fumigation of stored grain. It was his opinion there is a great future for this type of fumigation.

Perhaps the most interesting report of the entire meeting was that made by Mr. Warwick Benedict on the collecting in California and the rearing, both in California and in Kansas, of *Dinapate wrighti*. Mr. Benedict showed adults, pupae, mandibles of larvae, and a section of a palm log fourteen inches in diameter, which the beetles had tunneled from end to end. The log was collected in 1924 and beetles emerged that year and each year since.

A six o'clock dinner was given for the society by the local members at the University Club. The following attended the meetings: Professor Geo. A. Dean, Dr. Roger C. Smith, Professor J. W. McColloch, Dr. R. L. Parker, Professor Harry R. Bryson and Dr. Reginald H. Painter, of Manhattan; Dr. Hazel E. Branch and Mr. J. R. Norton, of Wichita; Mr. Lyle A. Stephenson and Mr. and Mrs. J. W. Blachly, Kansas City, Mo.; Mr. W. Knaus, McPherson; Mr. Warwick Benedict, Miss Kathleen Doering, Dr. H. B. Hungerford, Dr. Paul B. Lawson, Professor R. H. Beamer, Dr. P. A. Readio, Mr. Howard Deay, Mr. Chas. H. Martin and Mr. E. P. Breakey, of Lawrence; Mr. Schenk, American Cyanamid Sales Co., New York.

The meeting of the Society next year will be held in Wichita, Kansas, at about the time of the meeting of the Kansas Academy of Science.

Officers elected for the ensuing year are Mr. Warren Knaus, McPherson, Kansas, President, and Dr. R. L. Parker, Kansas State Agricultural College, Manhattan, Kansas, Secretary.

H. B. Hungerford and R. L. Parker, *Secretary*.

OCTOBER, 1927

ENTOMOLOGICAL NEWS

Vol. XXXVIII No. 8

JAMES H. B. BLAND,
1833–1911

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PHILADELPHIA, PA.
THE ACADEMY OF NATURAL SCIENCES,
Logan Square

Entered at the Philadelphia, Pa., Post Office as Second Class Matter.
Acceptance for mailing at the special rate of postage prescribed for in Section 1103,
Act of October 3, 1917, authorized January 15, 1921.

ENTOMOLOGICAL NEWS

published monthly, excepting August and September, by The American Entomological Society.

Philip P. Calvert, Ph.D., Editor; E. T. Cresson, Jr., Associate Editor.

Advisory Committtee: Philip Laurent, J. A. G. Rehn, Chas. Liebeck, J. Chester Bradley, Ph.D., Frank Morton Jones, John C. Lutz, Max Kisliuk, Jr.

The subscription price per year of ten (10) numbers is as follows:

United States and possessions . .	$3.00
Canada, Central and South America .	3.15
Foreign	3.25

Single copies 35 cents

ADVERTISING RATES: Full width of page. Payments in advance.

One issue, 1 in., $ 1.20, 2 in., $ 2.40, half page, $ 4.00, full page,, $ 8.00
Ten issues " 11.00, " 20.00, " 35.00, " 70.00

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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. The receipt of all papers will be acknowledged. Proof will be sent to authors when requested. Twenty-five "extras" of an author's contribution, without change in form and without covers, will be given free when they are wanted; if more than twenty-five copies are desired *this should be stated on the MS.*

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STATED MEETINGS

Of The American Entomological Society will be held at 7.30 o'clock P. M., on the fourth Thursday of each month, excepting June, July, August, November and December, and on the third Thursday of November and December.

Communications on observations made in the course of your studies are solicited; also exhibits of any specimens you consider of interest.

The printer of the NEWS will furnish reprints of articles over and above the twenty-five given free at the following rates: One or two pages, twenty-five copies, 35 cents; three or four pages, twenty-five copies, 70 cents; five to eight pages, twenty-five copies, $1.40; nine to twelve pages, twenty-five copies, $2.00; each half-tone plate, twenty-five copies, 30 cents; each plate of line cuts, twenty-five copies, 25 cents; greater numbers of copies will be at the corresponding multiples of these rates.

ENTOMOLOGICAL NEWS

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On the Biology of the Parasitic Bees of the Genus Coelioxys (Hymen., Megachilidae).

By S. GRAENICHER, South Miami, Florida.

Although this genus is well represented in both hemispheres, it is surprising how little is known concerning the life history of these bees that pass their larval stages in the nests of host-bees belonging to the genera *Megachile, Chalicodoma, Anthophora* and *Tetralonia.*

In a previous paper the writer[1] described the methods of the oviposition of the adults, and the habits and peculiar structures of the first stage larvae of two species of *Coelioxys* found in the nests of leaf-cutter bees (*Megachile*). Later on, while still a resident of Wisconsin, he had an opportunity to study the activities of two additional species of *Coelioxys,* and thereby gained some more information on the subject.

In 1897 Ferton[2] published the results of some observations made in France on two species of *Coelioxys* ovipositing in the nests of leaf-cutter bees. The mode of oviposition employed by one of these species agrees closely with what the writer has seen in the species of our fauna observed so far. The second species studied by Ferton shows an entirely different mode of oviposition, as will be discussed in the course of this paper.

In his recent work on the "Bees of Europe"[3] Friese informs us of having found an egg of *Coelioxys rufescens* Lep. in the nest of *Anthophora fulvitarsis* Br. suspended from the roof of the cell, and this constitutes still another method of

[1] S. Graenicher. Some observations on the life history and habits of parasitic bees. Bull. Wis. Nat. Hist. Soc., Vol. 3, pp. 153-167. 1 pl., (1905).

[2] M. Ch. Ferton. Nouvelles observations sur l'instinct des hyménoptères gastrilégides de France et de Corse. Actes Soc. Linn. Bordeaux, Vol. 52, pp. 11-13, plate 4, (1897).

[3] H. Friese. Die europäischen Bienen (Apidae) 1923.

oviposition met with in *Coelioxys*. He does not mention the information given by Ferton.

Both Ferton and Friese have seen larvae of *Coelioxys* in advanced stages of development, but they did not come across the very characteristic first stage larvae.

Referring to parasitic bees in general, whereby he mentions *Stelis*, *Coelioxys*, *Melecta* and *Nomada* as examples, Friese says that at first two eggs are present in a cell of the hostbee (egg of parasite and egg of host), but that at a later period only the larva of the parasite is found. He goes on to say that it is usually assumed, that the egg of the parasite hatches earlier than that of the host, and that the parasite consumes the bee-bread more rapidly, thereby causing the death of the host larva by starvation. In making these statements he does not consider the fact, that, so far as *Stelis* is concerned, it had been shown by Verhoeff[4] over thirty years ago, that the larva of the European species *Stelis minuta* Nyl. attacks and kills the larva of *Osmia leucomelaena* Ky. in much the same manner as in this country the *Stelis* larva kills the *Alcidamea* larva, as reported by the writer.

Nest of Leaf-cutter Bees (Megachile).

The methods employed by these bees in constructing their thimble-shaped cells with circular or oval pieces cut from leaves, are well known. There are several layers of round pieces at the bottom of the cell, and longer pieces forming the wall. After the cell has been half-filled with the food supply for the larva (bee-bread), an egg is placed on top of it, and the cell closed with circular pieces. The nests of some of the species are found in the ground, of others in dead branches on the ground, and in still others, in excavated pithy stems. The cells are placed end to end.

Mode of Oviposition of Coelioxys.

Ferton informs us how *Coelioxys quadridentata* L. (he calls it *C. conica*, but this is a synonym) pierces the inner wall of the cell of *Megachile circumcincta* K. with its pointed abdomen,

[4] C. Verhoeff. Zool. Anz. Vol. 15, p. 51, (1892).

and pushes its egg into the slit thus formed. The posterior portion of the egg lies between the innermost and the next layer of leaf-fragments, while the anterior pole remains inside of the cell in contact with the bee-bread. Ferton pictures a cell of the hostbee with 3 eggs of the parasite, as it appears after all but the innermost layer of leaf-fragments have been removed. (Pl. 4, fig. 5).

The ovipositing habits of two species of *Coelioxys* of the Wisconsin fauna, viz. *C. lucrosa* Cr., a parasite of *Megachile vidua* Sm. (not *M. addenda*, as it was called at the time) and of *C. rufitarsis* Sm., a parasite of both *M. latimanus* Say, and *M. melanophaea* Sm., are identical with those of the European species considered above. The same may be stated for the two following species of *Coelioxys* studied in Wisconsin; *C. ribis* Ckll., a parasite of *M. wootoni* Ckll., and *C. modesta* Sm., a parasite of *M. infragilis* Cr.

That this is not the only method of oviposition employed by species of *Coelioxys* is shown by Ferton's[5] account of the habits of *Coelioxys afra* Lep., a parasite of *Megachile albipila* Pérez. Its egg is found on top of the bee-bread, leaning up against the front end of the host's egg. The manner in which *Coelioxys rufescens* Lep. suspends its egg from the top of the cell of *Anthophora fulvitarsis Br.*, as reported by Friese, points to a third mode of oviposition within the genus *Coelioxys*.

Behavior of the Adult Parasite at the Nest.

On one occasion the writer came across a female of the parasitic bee *Argyroscelonis minima* Robt. flying along a clay bank in search of a nest of its hostbee, *Colletes eulophi* Robt.[6] After having discovered such a nest, it spent much of its time studying the surroundings of the nest, at first inspecting the immediate neighborhood, and then gradually taking in the more remote parts of the territory, returning to the nest from time to time, and entering it. It made repeated visits to the

[5] M. Ch. Ferton. Actes Soc. Linn. Bordeaux, Vol. 48, (1896). Also Vol. 52, pl. 4, figs. 9 and 10.

[6] S. Graenicher. A contribution to our knowledge of the visual memory of bees. Bull. Wis. Nat. Hist. Soc., Vol. 4, pp. 138-142, (1906).

nest for several days, and showed as much familiarity with the site of the nest as the hostbee itself.

A female *Coelioxys* behaves in exactly the same manner. The methods employed by such a parasitic bee, after it has found a nest, are identical with those exhibited by the hostbee from the time it has started the construction of a nest. By a thorough study of the surroundings, the latter is enabled to locate its nest without any loss of time on its return. There is a highly developed memory for visual impressions in the hostbee, and this seems to be just as well developed in the parasitic bee.

When more than one female *Coelioxys* has discovered the same nest of a host, each one of them may come to the nest to deposit its egg. Ferton saw four females of *Coelioxys quadrinotata* appear at the nest of *Megachile circumcincta* at about the same time. At a nest of *Megachile wootoni*, the writer found three specimens of *Coelioxys ribis* in attendance. Two of them (a larger and a smaller one) visited the nest. At first the small one entered, and stayed inside for a few minutes. During this time the larger one entered, but on finding the nest occupied, reappeared at once, and took up a position on a small plant nearby. After the small one had left, the hostbee arrived with a load of pollen, deposited it in the nest, and departed. Thereupon the larger *Coelioxys* paid a visit to the nest.

There are no signs of hostility between these rival parasites, either at the nest or when two of them happen to meet when on the wing. In the latter case, the writer has seen them flying around each other, face to face, in a playful way.

The Egg of Coelioxys.

In view of the foregoing, we are not surprised to find more than one egg of the parasite in the same cell. Ferton saw as many as three eggs of *Coelioxys quadrinotata* in a cell of *Megachile circumcincta*. There were five eggs of *Coelioxys ribis* in a cell of *Megachile wootoni*, and this is the largest number ever found by the writer in a single cell.

The eggs of the parasite are placed in the lower portion of

the cell wall, mostly near the base. Those of the various species of *Coelioxys* seen by the writer differ considerably in shape and size from those of their hosts. The egg of *Coelioxys* is comparatively shorter than that of *Megachile* and broadened out at its cephalic pole. The duration of the egg stage, as observed in both *Coelioxys rufitarsis* and *C. ribis,* amounts to about four days.

(To be continued.)

Two New Species of Diptera from North Carolina (Tachinidae, Conopidae).

By C. S. BRIMLEY, Entomology Division,
N. C. Dept. Agriculture.

Neophyto olmaba n. sp. (Tachinidae).

Much like *N. setosa* Coq. but differs from it in the same way that *Phytodes hirculus* Coq. does; namely in the absence of true discals on abdominal segments 1-3, in having the apical cell long petiolate, and in the posterior crossvein being nearer to the small crossvein than to the bend of the fourth vein. From the description of *P. hirculus* Coq., it differs in having three sternopleurals instead of two, in having no golden color on the face, and in the wings being hyaline or tinged with yellow toward the costa. The middle pair of marginals on segment three are out of line with the others, being further away from its posterior margin. Length 6 to 9 mm.

Type Female, Sunburst, North Carolina, May, 1912, F. Sherman. Five paratypes are from Raleigh, N. C., C. S. Brimley, taken on April 30, 1923, Aug. 23, 1921, and May 14, 1926; these are smaller than the type and also appear to be females, all having orbital bristles. Type and paratype will be deposited in the U. S. National Museum.

Conops limuva n. sp. (Conopidae.)

♀ length about 12.5 mm. Second antennal joint about one and one-fourth length of third (including style), small crossvein a little beyond middle of discal cell, about opposite tip of auxiliary vein; ventral plate of about uniform thickness for apical two-thirds or three-fourths, somewhat widened at the base.

Cheeks, face, sides of front, lower part of back of head and

narrow posterior orbits yellow; vertex, middle of front to antennae and greater part of back of head, black or dark brown, the middle of vertex behind tinged with yellowish. Proboscis and antennae black.

Thorax and abdomen black or dark brown, except for two short yellow-pollinose stripes on thorax in front, a broken vertical stripe on pleura to base of mid coxa, a transverse band on base of metanotum with a vertical extension down each side of same, narrow apical bands on tergites 1-3, broad apical band on 4, and most of rest, all yellow pollinose. Legs mostly yellow pollinose, apical half of hind tibiae and all tarsi black, all the femora darkened above, claws and pulvilli yellow.

The wings have the costal cells anterior to the first vein yellow; from the first vein and the costa beyond the tip of first vein to the third vein the wings are blackish, this color extending to the very tip of the third vein but not crossing it. Posterior part of wings abruptly hyaline, but with dusky edging in discal cell to posterior branch of fifth vein and also a dusky streak in front of fifth vein in third posterior cell.

Differs from all American *Conops* known to me except *brachyrhynchus* in having second antennal joint longer than third and from this and all others known to me by the wings being dark down to the third vein only, then abruptly hyaline behind it.

Type and only specimen, Raleigh, North Carolina, June 29, 1926, C. S. Brimley, in the North Carolina Department of Agriculture Collection.

Notes on North Carolina Hymenoptera.

By C. S. Brimley, Entomology Division,
N. C. Dept. Agriculture.

I. Key to the Species of Elis Fabricius (Scoliidae) found in North Carolina (including a New Species from South Carolina.)

1. Females. ..... 2.
   Males. ..... 8.
2. Propodeum smooth on sides, (pronotum with a pale band behind) ..... 3.
   Propodeum striate on sides. ..... 4.
3. Two yellow spots on front of pronotum, scutel with yellow, neck yellow above. (Southern Pines and Aberdeen, N. C., two, Sept., Oct.). *propodealis* Rohwer

No yellow spots on front of pronotum, scutel black, neck not yellow above. (Eastern and central North Carolina, June to October *carolinana* Panzer

4. Pronotum with a pale band behind, scutel marked with yellow. ..... 5.
Pronotum without a pale band behind, scutel black. ... 6.

5. Pronotum densely and coarsely punctate above, tibiae and tarsi reddish yellow. (Kittrell, N. C., July, one). *floridanus* Rohwer
Pronotum but little punctate above, tibiae and tarsi black or nearly so. (Southern Pines, August, three). *quinquecincta* Fabr.

6. No pale markings on the abdomen beyond the second segment. (Charleston, S. C., July, four). *berlyi* n. sp.
Segments 1-4 or 1-5 with pale markings. ..... 7.

7. Abdomen above with lateral spots only, venter black, stripe on each side of propodeum undivided or absent. (Whole State, June to October). *obscura* Fabr.
Abdomen above with the lateral spots on some of the segments nearly or quite uniting to form crossbands, venter with lateral yellow spots, spot on each side of propodeum deeply V-shaped. (Whole State, June to October). *interrupta* Say

8. A yellow spot on each side of last abdominal segment. (Raleigh and Kittrell, N. C., July, two). *atriventris* Gahan
No such spots present. ..... 9.

9. Hind tibiae mainly yellow, hind femora yellow at apex and on apical half above, no vertical groove through yellow spot below base of wing. *carolinana*
Hind tibiae mainly dark, hind femora black on sides to apex, the yellow limited to sa stripe above. ..... 10.

10. Hind tibiae mostly black, stripes on postero-lateral angles of propodeum usually entire outwardly, yellow lateral spots present on ventrals 2-6. Groove on yellow spot below wing feeble or absent. Larger. *obscura*
Hind tibiae dusky or dull reddish, propodeal stripes concave or emarginate outwardly, sixth ventral usually unspotted, groove on yellow spot below wing-base well developed. Smaller. *interrupta*

Note. Determination of the last three species is based on the examination of a number of specimens from Raleigh, where these species are all common and are the only ones of which females have been taken.

Elis berlyi n. sp. ♀. Black with the following white: very narrow upper anterior orbits, post-scutellum, spot below base of wings, broad band on first abdominal segment and large spot on each side of second. Pronotum coarsely and densely punctate above, propodeum striate on sides and behind. Length 18-20 mm.

Sharply distinguished from all species known to me by the absence of pale markings on the abdomen posterior to the second segment.

Type, female, Charleston, South Carolina, July 23, 1926, J. A. Berly, collector; *paratypes*, three females, same data. One paratype is retained for the collection of the North Carolina Department of Agriculture, the others and the type are returned to Professor Franklin Sherman, State Entomologist, Clemson College, South Carolina, whom I wish to thank for the privilege of examining and describing this form.

II. Description of a New Species of Cerceris. (Cerceridae.)

Cerceris natallenus n. sp. Black with the following yellow or reddish yellow: broad anterior orbits reaching a little above base of antennae, clypeal process except base but including lamellae, front of mandibles except tips, under-side of scape and of basal two-thirds of flagellum, tibiae and tarsi and extreme apex of femora, broad even apical band on dorsum of second abdominal segment, and very fine apical margins to ventral segments 2-6.

Sculpture about as in *compacta*, except that the enclosure instead of being rugose is mainly smooth with a narrow groove down the center and incomplete coarse oblique striae on the sides, the mesepimeron also is coarsely transversely striate on upper third and smooth on the remaining portion. Clypeal process broader and more arched than in *compacta*, the two lamellae completely separated. Length 15 mm.

Type female, Lagrange, North Carolina, August 5, 1924, T. B. Mitchell, in the collection of the North Carolina Department of Agriculture. Two other females and a male agree in the sculpture of the enclosure and of the mesepimeron, but present some color differences as follows: the first a female from Bostic, N. C., July 7, 1921, T. B. Mitchell, agrees with the type except that the hind tibiae are dark above and yellow beneath, length 13 mm.; the second a female, Willard, N. C.,

July 15, 1925, C. S. Brimley, agrees in structure with the foregoing, but the color of the head more or less, of the propodeum and of the first and second abdominal segments is red, and the legs are reddish, except that the mid and hind tibiae are dark above; the first abdominal segment has a transverse apical row of three yellow spots above, length 13 mm.; finally a male from Willard, N. C., July 15, 1925, C. S. B., agrees with the type in color, but has the hind tibiae dark above as in the Bostic specimen, and the scutellum has a broad yellow band partly divided in the middle.

In Banks' key to eastern *Cerceris* this runs to *compacta*, from which it may be distinguished by the different sculpture of the enclosure and mesepimeron as well as by differences in color, while from *flavofasciatus* (of which Dr. Rohwer tells me it is probably a variety) it may be distinguished in the female sex at least, by the unmarked scutellum, and in both sexes by the predominantly black hind femora.

A New Syrphid (Diptera) from Guatemala.

By DAVID G. HALL, College of Agriculture, University of Arkansas.*

A new species of *Mesogramma* from Guatemala is described herewith from a series of specimens in the collection of J. S. Hine.

Mesogramma flaviplura sp. nov.

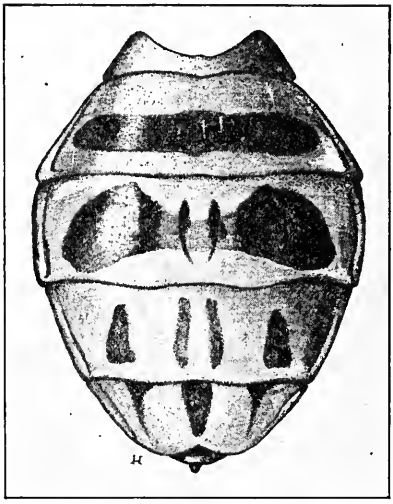
Length 8-9 mm. Face, dark brownish black, dusted with yellow along sides. Antennae, including arista, yellowish brown, third joint being somewhat silvery pollinose. Frontal triangle of male rather narrowed above, almost black, with black colored pile, dusted with whitish pollen a little before ocelli. Front of female blackish, shining and thickly dusted along sides with yellow pollen starting just below ocelli.

Median cinereous stripe of thorax moderately distinct, the rest of thorax dark blackish brown, lightly clothed with dark pile. A light yellow spot on mesopleurae, thinly clothed with light pile. Scutellum unicolorous with thorax, lighter on margin. Halteres yellowish white.

Abdomen of male of the same color as thorax, dark-brown metallic, without an apparent design or pattern. Abdomen of the female similar to that of male, except a series of opaque

*Research Paper No. 54, Journal Series, University of Arkansas.

spots that are hard to define. First segment shining, second with a transversal spot extending across the approximate center, not reaching lateral margins; third segment with a more extensive spot showing a tendency to break into a series of smaller spots, a large one on each side, easily contained within the borders of the segment and connecting somewhat with each



Pattern on abdomen of female Mesogramma flaviplura.

other, across a pair of median lines. Spots on the fourth segment distinctly separated, a pair on each side and a pair of median lines or spots. Fifth segment with a pair of oblique spots extending toward median posterior, a single median spot beginning at the anterior margin, extending back about three-fourths the distance toward the posterior margin, taking the place of the median lines on the preceding segments, a small triangular median spot on posterior margin. Fifth segment and hypopygium shining metallic brownish black.

All femora black, with dark pile, knees whitish. Hind tibia black, with dark pile, remaining tibia white, with light colored pile. All tarsi dark, increasingly so toward pulvillae.

Wings, smoked a deep blackish brown, darker along margin.

A series upon which this species is based was collected by Prof. Hine during the months of January, February and March, 1905, at Puerto Barrios, Guatemala, and are in his private collection at Columbus, Ohio.

Type—Female in the collection of Prof. Hine.

ENTOMOLOGICAL NEWS

PHILADELPHIA, PA., OCTOBER, 1927.

Summary of Votes in Recent American Referendum on Dr. Poche's Three Propositions to Change the International Rules of Zoological Nomenclature.

Referring to the recent referendum on Dr. Poche's (Vienna, Austria) three propositions in regard to the Rules of Zoological Nomenclature, the undersigned has the honor to report to the zoological profession the following results of the ballot:

Poche's proposition I: 8 votes for; 549 votes against.

Poche's proposition II: 4 votes for; 550 votes against.

Poche's proposition III: 4 votes for; 551 votes against.

A detailed report will be made to the Tenth International Zoological Congress (Budapest) and the undersigned unreservedly accepts the unambiguous results of this referendum as definite instructions from the profession in the United States for him to cast his vote (in the Congress as delegate, and in the Commission as member) against all three propositions.—C. W. STILES, Professor of Zoology, U. S. Public Health Service.

Personals.

PROF. J. G. NEEDHAM wrote from Ithaca on July 14, 1927, "I am leaving to-night for a year in China."

MR. HAROLD C. HALLOCK has been transferred from the Japanese Beetle Laboratory at Riverton, New Jersey, to Westbury, Long Island, New York, for research work on the Asiatic beetle, *Anomala orientalis*.

On July 13, MR. J. A. G. REHN, recording secretary and associate curator of entomology of the Academy of Natural Sciences of Philadelphia, set off on a second collecting trip in Costa Rica, his first visit to that country having been made four years ago. The present expedition is planned to visit especially Pozo Azul in the Pacific lowlands, the high south central mountains of Santa Maria Dota, the higher central volcanos of Irazú and Turrialba and, in the Atlantic lowlands,

Talamanca and Santa Clara. He expects to return to Philadelphia near the end of September.

Prof. T. D. A. Cockerell wrote from Leningrad, Russia, July 11, 1927: We arrived here yesterday on the S.S. Soviet (COBET in Russian) from London. On the way had three days at Bremen and saw much of J. D. Alfken, who has retired from teaching and now devotes his whole time to the study of bees. Was present at a meeting of the Bremen Entomological Society. Much kindness shown to us by all the people in Bremen and also here in Leningrad. To-day we saw the entomological collections of Academy of Sciences, beautifully arranged and cared for, the largest series of *Bombus* in the world, I think. They wish to exchange insects and have much to offer in all orders. Fortunately the collections were not at all damaged during the revolution. We expect to start for Irkutsk, a journey of eight days, to-morrow. [See the News for February last, page 57, for an outline of Prof. Cockerell's proposed journey.—Ed.]

Dr. C. H. T. Townsend has been placed in charge of the Peruvian Agricultural Institute of Parasitology. (Jour. Econ. Ent.)

At the meeting of the Entomological Society of France, March 9, 1927, Prof. W. M. Wheeler was awarded the Dollfuss prize of 300 francs for his work *Les Sociétés d'Insectes. Leur origine. Leur evolution.*

Entomological Literature

COMPILED BY E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published.

All continued papers, with few exceptions, are recorded only at their first installments.

Papers of systematic nature will be found in the paragraph beginning with (N). Those pertaining to Neotropical species only will be found in paragraphs beginning with (S). Those containing descriptions of new forms are preceded by an *.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

Papers published in the Entomological News are not listed.

4—Canadian Ent., Guelph. **5**—Psyche, Cambridge, Mass. **8**—Ent. Monthly Mag., London. **9**—Entomologist, London. **10**—Proc., Ent. Soc., Washington. **11**—Deutsche Ent. Zeitschrift, Berlin. **12**—Jour. of Economic Ent. **14**—Ent. Zeitschrift, Frankfurt a. M. **17**—Ent. Rundschau, Stuttgart.

18—Intern. Ent. Zeitschrift. Guben. 20—Societas Entomologica, Stuttgart. 21—The Entomologist's Record, London. 22—Bull. of Ent. Research, London. 24—Ann. Soc. Ent. France. 25—Bull. Soc. Ent. France. 26—Ent. Anzeiger, Wien. 27—Bull. Soc. Ent. Italiana. 35—Proc., Ent. Soc., London. 45—Zeit. f. Wissenschfl. Insektenbiol., Berlin. 50—Proc., U. S. National Museum. 55—Pan-Pacific Ent., San Francisco. 56—Konowia, Wien. 61—Proc., California Acad. Sci. 68—Science. 69—Comptes R., Acad. Sci., Paris. 70—Entomologica Americana, Brooklyn. 77—Comptes R., Soc. Biologie, Paris. 78—Bull. Biol. France et Belgique. 80—Lepid. Rundschau, Wien. 101—Biological Bul., Woods Hole, Mass. 107—Biologisches Zentralblatt. 109—Ann. Hist. Nat. Mus. Nat., Hungarici. 122—Zeit. f. Morph. u. Oekol. Tiere, Berlin. 130—Ohio Jour. Sciences, Columbus. 131—Ent. Blätter, Berlin. 133—Jour. Experimental Zool. 135—Quarterly Jour. Microscopic. Sci. 144—Ann. Sci. Nat., Zool., Paris. 153—Bull. Museum Nat. Hist. Naturelle, Paris.

