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# ENTOMOLOGICAL NEWS

AND

PROCEEDINGS

OF THE

ENTOMOLOGICAL SECTION

OF

THE ACADEMY OF NATURAL SCIENCES

OF

PHILADELPHIA

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VOLUME XXXII, 1920

PHILIP P. CALVERT, Ph.D., Editor  
E. T. CRESSON, JR., Associate Editor

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HENRY SKINNER, M.D., Sc.D., Editor Emeritus

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Vol. XXXII No. 1



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THE ACADEMY OF NATURAL SCIENCES, PHILADELPHIA

VOL. XXXII

JANUARY, 1921

No. 1

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## Notes on Ecology of Injurious Tenebrionidae (Col.).

By J. S. WADE, Scientific Assistant, Bureau of Entomology,  
Washington, D. C.

Some genera of native Tenebrionidae at one time considered of negligible economic importance are becoming, in the larval stage, each year more destructive to newly sown wheat and other grains over the semi-arid regions of the middle and western United States. The area of especial infestation comprises central and western Texas, Oklahoma, Kansas, Nebraska, eastern New Mexico, Arizona, California, and the Pacific Northwest.

Of the family Tenebrionidae about 10,000 species of widely varying form and size are known, and about 750 of these occur within the limits of the United States. In the western and southwestern states where the larger number of species occur they, like the Carabidae of eastern localities, comprise the most conspicuous portion of the Coleopterous fauna. Most of the species are black or dark brown, and some of the larger forms have long awkward legs and a peculiar loose-jointed appearance. A number of the species, notably *Eleodes* and *Blaptinus*, pos-

possess very few structural characters in common, and are linked together by such gradual changes and such great variations in structure, within their respective limits of distribution, that their classification presents great difficulties.

The following notes are based upon observations and collections made with special reference to relation to cereal crops, by the writer or other assistants of the Bureau of Entomology in the states of Arizona, California, Colorado, Idaho, Iowa, Kansas, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Texas, and Washington. Thus far it has been found that species most injurious to growing crops are those within the genera *Elcodes*, *Embaphion*, *Blapstinus*, and within the old genus *Asida*. It is probable, however, that in the near future species within other closely related genera will become pests upon the consequent destruction of native grasses and other host plants, and the cultivation of the soil. The injury to wheat and other grain is wrought by the larvae in destroying the newly sown grain before and during its germination in the fall.

Field surveys have been sufficiently extensive to secure data of significance bearing on the distribution factors of the injurious species as related to possible control measures. Any notes on local environment which throw light upon the various conditions under which the insects occur in numbers, and under which they might become serious pests, may afford valuable hints as to the most successful control measures, or may indicate types of ground or other conditions to be avoided in growing susceptible crops.

*Climatic limitations.* The conditions of a region in relation to various phenomena of the atmosphere, such as temperature and moisture, forms an especially important factor in the dispersal of these insects. It has long been known that these insects, especially the Eleodiini, occur chiefly in arid regions; thus, there are comparatively few species in the northeastern United States, while there are many in the southwestern portions of the country.

*Character of soil.* Observation has shown that the species under consideration are found most abundantly, under similar



physical and climatic conditions and altitudes, in sandy or sandy loam soils. The fact that such soils are much better suited to the multiplication of these insects than those containing a high percentage of clay, has been repeatedly noted by collectors, and the general prevalence in a locality of a hard "gumbo" or of a clayey surface is not suitable for the best development of these Tenebrionidae. In instances where there are small local sandy areas and clay is the predominating soil, such as often occurs in western Kansas and western Nebraska, the arenaceous areas are usually much more productive for the collector of these beetles. The great abundance of beetles of the genus *Eleodes* has been repeatedly correlated with friable and often gravelly as well as merely sandy soil and sub-soil.

*Condition of soil.* The breaking of native sod, especially on sandy land, and the consequent changes in the condition of the soil, also has an important bearing on the multiplication of the injurious species. The epigaeal Tenebrionidae are less abundant on such land while it is under cultivation, as by such process the immature stages more often are distributed and exposed to the elements and to enemies. It is noted, however, that the insects are found abundantly in grass and weeds near to and around the edges of such areas. The breaking up of sod on hard land may occasionally favor the increase of Eleodini and Asidini, probably by furnishing a medium beneath which the adults can more easily deposit eggs and obtain shelter. Further, it has been repeatedly observed that *Eleodes* are much more abundant on strips of plowed land which were afterwards permitted to run wild than on the native hard surface around such plowed portions. The presence of humus also increases the likelihood of greater infestation. The adults of *Eleodes* and *Embaphion* appear to show marked preference for the areas upon which grass is scanty and short instead of those upon which the growth is heavy. They are also more easily found, in warm weather, near sunset or during twilight.

*Drainage of soil.* All collections made indicate that good drainage favors the multiplication of *Eleodes* and other Tenebrionidae of like habits. Other conditions being equal, gently sloping hillsides usually are more heavily infested than are the

flats between them. When collecting upon a gently rolling surface, it has been repeatedly noted that a difference in altitude of only a few feet may be sufficient to cause a change in the number of specimens found, there being fewer on lower ground where drainage would be imperfect. It also frequently happens that a field located in lower ground surrounded wholly or in part by slightly higher areas may be practically free of damage, although the insects are present nearby in abundance.

It has long been known that a prolonged dry spell in the semi-arid regions caused practically complete disappearance of Tenebrionidae from the surface of the ground. Notwithstanding the fact that the beetles normally avoid low-lying damp spots, yet showers form the most effective stimulus to bring the adults to the surface from their subterranean cells in which the pupal life has been passed. Such showers will be found by the collector to be in direct ratio to the abundance of specimens found. Adults leave shelter and run about just before or just after a rain, and throughout the day during cloudy weather, in the manner habitual to their twilight activities.

*Covering of soil.* If the growth of vegetation is sufficiently heavy entirely to cover and shade the ground, these insects are present only in small numbers, whereas if the covering of weeds, thistles, and debris is not too thick, the insects may flourish in abundance. All of the different genera under consideration are often found in greatest profusion under small piles of Russian thistles (*Salsola kali* var. *tenuifolia* Mey.) which have been cut and piled in small heaps preliminary to destruction by fire, or where thistles and other trash, blown by high winds, have lodged along fence rows and other obstructions. They are usually present in greatest numbers beneath piles of dried rather than green thistles. Both larvae and adults can be found beneath loose straw around the edges of wheat and in stockyards around shocks, wheat stacks, and piles of threshed straw. Greater numbers occur beneath edges of new straw piles than of those two or three years old. *Eleodes* are often congregated, sometimes in considerable numbers, under dried leaves at the base of the common thistle (*Cirsium lanceolatum* Hill). Such habits might of course be used to

advantage in ridding infested land of the pest, by destroying all weeds and trash, and at the same time harmonize with good farm practice. The beetles are also found quite abundantly in the immediate vicinity of railroad tracks, under rubbish that has been scattered about, particularly under bits of cardboard, sheet metal, and paper. The latter appears to be such a favorite shelter for adults that paper might serve as a good cover for poisoned baits when such are used as a control measure. Occasionally beetles are noticed on vacant lots along edges of streets and sidewalks in residential sections of towns within infested districts, and there are a few records where under favorable conditions they have developed into garden pests. It does not, therefore, appear that these insects avoid ground already occupied by the ordinary activities of man.

While heavy pasturage appears to keep down these insects, the presence of cattle in moderate numbers, where cattle-raising is practiced on native ranges, is probably conducive to the multiplication of *Eleodes*, such conditions and such effect being largely similar to that preceding the arrival of the pioneer, when buffalo pastured upon these areas. In instances where the herds of cattle are not too large there appears to be slight likelihood of the insects being trampled out, particularly in the loose or sandy soils. Wherever grass is at all scanty, the number of cattle becomes more limited, which condition decreases chances for injury and destruction of the insects. The dried dung forms excellent shelter, under such conditions, for adults, and possibly for the larvae. A marked preference is shown by the adults for such cover, especially if the cakes are thin, and sufficiently well dried to possess non-conducting properties. Serious damage by this pest often follows planting of a cereal crop on old pasture land or on adjacent land, as such a tract might serve as a center of infestation for all nearby cultivated fields.

Areas upon which systematic crop rotation has not been practiced and upon which wheat has been planted year after year without fallowing are generally much more heavily infested.

While an infested field is likely to contain several species, there will be occasional areas containing a large majority of specimens of a single species, which constitutes the principal pest of that immediate locality. Hence collections made on July 31 at Ford, Kansas, around newly stacked wheat in upland sandy loam, furnished practically all adults of *Elcodes opaca* Say, whereas collections made at Dodge City, Kansas, 15 miles away, three days later, under the same general conditions, furnished practically all adults of *Elcodes obsolcta* Say. Again collections made on July 22 at Plains, Kansas, from beneath wheat shocks in an upland field recently in native sod, were nearly all adults of *Elcodes suturalis* Say, whereas collections made at Liberal, Kansas, 20 miles distant, two days later, under the same general conditions, furnished practically all adults of *Elcodes opaca* Say. The complexity of distribution points to the necessity for more careful study of the different species of similar habits from a greater number of collections made over more extended and diverse territory before deductions as to control should be considered absolutely trustworthy.

While the scope of this paper does not include a discussion in detail of prevention and control, it is believed that a study of the factors as outlined, affecting the distribution of these pests in relation to possible control measures, will indicate that a carefully worked out system of crop rotation will prove to be one of the best measures to be advocated. However, the keeping down of weeds, and destruction of all debris, especially dead and decaying vegetable matter upon or near to infested tracts, together with late winter or early spring plowing doubtless also will prove to be of much value.

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### A New *Pterophorus* (Lepid.).

By W. S. WRIGHT, San Diego, California.

*Pterophorus fieldi*, n. sp.

Expanse 21 to 26 mm.

Palpi, front and vertex mottled light brown and white; antennae whitish with very fine brown annulations.

Anterior part of thorax buff, this color spreading out into the base



of costa of primaries, somewhat darker and narrower in females than males. Thorax dorsally brown, becoming lighter basally. Abdomen light brownish buff on anterior part with a red-brown squarish spot close to base, becoming quite dark, almost seal-brown, mottled with lighter on the anal segments.

Fore wings: Ground color white, the costal edge, discal area from base to cleft, and inner margin broadly brown-streaked, the spaces between being more or less suffused with light brown scales. A dark brown costal streak just above the base of the cleft, connected broadly with the outer end of the discal streak, preceded and followed by white; another brown costal streak at the base of the first lobe occupying about one-half the space then narrowly white to apex. Extreme tip dark, two short dark longitudinal streaks, rather faint, near the base of the lobe. A white spot resting on the base of the cleft connected obliquely by a fine white line to the outer costal white spot. Second lobe brown at tip, a faint brown line down the center, a small rectangular white spot on vein *1b* at about one-third from the base. Fringe smoky, a whitish spot at anal angle, darker within the cleft, a very dark spot a little inward from tip of first lobe.

Hind wings dull smoky brown with a faint reddish tinge and darker fringes.

Legs white, more or less mottled with light brown, a small brush of appressed brown scales at end of fore tibia. The middle tibia shows the same development and in addition has a small cluster of long scales at the center. Hind tibia as the middle, but a little more prominent. Spurs light at base, smoky at tip.

In many specimens the scale clusters on tibiae become more or less obsolete, being represented by a slight swelling of the member at middle and end.

*Types*: Male, San Diego, California, May 24, 1910 (Geo. H. Field). Female, San Diego, California, June 23, 1911 (Author). In author's collection.

*Paratypes*: 33 specimens, male and female, in Mr. Field's and the author's collections. All taken at San Diego, California, between the 24th of May and the 26th of June.

Seventy-two specimens were examined in this study; all were taken at light.

The species is dedicated to my friend, Mr. Geo. H. Field, whose tireless field work has added many new species and much valuable information to the literature of West Coast Entomology.

## Notes on Microlepidoptera with Descriptions of New Species.

By ANNETTE F. BRAUN, Cincinnati, Ohio.

*Isophrictis similiella* Chambers.

*Gelechia similiella* Chambers, Can. Ent. IV, 193, 1872.

*Paltodora similiella* (Chambers) Busck, Proc. U. S. N. M., XXV, 779, 1903; XXX, 722, 1906.

The only reference to the life history of this species is found in Mr. Busck's *Revision of American Gelechiid Moths*, where he mentions the rearing of poor specimens from flower heads of sunflower from Oklahoma.

The larvae bore in the receptacle of the flower heads of black-eyed Susan (*Rudbeckia hirta*). At pupation the larva burrows down into the stem for a distance of one-fourth to two or three inches, where it makes an opening to the outside, and then pupates in the stem.

The species is very common locally around Cincinnati, nearly every flower head containing one or more of the whitish larvae. The moths emerge during the flowering period of the plant, which extends from June to August.

*Aristotelia robusta* n. sp.

Head and face yellowish fuscous, palpi dark fuscous irrorated with black; second segment whitish inwardly and at extreme apex outwardly, third segment shorter and thicker than usual, apical half white; extreme tip sometimes black. Antennae blackish fuscous in the apical half, with the last segment, and fifth and tenth from the tip white; beginning with the fourteenth segment from the tip, paler fuscous, annulate with yellowish white.

Fore wings dull ochereous rather densely overlaid with purplish fuscous dusting, especially toward apex, where it obscures the ground color. Before the middle of the wing and beginning within the costa, a darker shade crosses the wing very obliquely to the fold where it spreads out, rarely reaching the dorsal margin near tornus. At two-thirds a not very oblique yellowish costal streak passes to the middle of the wing just beyond the rather elongate black spot at the end of the cell. A dark line at the base of the cilia is broken on the costa by four faint ochereous spots; similar pale spots sometimes visible along termen. Hind wings fuscous. Legs dull yellowish, densely dusted with dark fuscous outwardly. Alar expanse: 11-12 mm.

*Type* ( $\delta$ ) and 30 paratypes reared from larvae mining

leaves of *Scirpus atrovirens*, Cincinnati, Ohio. Type and paratypes in writer's collection, paratype in collection of the Academy of Natural Sciences of Philadelphia.

The larvae begin to mine early in April. The mine extends toward the tip of the leaf, beginning as a small transparent blotch, with an opening on the under side of the leaf; following this is a linear green portion with sides nearly parallel, in which the leaf substance is not eaten; beyond this the mine expands and becomes larger and semi-transparent. When ready to pupate, the larva leaves the mine through a circular hole in the upper side of the linear green portion. Larva whitish with head black, thoracic plate dark brown, a brown spot on posterior half of 9 and anterior half of 10. The imagoes emerge in early June.

This species is most easily distinguished by the thickened dark palpi with sharply contrasting whitish apical half of the third segment.

#### ***Telphusa agrifolia* n. sp.**

Palpi with second segment dark gray, irrorated, with inner side and sometimes extreme tip whitish, third segment black, sometimes with an indistinct whitish annulus near tip. Face gray, head blackish, irrorated; antennae black, with gray annulations.

Fore wings with large patches of raised scales; ground color brownish black, sometimes with golden brown reflections, especially in the apical half, and sometimes unevenly dusted with pale brownish and whitish scales.

In one form an oblique whitish band crosses from basal fourth of costa to near middle of dorsum, and follows the dorsum, but is interrupted just before the tornus by an extension of ground color to the margin; at the tornus it curves upwards and ends beneath the apex; its shape and position are almost exactly those of the white band in *T. longifasciella* Clemens. An inwardly oblique irregular line of paler scales sometimes crosses the wing from apical third of costa to just beyond the middle of the dorsum. The ground color is darkest immediately before the oblique band, and before the curved portion of the whitish area beneath the apex.

In the more common form, the white is almost everywhere replaced by dull blackish blue; a longitudinal streak of whitish scales sometimes remains just below basal fourth of costa; a few pale scales follow the inner edge of the curved portion beneath the apex.

Three darker spots along costa in apical third, a dark patch at apex,

and three or four small dark spots along termen. The patches of raised scales are situated as follows: one within the dorsal margin near base; beyond it another at the inner edge of the white band; raised scales border the white band also just above the fold; beyond the fascia on the disk a large tuft, and beyond this tuft, but nearer the costa, a minute tuft; obliquely below the first of these, a larger tuft in the fold, followed by a large tuft above the fold, immediately above the second of these tufts, and sometimes connected with it, is a small tuft. Just above the space between the two large tufts the ground color is darkened. A line of slightly raised scales borders the inner edge of the curved portion of the band beneath apex. Hind wings brownish gray, darker along the margins, cilia concolorous. Legs fuscous, irrorated, with tips of segments whitish. Alar expanse 13.5-14 mm.

*Type* (♂), a specimen of the dark form, reared from larva on California live oak, *Quercus agrifolia*; Alameda County, California. Paratypes: Alameda County; Redwood Canyon, Marin County; Dutch Flat, Placer County; Mt. Saw Tooth, Tulare County, California, 11,500 ft. Type in the writer's collection, paratypes in the collection of the Academy of Natural Sciences of Philadelphia, the California Academy of Sciences, and in the U. S. National Museum.

The following note will aid in identifying the larva: Head and next two segments dark plum-colored, remainder of body grayish with tubercles dark.

This species is the closest ally of the eastern *T. longifasciella* Clemens, but is very distinct from it. The dark form is the most common; specimens with a distinct whitish band are rather unusual, but all gradations between the two occur together.

***Recurvaria ceanothiella* n. sp.**

Face white, head dusted with dark fuscous; palpi black, second segment with a narrow white annulus near apex, and another at extreme apex, more whitish inwardly, third segment with a white annulus at base and middle, extreme tip white. Antennae dark fuscous, basal segment white anteriorly, stalk annulate with gray.

Fore wings whitish, densely dusted with dark fuscous; three darker shades cross the wing obliquely, at one-fourth, one-half and three-fourths respectively, sometimes scarcely distinguishable from the rest of the wing except as dark patches on costa. Between the first of these and the base of the wing, a small black spot on costa; between



the first and second dark shade, a black spot within the costa; beyond the third dark shade, a narrow whitish streak, sometimes almost obliterated by dusting, curves inward just within the costa, then runs obliquely outward to the termen just beyond tornus. A more or less distinct black dot in apex, preceded by one or two more or less distinct black dots on costa and termen. Three large patches of black raised scales in a line about equally spaced, the first two in the fold, the third above it, and lying in the dark shades. Nearer the base than the first of these is a small black spot on the dorsal margin. Hind wing without hair pencil in male. Legs gray with tips of segments silvery; a faint paler bar across hind tibiae. Alar expanse: 11-13 mm.

*Type* ( $\delta$ ) and a large series of paratypes reared from larvae mining leaves of *Ceanothus divaricatus* Nutt., Dutch Flat, Placer County, California. Type and paratypes in the writer's collection, paratypes in the collections of the Academy of Natural Sciences of Philadelphia and the California Academy of Sciences.

The mine starts on the lower side of the leaf, usually next to the midrib; the entrance guarded by a short tube of silk. The mine is at first linear, with branches extending out from it; later blotchlike, including the linear portion. Pupa in a cocoon between two leaves tightly spun together. Larvae received February 20, imagoes April 15 to May 6.

The curved pale streak at three-fourths and the line of three patches of raised scales are the most distinguishing characteristics of this species.

***Brachmia hystricella* n. sp.**

Face pale straw-colored, head brownish ochereous, palpi brownish ochereous, upper and lower edge with a fine white line from base to apex, antennae brownish, banded beneath with whitish.

Thorax and fore wings brownish ochereous or fuscous; veins distinctly outlined with pale straw color; costal and dorsal margins and a streak from middle to end of cell also whitish; a curved white streak, with convex side toward the costa, lies between the cell and costal margin. There is a round black discal spot on the middle of the cell, and a similar one at the end of the cell; an elongate black spot in the fold beginning below the first discal; all three spots edged with white scales. Costal cilia straw-colored, cilia on termen fuscous, sharply contrasting along a diagonal line at apex; margin of termen blackish, cilia with two parallel fuscous lines, of which the outer is usually the darker and broader. Hind wings whitish straw-colored or grayish. Legs straw-colored. Alar expanse: 13-15 mm.

*Type* and seven paratypes reared from larvae in rolled leaves of *Hystrix patula*, Cincinnati, Ohio. *Type* and paratypes in writer's collection, paratype in collection of the Academy of Natural Sciences of Philadelphia.

There are several generations a year; larvae winter in the rolled leaves and reach maturity early in spring.

Larva with head brownish ocherous, lateral margins dark reddish brown, the dark brown continuing on the whitish first thoracic segment as two posteriorly converging lines, next four segments dark reddish brown, anterior margins of second and third thoracic segments whitish, remaining abdominal segments whitish, with subdorsal brown line and oblique brown bar extending from subdorsal line at anterior margin of each segment posteriorly and ventrally.

***Brachmia badia* n. sp.**

Head and face ocherous, palpi with a white line beneath; antennae ocherous, ends of segments brownish ocherous above.

Thorax and fore wings ocherous, the scales in the outer half of the wing tipped with a slightly deeper more reddish color. A dark brown discal dot in middle of cell, and a larger slightly transverse spot at end of cell, a dark brown plical spot a little anterior to the first discal. Cilia concolorous with wing; with two faintly indicated darker lines along the termen. Hind wings whitish. Legs brownish ocherous. Alar expanse: 16 mm.

*Type* (♂), Fredalba, California, August 13 (G. R. Pilate). *Type* in writer's collection.

The addition of this species to our fauna is interesting because it shows the extended distribution of the genus in the United States.

***Ethmia longimaculella* Chambers.**

*Ethmia longimaculella* Chambers, Can. Ent., IV, 43, 1872; Dyar, Jour. N. Y. Ent. Soc., X, 207, 1902; Barnes & Busck, Contrib. Nat. Hist. Lep., IV, pl. XVII, f. 14, pl. XXXVI, f. 1, 1920.

syn. *realsinghamella* Beut., Ent. Am., V, 9, 1889.

Large numbers of the larvae of this species were found feeding on leaves of *Lithospermum latifolium*, Clermont County, Ohio, July 10. The larva when young spins a web on the under side of a leaf, stretching from midrib to a lateral vein, but not reaching the margin. At this time it eats the lower side of the leaf, leaving the upper epidermis untouched. Later it folds the leaf upwards, bringing the margins together near

the base; within this it spins a fine web spreading outwardly; the lower epidermis is left uneaten now.

The larva is a very conspicuously marked creature: head almost black, first thoracic segment golden brown, second thoracic segment very dark reddish brown, remaining segments somewhat paler brown with four irregular pale brownish yellow conspicuous transverse bands situated as follows: at the anterior margin of the third thoracic, across the posterior margin of the third thoracic and anterior margin of the first abdominal, at the posterior margin of the fifth abdominal, and at the posterior margin of the sixth abdominal segments respectively.

Cocoon of silk and bits of rubbish on the surface of the ground. Imagoes May 12-15 of the following year.

***Heliozela aesella* Chambers.**

*Heliozela aesella* Chambers, Can. Ent., IX, 108, 1877.

The larvae produce flattened galls on leaves of grape. The gall consists of an irregularly shaped thickening of the leaf, situated on a vein and extending to either side of it, the area involved rarely being more than one centimeter in diameter, with a thickness perhaps three or four times that of the leaf itself. The galls are paler in color than the rest of the leaf and about equally distinct on the upper and lower surface. The larva consumes most of the leaf substance in the gall, especially in a large oval area, where only the epidermis is left. At maturity it cuts from this area, an oval case, in outline similar to that of *Antispila*. This case, however, does not remain flat, but is rolled up into a spindle, which falls to the ground. The spindle is flattened at each end, where a semi-circular fissure is left, guarded by the closely appressed, flattened, projecting ends. The spindle is then covered with fine particles of earth, and lined throughout with close whitish silk. Within this cocoon an inner pupal chamber is partitioned off; this tapers to a point at the posterior end, but at the anterior end is closed by a flat transverse sheet of papery silk. In emergence, the pupa pushes up this sheet of silk and protrudes from the cocoon to the side of the median line between the flat projecting ends.

The moths appear in the latter part of April and in early May; the galls develop on the expanding leaves and are fully formed by the beginning of June. The larvae reach maturity

about the middle of June. There is but one generation a year.

In the vicinity of Cincinnati I have found the galls only on *Vitis cordifolia*. In other localities it occurs on other species of grape; specimens of the work on a cultivated variety from Boston were submitted to me for identification some years ago by Mr. J. L. King, at that time on the staff of the Ohio Agricultural Experiment Station. In a letter accompanying the specimens he wrote that it has also been observed in the grape belt in northern Ohio.

**Argyresthia undulatella** Chambers.

*Argyresthia undulatella* Chambers, Can. Ent., VI, 10, 1874; Busck, Proc. Ent. Soc. Wash., XXXII, 22, 1907.

The larvae mine in the inner living bark of the main trunk and branches of the red elm (*Ulmus fulva*), hollowing out an elongate cavity. In early spring the presence of the larvae is shown by the brownish frass which is pushed to the outside. Early in April, in a crevice of the bark, it spins its cocoon, consisting of an inner spindle-shaped cocoon of very fine soft silk, covered on the outer side with a coarse web of irregular mesh. The cocoons are often found on the trunks in great numbers.

**Coleophora coenosipennella** Clemens.

*Coleophora coenosipennella* Clemens; Proc. Acad. Nat. Sci. Phila., 5, 1860; Tin. No. Am., 88, 1872.

The type of this species is not now in existence; but specimens of a species feeding on seeds of *Stellaria pubera* (great chickweed) agree so closely with Clemens' description of that species that I have no hesitation in determining them as that species. There is, however, considerable variation in ground color; the color ranges from very pale yellow to brownish. In the palest specimens, the white streaks are broader than the intervening streaks of ground color; in the darker specimens the reverse is the case, and the ground color almost obliterates the short oblique white streaks between the terminal portions of the costal and distal streaks. The basal segment of the antennae and also two or three succeeding segments are swollen with closely appressed scales. The wing expanse is 11.5—12 mm.

Specimens determined as this species have been placed in

the collection of the Academy of Natural Sciences of Philadelphia, and in the U. S. National Museum.

The moths appear in the latter half of April. Very young larvae were collected feeding within the unopened seed-pods of the chickweed in the middle of May. Even at this time, the flowering stems are wilted down and lying on the ground. The first silken cases were observed on May 25; this silken case is attached to the outside of the pod and the larva feeds on the seeds within. When the valves of the pod begin to curl open, a smooth sheet of silk is spun across, which prevents the seeds from dropping out. To this sheet of silk the case is now usually attached. The larvae feed for about ten days after spinning the silken case. Case short cylindrical, 6 mm. long, with strongly deflexed mouth, three-valved at apex; yellowish white at first, grayish when mature, and decorated with numerous dark reddish granules.