GENERAL—Bethune-Baker, G. T.—Remarks on Dr. Verity's "Explanation and Justification." (21, xxxix, p. 103-104.) **Bird, R. D.**—Notes on insects bred from native and cultivated fruit trees and shrubs of southern Manitoba. (4 lix, p. 124-128.) **Blasche, F.**—Raupen in hummelnest. Selbstanfertigung von gebrauchsgegenstanden. (18 xxi, p. 71.) **Bois, N. D.**—Leon Diquet Explorateur-naturaliste, Correspondent du Museum. (153, 1926, no. 6, pp. 333-335.) **Bradley, J. C.**—Nomina conservanda. (Science, lxvi, p. 100-103.) **Chappius, P. A.**—Die tierwelt der unterirdischen gewässer. (Thienemann's Die Binnengewässer, ii, p. 92-99.) **Depdolla, Ph.**—Die keimzellenbildung und die befruchtung bei den insekten. (Handbd. der Ent. Schröder, i, p. 825-) **Essig, E. O.**—Some insects from the adobe walls of the old missions of Lower California. (55, iii, p. 194-195.) **Franz von Tunkl, F.**—Ueber die wertung des insektenlebens vor zweihundert jahren. (26, vii, p. 155-156, Cont.) **Frohawk, F. W.**—Range of vision in insects. (9, lx, p. 163.) **George, L.**—Observations sur la biologie de deux hymenopteres entomophages. (Bul. Soc. His. Nat. Afr. Nord, 1927, p. 55-71.) **Hayward, K. J.**—Collecting experiences in the Rio Paranamini region of Argentina. (9, lx, p. 164-165.) **Hedicke and others**—Hexapoda [Abstracts]. (Zoologischer Bericht, Berlin, xii, pp. 436-451.) **Houard, C.**—Les collections cecidologiques du Lab. d'Ent. du Mus. Hist. Nat. Paris; Galles de la Guyane Francaise, Mem. 2. (Marcellia, xxi, p. 97-128, ill.) **Houard, C.**—Les Collections cecidologiques du laboratoire d'entomologie du Museum d'Histoire Nat-

urelle de Paris: Galles de l'Amerique tropicale. (Marcellia, Avellino, vol. xxiii, fasc. 1-6, pp. 95-124.) **Howard, L. O.**—The historical development and present organization of applied entomology in the United States. (Centralblatt für Bakteriologie etc., Jena 2te Abt., Bd. 71, pp. 105-113.) **Jordan, D. S.**—Concerning "species grinding." (Science, lxvi, p. 14-15.) **Lameere, A.**—Abrégé de la classification zoologique. (Annales Société royale zoologique de Belgique, lvii, p. 68-182.) [Arthropods pp. 110-135.] **Leon, N.**—Entomologia Medicala. (Acad. Romana Bucuresti. Stud. Cerc. ix, 248, pp. ill., 1925.) **McAtee, W. L.**—Notes on insect inhabitants of bird houses. (10, xxix, p. 87-90.) **Moznette, G. F.**—Notes on some insects occurring on the Island of New Providence, Bahama Archipelago, and their bearing on horticulture in Florida. (Quarterly Bull. State Plant Board of Florida, xi, p. 119-121.) **Müller & Schuster von Forstner.**—Vulkanausbrüche und insekten. (17, xliv, p. 22-23.) **Needham, J. G. & Christenson, R. O.**—Economic Insects in some streams of Northern Utah. (Bull. 201, Utah Agr. Exper. Sta., Logan, Utah, pp. 36, ill.) **Parisi, B.**—Notiziario della sezione du zoologia del Museo Civico di Storia Naturale di Milano. Il nuovo ordinamento delle collezioni entomologiche. (Naturo, Milano, xviii, p. 42-46, ill.) **Puengeler, R.**—Obituary (11, 1927, p. 97-100.) **deStefani, T.**—Piccole note alcuni insetti. (Il Nat. Siciliano, xxv, p. 1-10). **Turner, H. J.**—Nomenclature. Errors. (21, xxxix, p. 95-96.) **Turner, H. J.**—Races and their naming. (21, xxxix, p. 104-106.) **Verity, R.** A few words of explanation and justification. (21, xxxix, p. 100-103.) **Weiss, H. B.**—Jan Jacobz Swammerdam. (Sci.-Mon. Mag., 1927, p. 220-227, ill.)

ANATOMY, PHYSIOLOGY, ETC.—Carpentier, F.—Sur les trachees de la base des pattes et des ailes de la sauterelle verte. "Phasgonura viridissima." (Ann. Soc. Sci. Bruxelles, xlvii, B, p. 63-86, ill.) **Cockayne, E. A.**—Gynandromorphs and intersexes. (35, i, p. 91-92.) **Codreanu, R.**—Le cycle évolutif d'un Chironomide a larve ectoparasite d'une nymphe d'ephémère. Les conditions de la mue dans un cas de parasitisme d'une nymphe d'ephémére par une larve de Chironomide (77, xcvi, p. 1433-1435; 1435-1436.) **Crampton, G. C.**—The thoracic sclerites and wing bases of the roach Periplaneta americana and the basal structures of the wings of insects. (5, xxxiv, p. 59-72, ill) **Debaisieux, P.**—A propos des cnidosporides des blattides. (77, xcvi, p. 1404-1406.) **Demoll, R.**—Untersuchungen über die atmung der insekten. (Zeit. f. Biologie, lxxxvi, p. 45-66.) **Feuerborn, H. J.**—Ueber die genese der imaginalen thoraxmuskulatur und das tracheensystem von Psychoda alter-

nata. (Zool. Anz., lxxi, p. 249-269, ill.) **Goldschmidt, R.**—Weitere morphologische untersuchungen zum intersexualität sproblem. (**122,** viii, p. 63-95, ill.) **de Gryse, J. J.**—The morphogeny of certain types of respiratory systems in insect larvae. (Trans. R. Soc. Can., xx, (V), p. 483-503.) **Heller u. Meisels.** Untersuchungen über die metamorphose der insekten. (Biol. Zentralb., xlvii, p. 257-264, ill.) **Hollande, A. C.**—La rénovation de l'épithélium de l'intestin moyer du criquet égyptien. (**69,** clxxxiv, p. 1476-1478, ill.) **Koch, A.**—Studien an leuchtenden tieren. Das leuchten der myriapoden. (**122,** viii, p. 241-270, ill.) **Kosminsky, P.**—Intersexualität im männlichen Kopulationsapparat von Lymantria dispar L. unterm Einfluss der Temperatur. (**107,** Bd. 47, pp. 323-326, ill.) **Lee, M. O.**—Respiration of Insects. (**68,** Aug. 5, 1927.) **v. Lengerken, H.**—Biologie der tiere deutschlands, P. Schulze. Lief. 24, Teil 40, Coleoptera IV, p. 169-346, ill. **Levitt u. Spett.**—Ueber einige fällen von verdoppelungs-anomalien des receptaculum seminis einiger blattkäfer. (Zool. Anz., lxxi, p. 331-334, ill.) **Payne, N. M.**—Measures of insect cold hardiness. (Biol. Bull., lii, p. 449-457.) **Pearl, Miner & Parker.**—Experimental studies on the duration of life. Density of population and life duration in drosophila. (Am. Nat., lxi, p. 289-318.) **Pilewiczowna, M.**—Sur le metabolisme azoté des insectes.—Prace Instytutu im. Nenckiego (Travaux de l'Institut Nencki), Warsaw, No. 53, 1926, pp. 1-25, (ill.) [Polish, with a French resumé]. **Poisson, R.**—Recherches sur quelques processus spermatogenetiques. . . . de Notonecta. maculata. (Arch. Zool, Exper Gen., lxvi, p. 23-70, ill.) **Poulton, E. B.**—On certain effects of shock upon insect development. (**35,** i, p. 79-86.) **Rabaud, E.**—Les rassemblements de males d'halictes et le phénomène social chez les insectes. (**78,** lxi, p. 163-185.) **Schraeder, T.**—Das hypopygium "circumversum" von Calliphora erythrocephala. (**122,** viii, p. 1-44, ill.) **Serebrovsky, A. S.**—The influence of the "purple" gene on the crossing-over between "black" and "cinnabar" in D. melanogaster. (Jour. of Gen., xviii, p. 137-175.) **Snodgrass, R. E.**—Morphology and mechanism of the insect thorax. (Smithsonian Miscel. Coll. 80, 1, 109 pp., ill.) **Spencer, W. P.**—The X chromosome of Drosophila hydei. Jour. Exp. Zool., lxvii, p. 441-466.) **Stern, C.**—Der Einfluss der Temperatur auf die Ausbildung einer Flügelmutation bei Drosophila melanogaster. (**107,** Bd. 47, pp. 361-369, ill.) **Taverne, L.**—A propos du vol godillé. (**153** 1926 no. 6, pp. 364-368, ill.) **Thompson & Parker.**—Etudes sur la biologie des insectes parasites: la vie parasitaire et la notion morphologique de l'adaptation. (**24,** xcvi, p. 113-146.)

Timofeeff-Ressovsky, N. W.—A reverse genovariation in D. funebris. Studies on the phenotypic manifestation of hereditary factors. . . (Genetics xii, p. 124-127; 128-198, ill.) **Toumanoff, K.**—Sur le rapport entre la formation du pigment vert figure et la nutrition chez Dixippus morosus. (77, xcvi, p. 1392-1396.) **Ulrich, W.**—Uber das bisher einzige strepsipteron aus dem baltischen bernstein und über eine theorie der mengeinenbiologie. (122, viii, p. 45-62, ill.) **Vandel, A.**— La cytologie de la parthenogenese naturelle. (78, lxi, p. 93-125.) **Vogle, R.**—Ueber drei an Salzwasser angepasste Insektengattungen an der östlicken mittelmeerküste. (Internationale Revue d. gesamten Hydrobiologie u. Hydrographie, Leipzig, xvii, pp. 355-6). [Aedes, Ochthebius, Eristalis.]

ARACHNIDA AND MYRIOPODA—Gerhardt, U.—Neue biologische untersuchungen an einheimischen und ausländischen spinnen. (122, viii, p. 96-186, ill.) **Kuhl.**—Myriopoda [Abstracts]. (Zoologischer Bericht, Berlin xii, pp. 434-436.) **Nalepa, A.**—Beobachtungen über die Verbreitung der Gallmilben. (Marcellia, Avellino, Vol. xxiii, fasc. 1-6, pp. 89-94.) **Savorv, T. H.**—Spiders in the sea. (Sci. Prog., London xxii, p. 104-105.) **Seyser, W.**—Die anatomie der kreuzspinne. (Mikrokosmos, xx, p 205-209, ill.) **Vitzthum, Graf.**—Arachnoidea [abstracts]. (Zoologischer Bericht, Berlin, xii, pp. 433-4.)

(N) **André, M.**—Notes complémentaires et synonymiques concernant divers Thrombidiidae. (153, 1926, no. 6, pp. 375-377.) ***Mello-Leitão, M.**—Notes sur quelques Araignées bresiliennes de la collection E. Simon. 1. Les Palpimanides de l'Amerique du Sud. (153, 1927, no. 1, pp. 86-92, ill.) **Roewer, C. F.**—Weitere weberknechte I. Erganzung der "Weberknechte der Erde.", 1923. (Abh. Naturw. Ver. Bremen, xxvi, p. 260-402, ill.)

(S) ***Mello-Leitao,**—Arachnideos de Santa Catharina (Rev. Mus. Paulista, xv, p. 395-418, ill.)

THE SMALLER ORDERS OF INSECTA. — Davies, W. M.—On the trachael system of Collembola, with special reference to that of Sminthurus viridis. (135, lxxi, p. 15-30, ill.) **Gros et Lestage.**—Contribution a l'etude des larves des ephemeropteres. (Ann. Biol. Lacustre, xv, p. 119-186, ill.) **Hood, J. D.**—On the synomymy of some Thysanoptera occurring in California. (55, iii, p. 173-178, ill.) **Needham, J. G.** The life history and habits of a mayfly from Utah. (4, lix, p. 133-136, ill.) **Popowa, A. N.**—Ueber die ernährung der Trichopteren-

larven (Neureclipsis bimaculata und Hydropsyche ornatula.) (45 xxii, p. 147-159.) **Ryves.**—L'entomologie des mouches a truites. Les ephemeres. (La Nature, Jul. 1927, p. 28-29, ill.) **Womersley, H.**—A study of the larval forms of certain species of Protura. (8, lxiii, p. 149-154.)

(N) ***Berry, E. W.**—A new type of caddis case from the lower eocene of Tennessee. (50, lxxi, Art. 14, 4 pp., ill.) ***Carpenter, F. M.**—A fossil insect from the lower permian of the Grand Canyon. (50, lxxi, Art. 32, 4 pp.) ***Gahan, A. B.**—Description of a new species of Mymaridae parasitic in procid eggs. (55, iii, p. 180-181.) **Garman, P.**—Guide to the Insects of Connecticut, Part V, The Odonata or Dragonflies of Conn. (Conn. State Geological and Natural History Survey, Bull. 39, Hartford. 331 pp., ill.) ***Hood, J. D.**—A contribution toward the knowledge of New York Thysanoptera, with descriptions of new genera and species. (70, vii, p. 209-241, ill.) ***Martynov, A. B.**—Ueber eine neue ordnung der fossilen insekten, Miomoptera nov. (Zool. Anz., lxxii, p. 99-109, ill.)

(S) ***Longinos Navas, R. P.**—Insectos del museo de Paris (Broteria, Zool., xxiv, p. 5-33, ill.)

ORTHOPTERA—Criddle, N.—Studies of the immature stages of Manitoban Orthoptera. (Trans. R. Soc. Can., xx, (V), p. 507-527, ill.) **Eisentraut, M.**—Beitrag zur frage der farbenpassung der orthopteren an die färbung der umgebung. (122, vii, p. 609-642, ill.) **Imms, A. D.**—The biology and affinities of Grylloblatta. (35, i, p. 57.) **Tanner, V. M.**—Notes on Orthoptera and Dermaptera from Utah. (55, iii, p. 178-179.)

(S) ***Chopard, L.**—Descriptions de Gryllides nouveaux. (24, xcvi, p. 147-174, ill.) ***Karny, H. H.**—Revision der Gryllacriden des Zool. Inst. in Halle, sowie einiger Tettigoniiden typen von Burmeister und Giebel. (Zeit. f. Naturw. Halle, lxxxviii, p. 1-14. ***Vignon, P.**—Les Ptérochrozées du Musee entomologique allemand du Berlin-Dahlem. Deux variétés nouvelles dans le genre Ommatoptera Pictet. Rectification systematique. (153, 1926, No. 6, pp. 360-363.)

HEMIPTERA.—Bonnamour & Gautier.—Nouveau gite pour l'hibernation de Tingis pyri. (Tingitidae). (25, 1927, p. 118-119.) **Davidson, J.**—On the biological and ecological aspects of migration in aphides. (Sci. Prog. London, xxii, p. 57-69.) **Davidson, J.**—On the occurrence of intermediates in Aphis rumicis L. and their relation to the alate and apterous viviparous females, (Journal, Linnean Soc., London, Zoology,

xxxvi, pp. 467-477, ill.) **Decary, R.**—Note sur l'apparition, les effets destructeurs et la disparition rapide d'une cochenille. (**25,** 1927, p. 150.) **Ferris, G. F.**—Mealybugs. (Monthly Bulletin, Dept. Agric. State of Calif., Sacramento, xvi, no. 8, pp. 336-342.) **Hoffmann, W. E.**—Biological notes on Laccotrephes (Hemiptera, Nepidae). (The Lingnaam Agricultural Review, Canton, China, vol. 4, no. 1, pp. 77-93, ill.) **Mordvilko, A.**—L'anolocyclie chez les Pemphigiens des Pistachiers, (**69,** tome 185, pp. 295-297.) **Myers, L. E.**—The generic types of the Diaspidae. (**22,** xvii, p. 341-346, ill.)

(N) **Funkhouser, W. D.**—General catalogue of the Hemiptera. Fasc. 1, Membracidae. 581 pp. (Pub. by Smith College, Northampton, Mass.) **Horváth, G.**—Les noms generiques de nos trois grandes cigales indigénes. (**109,** xxiii, p. 93-98.) ***Knight, H. H.**—Descriptions of nine new species of Melanotrichus Reuter from N. A. (Miridae). (**4,** lix, p. 142-147.) ***Knight, H. H.**—Descriptions of fifteen n. sps. of Ceratocapsus (Miridae). (**130,** xxvii, p. 143-154.) ***Knowlton, G. F.**—Notes on a few Amphorophora (Aphididae) of Utah. (**55,** iii, p. 185-186, ill.) **Knowlton, G. F.**—A new willow aphid from Utah. (**55,** iii, p. 199.) ***Melichar, L.**—Monographie der Cicadellinen. (**109,** xxiii, p. 273-394.) ***Spruyt, F. J.**—Notes on Alartus psocidivorus a new species of Mymaridae. (**55,** iii, p. 182-184, ill.)

(S) ***Esaki, T.**—The water-striders of the subfamily Halobatinae in the Hungarian National Museum. (**109,** xxiii, p. 117-164, ill.) ***Esaki, T.**—On some species of Potamobates. (Gerridae.) (**109** xxiii, p. 251-257, ill.) ***Hempel, A.**—Cerococcus parahybensis, n. sp. Note preliminiar. (Rev. Mus. Paulista, xv, p. 389-394, ill.) ***Lallemand.**—Description d'une nouvelle espèce de Cercopide constituant un nouveau genre. (**24,** xcvi, p. 208.)

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(N) **Barnes & Benjamin.**—Check list of the L. of Boreal Am., Superf. Sphingoidea and Saturnioidea, and Bombycoidea. (Bul. S. Cal. Acad. Sci., xxvi, p. 35-50.) ***Barnes & Benjamin.**—A new race of Hemaris diffinis (Sphingidae). (Bul. S. Cal. Acad. Sci., xxvi, p. 51.) **Bouvier, E. L.**—Etude sur les Cératocampidés de la collection Charles Oberthür. (144, Xe Série, x, fasc. 2, pp. 233-288, ill.) [n. sps. Cen. and So. Am.] ***Clark, B. P.**—Descriptions of twelve new Sphingidae and remarks upon two other species (Proc. New Engl. Zool. Club, ix, p. 99-109.) **Draudt, M.**—Die Grossschmetterlinge der erde Amer. Lief. 191, Vol. 7, p. 325-340, 1 pl. **Keifer, H. H.** California microlepidoptera II. (55, iii, p. 162.) **Seitz, A.**—Die grossschmetterlinge der erde, Fauna Amer., Lief. 192-196., Bd. vii, p. 341-348, ill., M. Draudt; Bd. vi, p. 529-584, ill., W.

Schaus. *Wright, W. S.—Two new Geometridae from San Diego County, Cal., (Trans S. Diego Soc. Nat. Hist., v. p. 41-44.)

(S) *Hall, A.—A new species of Anaea (Nymphalidae) from Chiriqui. (9, lx, p. 149.) *Krüger, R.—Eine neue Heliconius-form. (18, xxi, p. 86.) *Michael, O.—Zwei neue Agriasformen. (14, xxxxi, p. 147-148.) *Neustetter, H.—Eine neue Heliconius-form. (18, xxi, p. 86.) *Röber, J.—Neue exotische falter. (18, xxi, p. 97-100.)

DIPTERA.—v. Frankenberg, G.—Die rückstülpung des pharynx bei der larve von Corethra. (Zool. Anz., lxxii, p. 75-80, ill.) Hase, A.—Beobachtungen über das verhalten, den herzschlag sowie den stech-und saugakt der pferdelausfliege, Hippobosca equina. (122, viii, p. 187-240, ill.) Tillyard, R. J.—The mechanism of the so-called 'Posterior Sucker' of a Simulium Larva. (Nature, London, July 30, 1927, p. 154.) Walker, G. P.—A blackfly, (Simulium bracteatum), fatal to goslings. (4, lix, p. 123.)

(N) Collin, J. E.—On some characters of possible generic importance in the Hylemyia-Chortophila group of the Anthomyidae. (8, lxiii, p. 129-135.) *Curran, C. H.—The nearctic species of the genus Rhaphium (Dolichopodidae). (Trans. R. Canadian Inst., xvi, p. 99-179, ill.) *Curran & Fluke.—Revision of the Nearctic species of Helophilus and allied genera. (Trans. Wisconsin Ac. Sci. A. & L., xxii, p. 207-282, ill.) *Kröber, O.—Beiträge zur kenntnis der Conopidae. [n. s. from S. Am.]. (56, vi, p. 122-143, ill.) *Van Duzee, M. C.—A contribution to our knowledge of the North American Conopidae. (61, xvi, p. 573-604.). *Wagner, J.—Ueber die einteilung der gattung Ceratophyllus. (56, vi, p. 101-113, ill.)

(S) *Borgmeier, T.—Phorideos novos ou pouco conhecidos do Brasil. (Bol. Mus. Nac. R. de Jan., ii, p. 39-52, ill.) *Townsend, C. H. T.—Synopse dos generos muscoideos da região hümida tropical da America, congeneros e especies novos. (Rev. Mus. Paulista, xv, p. 205-388, ill.)

COLEOPTERA.—*Dudich, E.—Die Cephennium-larven und ihre beziehung zu der insektenordnung Anisosphaeridia. (131, xxiii, p. 85-87.) Ferris & Nissen.—The larva of a species of the Cassididae. (55, iii, p. 169-172, ill.) Heikertinger, F.—Ueber fühleranpassungen bei myrmekophilen käfern. (45, xxii, p. 124-147.) Kirchner, H.—Biologische studien über Carabus cancellatus. (122, vii, p. 489-534, ill.) Kolbe, H.—Die einstammigkeit der Paussiden und die primitiven gat-

tungen dieser myrmekophilen coleopterenfamilie. (Zool. Anz., lxxii, p. 205-218.) **Mutcher, A. J., and Weiss, H. B.**—The Dermestid beetles of New Jersey. (N. J. Dept. Agric. Circular No. 108, Trenton, 30 pp., ill.) [Keys to genera and species]. **Potts, S. F.**—The alimentary canal of the Mexican bean beetle. (130, xxvii, p. 127-137, ill.) **Urban, C.**—Ueber entwicklung and larven einiger Rhinoncus-arten. (131, xxiii, p. 49-58, ill.) **VanDyke, E. C.**—Pterosticus horni. (55 iii, p. 196.)

(N) ***Blaisdell, F. E.**—Miscellaneous studies in the Coleoptera No. 2. (55, iii, p. 163-168.) ***Brown, W. J.**—Four new species of Onthophagus. (4, lix, p. 128-133.) **Didier, R.**—Quelques modifications à la classification des Lucanides. A propos du genre Cyclommatus. (25, 1927, p. 101-103.) **Everly, R. T.**—A check list of the Carabidae of Columbus, Ohio, and vicinity. (130, xxvii, p. 155-156.) ***Fall, H. C.**—New Coleoptera XII. (4, lix, p. 136-141.) ***Hardy & Preece.**—Further notes on some species of Cerambycidae from the southern portion of Vancouver Island and B. C., with descriptions of some new varieties. (55, iii, p. 187-193.) ***Van Dyke, E. C.**—The species of Amphizoa. (55, iii, p. 197-198.)

(S) ***Kleine, R.**—Novos generos e especies da fam. Brenthidae da zona neotropica. (Rev. Mus. Paulista, xv, p. 421-481, ill.) ***Melzer, J.**—Longicorneos do Brasil, novos ou pouco conhecidos. (Rev. Mus. Paulista, xv, p. 137-204, 561-528, ill.) ***Pic, M.**—Nouveaux coléoptères exotiques. (25, 1927, p. 139-140.) ***Pic, M.**—Nouveaux Coléoptères exotiques. (153, 1926, No. 6, pp. 354-359.) **Pinto da Fonseca, J.**—Um parasita novo do cafeeiro "Corthylus affinis". (Rev. Mus. Paulista, xv, p. 583-590, ill.)

HYMENOPTERA.—Combes M.,—Sur la "repugnance des fourmis a se laisser choir" etudiée par Sir John Lubbock. (144, Xe serie, X, fasc. 2, pp. 223-231.) **Dimitrowa, A.**—Untersuchungen über die beziehung zwischen tracheen und adervertauf im hymenopterenflügel. (122, vii, p. 694-739, ill.) **Donisthorpe, H. St. J. K.**—Gynandromorphism in Ants. (35, i, p. 92-93.) **Frison, T. H.**—The fertilization and hibernation of queen bumble-bees under controlled conditions. (Bremidae). (12 xx, p. 522-526.) **Salt, G.**—The effects of Stylopization on aculeate Hymenoptera. (133, vol. 48, no. 1, pp. 223-331, ill.) **Strand, E.**—Verzeichnis der Hymenoptera, die bis zum jahre 1926 beschrieben wurden in den arbeiten. (14, xxxxi, p. 112-116.) ***Viereck, H. L.**—A preliminary revision of some Charopsinae, a sub-family of Ichneumonidae. (Trans. R. Soc. Can., xx, (V), p. 173-186.)

(N) *Cockerell, T. D. A.—Northern types of insects in Peru.) (9, lx, p. 158-159.) *Cockerell, T. D. A.—Bees of the genera Agapostemon and Augochlora in the collection of the California Academy of Sciences. (55, iii, p. 153-162.) Gahan, A. B.—Four new chalcidoid parasities of the pine tip moth, Rhyacionia frustrana. (Jour. Agric. Res. xxxiv, p. 545-548.) *Huber, L. L.—A taxonomic and ecological review of the N. A. chalcid-flies of the genus Callimome. (50, lxx, Art. 14, 114 pp., ill.) *Isensee, R.—A study of the male genitalia of certain anthidiine bees. (An. Carnegie Mus., xvii, p. 371-384, ill.) Plath, O. E.—The natural grouping of the Bremidae (Bombidae) with special reference to biological characters. (101, lii, p. 394-410, ill.)

(S) *CockerellT. D. A.—Megachilid bees from Bolivia collected by the Mulford biological expedition. (50, lxxi, Art. 12, 22 pp.) *Masi, L.—Descrizione di una nuova specie di Trigonura (Chalcididae). (27, lviii, p. 21-24.)

SPECIAL NOTICES.—Diptera Danica.—Genera and species of flies hitherto found in Demark. By W. Lundbeck. Part VII, Platypezidae, Tachinidae. This monograph (of 560 pp. ill.) of the Danish species of these families include some species found in North America. It is in English, and should be useful to American dipterological taxonomists.

A Guide to the Study of Fresh-water Biology. With special reference to Aquatic Insects and other Invertebrate Animals. By James G. Needham, Ph. D., Litt. D., Professor of Limnology in Cornell University, and Paul R. Needham, M. S., Instructor in the same. 1927. The American Viewpoint Society, Inc. New York and Albany. 14x21.5 cm. 88 pp., 24 pls., 8 text figs.—This little book is intended to make identification and recognition of freshwater non-vascular plants and invertebrates easier and quicker by condensed keys, tables and pictures. Orders, families or genera, but not species, are illustrated. The arthropods treated in keys and tables are the orders of aquatic insect larvæ; nymphs of Plecoptera (pl. 1), Ephemerida (pls. 2, 3), and Odonata (pls. 4-7); adults of Hemiptera (pl. 8) and Coleoptera (pl. 13, in part); larvae of Trichoptera (pl. 13, in part, pl. 9, their "houses"), Coleoptera (pl. 10), Tipulidae (pl. 11), Sialididae and Hemerobidae (pl. 13, in part) and orders of Crustacea (pls. 14, 24). Part II, pp. 64-88, is composed of a description of collecting methods, apparatus and equipment and directions for twenty-five prac-

tical exercises in freshwater biology. The key to the orders of aquatic insect larvae is the same, although rearranged, as that in the senior author's chapter on aquatic insects in Ward and Whipple's *Fresh Water Biology*, but the others are enlarged and considerably different. The illustrations, chiefly outline figures, are much more numerous than in that chapter, and have been copied from many sources. The whole is a very compact pamphlet in flexible covers, convenient and handy.—P. P. CALVERT.