***Coleophora borea* n. sp.**

Face and mid-dorsal line of head brownish ochereous, sides of the head whitish, palpi white above, brownish ochereous or fuscous beneath, second segment with a pointed tuft projecting more than half the length of the third segment; antennae white, annulate with brownish ochereous or fuscous, basal segment and four or five succeeding segments somewhat thickened with scales.

Fore wings brownish ochereous or fuscous with the veins except the base of the upper margin of the cell distinctly outlined in white; dorsal margin white; interspaces between the costal veins shading to dark brown at the base of the costal cilia; the dark brown usually forms a streak below vein 7, extending into the apical cilia; a broad streak sometimes dark brown, sometimes scarcely deeper than the ground color, extends the length of the cell and ends in a dark brown spot, which is most conspicuous in the paler specimens. Cilia brownish ochereous intermixed with white scales, which form a line at the base of the cilia along the termen. Hind wings and cilia fuscous. Legs whitish ochereous, first two pair fuscous outwardly, posterior pair with a fuscous line along the outside. Alar expanse: 15-16 mm.

*Type* (♂) and 25 paratypes reared from larvae mining into seeds of the climbing false buckwheat (*Polygonum scandens*); Cincinnati, Ohio.

Type and paratypes in the writer's collection; paratypes in the collection of the Academy of Natural Sciences of Philadelphia and in the U. S. National Museum.

The moths appear in the first half of September. The larvae at first feed within the seeds and at the end of November or the beginning of December spin the first case, which is yellowish white, straight and cylindrical, more or less thickly strewn with granules, especially near the mouth, with the apex at this time roughly two-valved. The larvae spin and feed actively when the temperature is well below the freezing point; in fact development takes place more rapidly out-of-doors than in a warm room. The case is gradually enlarged and thickened, becoming dark brownish gray except along a slight projecting keel on the ventral side. The larvae feed during the winter becoming full grown early in March, the case is now almost black, stout cylindrical, 8-9 mm. long, three-valved at apex, with the plane of the mouth forming a very acute angle with the long axis.

The distinguishing characters of this species are the distinct undusted white lines and the dark streak and spot at the end of the cell. From *C. amarantella*, which also possesses a similar dark spot, it is separated by the absence of dusting. The very different case separates it from the other Polygonum-feeding species, *C. shaleriella*, which is similarly marked with white streaks, but lacks the dark streak and spot.

***Coleophora duplicis* n. sp.**

Face white mixed with pale ochereous; palpi white above, pale ochereous inwardly, fuscous outwardly; antennae white, with first segment somewhat thickened with anteriorly projecting pale brownish scales; stalk either white or with distinct ochereous or fuscous annulations (the variation independent of sex).

Fore wings grayish ochereous, sometimes brownish; very rarely pale brownish ochereous; broad white streaks follow the course of the veins in the costal half of the wing, with the spaces between them dusted with blackish scales and darkening toward margin, the white streak along upper margin of cell also somewhat dusted in its outer half and usually confluent with a short streak through the outer half of the cell; all these white streaks in the costal half of the wing are often confluent with almost entire absence of dusting except toward apex. A broad white dusted streak follows the fold, with the ground color on either side of it not dusted; dorsal margin white. Cilia pale brownish ochereous with scales at their bases white. Hind wings and cilia pale fuscous. Legs white, fore and middle pair outwardly fuscous, posterior pair with a fuscous line on the outer side. Alar expanse: 11.5-14.5 mm.

Type (♀) and eleven paratypes reared from larvae mining seeds of *Aster shortii*, eleven reared from *Aster cordifolius*, twenty from *Solidago caesia* and *Solidago latifolia*, many specimens captured on flowers of Aster in September, all at Cincinnati, Ohio; a series taken on goldenrod flowers, Balsam, North Carolina, August 15-25. Type and paratypes in writer's collection, paratypes in the collection of the Academy of Natural Sciences of Philadelphia and in the U. S. National Museum.

The larvae mine at first within the seeds, later (in October and early November) constructing buff silken cases, marked with darker longitudinal streaks and encircled with backwardly projecting pappus attached near the mouth; occasionally entire dry disk flowers are attached to the case in the same manner; numerous small fragments of flowers are attached near apex. Case short cylindrical, bulging somewhat behind mouth, which forms an acute angle with the axis; apex prominently three-valved, the angles sharp and at base projecting somewhat beyond the general outline of the case.

The following observations on the method of attaching the pappus and constructing the case after the larva leaves the seed may be of interest. The pappus is cut off at equal distances from the seed and passed forward between the legs. The pieces are fastened together around the body of the caterpillar (*i. e.*, attached by the larva working inside) by a few strands of silk. At first they project irregularly, some even pointing forward. When sufficient pieces have been put in position the case itself is spun within the loosely fastened-together pappus and the deflexed mouth is added. At first the case merely converges toward the apex; later the apex is made distinctly three-valved.

The largest specimens are those reared on *Aster shortii*, the smallest on *Solidago caesia*; apparently the difference in size is due directly to difference in food supply resultant upon the small size of the seeds of the latter plant.

In general, this species may be distinguished by the pale costal half of the wing in contrast with the darker dorsal half. Pale brownish ochereous almost undusted specimens, which sometimes occur, are almost indistinguishable from *C. gran-*

*ifera*. This need not result in confusion of the two species, as *C. granifera* emerges almost three months earlier. The case of *C. duplicis* is almost identical with that of *C. ericoides* on another species of *Aster*, but besides differences in color and markings *C. ericoides* is much more slender and narrow-winged.

***Coleophora biforis* n. sp.**

Head pale grayish ochereous; palpi whitish, apical half of second segment blackish outwardly; lower edge of third black. Antennae with basal segment thickened with scales, stalk white, with conspicuous dark brown annulations.

Fore wings pale grayish ochereous, marked with whitish lines as follows: A distinct white streak from base along costa for about one-half the wing length; a distinct rather broad white streak from base along upper margin of cell, forking at one-third, the upper fork a continuation of the broad white streak and running out to the middle of costa, the lower fork continuing through the middle of the cell as a very indistinct whitish line, which at the end of the cell bends up to reach costa near apex. Sometimes at the bend it sends a branch to termen. Between the ends of the forks, two short usually detached whitish lines run to costa (sometimes these are branches of an indistinct line along upper margin of cell); narrow whitish lines along fold and along dorsum. Usually the white streak along costa and the white streak along upper margin of cell to middle of costa are the only distinct white streaks. Extreme base of costa blackish. Hind wings pale gray, cilia toward apex ochereous-tinged. Legs pale grayish ochereous. Alar expanse: 11.5-12.5 mm.

*Type* (♂) and five paratypes reared from larvae mining into seed pods of *Luzula campestris*, Cincinnati, Ohio. Type and paratypes in the writer's collection.

The cases may be found attached to the seed pods in April and May; the moths emerge the following spring at the time of blooming of the food plant. The completed case measures 8-8.5 mm. in length, slender cylindrical, tapering to the three-valved apex. The sides of the obtuse apical angles of the valves are very short; from the point of union of adjacent valves, a gradually lowering ridge runs about half-way down the case.



## Two Days with Indiana Odonata.

By E. B. WILLIAMSON, Bluffton, Indiana.

The positive limnotropism shown June 13, 1920, was first evidenced June 6, when Professor Osburn, Dr. Kennedy and myself were attracted to the woodland swamp southeast of Bluffton, Indiana, which I have designated in previous papers as the Vanemon swamp. This swamp will be known, long after its decease, as the locality where the beautiful *Aeshna mutata* was rediscovered. And in that day when the swamp will have become a cornfield will *Aeshna mutata* also have disappeared from the earth? A certain melancholy attends my every visit to this swamp. Twenty years have seen profound changes there, changes that speak too clearly of extinction. One can consider his individual dissolution with a certain equanimity, knowing that nothing of particular value to the race is involved therein. But here, before his eyes, is taking place the extinction of a habitat of numerous species, which will themselves inevitably suffer annihilation at the same time. Are these woodland swamps to pass without a historian to recount the doings of their myriad plant and animal inhabitants? The failure to record the comings and goings and the infinite activities at these swamps will be held by future generations as criminal folly on the part of the generation now living. Sea shores can wait. The woodland swamps are going and going fast, and their wonderful and interesting fauna and flora are going with them.

Our trip to the Vanemon swamp on June 6 was made especially to obtain life history material of *Epiacschna heros*, in which Dr. Kennedy was interested. He was able in several instances to observe females of this species ovipositing and to obtain the eggs. While he was so engaged, I waded out to the little dwindling patch of spatterdock in the northwest part of the swamp where I found both *Enallagma cyathigerum* and *calverti* flying. It is interesting to note that these two species are absolutely indistinguishable on the wing, just as at the same season, at more open pools and at lakes, *Enallagma ebrium* and *hageni* cannot be specifically recognized in flight. Later in the season certain *Sympetra* present a similar but not quite

so difficult or impossible task for the collector. In collecting in the tropics this difficulty is more rarely encountered. Seven species of *Argia* all taken one day on one small stream were all easily specifically recognizable before being netted.

The appearance of *Enallagmas* at the Vanemon swamp this year is their second appearance there since 1900. The first appearance was in 1907, when on June 16 and 18, I took 77 males and 25 females of *calverti* and 3 males and 1 female of *cyathigerum*. (EXT. NEWS, July '08.) In 1907 a single male *aspersum* was seen, and I think satisfactorily identified, but not captured. This year a single male of *ebrium* was taken at the swamp, associated with the other two *Enallagmas*, *cyathigerum* and *calverti*.

Mr. Frank C. Waugh and I went to the swamp on June 13 to complete some observations and make comparisons with conditions noticed a week earlier. The following remarks on the *Enallagmas* are based on observations made during both trips, June 6 and June 13. On June 6, 13 males of *calverti* and only a single male of *cyathigerum* and a female of each were taken. On June 13 the proportion was different, 32 males of *calverti* and 10 males of *cyathigerum*, and a single male of *ebrium* being taken. The last is a new record for the swamp. The *Enallagmas* were more numerous on June 13 and were flying generally over the entire swamp. They were restless, seldom alighted, flew close to the water and were therefore not easily netted. They were possibly more abundant about the spatterdock leaves. There are at the present time possibly half a dozen clumps, too small to be called areas, of this plant in the swamp. On June 6 pairing and ovipositing were going on more actively than on June 13, which was a cooler and cloudier day. The pairs rested on the floating spatterdock leaves and so far as observed oviposition was invariably in the upper surface of the leaf, no particular area of this surface being preferred. The female, in couple with the male, held her abdomen nearly vertical and gave a quick push to insert a single egg. A single egg to several eggs might be placed in a leaf, the pair generally moving restlessly from leaf to leaf. The spot of insertion of the egg is soon marked by a

small light brown spot, which, under low magnification, shows many small perforations. The long curved egg is placed vertically in the plant tissue. The larva on hatching must find its way over the leaf surface to the water.

The apical black ring and the sub-apical dorsal black spot on the second abdominal segment of the male were separate in 20 males of *calverti* and 8 males of *cyathigerum*, very narrowly joined by a dorsal line in 13 males of *calverti* and 2 males of *cyathigerum*, more broadly joined in 9 males of *calverti* and 1 male of *cyathigerum*, and very broadly joined in 3 males of *calverti*.

When we visited the swamp on June 6, *Lestes forcipatus* was very numerous as teneral in the low adjacent woodland and as adults, singly and with many pairs in couple, over the marsh. On June 13 *Lestes uncatus* was the more abundant species, many pairs being seen. On both dates numbers of *Ischnura verticalis* were seen, *Anax junius* was ranging freely over the entire swamp, and on June 6 an occasional male of *Epiaschna heros* passed high overhead from the forest and back again into the forest, while a few females prowled the ill-defined shore line, occasionally alighting to oviposit. On June 13 a single freshly emerged but mature male *Aeshna mutata* was flying in the vicinity of a spatterdock clump, where it was captured. *Plathemis lydia* and *Libellula pulchella* were common on both dates and on June 13 I saw several males of the restless and wary *Libellula vibrans* at the northeast part of the swamp, near the outlet, and succeeded in netting two of them. On the same date *Pachydiplax longipennis* and *Erythemis simplicicollis* were generally common, the males of the latter species frequently displaying their unique performance by two individuals of flying about each other in intersecting circles. Two males of *Tramea carolina* were seen June 6 and several males and a few pairs of *lucrata* were seen on June 13.

In 1907, when the Enallagmas were discovered at the Vane-mon swamp, I visited the old gravel pits and other pools known to me in the county, in an effort to locate other colonies of the species observed at the swamp and no such colonies were lo-

cated. The most likely place to look for such colonies are the Doster ponds, near Poneto, five or six miles southwest of the Vanemon swamp, in the direction of the prevailing winds. The Doster ponds are three artificial ponds lying near together in an east and west row, with a shallow canal, circling to the south through woodland, joining the east and west ponds. A fourth smaller pond lies just south of the west pond. These ponds are of interest as furnishing the single male of *Libellula exusta* ever seen in the county and at the same time when it was taken, and never before or since, *Leucorhnia frigida* was taken at the west pond associated with the *Libellula*.

Leaving the Vanemon swamp, Mr. Waugh and I reached the Doster ponds about eleven o'clock, where we were unable to find either *Enallagma calverti* or *cyathigerum*. At the west pond, the shallowest one, we took *Enallagma hageni* and *ebrium*, and at the east pond *traviatum*, *ersulans* and *antennatum*, neither of the two taken at the west pond being observed here. No *Enallagmas* were seen at the middle pond, but *Tramea lacerata* and *Gomphus graslinellus* were seen at all three ponds. At the east pond a single male *Epicordulia princeps* was patrolling the south side.

We returned home about 1.30 o'clock and after a hurried lunch I went to the ripple in the Wabash River, where last year on June 8, *Gomphus crassus* and *fraternus* were flying in numbers (ENT. NEWS, Dec., 1919). The afternoon was cloudy and windy, but in about an hour I caught 22 males of *crassus* and a single male of *graslinellus*. In 1919 about one-fifth of the *Gomphi* captured at the ripple were *fraternus*, but not one was seen this year, while *graslinellus*, not seen in 1919, was represented by a single male in 1920. At the ripple where the *Gomphi* were taken the other dragonflies on the wing were *Hetaerina americana*, *Argia moesta*, *Enallagma antennatum* and *Ischnura verticalis*.

To refer again to the Vanemon swamp, a complete list of the dragonflies observed there during the past twenty years may be of interest. No calopterygine, gomphine or corduline has ever been seen at the swamp. The list follows:

*Lestes congener, curinus, forcipatus, rectangularis, uncatu8, unguiculatus, Enallagma aspersum, calverti, cyathigerum, ebrium, Nehalennia irene, Ischnurã posita, prognatha, verticalis, Anomalagrion hastatum,*

*Anax junius, Aeshna constricta mutata, Epiacschna heros.*

*Libellula pulchella, quadrimaculata, semifasciata, vibrans, Plathemis lydia, Erythemis simplicicollis, Sympetrum ambiguum, obtrusum, rubicundulum, vicinum, Pachydiplax longipennis, Leucorhina intacta, Tramea carolina and laccrata.*

A total of 33 species, which may be taken as practically complete for woodland swamp dragonfly associations in northern Indiana. But this association is no fixed certain thing: it is a fluctuating association marked by comings and goings, by appearances and disappearances, by ebbs and flows. *Libellula quadrimaculata* was there only one year; *Enallagmas* appeared in 1907, to disappear until 13 years later; certain species are present every year. There are many other species of animals at the swamp of which I know nothing. Formerly a *Sparganium* swamp, the *Sparganium* has entirely disappeared; a *Scirpus* came in, spread for a few years, and has gone; and so it goes. Will not someone appreciate the beauty and interest of this swamp before the swamp itself is gone forever?

## A New *Xylophanes* from Cuba (Lepid., Sphingidae).

By DR. C. T. RAMSDEN, Guantánamo, Cuba.

Among Sphingids taken at light at Guantánamo, Cuba, in 1917, appeared what seems to be a new *Xylophanes*, which I take pleasure in naming for Mr. B. Preston Clark, of Boston, Massachusetts, in recognition of his keen interest in this family.

### *Xylophanes clarki*, n. sp.

Head and thorax Prouts brown, a pale ochraceous salmon-colored stripe from in front of, and passing over, eye to end of thorax. Palpi Buckthorn brown. Antennae Prouts brown. Body above Dresden brown, below antimony yellow, while the sides are yellow ochre.

*Upperside.* Primaries: Dresden brown with seven Prouts brown postmedian tranverse lines which begin near the middle of inner margin and extend apically; the first of these is darkest in color, extends apically for 15 mm., then turns sharply to the costa where it terminates;

the third, fourth and fifth are bowed between the veins, giving a wavy effect, forming sharp apices on the veins; the sixth is broader and terminates at the apex; the seventh joins the sixth just before it reaches the apex. On the costal margin at one quarter of the distance from base to apex, a line 2 mm. in length extends obliquely towards the inner margin, then runs basally at right angles for 3 mm.; distally of this line and 1 mm. from it there runs another parallel to it; from these lines basally and limited by the first of the postmedian transverse lines and the inner margin is a pale ochraceous salmon-colored area.

Secondaries: Bister color at base, shading into Prouts brown towards distal margin. A row of eight yellow ochre spots, placed one between each two veins, extends from anal angle nearly reaching the costa.

*Underside.* Primaries: Basal half of wing Dresden brown. A warm buff patch reaching from inner margin to costa which is of the same color; outside of this is a clay-colored patch which starts at anal angle, widening at center, then narrowing again as it reaches the apex. There is a reddish brown point on each vein in the warm buff patch.

Secondaries: Warm buff. A clay-colored stripe extends from near anal angle along inner margin, widening as it reaches the apex. A row of brown points extends from costa to near anal angle, one on each vein; interior and parallel to these points are two reddish brown lines, the one nearer the base of wing being more pronounced.

Extent of one wing, 29 mm.

*Type:* One male, Guantánamo, Cuba, 20th June, 1917, in the collection of The Academy of Natural Sciences of Philadelphia.

The above species is close to *X. fosteri* R. & J., but differs from it, above, in having the stigma very obscure while in *fosteri* it is very prominent. The solid brown area between the two basal transverse lines of *fosteri* extending from the inner margin about 4 mm., and standing out in sharp contrast with the rest of the forewing, is entirely lacking in *clarki*. The row of eight yellow ochre spots of the secondaries of *clarki* is replaced by a continuous band in *fosteri*.

# ENTOMOLOGICAL NEWS.

PHILADELPHIA, PA., JANUARY, 1921.

## **Another New Year's Resolution.**

A year ago, on the editorial page of the NEWS for January, 1920, we published eleven New Year's Resolutions for the Entomologist. We shall not repeat them here, although they are quite as well worthy of remembrance and of practice in 1921 as in 1920, and we respectfully refer them to the attention of collectors and writers. All of us, including the editor, forget, or neglect to do, things we ought to do. As the result of our neglect the other fellow often must devote some precious time to making good our omissions, deficiencies and errors. Many a half hour, with its opportunity for original or constructive work, is lost because some correspondent needlessly inflicts upon a busy man data which are illegible, uncertain, or incomplete. There is a paper, or a drawing for an illustration, which is unfinished in some detail and must be returned to the author for correction. There are questions raised which the inquirer could have answered for himself by a little more personal effort and investigation. As we grow older, we appreciate more fully the fleetingness of time, the shortening of our working life. Let us add to the New Year's resolutions of 1920 a twelfth for 1921, whose spirit is so general as to include the reason for all those eleven:

Don't bother the other fellow with the sort of things you don't like to be bothered about yourself.

## Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS  
OF THE GLOBE

### An Additional Distributional Record for *Rhacognathus americanus* Stål. (Hemip.-Heterop.)

Concerning the then known distribution of this rather uncommon pentatomid, Uhler remarked (Bull. U. S. Geol. Surv. Terr., II, No. 5, 1876, 282): "Inhabits Illinois, Nebraska and Canada." The species was described four years previously by Stål whose type came from Illinois. Since that time a record for Ohio has been published. Van Duzee (Trans. Am. Ent. Soc., XXX, 1904, 68) mentions a specimen in his collection that was taken at Winnipeg, Manitoba. Hart (Nat. Hist. Surv. Illinois, XIII, 1919, 202) mentions five examples secured in northern Illinois. To the best of my knowledge these constitute the only available definite records for the species and I take pleasure in adding another to the list.

On August 17, 1911, I collected a male on one of the grassy hills in the vicinity of Fergus Falls, Minnesota. This specimen is almost entirely black; the only distinct light markings occur on the tibiae, sternal plates, anterior median longitudinal line of the pronotum and on the connexivum, where the marks are of a reddish tinge. The rugae between the black punctures are but very faintly yellowish. Length of this specimen which is now in my collection, 10.00 mm.

DAYTON STONER, University of Iowa, Iowa City, Iowa.

### Further Notes on "A Rare Pamphlet" (Hym., Lep., Neur.)

In ENTOMOLOGICAL NEWS, xxxi, p. 176, June, 1920, Mr. Nathan Banks calls attention to a long-forgotten paper by Dr. A. S. Packard. This paper was to have appeared in volume two of the Transactions of the Chicago Academy in 1870, and was supposed to have been destroyed with the rest of the publication in the great fire until the copy at Cambridge was discovered. The fact that two species of moths were described therein as new, among numerous other insects, aroused our interest in the question raised by Mr. Banks as to its possibly valid publication, and it was with some relief that we read a note by Mr. Grote which accidentally came to our notice a short time later. This note was published in the Canadian Entomologist, xxiv, pp. 182-3, 1892, under the heading "*Gastropacha alucensis*." The specific name is apparently a typographical error for *alascensis*. At the beginning of this brief paper appears the following statement: "With regard to the omission of this species from 'Mr. Grote's lists,' I would state that I was informed that the entire edition of the Chicago Academy Transactions, in which the description appeared, was destroyed in the Great Fire, and that Dr. Packard in consequence regarded his paper as unpublished." This is, of course, not conclusive evidence, but it is so



nearly contemporary that it seems well to accept the solution offered and regard the paper as unpublished. It would seem that if Dr. Packard held this opinion he and the other authors must have described their material elsewhere or made other disposition of it. The current nomenclature in the genera concerned might throw some light on the matter, but the Lepidoptera described in the paper are so few that we can gather nothing from them. In the genera of the two species described as new we have but one Alaskan specimen each, and these can readily be placed under species named in 1841 and 1871 respectively.

We expect to adopt this opinion in preparing our catalogue of Lepidoptera, but recognize the possibility suggested by Mr. Banks that the later discovery of additional copies may make it necessary to regard the paper as published.

WM. BARNES, M.D., and A. W. LINDSEY, PH.D.,  
Decatur, Illinois.

#### **Chalybion Dahlbom not a Synonym of Sceliphron Klug. (Hym.)**

In a recent paper Hutson (Trans. Amer. Ent. Soc., vol. 45, 1919, p. 218) tabulates the blue mud-daubers of North America and places them in the genus *Sceliphron* Klug, giving *Chalybion* Dahlbom as a synonym. For the black and yellow mud-daubers he would use the name *Pelopaeus* Latreille. This change in the generic names for these groups is most unfortunate because it is not only unnecessary but contrary to the Rules of the International Commission on Zoological Nomenclature. Hutson defends his usage by reference to recommendations *k* and *u* of the International Commission, but entirely overlooks the designation of genotypes made by previous students. In 1810 Latreille designated as type of *Pelopaeus* the species *spirifex* and in 1897 Bingham chose the same species as type of *Sceliphron*. The species *spirifex* was included in the original account of both of the genera and the type designations must be considered as valid, even though Bingham did not follow certain *recommendations* (he violated no *rules*) of the International Code. *Sceliphron* Klug and *Pelopaeus* Latreille are isogenotypic and since *Sceliphron* has priority Latreille's name must fall as a synonym. The black and yellow mud-daubers are therefore *Sceliphron* and the blue mud-daubers *Chalybion*. The synonymy is, briefly, as follows:

**Sceliphron** Klug (1801)—Type. *Sphex spirifex* Linnaeus (Bingham 1897).

*Pelopaeus* Latreille (1802)—Type. *Sphex spirifex* Linnaeus (Latreille 1810).

*Pelopaeus* Patton, Hutson and others.

**Chalybion** Dahlbom (1843)—Type. *Sphex cyaneum* Linnaeus (Patton 1880).

*Sceliphron* Hutson.

S. A. ROHWER, U. S. National Museum, Washington, D. C.

## Entomological Literature

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

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), 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.

The records of papers containing new genera or species occurring north of Mexico are all grouped at the end of each Order of which they treat.

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.

1—Proceedings of the Academy of Natural Sciences of Philadelphia. 2—Transactions of the American Entomological Society, Philadelphia. 4—Canadian Entomologist, London, Canada. 9—The Entomologist, London. 11—Annals and Magazine of Natural History, London. 13—Journal of Entomology and Zoology, Claremont, Cal. 17—Lepidoptera, Boston, Mass. 39—The Florida Entomologist, Gainesville. 42—Entomologiske Meddelelser udgivne af Entomologisk Forening, Kjobenhavn. 49—Entomologische Mitteilungen Berlin-Dahlem. 50—Proceedings of the United States National Museum, Washington. 62—Bulletin of the American Museum of Natural History, New York. 68—Science, Lancaster, Pa. 76—Nature, London. 90—The American Naturalist, Lancaster, Pa. 104—Zeitschrift fur Wissenschaftliche Zoologie, Leipzig. 108—Journal of Genetics, Cambridge, England. 111—Archiv fur Naturgeschichte, Berlin. 116—Entomologische Zeitschrift, Frankfurt a. M.

**GENERAL.** Allard, H. A.—The flight of fireflies and the flashing impulse. 68, lii, 539-40. Casey, T. L.—Remarks on family names. 68, lii, 491-2. Hertwig, P.—Abweichende form der parthenogenese bei einer mutation von Rhabdites pello. (Arch. Mikrosk. Anat., xciv, 303-37.) Hopping, R.—Some winter insect life. 4, lii, 217-18. Hudson, G. V.—On some examples of New Zealand insects illustrating the Darwinian principle of sexual selection. (Trans. Proc. New Zealand Inst., lii, 431-8.) Krausse u. Wolff—Eine uebersicht iber die bisher aufgestellten fossilen und rezenten insektenordenungen. 111, 1919, A, 3, 150-71. Nielsen, J. C.—Obituary by J. P. Kryger. 42, xiii, 1-11. Schuster, W.—Entomologische anzeichen einer wiederkehrenden tertiarzeitahnllichen tierlebensperiode? 116, xxxiv, 62-3 cont.

**ARACHNIDA &c.** Campbell, A. S.—Central nervous system of a centipede. 13, xii, 69-70. Case, S.—General reactions of a centipede. 13, xii, 79-81. Deeley, R. M.—Mating dances of spiders. 76, cvi, 345. Deichmann, E.—Note sur un cas de hermaphroditisme lateral chez une araignee. 42, xiii, 181-2.