DIE GOLDWESPEN EUROPAS. von Dr. W. TRAUTMANN, Lautawerk. Published by the author, 1927. Paper bound. 194 pages; 4 plates (2 colored).—This work is evidently a careful taxonomic study of the European species of the family Chrysididae, which will supplant, for the field covered, larger and less critical works. The introduction is brief and includes a good account of the morphology of the group as well as other general information. In its larger aspects, the classification follows Bischoff (Genera Insectorum, fascicle 151, 1913). In the genus *Chrysis*, the usual subdivisions, *Hoiochrysis*, *Gonochrysis*, etc., are used by Trautmann as "Hilfsgenera", with the admission that they are extremely unnatural groups. As in most works treating European cuckoo wasps, color is extensively used in keys and descriptions, although the author finds all characters, with the exception of mouthparts and external genitalia, subject to variation. Color, though not always alone, forms a basis for the recognition of numerous varieties or races under many species. *Chrysis ignita* L., probably the most common of European species, has twenty such varieties recognized in this work. Since varietal differences seem to be dependent on the species of host, it is not surprising to find a multiplicity of host species for those Chrysididae which have many varieties. To mention only one example, there are in fact twenty host species accredited to *ignita*, although the presence of a beetle, *Ptosima*, and of the social wasp, *Vespa*, in this list, among solitary wasps and bees, the usual hosts, would seem to need confirmation of early and perhaps unreliable records. The varietal forms have been studied with apparent care, some in their relationship to different hosts. Observations on the habits of American species would probably aid the taxonomist in discovering similar varieties in many of them, otherwise obscure. The two colored plates in this book rather successfully approximate the striking coloration of European species of Chrysididae, but

the figures are too small to be morphologically satisfactory. It may be somewhat confusing to the novice to find the captions of both generic and specific descriptions printed in the same type, and both capitalized.—Leland H. Taylor, West Virginia University.

General Catalogue of the Hemiptera. G. Horvath, General Editor, H. M. Parshley, Managing Editor. Fascicle I Membracidae By W. D. Funkhouser, Ph. D., University of Kentucky. Published by Smith College, Northampton, Mass., U. S. A., 1927. 23 x 15 cm. 12 unnumbered+ 581 pp.—A group of hemipterists met in Cincinnati, in December, 1923, on the occasion of the meeting of the American Association for the Advancement of Science, to discuss the project of a general catalogue of the Hemiptera of the world. Two previous attempts to produce such—by Lethierry and Severin, 1893-6, and by Kirkaldy, 1909, had failed of completion by reason of the deaths of the authors (Lethierry, Kirkaldy). The result of the Cincinnati conference was a Publication Committee of ten members comprising Messrs. Horvath, Parshley and Funkhauser and H. G. Barber, E. Bergroth (since deceased), C. J. Drake, H. B. Hungerford, H. H. Knight, Z. P. Metcalf and J. R. de la Torre Bueno. The present volume is the first fruits of their labors. The unnumbered pages contain an *Avant-propos* by Dr. Horvath (6 pp.), dealing chiefly with details of nomenclature, and a list of the families "to afford a glimpse of the ground that is to be covered, to furnish (as fascicle numbers are added) a general index to the series, and to give a basis for critical discussion and revision." It is stated that "while a large number of authorities have agreed to undertake the cataloguing of their families—in fact many fascicles are now in active preparation —there are some opportunities still open, especially in the Homoptera; and the Editors will take pleasure in answering inquiries on this subject."

Dr. Funkhauser's portion is preceded by an Introduction in which he states that "In cataloguing the Membracidae it has not been deemed advisable to attempt an arrangement which would indicate relationships beyond the subfamilies except in the Smiliinae in which subfamily the genera are grouped into tribes . . . The genera and their species within the subfamilies and tribes are therefore arranged in alphabetical order . . . . [but a list, pp. 5-8, gives] a systematic arrangement of the family which represents the natural sequence

of the groups as well as we can determine it at present . . . . Each species is recorded under each genus in which it has ever been placed, with a reference to the correct location. Thus all known synonyms are cross-indexed and, in addition, all are included in the general index [pp. 547-581] . . . . [Italic] type used to indicate synonyms should prevent confusion in this arrangement . . . . It is hoped that no citations have been omitted which are necessary to make clear the bibliographical history . . . . all references are chronological[ly arranged] . . . . Locality references are arranged as far as possible in a geographical sequence, adjacent localities being placed together . . . . [Trinomials] are given in this catalogue only when it has been impossible to reduce the subspecies to synonymy or to recognize it as distinct."

The catalogue proper occupies pp. 9-512, a Bibliography 513-545. No statement as to the number of species and genera recorded is given. Such works as this are of undeniable necessity and utility, as Dr. Horvath writes, and we hope that the entire number of fascicles will duly and promptly appear. —P. P. Calvert.

Biological Survey of the Mount Desert Region. Conducted by William Procter. Part I. The Insect Fauna with reference to the Flora and other Biological Features. By Charles Willison Johnson, Curator of Insects and Mollusks, Boston Society of Natural History. From the Mount Desert Island Biological Laboratory, Mount Desert Island, Maine. Published by the Wistar Institute of Anatomy and Biology, Philadelphia, 1927. 26 x 18 cm. 247 pp. With a portrait of, and dedication to, Charles Henry Fernald.—This list of insects, 3384 species, is preceded by an Introduction, pp. 9-19, in which evidence is given from several sources of the great richness, in plants and insects, of the approximately 100 square miles which constitute the "Mt. Desert Region". The halophilous insects indicate that there is a wide overlapping of northern and southern forms on this part of the coast. Most of the data furnishing this list were obtained by the author during varying periods in 1918-'23, 1925-'26, although no continuous observations or collections were made throughout any one year. The Diptera number 1197 species, Hymenoptera 692, Lepidoptera 521, Coleoptera 469, Hemiptera 123, Homoptera 121; of the remaining 13 orders no one includes as many as 100 species. The reason for the large number of Diptera "is that the writer, being a dipterist, has been able to

determine the greater part of the species collected. The Hymenoptera would probably prove as numerous if all of the species could be determined." There is an alphabetical index to genera and subgenera. This work will be of great value in the study of the distribution of North American insects.—P. P. CALVERT.

MORPHOLOGY AND MECHANISM OF THE INSECT THORAX. By R. E. SNODGRASS, U. S. Bureau of Entomology. Smithsonian Miscellaneous Collections, Vol. 80, No. 1. 108 pp., 44 text-figs. June 25, 1927.—In this excellent memoir, Mr. Snodgrass has returned to a subject on which he has already published extensively. The present essay treats of the fundamental structure of an arthropod segment, the elemental structure of a thoracic segment, the special structure of a wing-bearing segment, the wings and the mechanism of flight and the legs and their muscles. The sclerites are, of course, described and interpreted, especially in relation to the muscles. The thorax of the Protura is given much attention as a source of comprehension of the insectan thorax. The trochantin is held to have played an important rôle in primitive insects, although now becoming obliterated in the higher insects (p. 14). The proximal three segments of the primitive arthropod limb were the subcoxa, coxa and first trochanter; the subcoxal theory, as proposed in this paper, assumes that, in insects, the lateral walls of the subcoxa, becoming flattened out, lost the power of motion and furnished the pleural sclerites of the thorax (pp. 34, 99). These sclerites are described as forming primarily, two arches, one, the eupleural, above the second, or trochantinal, both concentric over the base of the coxa (p. 30). In addition to the descriptive anatomical parts of the text are many considerations and suggestions of interest to others than morphologists. We may mention the view expressed in several places (pp. 14, 27, 28, 29) that the pterygote thorax has not evolved from that of the apterygotes, a review of the number and position of the spiracles (pp. 37-40), the rejection of the idea that the past existence of paranotal prothoracic lobes meant insects with three pairs of wings (p. 44), the correlation of the predominance of either pair of wings (meso-or metathoracic) with the positions of the phragmata (p. 50), the mechanism of the wing-bearing tergum (pp. 56, 66-69), the views that the one-jointed trochanter of most insects is due to a fusion of two trochanteral segments originally corresponding to the basipodite and ischiopodite of crustaceans and chilo-

pods (pp. 80, 93)* that the tarsus, as the propodite of the generalized arthropod limb, was originally a single segment, which became divided and standardized as five segments in adult Pterygota other than the Odonata, so that numbers between one and five may represent either progressive increase or retrogressive loss (p. 81). We may stop with two quotations from the closing pages: "The larvæ of more generalized adults are likely to have acquired many adult characters, while those of more highly specialized adults may be of an earlier ontogenetic stage and, consequently, may retain more primitive characters. . . . . The distinctive character of insects began with the development of the thorax as the locomotor centre of the body . . . " (p. 98).—P. P. CALVERT.

ECONOMIC BIOLOGY FOR STUDENTS OF SOCIAL SCIENCE. By PHILIPPA C. ESDAILE, D. Sc. (Manchester), Reader in Biology in the University of London King's College for Women, Household and Social Science Dept. Part I. Harmful and Useful Animals with 150 illustrations specially prepared by the author. London, University of London Press, Ltd. 1927. 22x14.5 cm., pp. xv, 175. 7s. 6d.—The author says that the two parts of this work are "really a kind of Materia Domestica, a collection of facts concerning certain animals and plants which are, or may be, closely associated with man and his household . . . . so far as I am aware, there is no textbook on Economic Biology for students of Social Science." Insects occupy pp. 50-145, Arachnida pp. 146-155; in addition, the mosquitoes are dealt with on pp. 10-18 in Chapter I, Protozoa. In most cases formal classification and keys are omitted, but the species discussed are grouped under the usual taxonomic orders. Descriptions of the commoner species of household, disease-conveying and beneficial insects (*e. g.*, silk worm, lac insects, parasitic Hymenoptera), their life-histories and the methods of control of the injurious species are given. The details of some of the illustrations are not always accurate (*e. g.*, the chaetotaxy of *Calliphora erythrocephala*, p. 137). The text is interestingly written and the book should be helpful to those for whom it is intended. The final chapter, XIV, is on "The general care of the person and the house" (pp. 156-160), followed by a glossary, pp. 161-167, and an index, pp. 169-175.—P. P. CALVERT.

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*In a letter of Sept. 1, 1927, Mr. Snodgrass writes: "I forgot to mention that in making homologies of leg segments an extra segment, the 'patella,' must be assumed in spiders, *Limulus* and Pycnogonida."

Doings of Societies.

The American Entomological Society.

Meeting of March 24, 1927, at the Academy of Natural Sciences of Philadelphia, Mr. R. C. Williams presiding; thirteen members and visitors were present.

Mr. Enburg was elected to resident membership. An invitation was read, inviting the Society to participate in the 10th International Congress of Zoology to be held in Budapest.

The communication of the evening was given by Mr. Rehn, on the Utah Expedition. Mr. Rehn showed how he and Mr. Hebard had endeavored to further their studies in the distribution of insects, particularly Orthoptera, and to trace geographical variations. The places and methods of collecting were well illustrated.

Odonata and General.—Dr. Calvert exhibited the male type of the dragonfly, *Calopteryx maculata floridana*, the new subspecies recently described by Mr. J. R. Huggins in the *Transactions* of the Society (Vol. 52, pp. 355-364). In this connection he called attention to a passage in Prof. R. Hesse's *Tiergeographie auf ökologischer Grundlage* (Jena, Gustav Fischer, 1924), page 392, translated as follows: "In homoiothermal animals the same species attains a larger size in colder than in warmer localities, or the larger species among those nearly related inhabit the colder climate. This is in sharp contrast to the behavior of the poikilothermal animals, as reptiles and amphibians, which are smaller in colder localities. This statement has been termed Bergmann's Rule after its discoverer and formulator". The paper in which Carl Bergmann laid down this rule is entitled *Ueber die Verhältnisse der Wärmeökonomie der Thiere zu ihrer Grösse*, published in the *Göttinger Studien* von August Bernard Krische at Gottingen in 1847, pp. 598-708. The recent *Union List of Serials in the Libraries of the United States and Canada* mentions only two copies of these *Studien* as being in the United States, one in the library of Columbia University, New York City, the other in the University of Washington, at Seattle. The speaker has not examined Bergmann's article. The

formulation of the facts in regard to the distribution of mammals and birds has, in the United States, usually been associated with the late Dr. J. A. Allen. Allen's essay, *The Influence of Physical Conditions in the Genesis of Species* (Smithson. Rept. for 1905), reprinted from the *Radical Review* of 1877, does not refer to Bergmann or to any other earlier author. The case of *Calopteryx maculata floridana*, a poikilothermal animal, agrees with Bergmann's Rule as above stated.

Meeting of April 26, 1927, in the same place, Mr. Williams presiding; fifteen members and visitors were present.

It was suggested in an informal report of the Collecting Trip Committee that the schedules of the Leidy Microscopical Club be followed.

Mr. Carl Lorup was elected to resident membership.

Mr. Cresson read a notice, in the *Reading Eagle*, of the appointment of Mr. Herman Hornig as curator of the Mengel Collection, recently given to the Reading (Pa.) Museum and Art Gallery by Dr. Levi W. Mengel. It was approved, on motion, that a letter of congratulation be sent to Mr. Hornig.

Mr. Williams appointed a committee of three, Rehn, Calvert and Cresson, Jr., on the subject of American objections to the propositions of Dr. Poche of Vienna, concerning Zoological Nomenclature.

Mr. Williams suggested that the Society sponsor an entomological exhibit, to be held in the Academy and asked members to contribute interesting material.

LEPIDOPTERA.—Mr. Frank M. Jones gave the communication of the evening on "Observations on *Thyridopteryx ephemeraeformis*." Although considerable work has been done on the life history of this insect, the results are somewhat conflicting, especially regarding the possibility of parthenogenesis. The insect was first noted in America in 1767. Mr. Jones' talk was well illustrated by excellent slides prepared by himself, showing various stages of the insect, especially at mating. A vote of thanks was given to Mr. Jones for his interesting communication.

Meeting of May 26, 1927, in the same place, Mr. Williams presiding; eleven members and visitors were present.

Mr. Vernon S. L. Pate was elected to resident membership. According to the recommendation of the committee appointed to consider the letter of Dr. C. W. Stiles, dated April 11, 1927, on the subject "American referendum, re: American objections to Dr. Poche's (Vienna) propositions in Zoological Nomenclature," the Society adopted the following resolution to be sent to Dr. Stiles:

The American Entomological Society requests the International Commission on Zoological Nomenclature to consider the propositions made by Dr. Poche and report to the Tenth International Zoological Congress (or if not possible then, to the Eleventh Congress) such modifications in the International Rules of Zoological Nomenclature and in the procedure of the Commission as may seem desirable to the latter body.

In view of the complexity of the questions involved in Dr. Poche's propositions and the confidence which this Society feels in the International Commission on Zoological Nomenclature, it believes that the decision can best be made by the Commission in the light of its wide experience.

ORTHOPTERA.—Mr. Rehn made a few remarks on the species of the Acridid genus *Microtylopteryx*, exhibiting specimens of all five species, four Costa Rican and one Panamanian. Slides of representative habitats of certain of the species were shown.

R. J. TITHERINGTON, *Recording Secretary.*

OBITUARY.

OLIVER ERICHSON JANSON, specialist on the Coleopterous group of the Cetoniinae of the world, died at Highgate, England, November 25, 1926, in his 76th year. He was a son of Edward Wesley Janson with whom he was long associated as dealers in entomological specimens, supplies and books, a business which is continued by his two sons at 44 Great Russell St., Bloomsbury, London. His own collecting was done chiefly in Britain, Iceland and Ireland. An obituary notice

and portrait is in the *Entomologist's Monthly Magazine* for January last.

GEORGE TAYLOR PORRITT, a member of the editorial staff of the same *Magazine*, active in the study of British Lepidoptera, Orthoptera and the Neuropteroids, died January 21, 1927, in the 79th year of his age. Obituary notices and portraits are in the April numbers of the *E. M. M.* and the *Entomologist*.

JULIUS SEELHORST MEVES, Swedish lepidopterist, born at Göttingen, October 17, 1844, died at Södertälje, August 30, 1926. An obituary, portrait and bibliography are in *Entomologisk Tidskrift*, volume 47, pp. 248-251.

LEON DIGUET, naturalist and explorer of Mexico (1889-1913) and Oregon (1895), died at Paris, August 31, 1926. He was born at Havre, France, July 25, 1859. His collections, including insects, were made for the Paris Museum, in whose *Bulletin* for 1926, No. 6, a brief account of his life is given.

The death of PROF. CHARLES FULLER BAKER, on July 21, 1927, was announced in *Science* for July 29. He was born at Lansing, Michigan, March 22, 1872, received the B. S. from Michigan Agricultural College in 1892 and the A. M. from Stanford University in 1903. He was successively connected as zoologist, entomologist, teacher or curator with the Michigan (1891-2) and Colorado (1892-7) Agricultural Colleges, Alabama Polytechnic and Experiment Station (1897-9), Central High School of St. Louis (1899-1901), Pomona College, California (1903-04, 08-12), the Experiment Station at Santiago, Cuba (1904-07), the Museu Goeldi, Para (1907-08), the University of the Philippines (1912 on), the Botanical Gardens, Singapore (1917-18) and was botanist on the H. H. Smith expedition to the Santa Marta Mountains, Colombia (1898-99). He also was editor or served on editorial boards, of a number of scientific journals.

Among his entomological papers are *A Preliminary List of the Hemiptera of Colorado*, in association with Prof. C. P. Gillette (1895), *A Revision of American Siphonaptera* (1904), *The Classification of American Siphonaptera* (1905), *A Study of the Caprification of Ficus nota* (1912), etc. He published a series of leaflets entitled *Invertebrata Pacifica*, paged contin-

nously, listing species of insects which he collected on the Pacific slope of North and Central America. To a criticism by Dr. Henry Skinner (Ent. News, xvi. p. 239), of this mode of publication, Prof. Baker made a vigorous reply (*t. c.*, pp. 264-270, 1905), in which is included a list of the contents of the first seven issues of this work. A note in *Science* for August 5 states that by his will "his zoological collection, comprising more than 50,000 specimens, has been given to the Smithsonian Institution and collections of less extent to the universities of Berlin, London, Madrid, Paris, Moscow and Vienna." An appreciation, by Colin G. Welles, chiefly of his work as Dean of the College of Agriculture of the University of the Philippines, has appeared in *Science* for Sept. 9.—P. P. Calvert.

A biographical sketch of Dr. Alfred Möller, mycologist, known among entomologists for his observations and experiments on the fungi cultivated on leaf fragments by leaf-cutting ants in Brazil, is published in the 9tes Heft of *Hausschwamm Forschungen* (Jena, Fischer, 1927). It is accompanied by a portrait. Möller was a grand-nephew of Fritz Müller, and was born in Berlin, August, 1860, and died at Eberswalde, November, 1922. In 1915-1920 he published an edition of *Fritz Müllers Werke Briefe und Leben* (3 vols., Jena, Fischer).

The death of Karl Balduş, assistant in the zoological institute, University of Heidelberg, on June 26, was announced in *Science* for August 5. He had recently published (1924) three important articles on Odonata: *Untersuchungen über Bau und Funktion des Gehirnes der Larve u. Imago von Libellen* (Zeitschr. wiss. Zool. Bd. 121, p. 557-620, 2 taf.), *Experimentelle Untersuchungen über die Entfernungslokalisation der Libellen* (*Aeschna cyanea*) (Zeitschr. vergl. Physiol. Bd. 3, p. 475-505, 13 figg.); and under the same title in *Die Naturwissenschaften*, Jahrg. 12, p. 725-726.

The death of M. L. Gedoelst, professor at the Veterinary School at Cureghem, Belgium, known for his publications on the larvae of Oestridae, was announced at the meeting of the Entomological Society of Belgium, March 5, 1927, but without further particulars.

NEW ADDRESS

FOR SUBSCRIPTIONS FOR 1928 NOW PAYABLE

See next page.

NOVEMBER, 1927

ENTOMOLOGICAL NEWS

Vol. XXXVIII No. 9

JAMES H. B. BLAND,
1833-1911

CONTENTS

PHILADELPHIA, PA.
THE ACADEMY OF NATURAL SCIENCES.
Logan Square

Entered at the Philadelphia, Pa., Post Office as Second Class Matter.
Acceptance for mailing at the special rate of postage prescribed for in Section 1103,
Act of October 3, 1917, authorized January 15, 1921.

ENTOMOLOGICAL NEWS

published monthly, **excepting August and September,** by The American Entomological Society.

Philip P. Calvert, Ph.D., Editor; E. T. Cresson, Jr., Associate Editor.

Advisory Committtee: Philip Laurent, J. A. G. Rehn, Chas. Liebeck, J. Chester Bradley, Ph.D., Frank Morton Jones, John C. Lutz, Max Kisliuk, Jr.

The subscription price per year of ten (10) numbers is as follows:

United States and possessions . .	$3.00
Canada, Central and South America .	3.15
Foreign	3.25

Single copies 35 cents

ADVERTISING RATES: Full width of page. Payments in advance.
One issue, 1 in., $ 1.20, 2 in., $ 2.40, half page, $ 4.00, full page,, $ 8.00
Ten issues " 11.00, " 20.00, " 35.00, " 70.00

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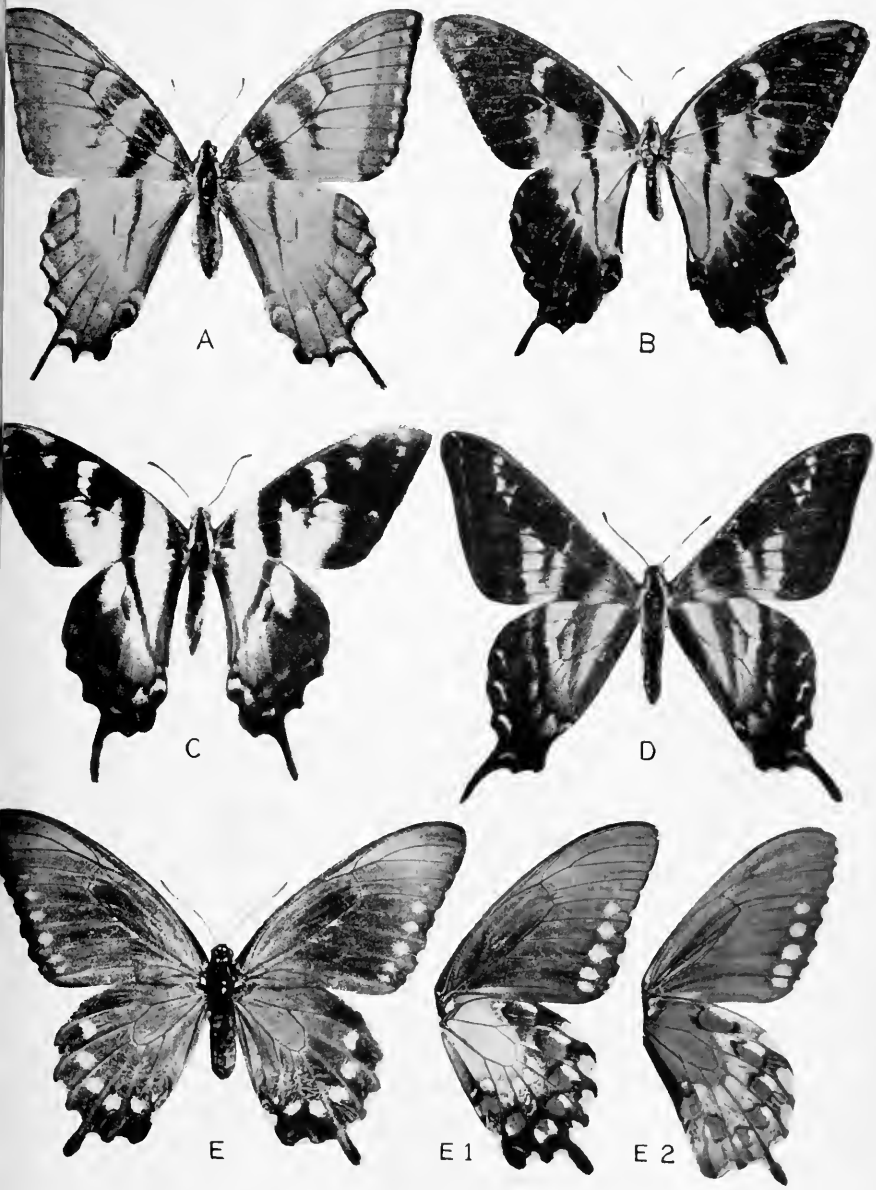
Owing to increased cost of labor and materials, no illustrations will be published in the NEWS for the present, except where authors furnish the necessary blocks, or pay in advance the cost of making blocks and pay for the cost of printing plates. Information as to the cost will be furnished in each case on application to the Editor. Blocks furnished or paid for by authors will, of course, be returned to authors, after publication, if desired.

STATED MEETINGS

Of The American Entomological Society will be held at 7.30 o'clock P. M., on the fourth Thursday of each month, excepting June, July, August, November and December, and on the third Thursday of November and December.

Communications on observations made in the course of your studies are solicited; also exhibits of any specimens you consider of interest.

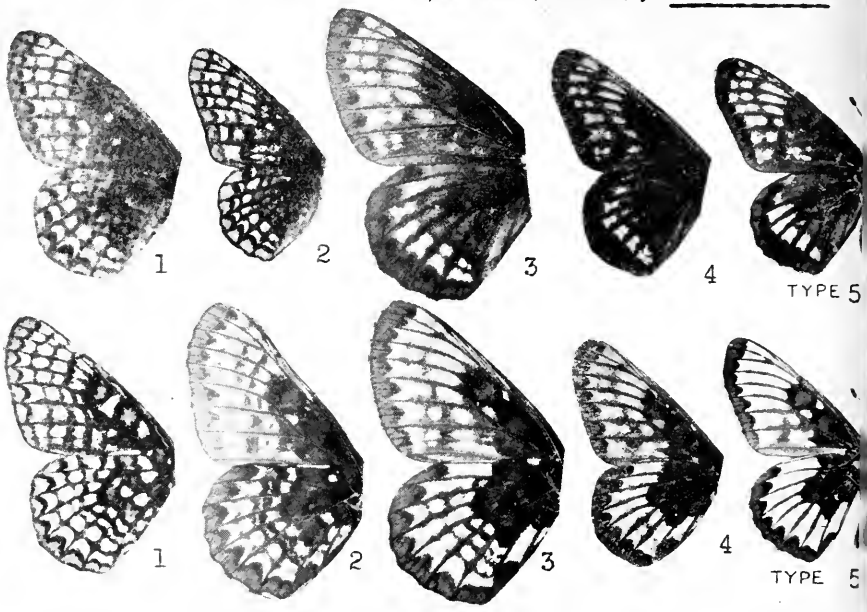
The printer of the NEWS will furnish reprints of articles over and above the twenty-five given free at the following rates: One or two pages, twenty-five copies, 35 cents; three or four pages, twenty-five copies, 70 cents; five to eight pages, twenty-five copies, $1.40; nine to twelve pages, twenty-five copies, $2.00; each half-tone plate, twenty-five copies, 30 cents; each plate of line cuts, twenty-five copies, 25 cents; greater numbers of copies will be at the corresponding multiples of these rates.



NEW TRANSITION FORMS—GUNDER.

PLATE A.

Euphy. phaeton (Dru.);
transition form *superba* (Stkr.); ALBIFUSISM



Euphy. phaeton (Dru.);
transition form *streckeri* (Ellsw.); MELANIFUSISM

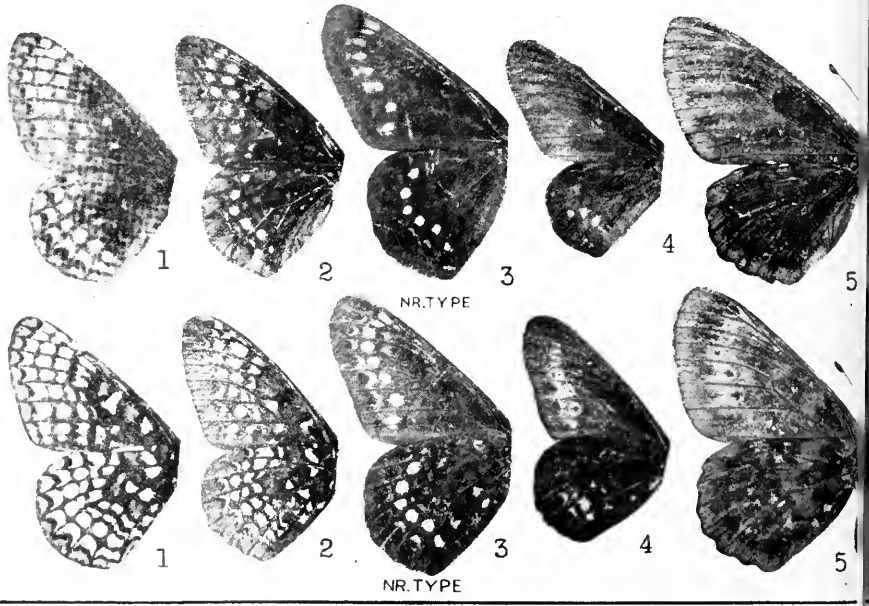
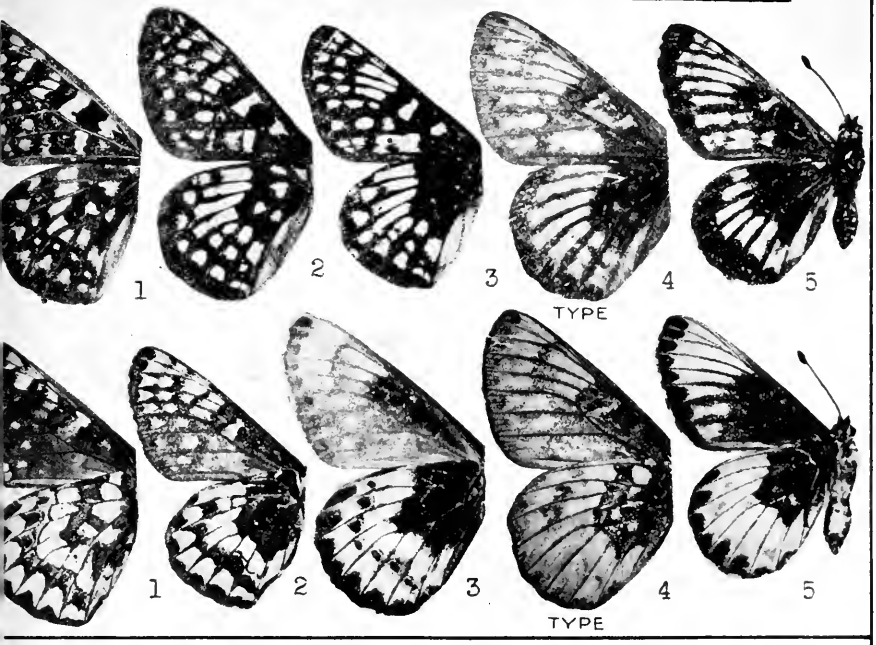


PLATE B.

SEQUENCE OF TRANSITION FORMS—GUNDER.

Euphy. chalcedona (D.& H.), transition form *fusimacula* (Barnes); ALBIFUSISM



Euphy. chalcedona (D.& H.), transition form *mariana* (Barnes); MELANIFUSISM

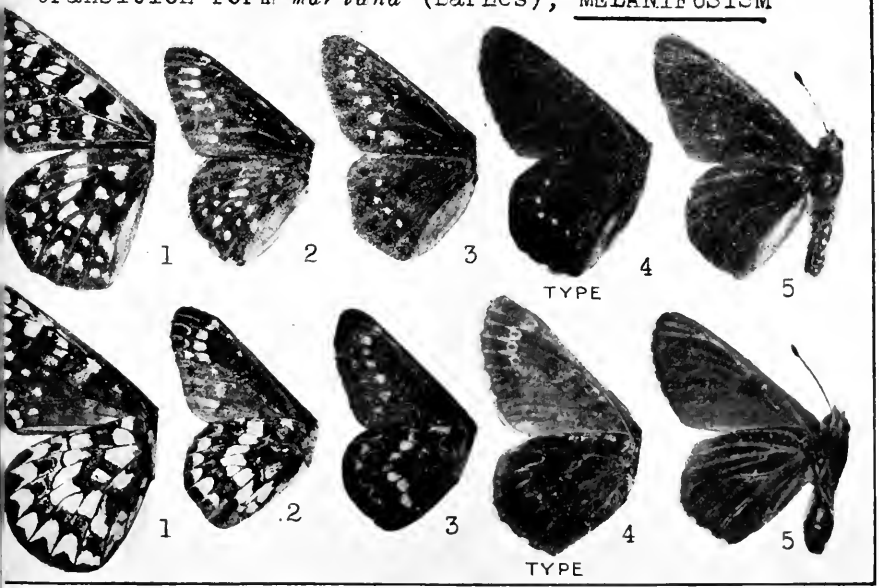
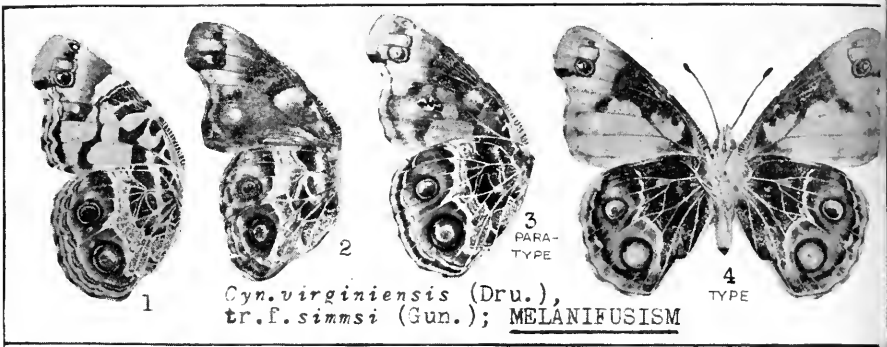
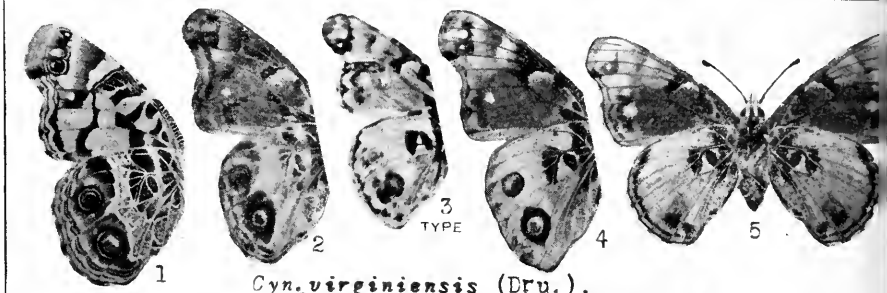


PLATE C.

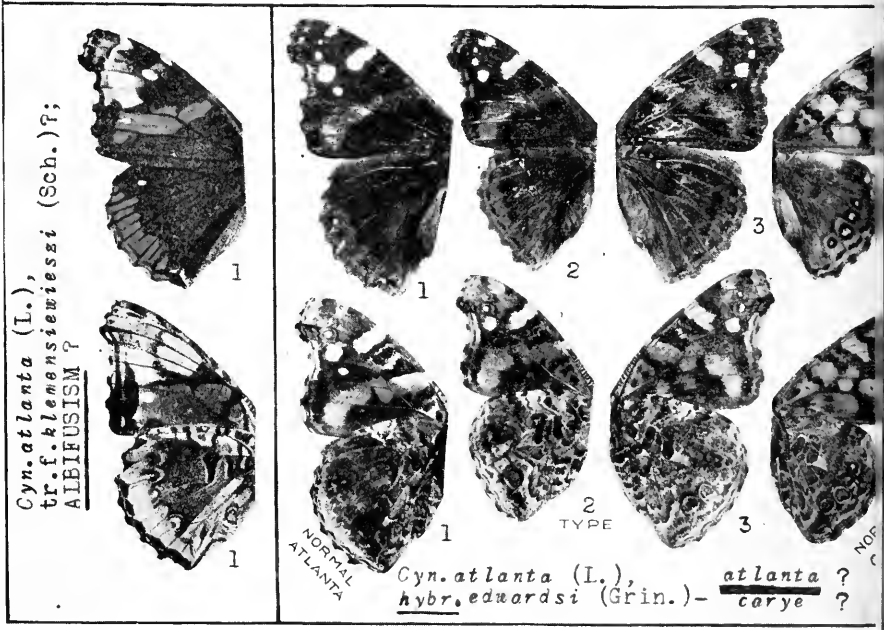
SEQUENCE OF TRANSITION FORMS—GUNDER.



Cyn. virginiensis (Dru.),
tr. f. *simmsi* (Gun.); MELANIFUSISM



Cyn. virginiensis (Dru.)
tr. f. *ahnashtee* (Fox); ALBIFUSISM



Cyn. atlanta (L.),
tr. f. *klemensiewiczi* (Sch.)?;
ALBIFUSISM ?

Cyn. atlanta (L.),
hybr. edwardsi (Grin.) – *atlanta* ? / *carye* ?

PLATE D.

SEQUENCE OF TRANSITION FORMS—GUNDER.

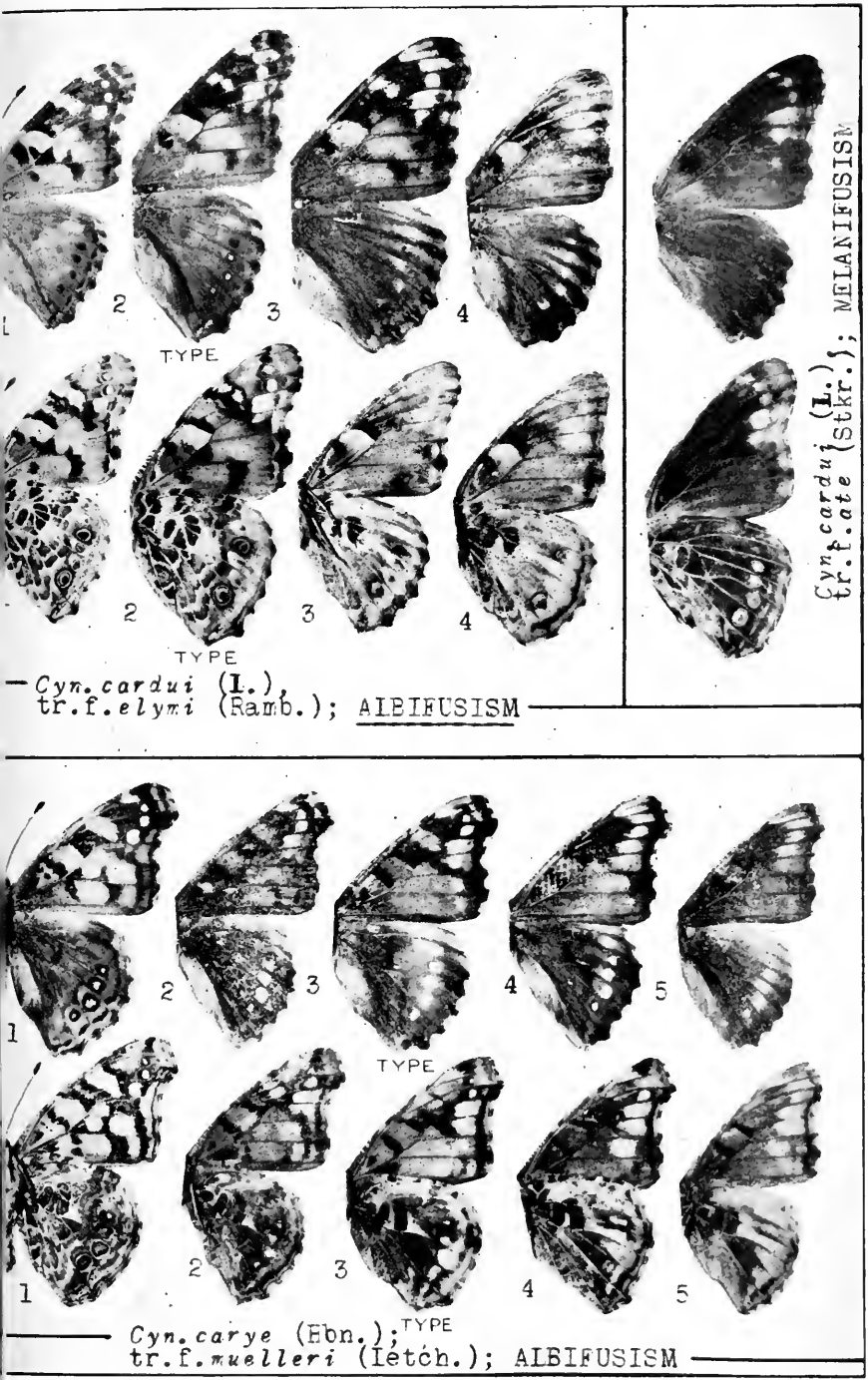


PLATE E.

SEQUENCE OF TRANSITION FORMS—GUNDER.

1. SPECIES— . . . . . SPE(
A prime group of individuals reproducing their own in kind.

2. RACE—(Subspecies & "variety" being synonymous) . . . . . R
A digressing near-by group or a separate far-away group of individuals reproducing their own in kind which are constantly similar to, yet consistently atypical of, a predetermined group.

3. FORMS—
- LOCAL FORM— . . . . . F.
  A cognate form whose congenial habitat is definitely restricted to segregated localities within the range of a race or species and generally contagious to them; i. e., altitude or confined desert forms.
- GENERAL FORM— . . . . . .
  A form occurring quite generally throughout the range of a species or a race. This term is much abused, names being given on slight provocation usually "representing pacific character variance understood by original author."
- SEASONAL FORM— . . . . . F. VERN. or F. A
  Forms occurring within a species or race only at certain periods of the year.
- SEXUAL FORM— . . . . . F ♀ o
  Forms belonging to one sex only.

Deviating, cognate individuals or group of individuals bred continually or at cyclic periods within a species or within a race and which are, as a rule, practically counterparts of one another.

*4. TRANSITION FORM— . . . . . F
(Normal form *F. NORM.*, may be used in contradistinction)

Individuals which occur irregularly within a species or within a race and which by change of color or by change of pattern graduate with persistent characteristic similarity from near parental type up to definitely limited variation away from parental type. These may be classified for retention of names as follows:

Change of color——
- melanism—*to black*
- chromatism—*to any spectrum color*
- albinism—*to white*
- pellucidism—*lacking color, iridescent*

Change of pattern——
- immaculism—*lacking design*
- albifusism—*white design radiation*
- chromatifusism—*color design radiation*
- melanifusism—*black design radiation*

HYBRID— . . . . . H
Progeny which have the combined essential characteristics of parents each unlike in specific character relation. (See Zoo. Nom. Rulings re. their designation.)

HERMAPRODITES, DWARFS & GIANTS, PIGMENTAL FLUID MISPLACEMENTS DUE TO CRAMPED (?) PUPA SHELL, VENATION MALFORMATIONS, CHRYSLAS BURNS, WING DISTORTIONS WITH RESULTING PATTERN CHANGE, RUBBED SPECIMENS, SCALELESS, MONSTROSITIES, DEGREASING OR KILLING COLOR CHANGE, FADES, INVERTED WINGS, PARASITIC WING PUNCTURES and all so-called freaks, aberrations, illforms, malforms, deforms and sports.

Names given to specimens which vary from normal due to the above listed lepidopteric inflictions fall into the synonymy and have no classification rating by rank in check lists or catalogues.

In formal description, the terms shown in *red italics* are generally followed with the abbreviation *nov.*, mea new; i. e., *species nov., race nov., f. tr. nov.*, etc. To mingle in or use the general words variety or form i BROAD SENSE OF MEANING when describing in formal language is indefinite, confusing and coll Old time authors were not particular in this regard, hence there is considerable confusion about their classi captions and just what lepidopteric rank they intended for their new specimens.

ENTOMOLOGICAL NEWS

VOL. XXXVIII NOVEMBER, 1927 No. 9

Transition Forms (Lepid., Rhopalocera).

By J. D. GUNDER, Pasadena, California.

(Plates V-X).

The transition forms of the order Lepidoptera represent the most tangible and discernible evidence we can offer of gradual evolutionary change taking place within any of the orders of the insect class. Other popular groups, such as Diptera, Coleoptera, Hymenoptera, etc., record little available material along corresponding lines. Their great families seem to have remained longer constant through the decades and their present-day specimens evince small advance alteration of color or pattern as compared with the kindred subdivisions of Lepidoptera when it is considered that all have been subject to the Earth's more recent geographic and climatic changes. Lepidoptera may therefore be considered as among the newer orders because of their more tender subjectivity and more obvious state of flux. For this reason zoologists in recent years have been more inclined to recognize and allow greater flexibility or subdivision of classification for this order.

Moths are generally more constant than butterflies, at least their variants have been less recorded or are less noticeable. Transition forms of butterflies are the occasionally occurring, ultra-developed forerunners, prematurely representative of a potential posterity, which by forcing an average of their style upon their kind, eventually produce a slightly different type of butterfly not unlike unto themselves. Some of these specimens are of extremely futuristic design, while others are only slight advances beyond the mean of their parentage. (See plates VI-IX.). The law of average controls prospective modification, so one cannot say the extreme types furthest away from normal, now found in transition forms, will predominate; rather, it is surmised that the intermediate grades will survive to be represented in the next era. Whether the tentative de-

velopment is progressive or retrogressive depends upon the stability of the present habitat. Should the environmental change be unusually rapid, the colony is lost; should time allow adaptability, it survives, barring of course other natural causes of elimination. Likewise a long period of no change over an area sustains and increases a colony. This is the case at the broad, flat equator where insects rarely change, only multiply, and where transition forms are scarce, if any exist. So it is in the two temperate or variable zones that most change occurs and phases of these forms may be looked for more commonly. With our present knowledge, it is impossible to state positively that any one particular group of our butterflies are either progressing or retrogressing, however the abundance of one type of transition form over another may give a hint. We know for example there are captured many times more specimens of *Euphy. phacton* and *chalcedona* showing albifusism than melanifusism. This evidently predicts a lighter-patterned progeny in their future. Whether it represents reversion to a pre-existent status or conversion to an entirely new design is problematical. However, I do not believe there is much evidence ever of an extended or total reversion in nature; everything points to a greater complexity of organism keeping pace with the maturity of all earthly life. Progressive and retrogressive development is manifest by transition forms in two very general ways; one which tends to step-up color sequence or add design, the other which tends to reverse color sequence or suppress design. Occasionally both tendencies are observed in one individual which is interesting, but which has no special significance other than illustrating what was produced by the chance union of opposite well-developed transition forms. The ordinary color gradation in palæarctic butterflies is through white, cream, yellow, orange to red and reverse. Beyond this range, we do not know if the order of a known spectrum is followed or not, nor just where the division of pigmental and refracted colors of scaling starts. Regarding design change, the same tendencies of fusion, broadening, radiation, extension or reverse, or what ever you may call it, occurs in all the

families from the Papilionidae to the Hesperiidae. Sometimes this radiation is outward, though usually inward, depending upon the present condition of the particular family under observation. Melanism should not be mistaken for melanifusism; the former usually over-casts without design change, while in the latter, the design itself changes. The same difference also applies to chromatism and albinism in distinction to chromatifusism and albifusism. (Note classification order on Plate X).

In sorting out and classifying the transition forms to which names have been given up to date, I find that practically all these specimens have been listed in catalogues and check-lists under the term "ab." [erration.] Also placed under this term, with evident equality by some authors and systematists, are found named "freaks", "dwarfs", "malforms" and various kinds of physically injured and ill-shaped specimens which should not be recognized by a created denominative anymore than a six-toed, pock-marked or birth-marked human being is deserving of a special, specific title for classification. Diagnosis of the condition of these specimens places them in a totally different category from transition forms, though some have a superficial resemblance, especially some distorted wing specimens which may have a protogenic analogy. Authors giving names to such off specimens are not so much to be blamed, considering what the meaning of the term "ab." really is. A summary of dictionary definitions of "aberration" is—"*A wandering deviation from what is right, natural; a mental (or physical) disorder*". The very meaning of the word, as it stands in our lists, invites authors to name "freakish" specimens!! (See paragraph of mal-lepidopteric symptoms on Plate X). It may be pointed out, therefore, that "ab." is a poor excuse of a word to represent in this day and age a recognized division ofclassification in our Lepidoptera. It is really an old time, lay medical expression, first applied by early entomologists to what they thought were freakish specimens of little biological value or to any specimens which they could not place directly in their cabinets under a species or subspecies. ANYTHING, they could not place, was an "ab."!! So the

word has been handed down to us, for the most part an unchallenged expression, but it is hoped that by discussion and study, it will come into its own true meaning once again and therefore become applicable only for vernacular designation of such specimens as exist outside the pale of possible systematic classification.

EXPLANATION OF PLATE V.

Fig. A. **Papilio glaucus** L., form **turnus** L., tr. f. **dietzi** f. tr. nov.

Similar to *Pap. machaon,* race *britannicus,* tr. f. *cvittata* Spengel, as illustrated by Verity. Here there occurs a shading out or loss of the black maculation through the limbal areas on both wings and on both surfaces. With the disappearance of the black on the secondaries, the blues and reds show more conspicuously on the yellow ground color.

Classification: Transition form; immaculism, a medium development.

Data: Holotype ♀, expanse 88mm. Van Courtland Park, New York, (H. Dietz), June 26, 1910. Deposited for future safe-keeping by Mr. Dietz in the coll. of the American Museum of Natural History, New York City. I take pleasure in naming this fine representative specimen after that gentleman.

Fig B. **Papilio glaucus** L., form **turnus** L., tr. f. **gerhardi** f. tr. nov.

Similar in design change to *fletcheri* Kemp (see ill., Can. Ent., Vol. XXII, p. 204, fig. 11) in that the black maculation on both upper and under sides radiates considerably inward, especially through the limbal areas on the secondaries and through the cell and apical areas on the primaries. This specimen is noticeably larger and of a deeper yellow than *fletcheri* type which measures only 75mm. This size and color also make the corresponding difference between *turnus* and race *canadensis.*

Classification: Transition form; melanifusism, well developed.

Data: Holotype ♂, expanse 94mm. Evansville, Indiana

(Evans), no date. In Strecker Coll., Field Museum, Chicago. I take great pleasure in naming this beautiful tr. f. after my old friend, Wm. Gerhard, of the Field Museum, because his real kindness and untiring energy has given to him the respect of all.

Note: Through the help of Dr. McDunnough of Ottawa, I located the type of *fletcheri* Kemp in the Strecker Coll. It is a tr. f. of race *canadensis* R. & J. Another much more developed phase of *fletcheri* is also in the Strecker Coll., labeled Orillia, Ont., Dec. 1896. The Academy Coll. at Philadelphia contains a specimen labeled White River, Ont., and in the Barnes Coll. there are two labeled Bay of Fundy and Lawrence, Mass.

Fig. C. **Papilio rutulus** Luc., tr. f. **fannyae** f. tr. nov.

Similar to tr. f. *fletcheri* of race *canadensis* of *Pap. turnus,* also to tr. f. *radiatus* of *Pap. troilus* and others, in which the black maculation of the limbal areas of both surfaces radiates inward, more especially on the secondaries and through the apical and cell areas of the primaries.

Classification: Transition form; melanifusism, a well marked amount.

Data: Holotype ♂, expanse 90mm. Yoncalla, Oregon (Rees), June 10, 1926. In Author's Coll. Named after Mrs. Gunder, my wife.

Note: M. LeCerf of the Paris Museum has very kindly sent a description (see Bull. Mus. Nat. Hist. Paris, Suppl. t. 2, 25, 1912) and upper and under side photos of his *hospitonina.* I find this type specimen is not a transition form, but a case of wing distortion which has blunted the apex of the primaries and also very slightly deformed the maculation and wing shapes. It is a "freak" which has been mistaken for a tr. form and therefore its name should fall as a synonym directly under the species *rutulus.*

Fig. D. **Papilio eurymedon** Luc., form **albanus** F. & F., tr. f. **columbiana** f. tr. nov.

Similar to tr. f. *fletcheri* of race *canadensis* of *Pap. turnus* and also to others where the black maculation radiates inward on both surfaces through the limbal areas. In this specimen

the extension of the black is more noticeable on the primaries in and near the cell areas.

Classification: Transition form; melanifusism, a medium development only.

Data: Holotype ♂, expanse 85mm. Kaslo, British Columbia, Canada (Cockle), June 28, 1925. In Author's Coll.

Note: A translation of the description of form *albanus* F. & F. lays stress principally upon the light ground color, smallness, etc., without decided reference to the black maculation. Form *albanus* is therefore considered a northern general form of *eurymedon*, for to the southward, the ground color becomes more creamy or yellow. Comstock figures a specimen of form *albanus* from my coll. which is really a first phase of this tr. f., though with not quite so much black fused. Tr. f. *cockli* Gun. is a case of melanism (black overcasting without design change), whereas this specimen is a case of melanifusism.

Figs. E. and E1. **Papilio philenor** L., race **hirsuta** Skinn. (under side half-fig. e2), tr. f. **inghami** f. tr. nov.

The maculation is unchanged on this specimen, but it shows a loss of the blue ground color or blue iridescence over certain areas, particularly around the cell and basal areas on the under side of the secondaries. (Compare fig. E1 with fig. E2). On the primaries there is a noticeable shading out to brownish near the apical part of the limbal area on both surfaces. On glancing through the various illustrations of *Papilio* shown in color by Seitz in his Palaearctic Butterflies, it will be noticed that many kindred species have this brownish shading in conjunction with the bluish iridescent ground color. It may be said, therefore, that *philenor* reaching northward is apt to lose its iridescence, as first evinced by its tr. forms.

Classification: Transition form; pellucidism (lacking iridescent color), probably a near final phase.

Data: Holotype ♀, expanse 87mm. Fairfax, California (Ingham), June 6, 1924. In Author's Coll. Named for Mr. Chas. Ingham of Los Angeles, who first called my attention to the appearance of this specimen.

Note: At first glance, this specimen might be taken for a case of chrysalis burn, but the position and regularity of the changed shading does not warrant this contention.

Not Figured. **Papilio marcellus** Cram., tr. f. **broweri** f. tr. nov.

Same as typical Missouri specimens of this species, except that the red spots at the anal angle on the upper side of the secondaries and also the streak of red running through the discal area on the under side of the secondaries, here become a decided yellow instead of being red.

Classification: Transition form; chromatism, color change red to yellow.

Data: Holotype ♂, expanse 70mm. Willard, Missouri (Brower), June 23, 1918. Deposited for safe keeping in the U. S. National Museum, Washington, D. C. Named after Mr. E. A. Brower, of Willard, Missouri.

Explanation of Plates VI-IX.

On these plates are illustrated the commonest transition forms of the family Nymphalidæ. They are all untouched photographs of existing specimens arranged in convenient phases of their transition from normal parentage up to near the extremity of their variance. Both sides of each specimen are shown for comparison and in most cases a photo of the original type specimen, (which stands by reason of priority for the group name), is included. Transition forms of (*Dryas*) *Argynnis* and (*Cynthia*) *Vanessa* are more represented in general collections and are, therefore, of more recognizable interest to readers. Later, I hope to illustrate in the same species other rarer transition forms and also continue to show graphically the practicability and necessity for classification of all transition form specimens along the lines advocated. If these specimens are not subject to some system of classification in the near future, our lists will become as incomprehensible as those now emanating from European sources which, take for example, *Parnassius apollo*, are inflicted with rather more than 150 named "forms," an impossible amount, many of which must be straight synonyms!

Plate VI: (Upper half); Albifusism: No. 1, *Euphy. phaeton* (Dru.), typical; no. 5, extreme tr. f. *superba* (Stkr.), type.

(Lower half); MELANIFUSISM: No. 1, *Euphy. phacton* (Dru.), typical; no. 3, approximate type tr. f. *streckeri* (Ellsw.); no. 5, extreme phase.