**NEUROPTERA.** Calvert, P. P.—The Costa Rican species of *Epigonphus* and their mutual mating adaptations. **2**, xlvi, 323-54. Jucci, C.—Sulla differenziazione delle caste nello società dei termitidi i neotenicì. (Atti R. Ac. Naz. Lincei, cccxvii, 95-8.)

**ORTHOPTERA.** Brindley, H. H.—Further notes on the food plants of the common earwig. (*Forficula auricularia*.) (Proc., Cambridge Phil. Soc., xx, 50-55.) Rehn, J. A. G.—Records and descriptions of Brazilian O. **1**, 1920, 214-93.

**HEMIPTERA.** Allard, H. A.—Some observations concerning the periodical cicada. **90**, liv, 545-51. Distant, W. L.—Description of a new genus and species of Cicadidae from Cuba. **11**, vi, 455-6. Haviland, M. D.—Preliminary note on antennal variation in an aphid (*Myzus ribis*.) (Proc., Cambridge Phil. Soc., xx, 35-41.)

**LEPIDOPTERA.** Bodley, H. S. J.—Butterfly delicacies. **17**, iv, 84. Frazier, W. E.—Collecting butterflies at night. **17**, iv, 83-4. Frohawk, F. W.—Duration of stages of *Pyrameis atlanta*. **9**, liii, 252-4. McMurray, N.—Some collecting notes. **17**, iv, 82-3. Onslow, H.—Inheritance of wing color in *L. Melanism* in *Boarmia abietaria*. **108**, x, 135-40. Thompson, E. C.—Climatic variations in *E. imperialis*. **17**, iv, 83.

Busck, A.—A new *Gracilaria* injurious to avocado. **4**, lii, 239. Watson & Comstock—Notes on American *L.* with descriptions of new varieties. **62**, xlii, 447-57. Wright, W. S.—Report of the *L.* of the American museum expedition to Arizona. **62**, xlii, 483-90.

**DIPTERA.** Keilin et Picado.—Biologie et morphologie larvaires d'*Anastrepha striata*, mouche des fruits de l'Amérique centrale. (Bul. Scient., France et Belgique, xlvi, 423-41.)

Alexander, C. P.—New Nearctic crane-flies. Pt. X. **4**, lii, 224-9.

**COLEOPTERA.** Blunck, H.—Die entwicklung des *Dytiscus marginalis* vom ei bis zur imago. Part 2. **104**, cxvii, 1-129. Kolbe, H.—Die Paussiden Sudamerikas. **49**, ix, 145-56. Minck, P.—Documenta historiae Scarabaei nasicornis scarabaeorumque veterum. **111**, 1919, A. 4, 88-114. Moznette, G. F.—Luminous beetles of Florida. **39**, iv, 17-18. Obenberger, J.—Ueber neue Buprestidengattung. **49**, ix, 157-72. Weiss & West.—Notes on *Galerucella* nymphæae, the pond-lily leaf-beetle. **4**, lii, 237-9.

Carr, F. S.—Albertan Coleoptera. **4**, lii, 218-20. Frost, C. A.—Notes on the *C.* with descriptions of n. sps. **4**, lii, 229-32.

**HYMENOPTERA.** Cockerell, T. D. A.—Some Neotropical Meliponid bees. **62**, xlii, 459-68. Emery, E.—La distribuzione geografica attuale delle formiche. (Mem. d. R. Acad. Lincei, xiii, 357-

450.) Wolff, M.—Bermerkungen uber die p Porizoninen-gattungen Iurgus und Tersilochus. 111, 1919, A, 3, 139-56.

Cushman, R. A.—North American ichneumon-flies, new and described, with taxonomic and nomenclatorial notes. 50, lviii, 251-92.

MacGillivray, A. D.—New saw-flies from Maine and New York. 4, lii, 233-6.

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A NEW STUDY OF THE ECONOMIC VALUE OF DRAGONFLIES.

Under the heading "Dragonflies and Damsellies in relation to pond fish culture, with a list of those found near Fairport, Iowa," Professor C. B. Wilson has published in the Bulletin of the U. S. Bureau of Fisheries (Vol. 36, pp. 185-264) an interesting and valuable contribution to knowledge of the biology of this group of insects. His paper deals with the fundamentals of animal economy—food, enemies and conditions for reproduction. His material was obtained in and about the ponds of the Fisheries Biological Station at Fairport, a description of which is first given. Then the relative abundance of the dragonflies found there in the summer, as definitely determined by counts of cast nymphal skins left at emergence, is given. These counts show the skimmer, *Libellula luctuosa* to be by far the most numerous, with *Erythemis simplicicollis* second. Then the food of 250 nymphs determined by examination of the contents of the alimentary canal, is given. These records corroborate and extend the observations of Miss Mary B. Lyon at Ithaca (*Entomological News* 26: 1-15, 1919) and of Alfred Warren in Hawaii (*Coll. of Hawaii Bull.* No. 3, 1915), and show that while there are differences in diet according to species and size of individuals, the staple foods in these ponds are small snails of the genera *Physa* and *Planorbis*, mayfly nymphs and crustaceans. All the forms studied eat also dragonfly nymphs smaller than themselves, and some are cannibals, eating the young of their own species. Two later sections of the paper discuss Odonata as food for fishes, summarize the results of past studies on wild fishes and add some new data.

There are numerous figures that are, on the whole, well executed; but the cleft middle lobe, shown in the labium of *E. simplicicollis* in figure 13, is surely an artifact or an error. The occipital tubercles shown so prominently in the new hatched nymph of *Epicordulia princeps*, usually present, though small, on newly hatched nymphs of Libelluline dragonflies, are not shown on any of the half dozen figures representing new hatched nymphs of that subfamily.\*

Under "experiments in hatching eggs," half a dozen species of

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\*If the grave error charged against Needham & Lloyd of publishing (on page 389 of their *Life of Inland Waters*) a photograph without stating whether the photograph was taken under natural or under artificial conditions, may be helped thereby, the reviewer will here state that the two were photographed as found in nature, and the nymph was not starved into eating the fish.

dragonflies and two of damselflies are treated, and figures and descriptions are given of the egg, the newly hatched nymph and of its detached labium; data on incubation and behavior accompany some of the descriptions. The paper concludes with an annotated list of the 64 species known to occur near the Biological Laboratory.

The bibliography is less extensive in scope than the paper itself. There is a brief account of the masticatory structures of the nymphal gizzard, but with no mention of the extensive work of Ris and others upon these structures. There is an extended account of mouth parts, both nymphal and adult, but without mention of Miss Butler's comprehensive work upon these and their development.

Since the argument in favor of dragonflies as of value in pond culture is based mainly on food relations, it is regrettable that one serious error mars both the statement of facts and the argument. This is the oft repeated and almost traditional error of including water boatmen among the enemies of fishes. Hungerford's studies published in Volume 25 of the *Journal of the New York Entomological Society* (1917), showed clearly that corixids are not predatory at all, but feed on algae and disintegrating plant residue.

This report is more a report of investigation and less an essay than was the Lamborn volume of 1890; but one may admit all the facts it presents without being able to concede that animals like Odonata, almost wholly carnivorous, and in part cannibals, are likely to prove a better source of animal food for fishes than are such herbivores as scuds, mayflies and midges, whose great function in life is that of turning grass into flesh. The question as to what forms may best be increased artificially for providing fishes with suitable animal food, will doubtless be settled eventually by actual production of some of them, and not by argument. If this work of Professor Wilson's paves the way for some sustained intensive rearing operations on particular species under controlled conditions at the Fairport Laboratory or elsewhere, we may eventually have some knowledge of their real economic value.—J. G. NEEDHAM.

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## Doings of Societies.

### The American Entomological Society.

Meeting of June 9th, 1919, in the hall of The Academy of Natural Sciences, fourteen persons present, Pres. Dr. Henry Skinner presiding.

Dr. Calvert moved the Society endorse the movement for the exclusive use of the metric system. Seconded and carried.

**Lepidoptera.**—Mr. Coxe exhibited a specimen of *Papilio weiskei* C. Ribbe, from the Aroa River, New Guinea, collected at an elevation of 8000 feet. This was described in *Insecten Börse*, xviii, 1900. The allied species from the A. N. S. Collection were also shown.

**Diptera.**—Mr. George M. Greene exhibited a specimen of *Sphecomyia vittata* Wied. which he collected along the Wissahickon Creek at Chestnut Hill, Pennsylvania, v. 19, 1919; stated he had also taken it at Falls Church, Virginia, iv. 17, 1917, and that there are four New Jersey records (Ins. New Jersey, III, p. 771, 1910).

**Orthoptera.**—Mr. Rehn remarked on the distribution of the genus *Anconia*, mentioning a new species from Texas.

**Odonata.**—Dr. Calvert referred to Dr. C. T. Ramsden's account of the life of Juan Gundlach in ENTOMOLOGICAL NEWS for 1915, including a list of his papers, among which is one on Cuban Neuroptera. The speaker summarized the results of his own study of this paper, as published in the *Transactions* of the Society, volume xiv, and exhibited specimens of the true *Enallagma pollutum* Hagen and its northern representative, *E. vesperum*, in connection therewith.

GEO. M. GREENE, *Recording Secretary.*

Meeting of October 23rd, 1919, in the same hall, eleven members present, Dr. Skinner presiding.

**Lepidoptera.**—Dr. Skinner exhibited a box of the recent additions to the collection, also a box containing the specimens figured in the colored plate in Dr. Calvert's "A Year of Costa Rican Natural History," which have been deposited in the collection.

Mr. Laurent stated that from cocoons of *Philosamia cynthia* gathered on September 5th, three moths emerged on September 29th and 30th, due no doubt to the warm weather prevailing the last half of the month. The speaker said that under ordinary conditions these moths would not have emerged until next year, as the species is single brooded in this vicinity.

**Orthoptera.**—A series of the handsome grasshopper *Schistocerca melanocera* (Stål) was shown by Mr. Hebard. The species is known only from the Galapagos Islands. Differences in coloration were pointed out and genetic factors and local environmental influences were said to be the causes of these. That other species divide into very interesting insular races on different islands of the Galapagos Archipelago was remarked.

**Hymenoptera.**—Mr. Rehn made a few remarks on the similarity of the white-haired Mutillids of the Southwestern United States to the seed pods of the creosote bush (*Covillea tridentata*).

**Diptera.**—Mr. Hornig made some comments on local mosquitoes, also showing his series of habitat pictures, larvae, pupae, drawings of same and adults of a number of the species.

J. A. G. REHN, *Secretary pro tem.*

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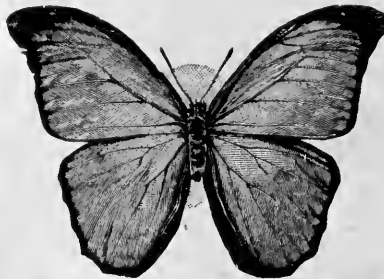
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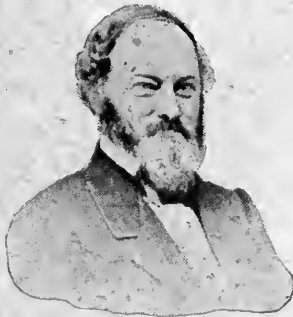
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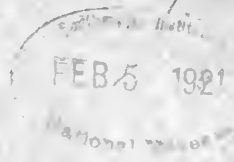
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WILLIAM HAMPTON PATTON.

# ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

THE ACADEMY OF NATURAL SCIENCES, PHILADELPHIA

VOL. XXXII

FEBRUARY, 1921

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## William Hampton Patton.

By W. E. BRITTON and L. O. HOWARD.

(Portrait, Plate 1)

William Hampton Patton was born in Waterbury, Connecticut, March 10, 1853, and died in Hartford, Connecticut, December 26, 1918. He was the son of William Patton, and he prepared for college at Williston Seminary, Easthampton, Massachusetts. He entered the academic department of Yale University in 1872 and, receiving a colloquy appointment in his senior year, graduated in the class of 1876 with the degree of B. A. Even before graduating, Mr. Patton was interested in the natural sciences, especially zoology and botany. After graduating he took two years of work in zoology at Yale, and during a part of this time served as assistant to Professor A. E. Verrill. This was followed by two years of independent study at his home in Waterbury.

During the summer of 1879, and from June 1880 to April 1881, he was a special agent of the United States Entomological Commission, at Washington, D. C., of which Dr. C. V. Riley was chairman. Dr. Riley was Government Entomologist from June 1878 until March 1879, when he resigned, and

Professor J. H. Comstock was appointed to the position and held office until March 1881. Riley returned soon afterward. During the time of Comstock's incumbency, Riley conducted the office of the U. S. Entomological Commission in his own house in Washington, and had for his assistants Messrs. E. A. Schwarz, W. H. Patton, H. G. Hubbard and W. S. Barnard. Mr. Schwarz states that all of these men were together at Selma, Alabama, in 1881. It is said that Dr. Riley met Patton at a meeting of the American Association for the Advancement of Science and had been attracted to his published papers in the *Canadian Entomologist*. Patton specialized in the Hymenoptera and was more or less interested in the Proctotrypidae at the time when Dr. Howard began his work on the Chalcididae, and they had occasional conferences over parasitic Hymenoptera. Patton was a scholarly man, well educated and with an excellent knowledge of the literature; his work was careful and sound and is so regarded by Hymenopterists to this day. He had an excellent personal appearance, but was rather shy and retiring, somewhat typical of the young professor in a large university. Few became intimate with him, but all recognized his broad general knowledge, his keenness, and especially his extensive acquaintance with the literature of all groups of insects. He took nothing for granted and was loath to believe personal and even recorded statements until he had investigated them for himself.