Plate VII: (Upper half); ALBIFUSISM: No. 1, *Euphy. chalcedona* (D & H.) typical; nos. 2-3, gradations (synonyms) named by Oberthür, Cooledge, Comstock; no. 4, tr. f. *fusimacula* (Barnes), type; no. 5, extreme phase.

(Lower half); MELANIFUSISM: No. 1, *Euphy. chalcedona* (D. & H.), typical; no. 3, nr. gradation (synonym) named by Comstock; no. 4, tr. f. *mariana* (Barnes), type; no. 5, extreme phase.

Plate VIII: (Upper row); MELANIFUSISM: No. 1, *Cyn. virginiensis* (Dru.), typical; no. 4, tr. f. *simmsi* (Gun.), type.

(Middle row); ALBIFUSISM: No. 1, *Cyn. virginiensis* (Dru.), typical; no. 3, tr. f. *arcashtee* (Fox), type; no. 5, extreme phase.

(Lower left section); ALBIFUSISM?: This is a tr. f. of *Cyn. atlanta* (L.). I know of none in American collections. This photo was made from a British publication.

(Lower right section): Figs. 2 (type, *edwardsi* Grin.) and 3 show two hybrids of *Cyn. atlanta* possibly with *carye*. Knowing how tr. fs. look in this species, we know that these two specimens are *not* tr. fs. Knowing tr. fs., we are able to distinguish hybrids without the necessity of breed proofing.

Plate IX: (Upper left section); ALBIFUSISM: No. 1, *Cyn. cardui* (L.), typical; no. 2, erroneously printed type, instead of nr. type; however, this figure approaches the original illustration of tr. f. *clymi* (Ramb.); nos. 3 & 4 show extreme phases to which names undoubtedly have been given in Europe, but which will later be unquestionably synonymized.

(Upper right section); MELANIFUSISM: Not numbered. This is Strecker's type of tr. f. *atc,* a rare tr. f. considering that *cardui* is such a plentiful butterfly. European lepidopterists please note this type illustration!

(Lower half); ALBIFUSISM: No. 1, *Cyn. carye* (Hbn.), typical; no. 2, synonym *intermedia* (Grin.); no. 3, tr. f. *muelleri* (Letch.), type; no. 4, synonym *letcheri* (Grin.); no. 5, extreme phase. Up to date, I can record no case of melanifusism for *carye,* though California is its habitat.

Explanation of Plate X.

This plate illustrates the position of transition forms in their relation to other divisions of classification. They, of course, come last, being youngest in point of time. Whether hybrids are really a factor in general development is still unknown. Evidence thus far offered gives them little hope; however, they should be listed as a possible contingency, until such time as it is definitely learned that they do not at all influence general development. If their influence appears negligible now, it may have been considerable in the past and therefore a possibility for the future. I have placed local forms under the term forms and though they are always in geographically isolated colonies, they are still confluent in character and position with their parent stock and their division is closer than that which differentiates species and race.

Regarding nomenclature in general, I quote in part from a letter recently received from N. D. Riley of London which admirably sums up the situation:—

"I do not see how we are ever to arrive at agreement as to the number of degrees of variation, as we overlook the time factor, or perhaps I should say, we cannot include the time factor in any two-dimensional scheme of classification. The old linear system is of course totally inadequate. Yet if we accept the theory of evolution, then our assessment of any group of individuals must make allowance for time; *i. e.,* what evolutionary stage have they arrived at? Consequently, we must admit that there exists today among the insects, not 1, 2, 4, 6, 8, or even 50 different stages of evolution, but an infinite number; and, therefore, I sometimes feel (which may sound strange from a professional systematist) that all our schemes of classification are mere futility. The *safeguard* of course is that *we cannot* recognize all these infinite gradations, and therefore, we are bound for convenience to apply arbitrary standards, and so, by degrees and with much labour, we may eventually arrive at a real *classification of convenience* which will also be *approximately natural.*"

[Corrigenda. We regret that the following errors in Plate X, as furnished us, require correction: Under "Local Form," for "contagious" read "contiguous". Under "General Form," for "pacific" read "specific". For "hermaprodites" read "hermaphrodites". For "chryslas" read "chrysalis".—Editor.]

Concerning Some Published Statements on the Habits of the European Earwig (Orthoptera: Forficulidae).

By B. B. Fulton, Ames, Iowa.

In the Entomological News of October, 1925, (Vol. 36, pp. 234-238) there is an article on the European Earwig, by Milton T. Goe, which gives several impressions which I believe to be misleading and which I think should be corrected in the literature.

In writing about the food of the earwig he gives the impression that they are mainly carnivorous in diet, and that they refuse to feed on any kind of foliage. I have no reason to doubt his statements regarding his feeding experiments, yet I am at loss to know why his caged earwigs refused to eat plant material, unless it could be that there were dead earwigs among them to feed upon. Earwigs (*Forficula auricularia*) prefer meat or sugar to ordinary foliage if given a choice, but in nature plant material forms by far the largest part of their diet. This is especially true in parts of this country where the earwig has become so exceedingly abundant. In such places, if they had to depend on a meat diet, most of them would starve for there would not be enough insects, which they could capture, or enough dead animals to support a tenth of them.

Aside from that it is a simple matter on any warm summer evening to observe, with the aid of a flash light, hundreds of earwigs feeding on plants. No cage experiments are necessary to determine that point.

Mr. Goe also makes the erroneous statement that dwellings would be unmolested by earwigs if reasonable care were exercised not to carry them in. Very few of the earwigs found in houses are carried in but go in of their own accord in search of dark hiding places to pass the daylight hours.

Concerning the use of the forceps, the statement that "to the best of our knowledge they are never used in combat" may be true enough as stated, but is misleading. I have many times seen the European Earwig use the forceps both as an offensive and defensive weapon against other earwigs and against other species of insects.

Mr. Goe also states that in mating the male seizes the female between his wide open forceps. This has never been the case in the many matings I have observed. The male simply slipped the forceps under those of the female with the ventral surfaces of both abdomens in contact, the two earwigs facing in opposite directions. In no case was any attempt made to clasp the female.

On the Biology of the Parasitic Bees of the Genus Coelioxys (Hymen., Megachilidae).

By S. GRAENICHER, South Miami, Florida.

(Continued from page 235).

FIRST STAGE LARVA OF COELIOXYS.

The well-developed first stage larva has a brown head capsule bearing two long and sharp-pointed, sickle-shaped mandibles. These thoroughly chitinized structures, which are so totally different from the corresponding structures in the first stage larva of the hostbee, suggest at first sight weapons to be used in attack or defense, and remind one of similar structures in many predaceous insects. The first stage larvae of *Coelioxys lucrosa* and *C. rufitarsis*, described by the writer in his previous paper, were several days old. Later on, with an ample supply of material on hand, obtained from the nests of *Megachile wootoni*, he has been able to follow up the development of the first stage larva of *Coelioxys ribis* from the time it left the egg until moulting took place.

The newly hatched larva of *Coelioxys ribis* is clear white, with its head slightly broader than the rest of the body.

On the second day it shows a marked increase in size, and a brownish coloration of the middle portion of its body, due to the color of the ingested bee-bread.

On the third day the body is considerably larger and more slender.

On the fourth day the head and mandibles are brown (more heavily chitinized), and the latter have increased considerably in length. At about this age the larva passes out of the slit into the cell on its way up through the bee-bread, to the upper

surface of the latter. After about 24 hours the tips of its long and sharp mandibles appear on top of the bee-bread in the vicinity of the host egg (or young host larva), opening and closing in rhythmical sequence.

Such a larva is extremely aggressive, and is ever ready to attack and destroy either the egg or the larva of the hostbee, or the larva of a rival. The adult parasitic bee is about as large as the hostbee, and this means that in the host's cell there is only enough room and enough food for the development of a single insect of this size. Only one occupant of a cell is destined to survive. The inoffensive larva of the host is destroyed without further ado. When a number of parasitic larvae occur in the same cell, they war among themselves, and, regardless of size, the one that approaches its adversary from behind or from the side is in a position to deliver the fatal bite. The victor partakes of the liquid contents of the victim's body, but after a while withdraws, and continues to feed on bee-bread, its natural food. It retains its aggressive instincts throughout its first stage. Moulting takes place at the end of six or seven days, and removes the heavy chitinous head structures. The resulting second stage larva resembles both in structure and behavior the larva of the hostbee.

A comparison of the exuviae of the first stage larvae of *Coelioxys rufitarsis, C. ribis* and *C. modesta* Sm., shows a difference in length of the mandibles. The last named species of *Coelioxys* is a parasite of *Megachile infragilis* Cr., which constructs its nest cells in hollow upright stems (sumach, burdock, etc.). *C. rufitarsis* has very long and slender mandibles, the length of which amounts to approximately one and one-fourth times the breadth of the head capsule. In *C. ribis* the mandibles are slightly shorter and not quite so slender. *C. modesta* differs considerably from the two just mentioned; its mandibles are hardly half as long as those in *C. rufitarsis.*

Apex of Abdomen in the Females.

The upper and lower plates of the apical segment of the abdomen in various species differ to such an extent in regard to shape, size and position to each other, that these characters

are most useful in the differentiation of the species. It is to be expected that there should be some connection between these structures in a given species and its mode of oviposition. The function of a pointed apex with its long slender lower plate, as we find it in *C. rufitarsis* and other species of our fauna, and *C. quadridentata* of Europe, is explained by the manner in which such a species pierces the wall of the nest cell, and pushes its egg into the opening, as already described. But *C. afra*, another European species observed by Ferton, places its egg on top of the bee-bread, and leaves a slight imprint in the bee-bread, made by the tip of its abdomen. In this bee, the apical plates are broad, the lower one hardly longer than the upper one[7]. *C. texana* Cr. and allied members of the North American fauna possess apical structures of a similar type, and may be found to employ similar methods of oviposition.

First stage Larvae of some other Parasitic Hymenoptera.

In a recent article on "The Bionomics of Dinocampus coccinellae Schrank" Balduf[8] has given us some detailed information concerning the structure, behavior, etc., of this Braconid parasite of ladybeetles. The squarish head capsule of the first stage larva, with its long curved and pointed mandibles (fig. 4, p. 473) resembles to a remarkable extent the corresponding structures in the first stage larva of *Coelioxys*. For purposes of comparison, I wish to call attention to the following points in the bionomics of this Braconid: Superparasitism (often more than one egg of the parasite deposited in the host's body) leads to competition, and, as Balduf informs us, "the first act of these individuals seems to be an attack upon one another." We are further told that "in all cases specifically noted, one larva survived the conflict." The second stage larva presents a different appearance from that of the first stage larva, since "in the moulting process the heavily chitinized head is lost."

This information shows how closely the first stage larva of *Coelioxys* agrees with that of the Braconid, both in regard to

[7] See O. Schmiedeknecht. Die Hymenopteren Mitteleuropas, p. 167.
[8] W. V. Balduf. Ann. Ent. Soc. Am., Vol. 19, pp. 465-498, (1926).

certain structures and behavior. We have in each case the same underlying conditions leading to the same results. There is in the body cavity of the beetle, with its liquid contents, sufficient space and food for the development of one mature Braconid larva, hardly for more than one, a condition that we find parallelled in the nest cell of the leaf-cutter bee with its limited space and supply of bee-bread. In each instance the first stage larvae carry on a fierce struggle among themselves for the undisputed control of space and food supply necessary for the development of one individual.

The first stage larva of *Anastatus* sp. (Eupelmidae) is, according to Parker and Thompson[9], like the same stage in Callimomidae, Eurytomidae and Leucospidae, having a brownish, heavily chitinized head capsule, which changes its shape through moulting, and becomes white (less chitinized). These authors inform us that there are "a number of well-defined larval types within the superfamily Chalcidoidea," and they further state that "these types are readily recognizable only in the primary larvae." This applies also to the parasitic bees of the genus *Coelioxys*, in which the first stage is the characteristic stage in the life of the larva.

Two New Species of Thrips (Thysanoptera).

By Glenn W. Herrick, Cornell University, Ithaca, New York.

Thrips veratri n. sp.— ♀. Length 1.28 mm. to 1.32 mm.; width of mesothorax .31 mm.; greatest width of abdomen .38 to .39 mm. General color, reddish to smoky-brown with the abdomen somewhat darkest.

Head a little wider than long; wider behind than in front; sides immediately behind the eyes plainly concave; sides and dorsum behind rough with transverse ridges; eyes protruding slightly, black with a row of transparent facets on the edge of each and a few hairs between the facets. One small, sharp, spine on the hind border of each postocular concavity. Ocelli conspicuous, close together, and each bordered with a dark crescent. The ocelli lie between the posterior half of the com-

[9] H. L. Parker and W. R. Thompson, Notes on the larvae of the Chalcidoidea. Ann. Ent. Soc. Am., Vol. 18, pp. 384-398, pl. 26-28 (1925).

pound eyes. Antennae about twice as long as the head; their bases separated by the notched prolongation of the vertex; actual and relative length of segments as follows: 1-22, 2-46, 3-59, 4-59, 5-46, 6-66, 7-21 microns.

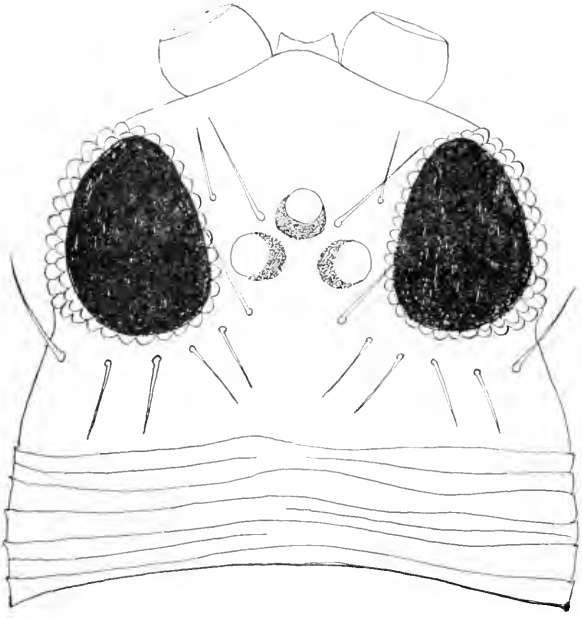


Fig. 1.—Head of *Thrips veratri* n. sp.

Basal segment subglobular, second segment constricted at base, third and fourth fusiform, fifth constricted at base and broadly joined to the sixth which is fusiform while the seventh is short and tapering. Color, one and two dark, reddish-brown, three noticeably lighter, the remaining segments smoky-brown. The segments bear numerous long spines.

Prothorax about one and one-fourth times as wide as the head and about the same length as the head. It is concolorous with the head. There are two long spines at each posterior angle and one short curved spine at each anterior angle. Pterothorax about one and one-third times as wide as the prothorax and slightly longer than it is wide, the mesothorax wider than the metathorax, dorsal surface of mesothorax plainly reticulated. The wings are well developed and distinctly brownish but lighter toward base. The hind wings are lighter than

the front ones. The front vein of fore wing bears a group of seven to eight spines at base, one spine from one-half to two-thirds of the distance from base, one spine about three-fourths of the distance from base and two more spines, one near the end and one at the end. The hind vein bears about ten spines. Legs concolorous with each other but the tibia and tarsi of each are lighter than the femur and somewhat lighter than the body. The legs in bleached specimens are plainly reticulated, particularly the femora. The legs are fairly spinose with a comb-like row of about ten strong spines on the inner sides of the hind tibiae.

Abdomen at base considerably narrower than pterothorax, gradually widening to and including the fifth segment, and tapering sharply beyond the seventh. In general, it is elongate oval in shape and somewhat darker brown than the prothorax. In bleached specimens the abdomen shows the reticulations while the spines along the sides and around the end of the abdomen are long and large; hind margin of eighth segment on dorsal side bears a row of comb-like spines. The pleurites of the abdomen are conspicuous and each is toothed at the posterior end.

Described from many individual females taken at one collection from the undersides of the leaves of American white hellebore (*Veratrum viride*), at Ithaca, New York, on June 27, 1924. No males have been found. The thrips live in the creases on the undersides of the leaves of this plant and have always been in abundance. Indeed most of the leaves are usually found to be seriously injured by the thrips. The epidermis on the underside is usually scarified and destroyed giving the leaves a brown, scorched appearance. The species certainly stands very near *Thrips impar*, but is apparently distinct from the latter although the distinctive characters are difficult to define. The third antennal segment seems lighter than that of *impar* and the whole body darker than that of the latter species.

Cotypes are deposited with the United States National Museum. Others are in the collection of Cornell University, Ithaca.

Microthrips leucus n. sp.—♀. Length 0.82 mm. (0.75 to 0.96 mm.). General color pale, almost white and transparent.

The front wings are considerably darker than the body and the ovipositor, being heavily chitinized, is conspicuous from its brownish-yellow appearance.

Head, including mouthparts, longer than wide, widest through the eyes (vertex); the cheeks conspicuously convex but narrowing rapidly to the mouth cone; there are two weak pale bristles between the compound eyes, each one just posterior to the base of an antenna; a short pale spine on each cheek just back of each compound eye; the mouthparts reach well backward to the middle of the prothorax and are black at the tip; eyes strongly protruding, coarsely granulate, and conspicuously black with an edging of transparent facets; the ocelli are difficult to detect, the anterior one most prominent and well forward while the posterior ones appear to be wide apart and in line with the hind third of the compound eyes; the maxillary palpi are two-segmented and white. The antennae are seven-segmented, the lengths of the segments are as follows: 1-20, 2-26.4, 3-36, 4-34, 5-33, 6-31.3, 7-36.3 microns.

The first segment is short, wide, and cylindrical, the second is large, globular and ringed with conspicuous chitinous ridges, the third is long and pedunculate with a conspicuous reentrant angular process in side view on the anterior third in which is a long prominent, curved, sensory spine and nearby two prominent straight spines (Fig. 2); the fourth and fifth are

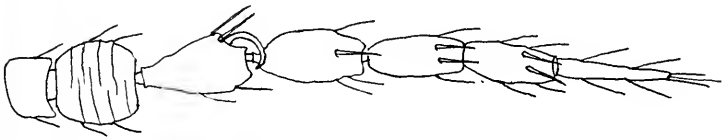


Fig. 2.—Antenna, side view, of *Microthrips leucus* n. sp.

slightly pedunculate; the sixth is cylindrical but tapering somewhat anteriorly while the seventh is long and slender and tapers slightly to the end. Each of the segments bears several conspicuous spines along the sides (Fig. 2). The antennae, as a whole, are brownish and considerably darker than the body and nearly concolorous with the front wings. The first segment is lightest, the second darkest while the remaining ones are nearly of the same shade although there is a slight deepening in color from the third to the seventh.

The prothorax is wider than the head and considerably widest at the posterior margin; there is one weak spine and one fairly strong spine at each posterior angle. The dorsal

side is striated but not strongly so. The pterothorax of about the same width throughout but slightly constricted in the middle and with the posterior angles of the metathorax strongly rounded. The pterothorax is much wider than the prothorax.

The wings reach nearly to the end of the abdomen; fore wings decidedly dark in color, so much so that the specific name might well be nigripennis; they are strong and heavy and thickly beset with rows of very short, black spines; the costal margin bears about 22 long slender hairs on the distal two-thirds with about 12 much shorter spines on the proximal third; the hind vein joins the fore vein at the end of the proximal fifth of the wing and the two anastomosed veins then run very nearly to the tip of the wing considerably nearer the costal than the hind margin; there are five minute spines on the vein widely spaced, the distal one much the largest and strongest. The hind wings are very narrow, nearly transparent whitish with the longitudinal vein decidedly brownish and conspicuous. The legs are concolorous with the body, the ends of the tarsi being somewhat darker; each hind tibia bears two rather stout spines at its inner extremity while each hind tarsus bears one spine in a similar position and a weaker spine opposite.

The abdomen is wider than the pterothorax at the fourth and fifth segments but tapers rapidly beyond to the tenth; tenth as wide at the base as it is long with the sides nearly straight and slightly converging and with the end broadly rounded. Near the tip of the tenth segment there are at least four colorless spines on both the dorsal and ventral sides. There are also four similar, perhaps slightly stronger spines at the end of the ninth segment with other additional ones along each side.

The nymphs of this species are delicate, whitish and almost transparent with the legs and antennae concolorous with the body.

This species clearly falls in the genus *Microthrips*, because of its 2-segmented maxillary palpus, its 7-segmented antennae (1-segmented style) and the anastomosing of the longitudinal veins of the front wings. It is also distinct from the one other species in this genus, *M. piercei* Morg., because of its characteristic delicate, whitish, transparent appearance and its conspicuous dark fore wings which offer a striking contrast to the body as a whole. It is separated from the genus *Leuco-*

thrips by its 7-segmented antennae and by the form and structure of the antennal segments.

The genus *Microthrips* was erected by A. C. Morgan in 1914 and described, together with the one species, *M. piercei*, in the *Proceedings of the United States National Museum*, Vol. 46, p. 19-21, 1914. Figure 28 of the antenna, which Morgan gives in connection with the description of *M. piercei*, answers well for this second new species.

Described from several females taken from a single low-growing, narrow-leaved fern (*Asplenium?*) in the greenhouse at East Lansing, Michigan, by Miss E. I. McDaniel and Mr. Donald Ries on April 20, 1925, at one collection. Hence all specimens are looked upon as cotypes.

Cotypes are deposited in the United States National Museum. Others are retained in the Collection of Cornell University, Ithaca.

I am indebted to Dr. H. Priesner for his courtesy in making an examination of these two species of thrips and in expressing the opinion that they were new species. Also to A. C. Morgan for his trouble in examining the second species and comparing it with *Microthrips piercei*.

The North American Species of Ilybius (Coleoptera, Dytiscidae).

By H. C. Fall, Tyngsboro, Massachusetts.

No table including all our described species of *Ilybius* has ever been offered; which fact, together with the rather monotonous similarity in appearance of the species, has made accurate determinations rather difficult, and led to considerable confusion in many collections. There are, however, a number of good characters, both structural and sexual, and with both sexes present, or at least the male, the student should be able in most cases to make reliable determinations.

Dr. Sharp has shown that the genus may be divided into two nearly equal groups, as follows.

Metatarsal joints in the male distinctly margined externally on their lower edge ..... Group I.
Metatarsal joints of male not so margined Group II.

GROUP I.

This includes the following species—*ater*, *subaeneus*, *pleuriticus*, *inversus*, *suffusus*, 4-*maculatus*, and *angustior*. Sharp also includes in this group *ignarus* and *fuliginosus*. Of these *ignarus* is so placed in error, as the male hind tarsi are not margined; it belongs to Group II. *Fuliginosus* is a European species doubtfully accredited to our fauna. If taken here it may be recognized by the pale under surface. Of the remaining species of the group, *ater* (*ungularis* Lec.) may probably always be recognized by its very large size (13 mm. or over); the color is black, very feebly or scarcely aenescent. This species must be rare in this country and I have seen only the LeConte type of *ungularis* from Pennsylvania.

Size moderately large, length 10 to 12½ mm.

Here come *subaeneus*, *pleuriticus*, *inversus*, *suffusus*, and 4-*maculatus*.

Subaeneus differs from all its associates by the lack of the longitudinal apical carina of the last ventral of the male; the last ventral is coarsely, closely, longitudinally striate apically, but without the central carina.

Suffusus may be known by "the whole margin of the elytra broadly and irregularly ferruginous hiding the usual pale spots." The type is from "Indian Territory" and is in the Horn collection. I have not seen it and do not know if there are others in collections.

4-*maculatus* has the last ventral in the male strongly strigoso-rugose at apex, the longitudinal rugae being longest at about the middle of each side of the apex.

Pleuriticus and *inversus* have the apical ventral of the male very little rugose on either side of the short apical carina. These two species are said by Sharp to agree in their sexual characters, but *inversus* is said to be of more convex and less parallel form and to be more coarsely reticulate. I have had the privilege—thanks to Mr. Arrow—of examining a cotype of *inversus* and of comparing it with the type of *pleuriticus* and am more than doubtful of its specific validity.

Size smaller, length 8½ to 9½ mm.

Here comes *angustior* alone. The margined hind tarsi of the male, the small size and narrow form, will probably be sufficient for its distinction. In addition, it may be said that the last ventral of the male is strongly longitudinally rugose in about its apical half, with distinct, short, median carina, and the hind tibiae are strongly punctate over a greater part of their surface than is usual.

GROUP II.

Size small, length 7½ to 9 mm.

Ignarus and *discedens* belong here. They are both rather narrow and black without aeneous lustre.

Ignarus has the last ventral of the male with distinct apical carina but without lateral rugosities.

Discedens has the last ventral of male smooth and without carina at middle, but with some long rather coarse lateral striae.

Size larger, length 9½ to 11½ mm.

Here are included *biguttulus, fraterculus, confusus* and *oblitus.*

In *biguttulus* the last ventral of the male is carinate at apex. With this I include *laramaeus* which is of doubtful validity. The type is slightly smaller and narrower and with the sides a little less evenly rounded than in *biguttulus* and the sculpture of the last ventral (♂) is a little more pronounced, though identical in character. There can I think be scarcely a doubt that *biguttulus* is the same as Say's *fenestralis,* and if so accepted the latter name takes precedence.

Fraterculus, confusus and *oblitus* agree in lacking the carina on the last ventral of the male, and resemble one another closely. They may be distinguished by the degree of approximation of the front margin of the hind coxal plates to the middle coxal cavity; in *fraterculus* this distance is nearly one-half, in *confusus* one-third, and in *oblitus* one-fourth the length of the coxal plate. In the great majority of specimens at least, the submarginal pale spots of the elytra are nearly or quite lacking in *fraterculus;* never so in my experience in *confusus* or *oblitus.*

For rapid consultation the principal characters above noticed are summarized in the following table.

Table of Species.

Metatarsal joints in the male distinctly margined externally on their lower edge .....Group I.
Metatarsal joints in the male not so margined .....Group II.

Group I.

Size very large, 13 mm. or over; black, scarcely aeneous ..*ater.*
Size moderately large, 10 to 12½ mm.
Last ventral of male without median apical carina .....*subaeneus*
Last ventral of male with such carina.
Elytra with broad irregular ferruginous margin .....*suffusus*
Elytra without broad ferruginous margin.
Last ventral of male strongly strigoso-rugose at apex 4-*maculatus*
Last ventral of male very little rugose on either side of the central carina ....*pleuriticus inversus.*
Size smaller, 8½-9½ mm.; form narrow, last ventral of male strongly apically rugose .....*angustior*

Group II.

Size small, 7½ to 9 mm.
Last ventral of male with distinct apical carina but without lateral rugosities .....*ignarus*
Last ventral of male smooth at middle and without carina, but with some rather coarse and long lateral striae .....*discedens*
Size larger, 9½ to 11½ mm.
Last ventral of male carinate at apex .....*biguttulus*
Last ventral of male not so carinate.
Hind coxal plates ½ their length from middle coxal cavities .....*fraterculus*
Hind coxal plates 1-3 their length from middle coxal cavities .....*confusus*
Hind coxal plates 1-4 their length from middle coxal cavities .....*oblitus*

Because of the uncertainty of the identifications in some of the published records it is unwise to attempt to state the pre-

cise limits of distribution of the various species. These are indicated in a general way in the Leng List, but a few additions or amplifications in the case of certain species may here be given, these suggested mainly by my own material—

Subaeneus ranges from Labrador and Newfoundland westward to Manitoba, Alberta and Colorado.

Ignarus: Of this species I have examples from Ottawa, Canada, and from Arlington, New Jersey (Bischoff Coll.).

Angustior crosses the entire continent from Labrador to the Kenai Peninsula in Alaska.

Confusus occurs in both Massachusetts and Connecteut but is not common.

Oblitus. I have taken this species on the Island of Nantucket and have a good series from White Plains, New York, taken by Mr. E. H. P. Squire.

It is quite obvious that the genus is essentially a northern one, and in our fauna overruns British America and Alaska, and occurs in all the states along our northern boundary. In the east only one species—*biguttulus*—descends as far as the latitude of Virginia. Farther west *suffusus* was described from Indian Territory and I have in my collection an example of a species allied to or identical with *biguttulus*, from the Davis Mountains in western Texas.

Exhibition of Lepidoptera.

An exhibition of butterflies and moths will be held in the reading room of the library of The Academy of Natural Sciences, 1900 Race St., Philadelphia, on Wednesday, Thursday and Friday, November 9, 10 and 11, 1927, from 12 to 5 P. M. The star feature will be the exotic collection of Mr. Judson Coxey. Mr. R. C. Williams, Jr., will show a selection from his European series. Mr. F. Haimbach will furnish some moths and some life-histories. Another table will be devoted to specimens from the Academy's collection and there will be some other things of interest. All are welcome.

Change of Address.

C. B. Williams from Ministry of Agriculture, Cairo, Egypt, to Research Institute, Amani, Tanga, Tanganyika, from 1st June, 1927.

New Building at Fayetteville.

The Department of Entomology of the Arkansas University and Station will be housed in a new agricultural building now being erected at a cost of $250,000. (Jour. Econ. Ent.)

The Kansas Entomological Society.

The Kansas Entomological Society held a field meeting on July 3 and 4 at the Sand Hills, Medora, Kansas. Many interesting insects were collected on this trip.

R. L. PARKER, *Secretary.*

Half-Larvae of Flies Obtained by Ligaturing Eggs. (Dipt.: Muscidae).

Under this title (in French), M. Jean Rostand has a note in the *Bulletin* of the Entomological Society of France (1927, No. 10, p. 163) stating that if eggs of *Calliphora vomitoria* are ligatured by a hair, midway between the two poles, say three hours after laying, at a temperature of 15° C., development continues and two half-larvae result, one anterior, the other posterior. The latter it is necessary to extract from the egg envelopes; it makes a few movements but soon dies. The anterior half-larva sometimes left the egg of itself, moved like a normal larva and ate; one of these, consisting of only six segments, was preserved alive for two days. If the ligature be made immediately after oviposition, or during the first hour, development is completely stopped.

Entomological Literature

COMPILED BY E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The numbers **within brackets** [ ] refer to the journals, as numbered in the following list, in which the papers are published. The number of volume **(in bold face)**, and in some cases the part, heft, &c. **within** ( ), follows; then the pagination follows the colon :

All continued papers, with few exceptions, are recorded only at their first installments.

Papers of systematic nature will be found in the paragraph beginning with (N). Those pertaining to Neotropical species only will be found in paragraphs beginning with (S). Those containing descriptions of new forms are preceded by an *.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

☞ *Note the change in the method of citing the bibliographical references, as explained above.*

Papers published in the Entomological News are not listed.

4—Canadian Ent., Guelph. **6**—Jour., New York Ent. Soc., New York. **9**—Entomologist, London. **10**—Proc.,

Ent. Soc., Washington. 12—Jour. of Economic Ent. 17—Ent. Rundschau, Stuttgart. 19—Bull., Brooklyn Ent. Soc. 22—Bull. of Ent. Research, London. 30—Tijdschrift voor Entomologie, The Hague. 47—Neue Beitr. z. System. Insektenkunde, Berlin. 50—Proc., U. S. National Museum. 62—Bull., Amer. Mus. Nat. Hist., New York. 68—Science. 73—Eos, Rev. Espanola Ent., Madrid. 77—Comptes R., Soc. Biologie, Paris. 79—Koleop. Rundschau, Wien. 80—Lepid. Rundschau, Wien. 81—Folia Myrmec. et Termit., Berlin. 105—Proc. Biological Soc. Washington. 107—Biologisches Zentralblatt. 111—Archiv f. Naturgeschichte, Berlin. 116—Annals of Applied Biology. 118—Die Naturwissenschaften, Berlin. 122—Zeit. f. Morph. u. Oekol. Tiere, Berlin. 138—American Mus. Novitates. 141—Amer. Naturalist. 145—Physis, Buenos Aires.

GENERAL.—Baker, C. F., Biographical note. [68] 66: 229-230. **Davies, W. M.**—Methods for collecting parasites of earwigs. [22] 17: 347-350, ill. **Hardy, G. A.**—Report on a collecting trip to Garibaldi Part, B. C. [Report of the Provincial Museum of Natural History for the year 1926, Victoria British Columbia] 1927: 15-25, ill. **Heikertinger, F.**—Die ameisenmimese. [107] 47: 462-501, ill. **Johnson, C. W.**—Biological survey of the Mount Desert region Part 1, The insect fauna. [Mount Desert Island Biological Laboratory]: 21-227. **Müller, Max und W. Schuster von Forstner.** Vulkanausbrüche und Insekten. [17] 44 (6): 22-23. 1927. **Neave, S. A.**—The control of insect pests by means of parasites. [Nature] 1927, Aug. 20: 267-8. **Schade, F.**—Am Serro pelado. [17] 44 (7): 25-26. 1927. **de la Torre-Bueno, J. R.**—Comment on insects in ocean drift or tide line. [19] 22: 158-162.

ANATOMY, PHYSIOLOGY, ETC.—Bugnion, E.—Les pièces buccales, le sac infrabuccal et le pharynx des Fourmis. [81] 1: 105-136, il. **Depdolla, P.**—Die Keimzellenbildung u. die Befruchtung bei den Insekten. [Handb. d. Entom. (von Schroeder)] 33. Lief., Bd. I.: 1073-1116, ill. **Golowinskaja, X.**—Ueber die nachkommenschaft eines durch temperatureinwirkung erzielten intersexen. [107] 47: 513-516, ill. **Handlirsch, A.**—Die postembryonale Entwicklung. [Handb. d. Entom (von Schröder)] 33 Lief., Bd. I: 1117-1184, ill. **King, R. L.**—A dominant body color in Drosophila repleta. [141] 51: 480. **Poole, C. F.**—The epistatic effect of vestigial in Drosophila. [141] 51: 477-480. **Seyser, W.**—Anfängerpräparate X. Chitinpräparate von

der grille (Gryllus campestris). [Micro. f. Naturf.] 5: 237-242, ill. **Stern, C.**—Ueber chromosomenelimination bei der taufliege. [118] 1927: 740-746, ill. **Whiting, P. W.**—Reversal of dominance and production of a secondary sexual character in the Mediterranean flour-moth. [141] 51: 450-456.

ARACHNIDA AND MYRIOPODA.—Berland, L.—Contributions à l'étude de la biologie des Arachnides [Archives Zool. Exper. Gener.] 66, Notes et Revue, No. 1: 7-29, ill. **Emerton, J. H.**—A Maine spider. [Maine Nat.] 7: 35-37, ill. **Willmann, C.**—Ueber oribatiden. [Mikro. f. Naturf.] 5: 193-200, ill. **Wiehle, H.**—Beitraege zur kenntnis des radnetzbaues der epeiriden, tetragnathiden und uloboriden. [122] 8: 468-537, ill.

(S) ***Crosby, C. R., and S. C. Bishop.**—Now species of Erigoneae and Theridiidae. [6] 35: 147-154. 2 pl. ***Mello-Leitao.**—Dios interessantes arachnideos myrmecophilos. [145] 8: 228-237, ill.

THE SMALLER ORDERS OF INSECTA.—Koeppel, A.—Zur naturgeschichte der springschwänze. [Micro. f. Naturf.] 5: 235-237, ill. **Lacroix, J. L.**—Etudes sur les Chrysopides. L'hibernation chez "Chrysopa vulgaris". [Bull. Soc. Sc. Nat. Ouest] (4) 6: 1-24, ill.

(N) ***Davis, W. T.**—A new dragonfly from Virginia. [19] 22: 155-156, ill. ***Ewing, H. E.**—Descriptions of three new species of sucking lice, together with a key to some related species of the genus Polyplax. [10] 29 (5): 118-121. **Ewing, H. E.**—The occurrence of Proturans in western North America. [10] 29: 146-147. ***Hood, J. D.**—Three new Phlaeothripidae (Thysanoptera) from the District of Columbia. [10] 29 (5): 111-116. 1 pl. **Light, S. F.**—A new and more exact method of expressing important specific characters of termites. [Univ. Cal. Pub., Ent.] 4: 75-88, ill. **Walker, E. M.**—The Odonata of the Canadian Cordillera. [Prov. Mus. Nat. Hist., Victoria, B. C.] 16 pp.

(S) ***Hood, J. D.**—New Thysanoptera from the United States. [6]. 35: 123-142. 2 pl. 927. ***Needham, J. G., and E. Broughton.**—Central American stoneflies, with descriptions of new species (Plecoptera). [6] 35: 109-120 1 pl.

ORTHOPTERA.—Cleveland, L. R.—Natural and experimental ingestion of Paramoecium by cockroaches. [Science] 66: 222. **Davis, W. T.**—The rearing of pink

katy-dids. [6] 33: 171-174. **Friedrich, H.**—Untersuchungen über die tibialen sinnesapparate in den mittleren und hinteren extremitäten von Locustiden. [154] 73: 42-48, ill.

(N) **Caudell, A. N.**—Problems in Taxonomy. [10] 29 (5): 129-132.

(S) **Caudell, A. N.**—Zorotypus longicercatus, a new species of Zoraptera from Jamaica. [10] 29: 144-145, ill. **Rehn & Hebard.**—The orthoptera of the West Indies. No. 1. Blattidae. [62] 54: 1-320, ill.

HEMIPTERA.—Hudson, G. V.—Notes on variation in neutral structure of N. Zealand cicadas. [Tr. N. Zeal. Inst.] 58: 73-74.

(N) ***Drake & Harris.**—Notes on the genus Rhagovelia with descriptions of six new species. [105] 40: 131-138. ***Knight, H. H.**—New species and a new genus of Deraeocorinae from North America. (Miridae). [19] 22: 136-143. ***Lawson, P. B.**—The genus Jassus in America north of Mexico. (Cicadellidae). [4] 59: 167-174, ill.

(S) ***Blanchard, E.**—Aphid notes. [145] 8: 12-22, 324-337, ill. **Blanchard, E. E.**—Sovre un Tingido nuevo para la fauna argentina. [145] 8: 361-363, ill. ***Esaki, T.**—An interesting new genus and species of Hydrometridae from South America. [9] 60: 181-184. ***Funkhouser, W. D.**—New Membracidae collected by the Cornell South American Expedition. [6] 35 (2): 159-164. 1 pl. ***Goding, F. W.**—New Membracidae. III. [6] 35: 167-170. **Goding, F. W.**—Revision on the Membracidae of South America and Antilles. [6] 35: 183-191. ***Hungerford, H. B.**—A new Ramphocorixa from Haiti (Corixidae). [138] No. 278: 2pp. **Pinto, C.**—Spiniger domesticus, n. sp. hemiptere suceur d'insectes, (Reduviidae, subf. Reduviinae). [77] 97: 833-835.

LEPIDOPTERA.—Frost, S. W.—Notes on the life-history of the four-banded leaf-roller, Eulia quadrifasciana. [4] 59: 149-152, ill. **Hepp, A.**—Biologische beobachtungen. (Grossschmetterlinge). [80] 1: 79-80, cont. **Kuehn, A.**—Ueber die änderung des zeichnungsmusters von schmetterlingen durch temperaturreize und das grundschema der Nymphalidenzeichnung. [Nactr. Ges. Wiss., Math-Phys. Kl.] 1926: 120-141, ill. **Noel et Paillot.**—Sur la participation du noyau a la secretion dans les cellules des tubes sericigènes chez le Bombyx du Mûrier. [77] 97: 764-766.

Philpott, A.—The modification of the eighth sternite in Microdes. [Tr. N. Zeal. Inst.] **58**: 91-92, ill. **Pöhlman, Hans**—Massenflug von Herse convolvuli in alter und neuerer Zeit. [17] **44**: *26-27*. 1927. **Rogers, W. P.**—Collecting notes on Eurema lisa (Bdv. & Lec.) in the vicinity of Fall River, Massachusetts. [19] **22**: 125. **Stephan, J.**—Der Schmetterling als Speise. [Der Naturfreund, Detmold] **4**: *266-269*. (Also in Unsere Welt, Detmold, **19**: *242-245*).

(N) ***Bell, E. L.**—Description of a new race of Pamphilia juba Scudder [6] **35**: 175-176. ***Bird, H.**—A new arrangement and a new generic name in the Gortynid series of the Acronyctinae (Lepidoptera). [6] **35**: 179-182. ***Dyar & Heinrich.**—The American moths of the genus Diatraea and allies. [50] 71, Art. 19: 48-pp., ill. ***McDunnough, J.**—The lepidoptera of the Seton Lake region British Columbia. [4] **59**: 152-162, ill. cont.

(S) **Bouvier, E. L.**—Etude sur les cératocampidés de la collection Charles Oberthür. [Ann. Sci. Nat. Zool.] **10**: 233-288. 3 pl. 6 fig. **Schade, Fr.**—Entomologische Skizzen aus Paraguay. [17] **44**: *23-24*. 1927. ***Schaus, W.**—New species of Heterocera from Central and South America. [10] **29**: . 101-111. **Schreiter, R.**—Observaciones biologicas sobre las especies Tucumanas de los generos Dysdaemonia, Rothschildia y Copaxa. [Univ. Nac. Tucuman, Mus. Hist. Nat.] no. 4: 17pp., ill. Sphingidae estudio sobre las especies Tucumanas de esta familia [l. c.] no. 9: 24pp., ill.

DIPTERA.—Aldrich, J. M.—The dipterous parasites of the migratory locust of tropical America (Schistocerca paranensis). [12] **20**: 588-593. **Mueller, R.**—Fliegen als krankheitsüberträger. [Die Umschau, Frankf. a. M.,] **31**: 648-649, ill. **Ribeiro, S.**—A note on a simulid larva found associated with a may-fly nymph. [Jour. & Proc. Asiatic Soc. Bengal] **22**: 69-70, ill. **Smith, K. M.**—A study of Hylemyia brassicae, the cabbage root fly and its parasites. [116] **14**: 312-330, ill.

(N) ***Curran, C. H.**—Some new American Tachinidae. [19] **22**: 144-154. **Curran, C. H.**—Four new American diptera. [138] No. 275: 4pp., ill. ***Huckett, H. C.**—A new kelp fly from Long Island (Fucellia). [19] **22**: 163-165, ill.

(S) ***Brethes, J.**—Notas sobre los Anophelinos argentinos. [145] **8**: 305-315, ill. **Cleare, L. D.**—Notes on the

breeding habits of two mosquitos. [22] 17: 405-409. 1 pl. *Duda, O.—Die südamerikanischen Drosophiliden unter berücksichtigung auch der anderen neotropischen sowie der nearktischen arten. [111] 1925, A, (11): 1-144, Cont.

COLEOPTERA.—Duncan, D. K.—An unusual condition found in collecting water beetles in Arizona. [19] 22: 143. Frers, A. G.—Metamorfosis de coleopteros argentinos. [145] 8: 82-92, ill. Jaques. H. E.—A preliminary survey of may beetles in Iowa. [Proc. Iowa Acad. Sci.,] 33: 337-339. Knaus, W.—1926 Collecting notes on Kansas Coleoptera. [19] 22: 126-127. Rittershaus, K.—Studien zur morphologie und biologie von Phyllopertha horticola und Anomala aenea. [122] 8: 1-408, ill. Spaeth, F.—Ueber eine den paläarktischen Arten nahe verwandte neue nordamerikanische Cassida. (Cassida relicta). [79] 13: 112-114.

(N) Böving, A. G.—On the classification of the Mylabridae-larvae. (Mylabridae). [10] 29: 133-142, ill. *Brown, W. J.—A revision of the species of Aphodius of Horn's series. [4] 59: 162-167. *Fall, H. C.—A new genus and species of Dytiscidae. [6] 35: 177-178. Fisher, W. S.—A change of name in Anobiidae. [10] 29 (5): 116. Hardy, G. A.—Buprestidae of Vancouver Island; Cerambycidae of same. [Rept. Provincial Museum Nat. Hist., 1926, Victoria, B. C.] 1927: 32-34, 34-37, ill.

(S) *Bruch, C.—Coleopteros nuevos y poco conocidos. Cerambicidos nuevos o poco conocidos. [145] 8: 199-211; 338-348, ill.

HYMENOPTERA.—Eidmann, H.—Ameisen und blattläuse. [107] 47: 537-556, ill. Jaubert, G. F.—Sur l'origine de la couleur jaune de la cire des abeilles. [Comptes Rendus, Acad. Sci. Paris.] 185: 405-6. Leininger, H.—Ein lateraler zwitter von Odynerus reniformis (Vespidae). [Verh. Naturw. Ver., Karlsruhe,] 30: 162-167, ill. Morison, G. D.—Acarine disease and the muscles of the honey bee [Nature, London] 1927, Aug. 20: 259-260. Mukerjee, D.—Digestive and reproductive systems of the male ant "Dorylus labiatus. [Jour. & Proc. Asiatic Soc. Bengal.] 22: 87-91, ill. Plath, O. E.—Psithyrus laborioso, an unwelcome guest in the hives of Apis mellifica. [19] 22: 121-125. Smith, R. C.—Observations on Euplectrus platyhypenae How. (Chalcidae), a parasite of noctuid larvae. [19] 22: 128-134, ill.

(N) **Bertoni, A. de W.**—Nuevos caracteres para la classification de los himenopteres vespoideos. [Rev. Soc. Cien. Paraguay] 2: 147-148. **Phillips, W. J.**—Two new species of Harmolita [10] 29 (5): 125-129. 1 pl. ***Schwarz, H. F.**—Notes on some anthidiine bees of Montana and California. [138] No. 277: 8pp.

(S) **Stärcke, A.**—Beginnende Divergenz bei Myrmica cobicornis Nyl. [30] 70: 73-84, ill.

SPECIAL NOTICES.

Students of geographical distribution and other aspects of ecology will find a vast mass of useful meteorological data in "World Weather Records Collected from Official Sources . . . Assembled and Arranged for Publication by H. Helm Clayton." Smithsonian Misc. Collections, vol. 79, Aug. 22, 1927, pp. vii, 1199.

BIOLOGIE DER HYMENOPTEREN, eine Naturgeschichte der Hautflügler, by H. BISCHOFF, Curator at the Zoological Museum of the University of Berlin. Julius Springer, Berlin, 1927. Pp. viii, 598, 224 ills. 27 Reichsmark.—What an entrancing title, and what pleasure we anticipate from the reading of a comprehensive account of the biology of that order of insects which presents such a diversity of habits and whose members have so many interesting structural and physiological adaptations. And in truth, we are not disappointed. The book does give an excellent summarization, in a well organized form, of the information at present available upon the natural history of the hymenoptera. In it materials heretofore widely scattered have been brought together, reorganized to suit the author's scheme of presentation, and given to us in a very condensed but still remarkably readable form. The space given to any special subject is not necessarily in proportion to the quantity of the existing literature, for, as the author explains, in respect to certain topics such as the habits of honey bees and of ants, upon which adequate comprehensive accounts already exist, he has given us only a relatively brief report. Theoretical considerations are usually kept more in the background and unsafe generalizations are avoided. The author discusses, but does not overemphasize, biological adaptations as being useful in explaining the phylogenetic origin of habits, such as parasitism, because of the probability of numerous convergences. At times, however, the author does pause to

tell us of theories essaying to explain the phenomena he is describing, and here we may not always agree with the particular explanation advocated, a circumstance which does not necessarily detract from our interest but rather heightens it. Regarding the building of drone comb by the hive bee, the author agrees with Quelle's theory which states that drone cells, which require more wax than worker cells, are built as the result of an overproduction of wax which in turn is due to a superabundance of bees, or, in queenless colonies, to lack of other employment for the bees which would ordinarily be engaged in nursing the young. Less crowded working conditions at such times are also a factor in allowing the individual cells to become larger in diameter. The author also describes the origin of hexagonal cells,—the building and molding of a circular cell by the bee within it is interfered with by the bees which are shaping the adjacent cells on all sides so that a hexagonal cell results. In the chapter on social organization he largely concurs in Legewie's recent views. The production of workers is explained as being due to underfeeding of the larvae. Since, in the chapter on sexuality, we are told that fertilized bee eggs must contain anlagen capable of developing into either queens or workers, according to the nature and to the amount of food supplied to the larva, it is not clear how these anlagen for worker characteristics, present in the egg, can be due to underfeeding of the subsequent larva. The underfeeding theory must therefore be, as we had already suspected, a theory of the phylogenetic origin of the worker caste. Then Buttel-Reepen's theory, that since more females than drones are produced the extra females must remain spinsters and can help only in rearing the offspring of the fertilized females, a theory which our author rejects, is in its method of reasoning not far removed from that of Legewie. We cannot stop to outline here the practical objections which can readily be made to the above theories individually; since such objections lead only to the formulation of accessory hypotheses on the part of the adherents. The author himself realizes the difficulties encountered in attempting an explanation of the origin of castes. He realizes the necessity of admitting the presence of anlagen for both queen and worker in the same egg but believes that these worker anlagen could not have been laid down in the egg before the worker caste had first come into existence, phylogenetically. But since these workers, said to be first formed by underfeeding, do not reproduce, it is hard to see how they can transmit any of their

characteristics. We see here the difficulties besetting any attempted Lamarckian explanation and yet new Lamarckian theories continue to crop up, not only as an explanation for the castes but also in regard to feeding habits, nest-building, parasitism, etc., theories which are surely not scientific and which often indicate but little more discernment than the older one, that insects acted according to intelligence and reason. Except for the pleasure of thinking them up, the value of such theories remains obscure. The volume is supplied with a table of contents, an adequate subject index and a generic index in which almost six-hundred genera are listed. The page headings are an added convenience to the reader. The bibliography is not intended to be complete but gives preference to the more recent literature. The following chapter headings may serve to indicate the scope of the book. 1. Anatomy, taxonomy, phylogeny, distribution, variation. 2. Locomotion and rest. 3. Nutrition. 4. Respiration and circulation. 5. Nervous system and sense life. 6. Nests of the aculeate hymenoptera. 7. Nests of the social hymenoptera. 8. Eggs and egg-laying. 9. Care of the young. 10. Parasitism. 11. Social life. 12. Sexuality. 13. Ontogeny. 14. Special adaptations, diseases, economic significance.

R. G. Schmieder.

Guide to the Insects of Connecticut, Part V. The Odonata or Dragonflies of Connecticut. By Philip Garman, Ph. D., Assistant Entomologist, Conn. Agric. Exper. Sta. State of Conn. State Geol. & Nat. Hist. Survey, Bull. No. 39. Hartford, 1927. 331 pp., 22 pls., 67+text figs.—In 1917 Dr. Garman published an excellent work on the Zygoptera of Illinois (Bull. Ill. St. Lab. Nat. Hist., xii, art. IV). Having joined the staff of the Connecticut Station some years ago, it is, therefore, eminently appropriate that he should undertake the preparation of the Odonate part of the series on Connecticut Insects which Dr. W. E. Britton is pushing on with commendable energy. As the total number of genera and species treated in this volume is respectively 48 and 164, it has been possible to devote more space to the description of each species than was the case in parts III and IV on the Hymenoptera and Hemiptera respectively; 112 of these species are stated (p. 299) to have been actually recorded from Connecticut. In this connection it may be noted that not all the Connecticut records and species given by Dr. R. H. Howe, Jr., in his *Manual of the Odonata of New England*, are included.

The numbers of species described in this new work is such that the latter will be useful over a large area outside of Connecticut; thus, of the 126 species listed for Indiana by Williamson in 1917 and 1920, 107 are dealt with here. Among the more novel or peculiar features of this book may be noted the view of the close relationship of Odonata, Plecoptera and Neuroptera (p. 17), the degree of curvature of the mesopleural (humeral) suture as separating Cordulinae from Libellulinae (pp. 18, 200), the recognition of the microthorax as one of four thoracic segments (p. 21), of the trochanter as two-segmented (p. 23), the discussion of the nomenclature of the venation (pp. 23-26) and of the relative rank of Agrionidae [Calopterygidae] and Coenagrionidae (pp. 26-27), the use of the labial palpi as the primary character separating the adults of the Libellulidae and Aeshnidae (p. 116), which had been previously done by Ris in a modified form (Cat. Coll. Selys, Libel. pp. 7, 8, 1909), the non-separation of Cordulinae from Libellulinae as such in the keys (pp. 199-200) and the use of Tillyard's tribes in these groups (ibid.). There is a useful bibliography, especially that section of it which lists papers treating of each State of the United States (pp. 296-7). There are many pages of outline figures with, we are glad to observe, the names of the species or genera in close proximity. At the end of the volume are 22 excellent half-tone plates, illustrating whole larvae or whole adults, or details of the structure of both stages. We should not fail to remark that much space in the text is devoted to keys and descriptions of larvae as well as of the imagos. Altogether Dr. Garman has given us a very useful manual and it is in no censorious spirit that we add a list of some corrections which we hope will aid beginners in the study of this group.

P. 30. The name *Boyeria* attached to fig. 7 should be *Basiaeschna* as in the legend at the bottom of the page.

P. 35, footnote. The lack of homology between the inferior appendage of Anisoptera and the inferiors of the Zygoptera was pointed out long before Crampton's paper of 1918, *e. g.*, by Rambur, *Nevroptères*, 1842, p. 14; Calvert, Trans. Amer. Soc. xx, p. 199, 1893.

P. 37. The key to adults, rubric 3, second sentence, "mesopleural suture with a black or dark brown stripe" will not lead orange and olive females of *Ischnura ramburii* and *Anomalagrion hastatum* to these genera as these females have no such stripe (*cf.* p. 43). The corresponding key in the author's *Zygoptera of Illinois*, p. 500, is more cautiously worded.

P. 38. The character given for the separation of the genera *Telecallagma* and *Enallagma*, based on the point of termination of Cu2 must be used with caution for the smaller species of the latter genus.

P. 125. The second sentence, rubric 1, key to adults, seems to be self-contradictory.

P. 129. The word "cross-" has been omitted before "vein" in the fifth line from the bottom and, Dr. Garman adds in a letter, in the first line of the descriptions of adults on pages 126, 141 and 167.

P. 162, line 31. "cephalo-mesal" should be "cephalo-lateral."

P. 171. *Aeshna (Coryphaeschna) ingens* Ramb., of the Gulf States, would fall in *Epiaeschna* by this key to adults.

Pp. 202 (under *Didymops*), 204 (under *Macromia*), 207 (under *Epicordulia*), 241 (under *Libellula*), 292 (under *Pantala*), etc. The term "subtriangle," although not restricted by its definition in the glossary, p. 304, is on these pages applied apparently to the hind wings only. This use of the term is rather unfortunate, as some authors, *e. g.* Kirby, have employed "subtriangular space" to designate the area on the *front* wings which has also been called the "internal triangle."

P. 206. A possible ambiguity in the first rubric of the key to adults might be obviated by inserting in the fifth line the word "not" before "greatly". Some species of *Tetragoneuria (canis, spinosa)* frequently have the triangle of the hind wing with a cross-vein and hence are liable to mislead in rubric 6 of this key.

P. 259. The words "triangle of the" have been omitted from before "front" in line 34.

P. 261-2, key to adults, rubrics 1, 4, and p. 262, generic description of adults of *Erythrodiplax*. The characters drawn from the point of origin of Cu2 and the number of antenodal cross-veins do not apply to many of the species of this genus which are not found in Connecticut.

P. 284, line 8 from bottom. A transverse carina may exist on segment 2, bounding the groove anteriorly.

P. P. Calvert.

OBITUARY.

George Charles Champion, coleopterist, collector in Guatemala and Panama and secretary for the *Biologia Centrali-Americana*, died August 8, 1927, at Woking, England. We hope to give a fuller notice of his work later.

NEW ADDRESS

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See next page.