While Patton was in Washington his father became very ill, and he left Washington and nursed him through his final illness. He was indefatigable in his care of the patient and, losing sleep and rest, had a nervous breakdown after his father's death. From that time on he acted strangely and was finally placed in a private asylum in New Haven. He escaped from the asylum and reappeared in Washington in 1882, in worn clothes and in poor physical condition, and Dr. Riley promptly gave him a job in the U. S. Department of Agriculture. He worked only a few days, when news came to the office from his boarding house keeper that he was acting strangely, and Dr. Riley and Dr. Howard at once visited him and finding him absolutely insane, arranged with the police authorities to take him back to the asylum in New Haven.

Patton was not continuously insane, but had long lucid periods extending over many months, during which he accomplished considerable entomological work, and some of his manuscripts were sent to the Bureau of Entomology to be placed, for publication.

From 1882 to 1885 Patton resided in New York City, Utica and Rochester, New York, and West Randolph, Vermont, but returned to Connecticut suffering from ill health due to too close application to work. At first he was in a retreat in New Haven, and Dr. Howard called upon him in 1894, and found him perfectly lucid, and had an interesting talk about entomological matters. For a number of years before his death he was an inmate of the Hartford Retreat for the Insane at 400 Washington Street, Hartford.

Soon after the office of State Entomologist was established in Connecticut, in 1901, Patton wrote a few letters to the office, calling attention to certain entomological points that needed investigating. His letters were perfectly lucid. He once asked to be appointed as inspector, and again asked for the loan of fifty dollars to enable him to bring certain essential entomological discoveries before the public. Not knowing that he was insane and confined in a retreat, the State Entomologist promised to be in Hartford on an early named date and asked Patton to meet him at a certain hour and place and talk about it. Of course Patton was not there, and not long afterward Professor Verrill gave the information regarding Patton's insanity. He was unmarried, and apparently his insanity was inherited. His sister became insane and drowned herself in 1897 or 1898. Patton's death resulted from valvular disease of the heart and arteriosclerosis.

Patton was a member of both the American and British Associations for the Advancement of Science, a Fellow of the Entomological Society of London, a charter member of the Biological Society of Washington, D. C., a member of the Entomological Society of Ontario, and of the Connecticut Academy of Science.

It is interesting to note that Patton was once a pupil of H. F. Bassett, also a Hymenopterist, of Waterbury, Connecti-

Professor J. H. Comstock was appointed to the position and held office until March 1881. Riley returned soon afterward. During the time of Comstock's incumbency, Riley conducted the office of the U. S. Entomological Commission in his own house in Washington, and had for his assistants Messrs. E. A. Schwarz, W. H. Patton, H. G. Hubbard and W. S. Barnard. Mr. Schwarz states that all of these men were together at Selma, Alabama, in 1881. It is said that Dr. Riley met Patton at a meeting of the American Association for the Advancement of Science and had been attracted to his published papers in the *Canadian Entomologist*. Patton specialized in the Hymenoptera and was more or less interested in the Proctotrypidæ at the time when Dr. Howard began his work on the Chalcididæ, and they had occasional conferences over parasitic Hymenoptera. Patton was a scholarly man, well educated and with an excellent knowledge of the literature; his work was careful and sound and is so regarded by Hymenopterists to this day. He had an excellent personal appearance, but was rather shy and retiring, somewhat typical of the young professor in a large university. Few became intimate with him, but all recognized his broad general knowledge, his keenness, and especially his extensive acquaintance with the literature of all groups of insects. He took nothing for granted and was loath to believe personal and even recorded statements until he had investigated them for himself.

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Patton was not continuously insane, but had long lucid periods extending over many months, during which he accomplished considerable entomological work, and some of his manuscripts were sent to the Bureau of Entomology to be placed for publication.

From 1882 to 1885 Patton resided in New York City, Utica and Rochester, New York, and West Randolph, Vermont, but returned to Connecticut suffering from ill health due to too close application to work. At first he was in a retreat in New Haven, and Dr. Howard called upon him in 1894, and found him perfectly lucid, and had an interesting talk about entomological matters. For a number of years before his death he was an inmate of the Hartford Retreat for the Insane at 400 Washington Street, Hartford.

Soon after the office of State Entomologist was established in Connecticut, in 1901, Patton wrote a few letters to the office, calling attention to certain entomological points that needed investigating. His letters were perfectly lucid. He once asked to be appointed as inspector, and again asked for the loan of fifty dollars to enable him to bring certain essential entomological discoveries before the public. Not knowing that he was insane and confined in a retreat, the State Entomologist promised to be in Hartford on an early named date and asked Patton to meet him at a certain hour and place and talk about it. Of course Patton was not there, and not long afterward Professor Verrill gave the information regarding Patton's insanity. He was unmarried, and apparently his insanity was inherited. His sister became insane and drowned herself in 1897 or 1898. Patton's death resulted from valvular disease of the heart and arteriosclerosis.

Patton was a member of both the American and British Associations for the Advancement of Science, a Fellow of the Entomological Society of London, a charter member of the Biological Society of Washington, D. C., a member of the Entomological Society of Ontario, and of the Connecticut Academy of Science.

It is interesting to note that Patton was once a pupil of H. F. Bassett, also a Hymenopterist, of Waterbury, Connecti-

- of Natural History: Proc. v. 20, p. 142-144 [1879]. (Published 1881.)
- Some characters useful in the study of the Sphecidae. Boston Society of Natural History. Proc., v. 20, p. 378-385 [1880]. (Published 1881.)
- 1881 List of North American Larridae. Boston Society of Natural History. Proc., v. 20, p. 385-397 [1880]. (Published 1881.)
- Note on the Philanthinae. Boston Society of Natural History. Proc., v. 20, p. 397-405 [1880]. (Published 1881.)
- 1884 Some notes on the classification and synonymy of fig-insects. Entomological Society of London. Proceedings 1884, p. xiv-xvii.
- Sound producing organs in *Anomala*, *Anthonomus* and other Coleoptera. Psyche, v. 4, p. 146, March, 1884.
- 1890 Notes upon *Ephestia interpunctella* (Hübner) Zeller. U. S. Dept. Agr. Div. Ent. Insect Life, v. 3, no. 4, p. 158-159, Nov., 1890.
- 1891 Scent glands in the larva of *Limacodes*. Canad. Ent. v. 23, p. 42-43, Feb., 1891.
- Aphidivorous habits of *Feniseca tarquinius* (Fabr.) Grote. Canad. Ent., v. 23, p. 66-67, March, 1891.
- Homohadena infixa*. Entom. News, v. 2, p. 206, Dec., 1891.
- 1892 Habits of *Prenolepis imparis* (Say) the winter ant. American Naturalist, v. 26, p. 871-872, Oct., 1892.
- Description of the female of *Aphenogaster fulva*. American Naturalist, v. 26, p. 872, Oct., 1892.
- Hexaplasta zigzag* (Riley). Entom. News, v. 3, p. 61, March, 1892.
- Anthophora walshii*. Entom. News, v. 3, p. 61, March, 1892.
- Notes upon Larridae. Entom. News, v. 3, p. 89-90, April, 1892.
- Prevention of the peach yellows and rosette as caused by the yellows mite. Entom. News, v. 3, no. 4, p. 97, April, 1892. [*Bryobia pratensis*.]
- Cynips Q-globulus* Fitch. Entom. News, v. 3, p. 104, April, 1892.
- Bombus ferridus* Fabr. Entom. News, v. 3, p. 181, Sept., 1892.
- Synonymy of butterfly parasites. Psychè, v. 6, p. 261, April, 1892.
- 1893 A new arrangement of the Coleoptera. Canad. Ent., v. 25, p. 9-10, Jan., 1893.
- The preservation of the larval food by digger wasps. Entom. News, v. 4, p. 202-203, June, 1893.
- Eastward range of Pacific Coast species. Entom. News, v. 4, p. 302, Nov., 1893.
- 1894 Habits of the leaping ant of Southern Georgia. American Naturalist, v. 28, p. 618-619, July, 1894.
- Notes on the winter ant. American Naturalist, v. 28, p. 619, July, 1894.

- 1894 Description of a new *Pelecinus* from Tennessee. *American Naturalist*, v. 28, p. 895-896, Oct., 1894.  
*Zethus aztecus* in Florida. *Canad. Ent.*, v. 26, p. 140, May, 1894.  
 Folded wings in *Foenus*. *Canad. Ent.*, v. 26, p. 146, May, 1894.  
 Identity of *Pezomachus* and *Hemiteles*. *Entom. News*, v. 5, p. 118-119, April, 1894.  
 Northward range of southern species. *Entom. News*, v. 5, p. 224, Sept., 1894.  
 Notes upon *Toxoncuron*. *Psyche*, v. 7, p. 178-179, Dec., 1894.  
 Notes upon wasps I. *Entomological Society of Washington. Proc.*, v. 3, p. 45-47, March 8, 1894.
- 1895 Relationship of the fauna of Puget Sound to that of Mexico and Canada. *Canad. Ent.*, v. 27, p. 280, Oct., 1895.  
 Systematic value of the larva of *Spermophagus*. *Canad. Ent.*, v. 27, p. 290, Oct., 1895.
- 1896 Rank in the Heteroptera. *Entom. News*, v. 7, p. 202, Sept., 1896.  
*Parapompilus*. *Entom. News*, v. 7, p. 248, Oct., 1896.
- 1897 *Monodontomerus* in Appalachia. *Canad. Ent.*, v. 29, p. 59, March, 1897.  
 A principle to observe in naming galls: two new gall-making Diptera. *Canad. Ent.*, v. 29, p. 247-248, Oct., 1897.  
*Thyreopus advenus* (Sm.) Pack. *Canad. Ent.*, v. 29, p. 248, Oct., 1897.  
*Clypeadon*. *Entom. News*, v. 7, p. 13, Jan., 1897.  
 Acorn insects. *Entom. News*, v. 7, p. 76-77, pl. 5, April, 1897.  
 The number of prolegs in insect larvae. *Entom. News*, v. 7, p. 122-123, June, 1897.
- 1909 A synonymical definition of *Nysson* and *N. aurinotus*. *Ohio Naturalist*, v. 9, p. 442-445, 1909.

## APPENDIX.

In response to our request, Mr. S. A. Rohwer, of the Bureau of Entomology and the National Museum, has sent us the following statement concerning Patton's taxonomic work:

So far as I have been able to ascertain from an examination of Patton's papers (and I have seen all but two), he described forty species of Hymenoptera. They may be arranged in super-families as follows:

Sphecoidea .....	16 spp.
Formicoidea .....	2 spp.
Chrysididae .....	4 spp.
Cerphoidea .....	2 spp.
Mutilloidea .....	6 spp.
Apoidea .....	10 spp.
Total .....	<u>40 spp.</u>

Practically all of these species are now recognized by students of Hymenoptera and while most of them are represented in the National Collection, yet so far as I have been able to determine there are no specimens which can be considered as type material. Patton's descriptions, on the whole, are very satisfactory and we have less trouble understanding his species than we do those of some of the other students who worked at about the same time. In his revisionary work Patton described thirteen genera; eight of these belong to the superfamily Sphecoidea and five to the superfamily Apoidea. Among the bee genera are such common and well recognized ones as *Bomboclecta*, *Diadasia*, *Emphor* and *Entechnia*. Among the wasp genera the ones which are recognized all over the world are *Isodontia*, *Aphilanthops*, *Larropsis* and *Microcmber*. The other four wasp genera have been recognized by some students, while certain other students consider that they are founded upon too trivial characters to be treated as genera.

In looking over Patton's papers I have been struck with the fact that while practically all of his systematic work was done on Hymenoptera, most of his biological observations were made on lepidopterous insects.

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### **Notes on Some of van der Wulp's Species of North American Anthomyiidae (Diptera).**

By J. R. MALLOCH, Urbana, Illinois.

In working up the Anthomyiidae of North America I have found some difficulty in placing most of the described forms in their proper genera and this has been especially true of the species described by van der Wulp. At my request Mr. F. W. Edwards obtained for me specimens of twenty-four of the species from the original series in the British Museum as an exchange. These specimens have been used as a basis for the following notes and have been incorporated in the collection of the Illinois State Natural History Survey. They are undoubtedly paratypes of the species listed.

**Clinopera hieroglyphica.**

This species is the genotype of *Clinopera*. The male I have before me has characters that appear to justify the separation of *Clinopera* from *Cyrtoneurina*, the genotype of which is *uber* G.-T. The distinguishing characters may be summarized as follows:

<i>Clinopera</i>	<i>Cyrtoneurina</i>
First wing-vein setulose only basad of humeral vein; third setulose at base.	First wing-vein setulose only distad of humeral vein; third setulose to or almost to inner cross-vein.

**Muscina tripunctata.**

This species is the same as *Neomuscina cavicola* Townsend. I have a male and female from Townsend's material sent me by Dr. Aldrich; the male agrees in all particulars with a male from van der Wulp's series from northern Yucatan.

The genus is valid and the species must therefore appear in our list as *Neomuscina tripunctata* (v. d. Wulp).

**Charadrella macrosoma.**

A male and female from northern Yucatan. The only species of the genus.