DECEMBER, 1927

ENTOMOLOGICAL NEWS

Vol. XXXVIII No. 10

JAMES H. B. BLAND,
1833–1911

CONTENTS

PHILADELPHIA, PA.
THE ACADEMY OF NATURAL SCIENCES,
Logan Square

Entered at the Philadelphia, Pa., Post Office as Second Class Matter.
Acceptance for mailing at the special rate of postage prescribed for in Section 1103, Act of October 3, 1917, authorized January 15, 1921.

ENTOMOLOGICAL NEWS

published monthly, excepting August and September, by The American Entomological Society.

Philip P. Calvert, Ph.D., Editor; E. T. Cresson, Jr., Associate Editor.

Advisory Committtee: Philip Laurent, J. A. G. Rehn, Chas. Liebeck, J. Chester Bradley, Ph.D., Frank Morton Jones, John C. Lutz, Max Kisliuk, Jr.

The subscription price per year of ten (10) numbers is as follows:

United States and possessions . .	$3.00
Canada, Central and South America .	3.15
Foreign	3.25

Single copies 35 cents

ADVERTISING RATES: Full width of page. Payments in advance.
One issue, 1 in., $ 1.20, 2 in., $ 2.40, half page, $ 4.00, full page,, $ 8.00
Ten issues " 11.00, " 20.00, " 35.00, " 70.00

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ENTOMOLOGICAL NEWS

VOL. XXXVIII DECEMBER, 1927 No. 10

Stelis permaculata Ckll., a Parasite of Heriades carinatus Cress. (Hymen.: Stelididae and Megachilidae).

By CHARLES H. HICKS, University of Colorado, Boulder, Colorado.

Many females of *Heriades carinatus* Cress.* were observed nesting in tunnels in old cottonwood stumps, along irrigation ditches on the plains east of Boulder, Colorado, during July and August, 1926. The stumps, free from bark, contained many small holes and tunnels made by coleopterous larvae which served as nesting places for bees and wasps. The tunnels used by *H. carinatus* were found in the harder wood; those in the parts soft from decay being used very little or not at all. The bee nested on all sides of the stump; the north side, however, being used the least. The entrance to the tunnel, after the bee had finished preparing and provisioning the nest, was sealed with a small plug of resin, material which was also used for partitions.

On August 2, a female was seen carrying out old pieces of wood and remains of a former nest. The hole to the outside was a little more than one millimeter in diameter, barely larger than the bee. While working she would back out, carrying the debris in her mandibles, and would drop it a few inches from the nest. This was usually done while she was on the wing, although sometimes she turned about and dropped it while holding on to the sides of the stump with her feet. The material was not excavated but removed, for all evidence points to the use of tunnels already made.

The entrance to the nest was marked with a circle of ink and some observations made on the bee. On August 3, the nest was not watched. On August 4, the bee was collecting

*This bee and its parasite have been determined by Professor T. D. A. Cockerell.

pollen all forenoon. She would enter head first, stay for a few seconds, then back out. Turning around on the outside, she would then insert her abdomen into the entrance and while holding on by her feet and assisted by her wings would back inside out of view. This was repeatedly observed and it was always found that the first entrance was to deposit nectar or inspect the nest; the second to deposit the pollen from the ventral scopa. The tunnel was so narrow, in most instances, that the bee was compelled to come out and back in, in order to place the pollen in the cell.

An estimate of the average period of time spent collecting pollen, depositing it and the like was made. The bee was found to remain within for about 30 seconds following the first entrance after each collecting trip; 55 seconds were spent depositing the pollen; and 12 minutes for each trip to the fields collecting pollen.

At this nest and other nests of this stump and others, specimens of a *Stelis* parasite were observed flying about or entering the tunnels. This species is *Stelis permaculata* Ckll., a common parasite here of *H. carinatus*. The habits of this parasite have been observed to some extent.

One *S. permaculata* female entered the nest of *H. carinatus* while the latter was away. She went into the tunnel head first, backing out after a few seconds. Immediately she turned about, placing her abdomen in the hole much as the host does in depositing pollen, and backed in out of sight. A vial was then placed over the entrance and this individual taken on leaving 36 seconds later. The purpose of backing in was doubtless to lay an egg, for there seems no other reasonable explanation for such an action. Other females of this species were found to enter nests of *H. carinatus* and I have since opened the tunnels of many, taken from these stumps and located by the outer resin plug, and have found the larvae of *H. carinatus* and the cocoons of *S. permaculata*. The cocoon looks very much like the cocoons of *S. sexmaculata* and other *Stelis* cocoons. *S. permaculata* has not before been found common, although this summer a number of specimens were taken and many more could easily have been secured.

On August 4, I observed a specimen of *H. carinatus* working for a long time at an outer resin plug, some 8 feet above the ground. While she was working another female of the same species clashed upon the one at work, both falling to the ground. A few minutes later one was caught while working at the resin. Soon the other returned and worked until I took her 15 minutes later. Both were working at the same entrance but whether each used the same tunnel for nesting is not known. A single female has been found to each nest observed, with this one exception. It does not seem probable that one was stealing the resin from another or that it was being eaten, for later observations showed no repetition of this association.

A number of nests of *H. carinatus* have been studied. They are irregular tunnels varying in length. One had a resin plug 2 mm. thick filling the entrance, followed by an empty space of 5 mm., and again a resin plug of 4 mm. The cells were below this and were separated by thin partitions of resin from .5 to 1.2 in thickness. The resin is sometimes very light and again quite yellow or almost brown. The dark color, especially in the case of the plugs, may be due to the bee having used older resin or to the effects of weather conditions. The fact that the bee nests in the harder parts of the wood makes it rather difficult to take the nests without injury to the larvae. However, during the fall and winter mature insects, both of the host and of the parasite, have been reared in the laboratory. The development has been materially hastened by the increased temperature of the laboratory.

An account of the habits of the bees of the genus *Heriades* (written *Eriades*) of Europe has been given by Friese.* Under the name *Eriades* he also includes the two genera, *Chelostoma* and *Trypetes*.

These bees have been found nesting in holes in posts, beams, trunks of trees, straw roofs, in the loam walls of houses and have been considered to use, in most cases, tunnels already constructed. Friese states that the name, "Bohrbiene"

*Friese, H., Die Europäischen Bienen (Apidae). Berlin und Leipzig. 1923.

(*Trypetes*) by Schenck, is probably due to the assumption that the animals drill new holes into old trunks of trees but states that he has never been able to observe this. Sometimes the side tunnels of the nest of an *Odynerus* are appropriated or again that of some "wood wasp." The partitions between the cells are made of loam, sand and pebbles, but apparently the species do not use resin as does *H. carinatus* here.

The larvae of most European species, if not all, spin a cocoon. This is likewise true of *H. carinatus*, the cocoon being thin and much larger than the animal. About the cocoon, usually near the ends, is found the excrement, between it and a partition of resin. Bees of the genus *Stelis* have been found parasitic on bees of the genus *Heriades* in Europe. These parasitic forms resemble very much the host in appearance.

According to Friese, *Stelis minima* is parasitic on *Eriades campanularum; S. pygmaea* on *E. truncorum;* and the wasp, *Sapyga clavicornis* on *E. florisomnis.* The fly, *Anthrax aethiops,* and a hymenopteron of the genus *Gasteruption* are also parasites of *Eriades.*

What is the First Insect known from North America?

By S. A. Rohwer, U. S. National Museum.

A few weeks ago, Professor E. O. Essig asked Dr. Howard to express an opinion on what insect was first described from America. The matter was referred to my office for attention and was written up in some detail. Dr. Essig suggested that it would be well for this record to be published so it would be available to all students, and inasmuch as other workers may be interested in this historical matter the following note is offered.

There are two ways to attack this problem. One would be the first reaction of the taxonomist, which would refer to the first insect which had nomenclatorial standing. To find the first insect described from America under this method of procedure, it is only necessary to consult the tenth edition of Linnaeus, published in 1758. We find that the very first insect described is a beetle, *Scarabaeus hercules,* which is said to come

from America, and is now known to occur in Central America, the Antilles, Guatemala and Ecuador. Restricting our inquiry to North American insects, we find that the first species to be validated nomenclatorially is the beetle now known as *Phileurus valgus* Linn. Other beetles which were described in the original edition are *Bruchus pisorum* (originally described from seeds of peas in America), *Silpha americana*, *Chrysomela philadelphica*, and *Alaus oculatus*. The first Nearctic Orthopteroid to be given standing in nomenclature is *Periplaneta americana* (Linn.); the first Lepidopteron, *Papilo ajax* Linn.; the first Heteropteron, *Dysdercus andreae* (Linn.); the first Hymenopteron, *Evania appendigaster* Linn.

From a historical point of view, this method of determining the oldest insect known from our region is hardly satisfactory, as the zoologists in general very often go back of the tenth edition of Linnaeus in matters of historical interest. Without delving deeply into the subject, it would seem that one of the first—if not the first—insects to be definitely recorded from America is the cochineal insect, *Coccus cacti*. This species undoubtedly was described in many of the early Spanish accounts of exploration. It was definitely mentioned as a kind of kermes by Martin Lister in 1672, and definitely recognized as an insect by Antony Van Leeuwenhoek in 1705.

Occurring along with the original technical descriptions of many insects in the tenth edition, there are references to earlier publications on these animals, and we find in the Coleoptera references to literature on the very first form known to have been described dating back to Roesslin, 1557 to 1616, and Marcgraf, 1648; but these references apparently do not refer to the insect as it occurs in its native habitat.

Mr. Caudell, in looking up the matter of the earliest known Orthopteron, submitted the following note:

"*Gryllus gryllotalpa* Catesby, Nat. Hist Car., vol. 1, plate viii (1731).

"This is the earliest American Orthopteron noted so far as I know, though the works of Madam Maria Sibylla Merian may contain some and are earlier, 1705.

"*Blatta molendinaria* Moufet, Ins. Anim. Theatr., p. 138, fig.

1, 2 (1634), is older than the above and the insect is a synonym of *orientalis,* but the new world locality is not there mentioned. The first reference to this species known to me with America noted as the habitat is by Linnaeus in his Syst. Nat., ed. x, p. 424 (1785)."

A similar investigation into the Lepidoptera by Dr. Schaus failed to reveal any earlier reference to a lepidopterous insect.

With it all, however, to find out the first insect mentioned in literature as occurring in North America it would be necessary to read all of the early accounts of exploration, and of course this would be hardly worth while; but it seems very probable that all of these accounts will include some mention of the cochineal insect. It is therefore very likely that this is the first insect to be definitely recorded from America.

New Species of Mimetic Miridae from North America (Hemiptera).*

By Harry H. Knight, Ames, Iowa.

Orectoderus arcuatus, n. sp.—Smaller and more slender than *obliquus* Uhler, easily distinguished in the male by the arcuate pale mark formed by the pale of the cuneus joining with that along inner margin of corium; female distinguished by the strongly clavate second antennal segment and by the polished surface of abdomen.

♂. Length 6.7 mm., width, 1.9 mm. Head: width 1 mm., vertex .44 mm. Rostrum, length 2.3 mm., reaching to middle of intermediate coxae. Antennae: segment 1, length, .32 mm.; II, 1.88 mm., gradually thickened to clavate (.133 mm. thick) on apical half; III, 1.09 mm., slender; IV, .62 mm. Pronotum: length .86 mm., width at base 1.39 mm.; calli more prominent than in *obliquus.*

Black, shining except scutellum and mesoscutum, legs orange red, tibia paler, tarsi blackish; hemelytra including membrane and veins black, clavus exterior to claval vein, whitish translucent; corium bordering clavus and continuing around inner apical angle to join cuneus, basal one-third or more of cuneus, white, or whitish translucent. Clothed with simple fuscous pubescence.

*Contribution from the Department of Zoology and Entomology Iowa State College, Ames, Iowa.

♀. Length 4.8 mm., brachypterous, width of abdomen 1.6 mm. Head: width 1.15 mm., vertex .58 mm., from tip of tylus to dorsal margin of eye 1.18 mm., height of eye .53 mm., width of eye .33 mm. Rostrum, length 2.22 mm., reaching to base of hind coxae. Antennae: segment I, length .33 mm.; II, 1.81 mm., slender on basal half, sharply clavate on apical third, thickness .20 mm.; III, broken; orange red, the clavate portion fuscous to blackish. Pronotum: length .89 mm., width at base .95 mm., width at middle .86 mm., constricted immediately in front of basal angles, broadly convex anteriorly, margins set with several, heavy, black bristles, coxal cleft visible from above. Hemelytra represented by short pads which beyond apex of scutellum are bent sharply erect, much as in *obliquus*. Abdomen subglobose beginning with third segment, polished and shining, rather sparsely clothed with fine yellowish pubescence, black, posterior margin of second tergite yellowish white. Head, thorax, and legs, orange red to dusky, tarsi blackish; wing pads fuscous, paler along the poorly defined claval suture.

Holotype: ♂ May 17, 1923, Ritzville, Washington (M. C. Lane); U. S. National Museum collection. *Allotype*: ♀ May 16, topotypic; U. S. N. M. collection. *Paratypes*: ♂ ♀ May 12, topotypic. ♂ "Colo. 1690." Several nymphs taken May 1 are also present from the type locality.

COQUILLETTIA JESSIANA, n. sp.—Allied to *balli* Kngt., but differs in the longer second antennal segment which exceeds width of pronotum at base, and in having membrane pale at base. Coloration suggestive of *insignis* Uhler but differs in the small size and in the female by the polished and shining body.

♂. Length 4.7 mm., width across base of cuneus 1.33 mm. Head: width .80 mm., vertex .32 mm., from tip of tylus to dorsal margin of eye .74 mm. Rostrum, length 1.4 mm., reaching to near hind margin of sternum. Antennae: segment I, length .26 mm.; II, 1.42 mm.; III, 1.21 mm.; IV, .72 mm. Pronotum: length .78 mm., width at base 1.15 mm.; from base of pronotum to tip of tylus 1.61 mm., greater than length of second antennal segment.

Coloration dark fuscous brown, head and scutellum more brown than fuscous, with tylus, lora, and juga orange brown; basal two-thirds of corium and clavus, and basal one-third of cuneus, white, the apical portions black; the black apical band

of corium cut squarely across its anterior margin, the edge of the black color more sharply defined than in *insignis*.

♀. Length 4.4 mm., brachypterous, width across abdomen 1.4 mm. Head: width .96 mm., vertex .56 mm. Rostrum, length 1.66 mm., reaching between intermediate coxae. Antennae: segment I, length .28 mm.; II, 1.68 mm.; III, 1.27 mm.; IV, .69 mm. Pronotum: length .72 mm., width .80 mm. Form very similar to *insignis* but distinguished by the polished and shining surface; sparsely pubescent, without a vestige of wings.

Holotype: ♂ August 26, 1925, Sterling, Colorado (H. H. Knight); author's collection. *Allotype*: same data as type. *Paratypes*: 10 ♂ 4 ♀, and nymphs, taken with the types by sweeping semiarid plains, grassland mixed with sage-brush (*Artemisia* sp.). 2 ♂ 1 ♀ July 22, 1900, Denver, Colorado (E. D. Ball). ♂ June 1, 1926, alt. 6000 ft., Chiricahua Mts., Arizona (A. A. Nichol).

I have dedicated this interesting species to my wife, Jessie Mae Knight, who has ever been unselfish in not restricting the time I would spend on scientific work.

COQUILLETTIA MIMETICA FLORIDANA, n. subsp.—Coloration similar to typical *mimetica* Osborn, but differs in the smaller size, more slender form and broader head.

♂. Length 5.1 mm., width at base of cuneus 1.24 mm. Head: width .98 mm., vertex .46 mm. Rostrum, length 1.63 mm., not attaining hind margin of sternum. Antennae: segment I, .34 mm.; II, 2.04 mm.; III, 1.92 mm.; IV, 1 mm. Pronotum: length .86 mm., width at base 1.06 mm. Distinguished by width of head being greater than length of pronotum; width of head also nearly equal to width of pronotum at base.

Holotype: ♂ July 24, 1926, Seebring, Florida (E. D. Ball); author's collection. *Paratype*: ♂, taken with the type.

While *floridana* can be separated from *mimetica* Osb. by as good structural characters as certain other species of the genus, its general aspect is so near that of *mimetica* that the position of subspecies more accurately expresses its relationship among other members of the genus. It is interesting to note that Dr. Ball has also taken typical *mimetica* Osb. in Florida (2 ♂ 1 ♀ May 15, 1926, Sanford), which indicates that there may be no

intermediate forms showing a gradual transition from *mimetica* to *floridana*. The connecting links in the evolution of *floridana* may already have disappeared.

COQUILLETTIA MIMETICA LATICEPS, n. subsp.—♂. Coloration nearly as in *mimetica* Osborn, but form smaller and less elongate; head broader, eyes more protruding, width of head distinctly greater than length of pronotum. In *mimetica* the width of head scarcely equals length of pronotum. Differs from *floridana* in the distinctly protruding eyes which rise sharply above the general contour of frons and vertex; also differs in the relatively shorter and broader form.

Length 5.2 mm., width 1.3 mm. Head: width 1.01 mm., vertex .37 mm. Rostrum, length 1.57 mm., scarcely attaining posterior margin of sternum. Antennae: segment I, length .32 mm.; II, 2.04 mm.; III, 1.63 mm.; IV, .92 mm. Pronotum, length .88 mm., not equal to width of head, width at base 1.3 mm.

♀. Length 5.2 mm., wingless, width of abdomen 1.5 mm. Head: width 1.03 mm., vertex .56 mm., from tip of tylus to dorsal margin of eye .88 mm., postocular space .207 mm. Antennae: segment I, length .33 mm.; II, 1.83 mm.; III, 1.48 mm.; IV, .90 mm. Pronotum, length .83 mm., width .77 mm. Differs from *mimetica* in the narrower postocular space, which is much less than the lateral width of an eye (.33 mm.). In *mimetica* the postocular space is equal to lateral width of an eye.

Holotype: ♂ August 6, Delhi, Colorado (C. J. Drake); author's collection. *Allotype*: August 16, 1925, Sugar City, Colorado (Beamer & Lawson); Kansas University Collection. *Paratypes*: ♂ 2 ♀, taken with the allotype. 2 ♂ Aug. 14, 1925, Olney, Colorado (Beamer & Lawson). ♂ June 26, 1920, Fort Collins, Colorado (Geo. M. List).

SERICOPHANES FLORIDANUS, n. sp.—Distinguished by the small size and dark color; suggestive of *heidemanni* Popp., but female with prothorax more cylindrical than globose, venter white beneath except first two segments and lateral margins.

♀. Length 2.4 mm., brachypterous, width of abdomen .87 mm.; length of hemelytra .68 mm. Head: width .56 mm., vertex .355 mm. Rostrum, length .98 mm., reaching to base of hind coxae. Antennae: segment I, length .17 mm.; II, .83 mm.; III, .56 mm.; IV, .50 mm. Pronotum, length .44 mm., width at middle .43 mm., coxal clefts visible from above, pro-

thorax widest at that point; strongly and evenly convex, but more cylindrical than globose.

Coloration dark brownish black, having a dull waxen sheen, the short hemelytra with pruinose areas evident; front and hind coxae except base, pale, venter white beneath except first two segments and lateral margins.

♂. Length 2.6 mm., width at base of hemelytra .68 mm. Head: width .50 mm., vertex .28 mm. Rostrum, length .92 mm., reaching to middle of hind coxae. Antennae: segment I, length .17 mm.; II, .77 mm.; III, .56 mm.; IV, .44 mm. Pronotum, length .50 mm., width at base .71 mm.

Form and coloration very similar to *heidemanni* but distinguished by the small size, the female giving the best characters for separating the species.

Holotype: ♀ April 9, 1926, Sanford, Florida (E. D. Ball); author's collection. *Allotype*: ♂ Aug. 25-30, 1925, Sanford, Florida (E. D. Ball); author's collection. The writer is indebted to Dr. E. D. Ball for the collecting and presentation of this diminutive ant mimic.

Renodaella, New Genus.

Allied to *Renodacus* Dist., tribe Renodaeini; arolia converging at apices as in *Ceratocapsus* and *Pilophorus;* genitalia of the complicated type as in *Ceratocapsus*. Head much like *Pilophorus*, but all the antennal segments thickened as in *Ceratocapsus*, segment II gradually thickened from base to apex, not suddenly enlarged at apex as in *Renodacus*. Rostrum reaching between middle coxae. Pronotum much as in *Pilophorus*, shining, the base not covering mesoscutum as in *Renodacus*. Scutellum moderately convex, mesoscutum strongly elevated, capped by the moderately down-curved basal margin of pronotum. Hemelytra set with heavy, black, bristle-like hairs, much as in *Renodacus;* also set with patches of silvery, scale-like pubescence; dull, opaque, embolium and cuneus shining; clavus and corium distinctly elevated or convex, embolar margins only moderately sinuate. Membrane fully developed (♂). Genitalia complicated in structure much in the form of *Ceratocapsus*.

Genotype: *Renodaella nicholi,* new species.

RENODAELLA NICHOLI, n. sp.—♂. Length 3.2 mm., width 1.06 mm. Head: width .74 mm., vertex .326 mm.; eyes forming a part of the convex curve formed by front of head, basal margin of vertex sharp and overlapping anterior margin of pronotum as in *Pilophorus*. Rostrum, length 1.21 mm., reaching to near hind margin of intermediate coxae. Antennae: segment I, length .18 mm., thickness .059 mm.; II, .60 mm., gradually thickened from base toward apex (.074 mm.); III, .37 mm., thickness .059 mm., more slender near base; IV, .385 mm., thickness .074 mm., fusiform; clothed with fine pale pubescence. Pronotum: length .74 mm., width at base .95 mm.; basal margin arcuate, disk rather strongly and evenly convex, higher on posterior half; lateral margins concave, sharply narrowed anteriorly, coxal clefts visible from above.

Dark brownish black to piceous, shining; hemelytra dull, more brownish, clavus and apical area of corium darker, embolium and cuneus strongly shining; membrane uniformly dark fuscous; coxae except apex of front pair, basal one-fourth of hind and middle femora, and apical one-third of tibiae, pale. Clothed with rather sparse, fine, pale to yellowish pubescence, vertex with four rather long pale hairs on base; clavus and corium set with long, erect black bristles, arranged in poorly defined rows. Hemelytra bearing several patches of silvery, scale-like hairs, the largest of which forms a short transverse band across corium just before apex of clavus, but stopping short of claval suture; a narrower band runs from outer basal angle of clavus toward apex of cuneus, also three or four smaller patches of silvery scales on apical half of clavus and on outer basal half of clavus. Genitalia distinctive, right clasper with an erect dorsal prong, acuminate on apical half with the tip somewhat decurved; also bearing two ventral, incurved hooks, the lower member of which is twice as large as the other; on inner basal part of clasper a third hook arises and points mesad. Left clasper with a prominent sharp hook near base which curves upward and forward, this followed by a sharp, needle-like spine just behind; the main stem of clasper, upon reaching median line of segment, turns dorsally and expands into a rather broad, thin, fish-tailed terminal portion.

Holotype: ♂ September 9, 1925, Santa Rita Mts., alt. 4500 ft., Arizona (A. A. Nichol); author's collection. Named in honor of the collector, Mr. Andrew A. Nichol.

An Additional Annotated List of Ants of Mississippi, with a Description of a New Species of Pheidole (Hym.: Formicidae).*

By M. R. Smith, A. and M. College, Mississippi.

Since the publication of the writer's article, "An Annotated List of the Ants of Mississippi" in Volume 35 of the Entomological News for 1924, 11 species of ants new to the State have been collected. Among this number is a new species of *Pheidole*. With the addition of these species our list of ants known for the State now includes 87 species. The writer believes that more intensive collecting in the northeastern, the southern and southwestern sections of the State will bring to light further species and probably several new ones.

The species new to our State list are given below in numerical sequence, with the usual notations or remarks accompanying each species. The new *Pheidole* is also described here.

Subfamily Ponerinae.

77.—Ponera opaciceps Mayr. Fayette, A. and M. College, Sibley, Bexley.

The worker of this ant bears a striking similarity to that of *Ponera coarctata* subsp. *pennsylvanica* Buckley, our most common eastern and northern species. The worker can be readily distinguished, however, by the finer and more contiguous punctation of the head. It measures about 3.10 mm. in length. Its color is generally black or very deep brown, with somewhat ferruginous or yellowish appendages and mouth parts. At Sibley, Mr. Andrew Fleming took alate males and females on June 5th, 1924. He remarks as follows concerning them. "I caught them while cultivating a tract near the creek. They were very numerous and annoying, swarming over my hands, face and neck." At Bexley a colony was found nesting in a cavity within a sweet potato on February 24, 1927. The cavity was thought to have been previously made by termites. Judging from the collections made in this section of

*A contribution from the Mississippi Agricultural Experiment Station.

the State this ant is not as common a species as *Ponera trigona* var. *opacior* Forel, but is more abundant than the following species.

78.—PONERA INEXORATA Wheeler. A. and M. College.

Only one colony of this ant has been found in the state. Wheeler remarks that the colonies are unusually small, seldom numbering over a dozen to a dozen and a half individuals. The workers taken from the colony mentioned above were found in the soil beneath a rotten limb. In the vicinity of the ants was found a small myrmecophilous beetle belonging to the family Pselaphidae. The workers of *inexorata* are ferruginous yellow throughout and measure from 2.75-3.25 mm. in length. They are about the size of the workers of *Ponera gilva* Roger but lack the sharply marginate sides of the epinotum of the latter species. The lateral borders of the mandibles of the worker of *inexorata* are concave or sinuate, an easily recognizable character.

79.—STRUMIGENYS LOUISIANAE Roger. Sibley.

This species was taken at Sibley on July 3, 1924, by Mr. Andrew Fleming, who wrote as follows concerning the ants, "I found a small nest in the cavity at the base of a small locust stump I had pulled up. I saw a winged form, presumably a female. It appeared to be a trifle larger and darker than the worker but I am not certain, as it was running rapidly and I failed to catch it. The workers are very slow in their movements. The stump was in a hillside thicket about ten feet from an open field." This species can be easily distinguished from all the other described North American forms by the elongate, subparallel mandibles of the worker, each of which bears at its apex two sub-equal teeth and posterior to these is a very small, faintly discernible tooth.

80.—SOLENOPSIS PICTA var. near MOERENS Wheeler. Sibley.

Workers of this species were sent to the writer by Mr. Andrew Fleming who took them from inside the twigs of a species of oak and from insect galls on red oak. Mr. Fleming states that this is one of the most common arboreal ants in that section of the state. These ants can be readily disting-

uished from any of the other species of *Solenopsis* occurring in the state by the black or deep brown color of the workers. At first sight, one not very familiar with ants might confuse this species with the tiny black ant, *Monomorium minimum* Buckley. The workers are, however, considerably smaller than those of the tiny black ant and have only a two-jointed distal club, whereas the tiny black ant has a three-jointed distal club.

81.—CREMATOGASTER OPACA var. PUNCTULATA Emery. A. and M. College, Sturgis.

The workers of this ant can be readily distinguished from the workers of other species of *Crematogaster* occurring in this State by the abundant and contiguous punctures which cover the posterior part of the head, the thorax, the petiole and the postpetiole. These punctuations give the body an opaque appearance. The epinotal spines are well developed and directed upward and backward. They are subparallel or parallel to each other. The ants nest in the ground and their colonies are rather numerous here at A. and M. College. The workers attend plant lice and mealy bugs, especially the subterranean forms. We have taken this ant in attendance on *Aphis gossypii* Glover on cotton, on the mealy bug, *Pseudaontonina* sp., on the roots of Johnson grass and on the mealy bug, *Trionymous* sp., on the roots of wild aster. The ants are often found trailing over the ground in single file where they are apparently in search of honey dew-excreting forms. A nest unearthed on February 24th, 1927, six inches below the surface of the ground, contained a dealated female, many workers and some partly grown larvae.

82.—PHEIDOLE DENTIGULA n. sp.—*Soldier*. Length: 2.25-2.5 mm.

Head, excluding the mandibles, longer than broad, about as broad in front as behind, with rounded posterior corners, angularly excised posterior border and distinct occipital groove, sides subparallel. Gula with two short, coarse, prominent teeth. Eyes placed near the anterior fourth of the head. Mandibles large, convex, with two distinct apical and two smaller basal teeth. Clypeus emarginate mesially. Frontal

area small, subtriangular, impressed. Antennal scapes extending about one-half the distance between the eyes and the posterior corners of the head; club longer than the remainder of the funiculus. Thorax short, robust, with prominent but rounded humeri; about one-half as broad as the head. Pro- and mesonotum convex, together forming a hemispherical mass when viewed in profile, the mesonotum with a faint transverse impression before the abrupt posterior surface. Mesoepinotal constriction pronounced. Epinotum with two acute spines which are little, if any, longer than broad at the base, a lateral ridge extending on each side of the epinotum from the base of spines to the mesoepinotal constriction. Petiole approximately twice as long as broad, with the sides slightly constricted at the base of the node, node when viewed from behind rectangular and with a straight or very indistinctly emarginate superior border. Postpetiole broader than long, slightly more than twice as broad as the petiole, with distinctly blunt, median conules. Gaster smaller than the head, oval, with straight anterior border.

Mandibles, clypeus and frontal area smooth and shining, the first longitudinally striated basally, apically with coarse, widely scattered, piligerous punctures. Head opaque, longitudinally striated in the region of the front and cheeks; remainder rugulose-reticulate throughout with very faint intermediate punctulae. Dorsum of pro- and mesothorax rugulose-punctulate with rather indefinitely distributed smooth areas. Intraspinal area on the epinotum finely punctulate. Pleurae of the thorax for the most part finely punctulate, occasionally with smooth punctureless areas, one of these areas very often present on the mesopleura. Superior surface of the postpetiole smooth and shining. Gaster very smooth and shining, legs less so.

Hairs pale yellowish, long and abundant, suberect to erect, more reclinate on the appendages.

Ferruginous; mandibles and clypeus darker.

Worker. Length 1.3-1.5 mm. Head, excluding the mandibles, slightly longer than broad, with convex sides and very faintly emarginate posterior border. Eyes anterior to the middle of the sides of the head. Clypeus convex, with a median carinula, which is most distinct anteriorly. Antennal scapes slightly surpassing the posterior corners of the head, the club longer than the remainder of the funiculus. Frontal area subtriangular. Thorax similar to that of the soldier, but relatively broader in proportion to the width of the head.

Posterior surface of the mesonotum meeting the mesoepinotal constriction at an almost right angle. Node of petiole and postpetiole not so well developed as that of the soldier, the postpetiole almost globular and lacking the decided conules which are so prominent in the soldier.

Head opaque, very finely and clearly punctulate throughout; anteriorly with faintly discernible longitudinal rugulae: posteriorly rugulose-reticulate. Mandibles, clypeus and frontal area smooth and shining, the first striated basally and with small scattered punctures apically. Thorax opaque, punctulate, with irregular rugulae, most of which occur on the mesonotum and are transverse or longitudinal. Petiole, postpetiole and gaster smooth and shining.

Hairs like those of the soldier; some workers with erect hairs on the antennal scape.

Color same as that of the soldier, but the mandibles and clypeus not quite so dark.

Described from ten soldiers and ten workers, the cotypes of which are in the writer's collection.

The type locality for this species is A. and M. College, Mississippi. The writer found these ants nesting in the soil at the bottom of a small ravine. Most of the specimens were taken at a depth of about six inches, where they were found nesting inside a small hollow root. Only soldiers, workers and larvae were seen. The ants appear to be entirely subterranean in their habits, since when exposed to the light they attempted to hide in the soil. A small proctrotrupid taken in the vicinity of the ants' nest was determined by Mr. A. B. Gahan, of the Bureau of Entomology, as a species of *Hoplogyron*, apparently new. Mr. Gahan states that similar specimens have been received from Harrisburg, Pennsylvania, where they were bred from the egg of the carabid beetle, *Brachynus* sp.

The soldiers of this species, while they show an affinity to the *flavens* group, are entirely different from any members of that group with which the writer is acquainted. The writer has submitted specimens to Dr. W. M. Wheeler and he is also of the opinion that this ant is distinct from any species of *Pheidole* that he has seen.

The most outstanding characteristics of the soldier are the rectangularly shaped head, which is longer than broad, the

distinct coarse teeth on the anterior border of the gula, and the prominent median conules of the postpetiole.

83.—MYRMECINA GRAMINICOLA subsp. AMERICANA Emery. A. and M. College.

A nest of this species found in the soil in a woodland tract on July 12, 1924, contained a number of alate males, workers and larvae. The ant is apparently a very rare species in this state.

Subfamily FORMICINAE.

84—LASIUS NIGER var. NEONIGER Emery. Corinth.

Workers taken at Corinth, in the northern part of the State, agree with the description of this variety. The genus is not well repesented in Mississippi, as the species do not appear to be adapted to this climate. No species of *Lasius* have been taken further south in Mississippi than A. and M. College.

85.—BRACHYMYRMEX NANELLUS Wheeler. Columbus and Sibley.

What is apparently this species of ant has been collected in the State on several occasions. A nest was found in the woods near Columbus. Several small chambers about one-fourth inch in diameter were discovered, about three inches below the surface of the soil. In these were found a dealated female, about 40 or 50 workers and some small larvae.

86.—PRENOLEPIS (NYLANDERIA) PARVULA Mayr. A. and M. College.

This small species of *Prenolepis* has only been taken once in the State. It does not appear to be as common in this vicinity as the species *P. brucsi* Wheeler. The workers of *parvula* can be readily distinguished from those of *brucsi* by the absence of erect hairs on their antennal scapes. On April 1, 1927, a colony of this species was found in the soil on a hill side slope beneath some leaves and a rotten tree branch. In the nest were found one dealate and four alate females, many workers and some medium-sized larvae.

87.—CAMPONOTUS CARYAE DISCOLOR var. CNEMIDATUS Emery. Adaton.

A small number of workers of what the writer believes to be this species were taken from beneath the bark of the trunk of an oak tree, in a low, not well drained patch of woodlands. The workers were very timid and tried to avoid capture by frantically running away or hiding under flakes of bark and remaining perfectly still. Their food is undoubtedly honey dew.

Dacerla downesi, a New Species of Miridae from Oregon (Hemiptera).*

By Harry H. Knight, Ames, Iowa.

It is of considerable interest to find a third species belonging to the remarkable myrmecoid genus *Dacerla* Bergroth. Mr. W. Downes submitted a series of specimens to the writer for study, with the observation that they had an aspect somewhat different from *Dacerla formicina* Parshley, and he believed they might represent a new species. Mr. Downes found this new form to occur only at an elevation of 5000 ft. or more, while *formicina* Parsh. was always found at lower levels in British Columbia. Upon comparing these forms I have found a good structural character for separating them, namely the relation of the first antennal segment to width of vertex. These differences hold good in a large series of both species, thus it seems advisable to describe the new form. A key is appended for the separation of the three known species of *Dacerla*.

Dacerla downesi n. sp.—Allied to *formicina* Parshley, very similar in coloration but form more robust, antennal segment I not equal to interocular width of vertex.

♀. Length 5.8 mm., width of abdomen 2.4 mm. Head: width 1.29 mm., vertex (narrowest point between eyes) .59 mm.; from dorsal margin of eye to tip of tylus 1.63 mm. Rostrum reaching to base of intermediate coxae. Antennae: segment I, length .50 mm.; II, 2.43 mm.; III, 1.33 m.; IV, 1.30 mm.

♂. Length 5.2 mm., width of abdomen 2 mm. Head: width 1.21 mm., vertex .58 mm.; from dorsal margin of eye

*Contribution from the Department of Zoology and Entomology, Iowa State College, Ames, Iowa.

to tip of tylus 1.48 mm. Antennae: segment I, length .50 mm.; II, 2.57 mm.; III, 1.4 mm., IV, 1.21 mm.

Pubescence and coloration, even to the white marks on venter, similar to *formicina* Parsh. Right genital clasper distinctive, broader and thicker than in *formicina*.

Holotype: ♀ July 29, 1921, Mount Hood, Oregon, alt. 6,000 ft. (W. Downes); Canadian National collection. *Allotype*: taken with the type; author's collection. *Paratypes*: 16 ♂ ♀, taken with the types. ♀ May 21, 1893, Hood River, Oregon (U. S. N. M.).

DACERLA FORMICINA Parshley. Proc. British Columbia Ent. Soc., No. 18, 1921, p. 6.

For comparison with the new species here described the following critical characters are given: ♀. Head: width 1.27 mm., vertex (narrowest point between the eyes) .56 mm. Antennal segment I, length .61 mm. ♂. Head: width 1.26 mm., vertex .56 mm. Antennal segment I, length .65 mm.

Key to the species of Dacerla.

1. Pronotum with posterior margin produced into an erect spine on median line ..... *inflata* Uhler
   Pronotum not produced into a spine 2
2. Antennal segment I in length greater than interocular width of vertex ..... *formicina* Parsh.
   Antennal segment I in length not equal to interocular width of vertex ..... *downesi* n. sp.

Coleopterist in the University of Kansas.

Mr. Warwick Benedict has been appointed Coleopterist in the Department of Entomology, University of Kansas, Lawrence. Mr. Benedict, having retired from a successful business career a few years ago, has devoted himself assiduously to the study of the Coleoptera and has accumulated a large private collection of these insects. A year ago he promised to donate his collections upon his death to the University of Kansas, but recognizing the greater contribution to science he has most generously offered to rearrange the University's collections of Coleoptera incorporating his own material as he proceeds.—H. B. HUNGERFORD, University of Kansas, Lawrence, Kansas.

ENTOMOLOGICAL NEWS

PHILADELPHIA, PA., DECEMBER, 1927.

Changes in the News for 1928.

Owing to the desire of the Editor and the Associate Editor of the NEWS to be relieved of much of the work which the conducting of this journal for the past seventeen years has entailed, changes will be made in the personnel, beginning with the number for January, 1928. The NEWS will continue to be published by the American Entomological Society, which retains its ownership therein. The present Editor will remain in editorial charge of the magazine, but will be assisted in this department by Dr. R. G. Schmieder, and Mr. Ernest Baylis as Associate Editors. Mr. John C. Lutz will be Business Manager and with the November, 1927, number has assumed charge of the receipt of subscriptions for 1928. His office for this purpose will be at his residence, 827 North 66th St., Philadelphia. Mr. E. T. Cresson, Jr., Treasurer of the Society, will continue as an Associate Editor. The Editor hereby expresses his hearty thanks to all these here named for the voluntary assistance which they now freely offer to the NEWS or which they have given in the past. Mr. Cresson has devoted an enormous amount of time to the compilation of our monthly lists of Entomological Literature and to looking after the petty details of the business affairs, including the distribution of the magazine, to the detriment of his scientific work and he richly deserves the relief which we believe the new arrangement will give him.

It is with great pleasure that we are able to announce also that, thanks to the Editors of *Biological Abstracts*, the NEWS is able to avail itself of such bibliographical data gathered by this organization at the library of the American Entomological Society, as fall within the scope of the department of Entomological Literature of the NEWS. In this way a duplication

of effort will be avoided in the future. Otherwise the information on current entomological publications given in the NEWS will be as in the past. It may be that as the service rendered by *Biological Abstracts* becomes more widely appreciated, it will be unnecessary for the NEWS to maintain even its lists of entomological articles.

We are anxious to receive suggestions from our subscribers that in their opinion would make the NEWS a better publication.

Dr. L. O. Howard Resigns as Chief, U. S. Bur. Entomology Dr. C. L. Marlatt Appointed to Succeed Him.

After more than thirty-three years of service as chief entomologist of the United States Department of Agriculture, Dr. Leland O. Howard retired on October 17 as the chief of the Bureau of Entomology, and was succeeded by Dr. C. L. Marlatt, a member of the department since 1888, and who for the past five years has been associate chief in charge of the regulatory work of the bureau, and also chairman of the Federal Horticultural Board.

Dr. Howard is now in his fiftieth year of Government service, having joined the entomological branch of the Department of Agriculture in 1878 soon after his graduation from Cornell University. He retires as chief at his own request, but this does not mean retirement from service. He has passed his seventieth birthday, and has asked to be relieved of the administrative duties of his office, but proposes to devote his full energies to the field of entomological research in which he has long been recognized as perhaps the most distinguished investigator. His favorite fields are medical entomology and parasitology.

Dr. Howard was placed in charge of the entomological work of the department June 1, 1894. In the years that have followed, the science of entomology has broadened tremendously and Dr. Howard has guided numerous activities which have been of great service to the American public.

Two campaigns with which Dr. Howard has been identified have captured the public fancy. He was a leader in the mosquito crusade. As early as 1892 he published results of experiments showing that certain types could be controlled by the use of kerosene, and when the mosquitos were identified as disease carriers he was able to recommend methods of

control. His publications on the house fly dating from 1896, to his book, *The House Fly Disease Carrier,* in 1911, were largely responsible for the anti-house fly crusades all over the world in the last 20 years.

Dr. Howard is a member of the three great American associations of limited membership, the National Academy of Sciences, the American Philosophical Society, and the American Academy of Arts and Sciences. He was Permanent Secretary of the American Association for the Advancement of Science for twenty-two years, and its president in 1920-21. He has been made honorary member of many foreign scientific societies and is the only American member of the Academy of Agriculture of France, and has received several decorations among which are the Cross, Chevalier de la Legion d'Honneur, and the Cross, Officier de l'Ordre du Merite Agricole. He has been a delegate to many international assemblies and an officer of six scientific gatherings. In addition to bachelor's and master's degrees from Cornell, his doctorates include Ph. D. (Georgetown 1896), M. D. (George Washington, 1911), LL. D. (Pittsburgh, 1911), and Sc. D. (Toronto, 1920). The bibliography of his publications comprises 941 titles.

Dr. Marlatt, who succeeds Dr. Howard, joined the Department of Agriculture in 1888 and has been closely associated with Dr. Howard's administration. When Dr. Howard was made chief, Dr. Marlatt became assistant chief, and in 1922 associate chief, in charge of regulatory work. He was instrumental in promoting the passage of the Plant Quarantine Act of 1912 and was appointed to administer it. Dr. Marlatt's specialties have been studies of scale insects, sawflies and periodical Cicadas, known as locusts. Dr. Marlatt holds the degrees of B. S., M. S., and D. Sc., all from the Kansas State Agricultural College.—(U. S. Dept. of Agriculture, Office of Information).

[Hearty congratulations go from the NEWS to one of its best friends, Dr. L. O. Howard, on his fruitful, successful and generous direction of the Federal Bureau of Entomology, with our best wishes for many additional years of research. —The EDITORS.]

The Fourth International Congress of Entomology.

The Fourth International Congress of Entomology is to be held in August, 1928, at Cornell University, Ithaca, New York. Previous Congresses have met at Brussels (1910), Oxford

(1912) and Zürich (1925). Every important interest—educational, scientific and economic—will be provided for in the program. Invitations have been forwarded through the State Department to foreign governments to send representatives and later invitations will also be sent to individual entomologists. A program will be arranged in which some of the leading entomologists of the world will take part. It is planned that in the forenoons throughout the week papers of general interest are to be read before the members of the Congress. In the afternoon sections will be formed dealing with (1) Taxonomy, distribution and nomenclature, (2) Morphology, physiology and genetics, (3) Ecology, (4) Medical and Veterinary Entomology, (5) Economic Entomology with its subdivisions relating to forest, fruit, vegetable and cereal insects, bees, insecticides and appliances. According to the number of papers announced each section may be subdivided or several sections may be united. Time will be arranged for an all-day visit to the Geneva Experiment Station, where the forenoon will be spent in looking at the exhibit of spraying machinery and insecticides, in examining the methods and machinery used in controlling the European corn borer, and in observing a demonstration of airplane dusting. The afternoon will be devoted to a general program. In addition, the summer meeting of the New York State Horticultural Society will be held at Geneva on the same day, which will serve to give the visiting foreign entomologists an idea of the general interest of American farmers in entomology. Certain afternoon excursions will also be made to nearby places of entomological interest, while immediately after the meetings some general excursions are planned to Niagara Falls, to entomological museums of eastern cities, and to the laboratories of the U. S. Bureau of Entomology devoted to the study of the Gypsy and Browntail Moths, the Corn Borer and the Japanese Beetle.—O. A. JOHANNSEN, *American Executive Secretary,* Cornell University, Ithaca, New York.

Automobile Collecting. (Odonata, Diptera: Tabanidae).

The following notes on the automobile and its relation to Insects have been inspired by A. O. Larson's recent article on, "Automobile vs. Insects," (Ent. News Vol. 38:47-51, 65-70). I have found the automobile an excellent contrivance for collecting Odonata, especially the faster flying species. In Florida I have collected quite a few specimens of *Coryphaeschna ingens, Anax junius* and *Tramea carolina* from machines, while the only specimen of *Gynacantha nervosa* that I secured from

that region was taken in a like manner. I have added a new Gomphus record *(G. descriptus)* to the Michigan faunal list by picking the specimen from a car parked on a side street in Ann Arbor, and then waiting an hour to ascertain that the Ford had not been driven out of its native State that day.

However important in furnishing a mechanical collecting ground for insects, the automobile assumes the role of an ecological factor in the reaction behavior of certain Diptera, namely the Tabanids. It has been my experience and also the experience of more assiduous collectors in this group, that Tabanids will congregate around a standing car if the engine is hot. It is not beyond a reasonable doubt to say that the Tabanids (especially *Chrysops)* react very positively to heat radiation, being attracted to warm bodies rather than to those that are not. It is due to this fact probably, that an over heated automobile parked in Horse-fly environments will act as a bait for this family of Diptera.

C. Francis Byers, Ithaca, New York.

The Oriental Moth, Rusicada fulvida, In Pennsylvania (Lepid.: Noctuidae).

In the late summer of 1925, I captured several specimens of *Rusicada fulvida* Gn., at Mt. Airy, Philadelphia; and again, in the early fall of 1926. I was unable to identify the moth. It was not represented in my collection, or in the collections of Mr. Frank Haimbach and the Academy of Natural Sciences of Philadelphia. In the early part of September, 1926, Mr. Arthur H. Napier while walking with me in a neighbor's garden, called my attention to a number of Rose of Sharon (*Hibiscus syriacus)* shrubs which were being defoliated by some caterpillars. We examined the leaves but could not find a larva. Mr. Napier then went to the back of the bushes and soon discovered a number of caterpillars resting on the small branches; it was then quite clear to us, the larvae fed at nights and hid away in the day time. We soon gathered about thirty-five of the caterpillars, which in due time pupated. On the 29th of April of the present year (1927) I had the pleasure of seeing the first specimen of *Rusicada fulvida* in my breeding cage. From April 29 to May 18, twenty-five moths emerged. My thanks are due to Dr. J. McDunnough for identifying this moth.

For description and figure of *Rusicada fulvida* see Seitz, *Macrolepidoptera of the World*, Vol. III of the Palaearctic Section.—Philip Laurent, Philadelphia, Pa.

Entomological Literature

COMPILED BY E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The numbers **within brackets** [ ] refer to the journals, as numbered in the following list, in which the papers are published. The number of volume **(in bold face)**, and in some cases the part, heft, &c. **within** ( ), follows; then the pagination follows the colon :

All continued papers, with few exceptions, are recorded only at their first installments.

Papers of systematic nature will be found in the paragraph beginning with (N). Those pertaining to Neotropical species only will be found in paragraphs beginning with (S). Those containing descriptions of new forms are preceded by an *.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

☞*Note the change in the method of citing the bibliographical references, as explained above.*

Papers published in the Entomological News are not listed.

4—Canadian Ent., Guelph. **6**—Jour., New York Ent. Soc. **7**—Ann., Ent. Soc. America, Columbus, Ohio. **8**—Ent. Monthly Mag., London. **9**—Entomologist, London. **14**—Ent. Zeitschrift, Frankfurt a. M. **17**—Ent. Rundschau, Stuttgart. **21**—The Entomologist's Record, London. **25**—Bull. Soc. Ent. France. **26**.—Ent. Anzeiger, Wien. **33**—Bull. et An., Soc. Ent. Belgique. **48**—Wiener Ent. Zeitung. **49**—Ent. Mitteilungen, Berlin. **68**—Science. **70**—Entomologica Americana, Brooklyn. **79**—Koleop. Rundschau, Wien. **101**—Biological Bul., Woods Hole, Mass. **111**—Archiv f. Naturgeschichte, Berlin. **122**—Zeit. f. Morph. u. Oekol. Tiere, Berlin. **154**—Zool. Anzeiger, Leipzig.

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SPECIAL NOTICES.

Contribution a l'etude systématique et biologique des Termites de l'Indochine. Par J. Bathellier. This monographic work is contained in pages 125-365 of "Faune des Colonies Françaises, Tom. 1, and contains many illustrations and a colored plate. Altho treating only of the Indochina species, its biological nature may make it interesting to American students of this group.

HISTOLOGICAL TECHNIQUE. By B. F. KINGSBURY and O. A. JOHANNSEN. John Wiley and Sons, Inc., New York, 1927, vii, 142 pp., 16 figs. Price, $2.25.—This book, although designated as a guide for a laboratory course in histology, might well be on the desk of every entomologist interested in the structure of insects. It not only contains the cream of Professor Kingsbury's experiences in the field of general histology, but to it are added Professor Johannsen's studies in insect histology. In the chapter on "Special methods" the authors detail the various methods for the treatment and sectioning of chitin as well as for staining it. In another section of the book entitled "Special methods for various forms", under the heading "Arthropoda", means for the study of the tracheal and nervous systems of insects are discussed. Directions for the sectioning of arthropod eggs and embryos reveal the special treatment each must receive. Near the close of the book consideration is given to the special preservatory methods required for coccids and other forms. In the words of the publishers, "the goal of the text, from the side of histological technique, is a refined method of analysis from the chemico-physical as well as the morphological aspect, and the interpretation of our morphology in terms of physiology".—WM. P. HAYES, University of Illinois, Urbana, Illinois.

OBITUARY.

As announced in the NEWS for November, GEORGE CHARLES CHAMPION died at Horsell, Woking, Surrey, England, on August 8, 1927. Obituary notices have appeared in the *Entomologists' Monthly Magazine* and *The Entomologist* for September, and in *Nature* for September 17th. The first mentioned is accompanied by a portrait. These three supply biographical information with particular reference to his own country. Champion has, like many others, a special interest for American entomologists by reason of his taxonomic work on Coleoptera and Heteroptera in the *Biologia Centrali-Americana*.

He was born April 29, 1851, son of a Walworth (London) clock- and watch-maker. After having actively studied British Coleoptera, he was engaged by Messrs. Godman and Salvin to make collections for the *Biologia* in Central America, and began his work at San José, the Pacific port of Guatemala, on March 16, 1879. In April, 1881, he proceeded to Panama, where he remained until May, 1883. His itinerary was first published in the NEWS for February, 1907, and subsequently in more detail in the *Introductory Volume* (1915) of the *Biologia*. He contributed an account of his experiences and methods, under the title *Tropical Collecting*, to the *Entomologists' Monthly Magazine* for 1884. Discussing the inserting of dates when certain species of Central American insects were collected, he wrote, in a letter of March 9, 1901, "It is not very important to my mind, for tropical countries"; in this he shared the opinion of Schaus, but not of Gundlach, nor, if I may add, my own.

On his return to England he continued his connection with Messrs. Godman and Salvin and the former records this appreciation of his work in the Preface to the same Introduction.

To my Secretary, Mr. G. C. Champion, I am specially indebted for the valuable assistance he has rendered as collector, contributor, and also as subeditor, in which last capacity his advice has been of inestimable value. His knowledge of Entomology, especially of Coleoptera and Rhynchota, has made him one of our most important contributors, and he has either undertaken alone, or shared in the production of, no less than nine volumes of the 'Biologia'.

These nine volumes were Coleoptera, Vol. III, part 1, Serricornia: Elateridae—Dascillidae; Vol. IV, parts 1 and 2, Heteromera; Vol. IV, part 3, in cooperation with D. Sharp, Curculionidae; parts 4, 5 and 7, continuation of the Curculionidae; VI, part 2 with J. S. Baly, Phytophaga (part). Rhynchota Heteroptera, Vol. II: Tingitidae to Corixidae. From the data furnished in the Introductory Volume, it appears that of the Heteromera Champion enumerated 1776 species of which he described 1295 as new; of the Curculionidae treated in parts 4, 5 and 7, he enumerated 2617 species and described 2094 of them as new. For the Cassididae in the Phytophaga the corresponding figures are 227 and 55 and for the volume on Heteroptera 592 and nearly half that number. It will be seen, therefore, that Champion described above 3400 new species in these groups of Coleoptera alone. The dates of publication of his contributions to the *Biologia* fall between 1884 and 1911.

In this connection it is of interest to quote from Champion's letters to the writer:

I have been labeling all the beetles dealt with in B. C. A. by myself. Have just got through about 2500 species of Curculionidae and every specimen now bears a printed name label . . . For some time past I have been sending and receiving co-types of Curc[ulionidae] to U. S. N. Mus. and they are returning the compliment. It is better for both museums. (1. xii. 1910).

The Biologia Curculionids worked out by me have just been presented [to the British Museum]—2617 species and about 19,000 specimens. (24. 2. 1911).

After the *Introductory Volume*—the last of the whole series—had appeared, he wrote:

It certainly was a great relief to get that final volume issued, so that the whole work might be closed up. I must say, at Mr. Godman's great age, that the matter was doubtful. However, he lived to see it through and is still fairly well in health. This brings my 36-year work to a close anyway as regards the 'Biologia'. (Nov. 16th, 1915).

The *Biologia* did not conclude Champion's work on Central American Coleoptera, however, for a number of papers by him, on material received after the volumes of that series were

closed, appeared in the *Transactions of the Entomological Society of London* (1913-1917) and in the *Annals and Magazine of Natural History* (1911-1926).

His holidays were often spent in collecting on the continent and islands of Europe, Switzerland, Norway, Corsica, Sardinia, Spain and Portugal, and also Tunis, being among the countries visited.

His eldest son, H. G. Champion, studied in the United States in 1914 and 1915, and the following letters refer to this visit.

My son, H. G. C., returned to England by the 'Cameronia' and left again, for India, Nov. 13th, by the 'Arabia'. I hope they will not be torpedoed in the Mediterranean (Nov. 16, 1915). . . . H. G. C. reached Bombay safely, thanks, on Dec. 6th. He has brought a great many Coleoptera from California, etc., many things not to be found in collections in this country, I am sure! It will take me a long time to mount them all. Shall hand over a set to B. Mus. probably (11. xii. 1915).

H. G. Champion's collections of Coleoptera in India furnished material for another series of descriptions of new forms by his father in recent volumes of the *Entomologists' Monthly Magazine*. Within the past ten years Champion also published much on African Coleoptera.

Of the *Magazine* G. C. Champion was an Editor from 1891 to the time of his death; to it he is stated to have contributed, before and during his editorship, 426 articles, exclusive of reviews and notices of periodicals. He had also been an editor of the *Annals and Magazine of Natural History* since 1923.

Active in the Entomological and other scientific societies of London, his modesty prevented his acceptance of the presidency of the first named.

He bequeathed his European and exotic Coleoptera to the British Museum, his British beetles to his eldest son.

As a contributor to the *Biologia*, the writer has again looked over a long series of letters and cards received from Champion in connection with that work. They testify to his scrupulous editorial care, his untiring helpfulness. They recall a personal acquaintance begun in 1895 and renewed at the Oxford Congress of 1912, and they leave behind the pleasant memory of an active and engaging personality. PHILIP P. CALVERT.

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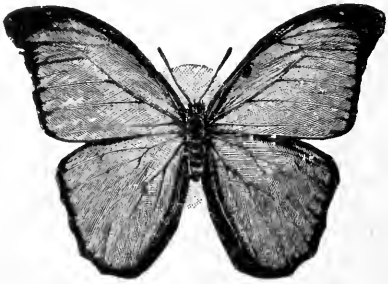

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