**Spilogaster rubripalpis.**

A female of this species from Cuernavaca proves that *Ariciella flavicornis* Malloch is a synonym. The species will stand in our list as *Aricella rubripalpis* (v. d. Wulp) Malloch.

**Mydaea obscura.**

A male of this species from northern Yucatan has the pteropleura and the declivitous portion of lateral margin of thorax in front of scutellum with hairs in center, prosternum bare, lower margin of metathoracic spiracle with some black hairs, third wing-vein bare at base, hind tibial calcar absent, third vein slightly flexed forward at apex, scutellum with some hairs low down on sides at base, anterior intra-alar bristle absent.

I erect for the reception of this species the new genus *NEOMUSCA*, with the combination of characters above mentioned.

I have in my possession a male from Esperanza Ranch, Brownsville, Tex., July 25.

**Phorbia fuscisquama.**

A male from Omilteme, Guerrero, is an aberrant species referable to *Phaonia* as at present limited.

**Mydaea concinna.**

A female from Xucumanatlan, Guerrero. This species has a pair of strong cruciate interfrontal bristles, the lower supraorbital directed forward, prealar long, anterior intra-alar present, prosternum and pteropleura hairy, metathoracic spiracle with some black hairs along posterior margin, hypopleura bare, basal abdominal sternite hairy, first and third wing-veins with setulae on greater part of their lengths above, first bare below, third setulose at base below, hind tibial calcar present, third vein not curved forward at apex.

This species differs from *Ariciella* Malloch in the setulose wing-veins, bare lateral area proximad of base of scutellum, presence of hind tibial calcar and prealar, as well as in several other characters.

I propose for the reception of the species the new genus *SMITHOMYIA*, with the combination of characters above mentioned.

**Mydaea pansa** G. T.

A female specimen identified by van der Wulp as *pansa* is a true *Mydaea*, separable from any known to me by its testaceous yellow color.

**Pogonomyia aterrima.**

A true *Pogonomyia* closely allied to *minor* Malloch. I have one female before me from Ciudad, Mexico. This specimen is slightly larger than paratypes of *minor*, has the fore tibia with one strong and one very weak posteroventral bristle, the fore tarsi more slender, the hind tibia with three anterodorsal and posterodorsal bristles and the wings darker than in *minor*.

**Limnophora socia.**

One female from Omilteme, Guerrero. This species closely resembles *Helina obscurinervis* (Stein) and *H. pocciloptera* Malloch, having the same thoracic and hind tibial bristling, but the palpi, second antennal segment and base of third are yellow, and the apex of first vein and base of third are darkened. The arista is pubescent.

Belongs to *Helina* R.-D.

**Spilogaster signatipennis.**

A male from Guerrero. Belongs to the same group as the preceding species, but the hind femur has long fine bristles on the entire length of the anteroventral surface and shorter

hairlike bristles on posteroventral. Prealar minute. Arista short-haired.

A female from Omilteme has the hind femur with two or three bristles near base and four or five on apical third on anteroventral surface and the posteroventral surface bare.

Both sexes have the palpi black and the antennae almost so.

#### **Spilogaster parvula.**

A female from Tepetlapa, Guerrero. This species has the cross-veins less distinctly infuscated than in the other species of the *obscurinervis* group and the hind tibia with three anterodorsal and one posterodorsal bristle. The palpi at apices and all of third antennal segment are infuscated and the arista long haired. Thoracic bristles as in the preceding species.

Belongs to *Helina* R.-D.

#### **Spilogaster copiosa.**

A male and female from Omilteme, Guerrero. Postsutural dorso-centrals three, prealar minute or absent, arista short haired. Fore tibia with one to three posteroventral bristles, hind tibia with three anterodorsal bristles and one to three posterodorsal setulae, cross-veins not infuscated.

Belongs to *Helina* R.-D.

#### **Leucomelina corvina.**

A male in poor condition, Orizaba. This is a *Limnophora*.

The thoracic dorsum in front of suture has three contiguous black marks, and behind the suture three contiguous black vittae, the one on each side not extending to scutellum. The second and third abdominal tergites each have a pair of large triangular black spots and the fourth has a smaller central spot. Mid tibia with one posterior bristle.

#### **Leucomelina deleta.**

One male, Omilteme, Guerrero. A *Limnophora*.

Differs from *corvina* in having a pubescent arista, eyes much closer together, thorax with three pairs of dorsocentral bristles, mid-tibia with two posterior bristles, and the abdomen with the paired dorsal spots extending from base to apex on each tergite, their inner margins straight, the outer concave in center.

#### **Leucomelina minuscula.**

One female, Atoyac, Vera Cruz. Very closely resembles *deleta*. The midtibia has one posterior bristle and the spots

on the abdomen are dilated at their posterior extremities. Both species lack the anterior intra-alar.

***Leucomelina garrula*.**

One female, Guerrero. Very closely resembles *minuscula* but larger (7.25: 4.5 mm.), and with two posterior bristles on mid tibia.

***Coenosia femoralis*.**

One female from Orizaba. This is *Bithoracochaeta leucoprocta* (Wied.). This species has the following synonyms: *antica* Walker, *calopus* Bigot, *despecta* Walker, *insignis* Stein, *pipunculina* Thomson, and *rufipes* Bigot, in addition to *femoralis*.

***Coenosia macrocera*.**

A female, Guerrero. This species is an aberrant form with a median anterodorsal and no anteroventral bristle on hind tibia. The ocellar and postvertical bristles are long.

***Coenosia punctulata*.**

A female, Omilteme, Guerrero. Similar in bristling of hind tibia to *macrocera*, but the antennae are shorter and stouter and the abdomen is nowhere yellow.

***Hydrophoria flavipalpis*.**

One male from Sierra de las Aguas Escondidas, Guerrero. This species belongs to *Emmesomyia* Malloch and differs from those previously placed in the genus in having a black mark across middle of thorax, palpi pale, and tips of mid and hind femora black. The fifth abdominal sternite is different from that of any of the other species known to me.

***Anthomyia dorsimaculata*.**

A male of this species from Omilteme, Guerrero. Belongs to the genus *Pegomyia* and closely allied to *vanduzeei* Malloch.

***Hydrophoria transversalis*.**

A male and female from Guerrero. Stein has sunk this species as a synonym of *pictipes* Bigot and placed it in his genus *Taeniomyia*. I can not satisfactorily separate the genus from *Pegomyia*, the black transverse band on thorax used by Stein for that purpose being in my opinion too trivial for a generic character.



**Hydrophoria collaris.**

A female from Guerrero. Differs from the female of the preceding species in having no cruciate interfrontal bristles and the arista much shorter haired. Belongs also, to *Pegomyia*.

**Phorbia prisca.**

A female, Ciudad, Mexico. A *Hylemyia* very close to *cilicrura* Zetterstedt. Impossible to say just what the species is.

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**A Bibliography on Fungous Insects and their Hosts.**

By HARRY B. WEISS, New Brunswick, New Jersey.

While many papers have appeared on various insects which inhabit fungi, only a few of them mention the specific or generic name of the fungus and it is such papers which have been listed below. The list is as complete as it has been possible to make it and includes only references to American literature. A few of the references relate to insects indirectly associated with certain fungi and not usually considered as funguous insects. The writer will be pleased to know of any omissions.

COLEOPTERA.

- Liodes basalis* Lec. Smith, J. B. Insects of New Jersey, p. 230. (N. J. St. Mus. Rept. 1909).
- Baeocera punctipennis* Blatch. Blatchley, W. S. Col. Ind. p. 494, 1910.
- Lycoperdina ferruginea*. Lec. Blatchley, W. S. Col. Ind. p. 538, 1910.
- Megalodacne ulkei* Crotch. Dury, C. Canad. Ent. X, 210. Blatchley, W. S. Col. Ind. p. 545, 1910.
- Ischyurus quadripunctatus* Oliv. Weiss, H. B. Canad. Ent. LII, p. 14, 1920.
- Mycotretus pulchra* Say. Weiss, H. B. Canad. Ent. LII, p. 18, 1920.
- Cucujus clavipes* var. *punicus* Mann. Hubbard, H. G. Canad. Ent. XXIV, p. 250-6, 1892.
- Epuraea monogama* Cr. Hubbard, H. G. Canad. Ent. XXIV, p. 250-6, 1892.
- Peltis pippingskoeldi* Mann. Hubbard, H. G. Canad. Ent. XXIV, p. 250-6, 1892.
- Peltis ferruginea* Linn. Hubbard, H. G. Canad. Ent. XXIV, p. 250-6, 1892.

- Calitys scabra** Thunb. Hubbard, H. G. Canad. Ent. XXIV, p. 250-6, 1892.
- Thymalus fulgidus** Erich. Dimmock, G. Direct. Collect. Coleop. p. 19, 1872. Beutenmuller, W. Ent. Amer. VI, p. 57, 1890. Breed, R. S. Bull. Mus. Comp. Zool. Harv. Col. vol. XL, No. 7, p. 319, 1903. Packard, A. S. 5th Rept. U. S. Ent. Comm. p. 510, 1890. Smith, J. B. Insects of N. J., p. 276, 1909. Weiss, H. B. Ent. News XXXI, p. 1-3, 1920.
- Agrilus bilineatus** Web. Ruggles, A. G. 15th Rept. St. Ent. Minn. p. 54, 1914. Chapman, R. N. Jour. Agric. Res. Vol. III, No. 4, 1915.
- Catorama nigratum** Lec. Weiss, H. B. Canad. Ent. LI. p. 255, 1919.
- Dorcatoma dresdensis** Hbst. Barber, H. S. Proc. Ent. Soc. Wash. X, p. 61, 1908.
- Cis wenzeli** Dury. Dury, C. Jour. Ciu. Soc. Nat. His. XXII, p. 7, 1917.
- Cis fuscipes** Mell. Dury, C. Jour. Cin. Soc. Nat. His. XXII, p. 11, 1917.
- Xestocis moznettei** Dury. Dury, C. Jour. Cin. Soc. Nat. His. XXII, p. 15, 1917.
- Sulcacis lengi** Dury. Weiss, H. B. Canad. Ent. LI, p. 203, 1919.
- Brachycis brevicollis** Csy. Weiss, H. B. Bull. Brook. Ent. Soc. XIV, p. 145, 1919.
- Ennearthron compacta** Dury. Dury, C. Jour. Cin. Soc. Nat. His. XXII, p. 22, 1917.
- Ceracis sallei** Mell. Weiss, H. B. Bull. Brook. Ent. Soc. XIV, p. 144, 1919.
- Octotemnus denudatus** Csy. Dury, C. Jour. Cin. Soc. Nat. His. XXII, p. 27, 1917.
- Cyllene robiniae** Forst. Schrenk, H. von. Mo. Bot. Garden Rept. 12: 21-31, 1901. Schrenk, H. von & Spaulding, P. Bull. 149. U. S. Bur. Pl. Indus., p. 45, 1909.
- Phellopsis obcordata** Kirby. Packard, A. S. 5th Rept. U. S. Ent. Comm., p. 510, 1890. Dimmock, A. K. Psyche, IV, p. 284, 1885.
- Phellopsus obcordata** var. **porcata** Lec. Hubbard, H. G. Canad. Ent. XXIV, p. 250-6, 1892.
- Bius estriatus** Lec. Hubbard, H. G. Canad. Ent. XXIV, p. 250-6, 1892.
- Diaperis maculata** Oliv. Dimmock, G. Std. Nat. His., p. 352, 1884. Dimmock, A. K. Psyche IV, p. 284, 1885. Packard, A. S. 5th Rept. U. S. Ent. Comm., p. 510, 1890.
- Hoplocephala bicornis** Fab. Packard, A. S. 5th Rept. U. S. Ent. Comm., p. 510, 1890.

- Platydemia oregonense** Lec. Hubbard, H. G. *Canad. Ent.* XXIV, p. 250-6, 1892.
- Platydemia ellipticum** Fab. Weiss, H. B. *Canad. Ent.* LI, p. 276, 1919.
- Boletotherus bifurcus** Fab. Dimmock, G. *Std. Nat. His.*, p. 352, 1884. Dimmock, A. K. *Psyche* IV, p. 284, 1885. Packard, A. S. 5th Rept. U. S. Ent. Comm., p. 510, 1890; *Insect Life* III, p. 355, 1891.
- Eustrophus bicolor** Say. Weiss, H. B. *Psyche* XXVI, p. 132-3, 1919.
- Hallomenus scapularis** Melsh. Blatchley, W. S. *Col. Ind.*, p. 1294, 1910.
- Orchesia castanea** Melsh. Weiss, H. B. *Canad. Ent.* LI, p. 203-4, 1919.
- Mordella marginata** Melsh. Weiss, H. B. *Ent. News*, Vol. XXXI, pp. 67-68, 1920.
- Anthonomus uniperinus** Sanb. Blatchley, W. S. & Leng, C. W. *Rhyn. N. E. Amer.*, p. 308, 1916.
- Dendroctonus piceaperda** Hopk. Hopkins, A. S. *Bull.* 28, n. s. U. S. Dept. Agric. Bur. Ent.

## LEPIDOPTERA.

- Prionoxystus robiniae** Peck. Schrenk, H. von & Spaulding, P. *Bull.* 149, U. S. Bur. Pl. Indus., p. 41, 1909.
- Tinea cloacella** Haw. Weiss, H. B. *Ent. News* XXX, p. 251, 1919.
- Tinea acapnopennella** Clem. Weiss, H. B. *Ent. News* XXXI, p. 108, 1920.

## DIPTERA.

- Leia bivittata** Say. Weiss, H. B. *Psyche* XXVI, p. 80-82, 1919.

## HEMIPTERA.

- Aradus similis** Say. Smith, J. B. *Ins. N. J.*, p. 139, 1909.
- Aradus debilis** Uhl. Hubbard, H. G. *Canad. Ent.* XXIV, p. 250-6, 1892.

## GENERAL PAPERS.

- Popenoe, C. H. *Mushroom Pests & How to Control Them*, Farmers Bull. 789. U. S. Dept. Agric.
- Weiss, H. B. & West, E. *Fungous Insects & Their Hosts*, Proc. Biol. Soc. Wash., vol. xxxiii, pp. 1-20, 1920.

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**Change of Address.**

Owing to renumbering of the city of Detroit, please note change of address. Old number 48 Webb Avenue. New number 90 Webb Avenue, to which all mail should be sent on and after January 1, 1921.

DR. W. W. NEWCOMB, Detroit, Michigan.

## New Species of Cladiinae—Hymenoptera.

By ALEX. D. MACGILLIVRAY, Urbana, Illinois.

The adults of all the following new species were bred from larvae collected in New York by Dr. Hachiro Yuasa and in Maine by Mr. Earl Shaw and the author for the Maine Agricultural Experiment Station. The descriptions are published so that the names can be used with descriptions of larvae that are to be published.

The types are deposited in the collection of the author.

### *Trichiocampus pacatus* n. sp.

♀. Body black with the following parts white: trochanters, profemora more or less at distal end, tibiae except distal one-fourth of metatibiae, and tarsi except metatarsi; clypeus broadly shallowly emarginate; median fovea elongate, shallow, continuous with ocellar basin; frontal crest not well developed, broken, represented by thickenings on each side of break; ocellar basin distinct, depressed, lateral walls fine, inconspicuous, linear, extending to lateral ocelli; antennae with third and fourth segments subequal, fourth segment longer than fifth; head and thorax polished; wings infuscated, proximal two-thirds smoky; costa, stigma and veins blackish; saw-guides with dorsal margin straight, ventral margin convex, distal portion oblique, pointed above. Length 5 mm.

Habitat: Ithaca, New York. No. 88-1.

The form of the frontal crest and the ocellar basin will distinguish this species.

### *Trichiocampus patchiae* n. sp.

♀. Body black with the following parts infuscated whitish: trochanters, distal portion of profemora and mesofemora, tibiae, and basitarsi; clypeus narrowly, angularly emarginate; median fovea circular, broad, shallow, inconspicuous; frontal crest strong, unbroken, narrow, rounded; ocellar basin flat, limiting lateral walls rounded, not linear, not conspicuous, a depression extending ventrad from median ocellus; head and thorax polished; wings infuscated, proximal two-thirds smoky, distal one-third clearer; costa, stigma and veins brownish; saw-guides with dorsal margin straight, ventral margin convex, distal portion blunt, pointed. Length 6 mm.

Habitat: Orono, Maine. Sub. 100.

This species differs from *pacatus* MacG. in the form of the frontal crest. Named for Dr. Edith M. Patch, Entomologist of the Maine Agricultural Experiment Station.

### *Trichiocampus paetulus* n. sp.

♀. Body black with the following parts white: trochanters, cephalic

aspect of profemora in great part, distal ends of mesofemora and metafemora, tibiae except fuscous distal one-fourth of metatibiae, tarsi except fuscous metatarsi; clypeus broadly roundly emarginate; median fovea small, oval, shallow depression; frontal crest narrow, fairly strong, unbroken; ocellar basin flat, lateral walls linear and distinguishable in certain lights; antennae with third segment longer than fourth and fourth longer than fifth; head and thorax polished; wings infuscated, distal one-third clearer than proximal two-thirds; costa, veins and stigma brownish; saw-guides with dorsal margin straight, ventral margin straight, distal portion convex and oblique. Length 5 mm.

*Habitat*: Onekama, Michigan. Bred by the author from larvae on *Populus*.

This species can be separated from *pacatus* MacG. by the form of the median fovea.

**Trichiocampus palliolatus** n. sp.

♀. Body black with the following parts white: trochanters, cephalic aspect of profemora in great part, distal ends of mesofemora and metafemora, tibiae except fuscous distal end of metatibiae, and tarsi except fuscous metatarsi; clypeus broadly shallowly emarginate, almost truncate; median fovea subquadrangular, broad, comparatively deep; frontal crest not strong, not decidedly thickened, unbroken; ocellar basin not strongly depressed below area bearing median fovea, lateral walls inconspicuous, linear in certain lights; antennae with third segment longer than fourth and fourth longer than fifth; wings infuscated, proximal two-thirds darker than distal one-third; saw-guides with dorsal margin convex, ventral and distal margins convex and oblique, blunt. Length 5 mm.

*Habitat*: Ithaca, New York. No. 154-1-1.

This species is similar to *pacatus* MacG. but can be separated by the form of the frontal crest and the clypeus.

**Priophorus modestus** n. sp.

♀. Body black with the following parts infuscated white: trochanters, distal one-third of profemora, ring on distal end of mesofemora and metafemora, tibiae except ring on distal end of mesotibiae and metatibiae, and tarsi for the most part; clypeus shallowly roundly emarginate; median fovea broad, round, shallow, inconspicuous; frontal crest narrow, hardly raised, linear, unbroken; ocellar basin flat, lateral walls rounded, appearing linear in certain lights; antennae with third and fourth segments subequal, fourth longer than fifth; wings slightly infuscated, not smoky; veins, costa and stigma brownish, spinulae prominent; saw-guides retracted. Length 5.5 mm.

*Habitat*: Orono, Maine. Sub. 109.

This species is readily distinguished from *solitaris* Dyar by the form of the median fovea.

**Priophorus moratus** n. sp.

♀. Body black with the following parts white: trochanters, pro-femora more or less, tibiae except fuscous ring on metatibiae, and tarsi except metatarsi; clypeus broadly angularly emarginate; median fovea obsolete or at most only a slight circular depression; frontal crest narrow, thick, unbroken, strong; ocellar basin strongly depressed, limits fairly distinct, lateral walls completely rounded, never showing as linear ridges, depression extending ventrad from median ocellus; antennae with third segment slightly shorter than fourth and fourth longer than fifth; head and mesonotum polished; wings strongly infuscated, distal one-third clear; saw-guides with dorsal margin straight, ventral margin straight, distal end oblique, convex, pointed above. Length 6 mm.

*Habitat*: Orono, Maine. Sub. q.

The absence of a median fovea will serve to distinguish this species.

**Priophorus munditus** n. sp.

♀. Body black with the following parts white: trochanters, ring on distal ends of femora, tibiae except infuscated distal ends of metatibiae, and tarsi except metatarsi; clypeus broadly shallowly emarginate, almost truncate; median fovea deep, broad, twice as long as wide; frontal crest hardly thickened, broadly broken, practically wanting; ocellar basin distinct, flat, impression extending ventrad from median ocellus, lateral walls linear, distinguishable; antennae with third and fourth segments subequal, the fourth slightly shorter; wings infuscated, distal portion clearer; veins, costa and stigma brownish, spinulae distinct; saw-guides retracted. Length 5 mm.

*Habitat*: Orono, Maine, Sub. 174.

The form of the ocellar basin and median fovea will distinguish this species from *aqualis* Nort.

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**Demand the Metric System!**

EDITOR ENTOMOLOGICAL NEWS—Your attention is respectfully called to the importance of the world-wide movement for metric standardization of weights and measures. It is an advance in which all are interested.

More than 100,000 petitions are on file with the Department of Commerce, Washington, D. C., demanding legislation which will establish the decimal metric system for general use in the United States after a liberal period of transition. Many of these petitions are from organizations having hundreds and thousands of members.

The present session of Congress is being called upon to enact progressive metric laws. Will not your publication strengthen this demand by strong editorial support? You can aid powerfully in establishing the logical decimal system.

"Get this good thing done in 1921."

Sincerely yours,

AUBREY DRURY, Secretary-Treasurer, World Trade Club,  
San Francisco, U. S. America.

## Entomology and the Professional Ideal.

By R. H. HUTCHISON, Malvern, Pennsylvania.

Some time ago a paper on "American Entomology: Its Present and Future Status as a Profession," was published and distributed by "a group of younger entomologists," the burden of its message being a strong plea for "a compensation sufficient to enjoy the necessaries of life." There can be no gainsaying the seriousness of the situation which they point out, especially in the matter of attracting and holding young men who in the next generation would be called upon to fill the places of the present leaders.

In considering a remedy they very creditably cast aside the idea of attempting to gain their end "through organization, union and strike," as used by the industrial worker, and they suggest that the end would best be attained if the men in the highest positions were "to waken to the condition and lend every effort to raise the standard of the profession through fair salaries for their assistants."

But let it be said by one who has been forced to give much thought to this matter that a general increase in salaries will not of itself give the profession any better standing or make it any more attractive to the right kind of men. Recent developments have made it plain that an even greater need is for a more general realization of professional ideals, and the leaders, even if they succeed in making entomology more attractive financially, fail if they neglect to impress on recruits the dignity of professional work in general and inspire them to follow certain high standards for Entomology in particular. Equal importance, and perhaps the only real solution of the question of compensation, lies in educating the people generally as to what professions stand for and what they are trying to do.

It will serve the purpose of this argument to review briefly the origin and distinguishing features of professions:

The professions of theology, law and medicine originated in the priesthood. The priests ministered alike to the bodies, souls and estates of their parishioners. They were lawgivers and administrators of the law. They were physicians and administrators of medicines, and they

were interpreters of the Divine Will, and dispensers of religious consolation.

As civilization advanced and knowledge accumulated, the several vocations practiced by the priests gradually segregated, resulting in the establishment of the three so-called "learned or liberal" professions. They were called "learned" because in ancient times most of the learning was confined to the priests. They were called "liberal" because the priests rendered their services without fees, obtaining their living from the church. . . . In process of time medicine and law were separated from the church,\*

but the priestly ideal of consecrated service still clung to them.

In process of time also various lines of professional work split off from medicine and Entomology may truly be said to have originated thus. Most of the great names associated with the early developments of Entomology were those of physicians. Malpighi held a medical degree from the University of Bologna; Swammerdam, author of the famous "Anatomy and Metamorphosis of Insects," was both physician and naturalist. The great Linnaeus himself received a medical education.†

Analyzing various definitions of the term "profession" in the light of what has just been said we may affirm that there are at least three important characteristics which distinguish a profession from a trade or commercial vocation.

*First:* A profession is "learned," i. e., it presupposes an accumulation of knowledge based on critical rather than superficial observations and classified as a science. This is embodied and preserved in scientific literature using an exact nomenclature or terminology.

*Second:* A profession is "liberal" in the sense that money-making is a minor consideration, and necessarily so because the value of professional services cannot be measured in terms of money. A physician may save the life of a child sick with diphtheria by the very simple act of giving an adequate dose of antitoxin, but in no case does he receive full value for this service. The professional men who proved that malaria and yellow fever are mosquito-borne diseases rendered serv-

\* Stewart, F. E. Journ. Am. Pharm. Assn. IX, No. 3 (Mar. 1920), p. 263.

† Locy. Biology and Its Makers. Henry Holt & Co., 1908.



ices to humanity which can never be evaluated in terms of money.

*Third*: A profession is altruistic. The professor uses his special knowledge in the service of others, giving them instruction, guidance or advice, or showing others how to apply his special knowledge to their art.

One of the most important of all professional services rendered to any profession is research work and the donation of the results of the same to the profession for the building up of the science upon which the profession depends.‡

By all these tokens then Entomology certainly ranks as a profession and one of the most altruistic. Entomologists, especially those in the Government employ, find themselves in a position to render service to the whole people and entomology as a profession is probably the least commercialized of any, with the exception of the Christian ministry. This is largely due to the fact that there are very few openings and no demand for entomologists outside the Government service and the Agricultural Colleges, not because they have striven more successfully for the attainment of this professional ideal. Far from it—and this leads to the point of the argument.

All Entomologists and others, who hold to the professional ideal and whose sense of the fitness of things has not been dulled by the depressing struggle against the high cost of living, will be inclined to look upon the action of some of the Entomologists of the Department of Agriculture in joining the Federal Employees Union and affiliating with the American Federation of Labor as a backward step, and one which *cheapens* the profession generally and *lowers* it in the estimation of managers of great industrial concerns who some day might come to appreciate the value of services which economic entomologists can render.

The apology for joining the Federal Employees Union was, of course, the totally inadequate salaries paid to Government scientific employees and the belief (doubtless sincere with many) that only by this move could sufficient pressure be brought to bear on an indifferent Congress to effect a readjustment of salary schedules to meet ever increasing expenses.

‡ Stewart—*loc. cit.*

There were those who knew only too well the financial difficulties encountered, yet felt themselves entirely out of sympathy with the action of their associates and were dimly conscious that a stimulating ideal had been thrown overboard. While they knew that "cloistered virtue" or the holier-than-thou attitude has no place in modern professional life, yet they felt that the way of true progress does not consist of throwing on the scrap heap all that the word "profession" stands for.

The situation becomes clearer with time. The move is now recognized as part and parcel of the all-too general reaction which followed the armistice and the almost universal turning away from high ideals and generous impulses—a condition not without its influence even on liberally educated and presumably thinking men.

It will contribute to a better understanding of the reactionary nature of this move to compare it with the history of Pharmacy. To quote again from Stewart's interesting paper:

The apothecaries in those days (about 1200 A. D.) were members of the Guild of Grocers and the vocation did not partake of a professional character. The apothecary, however, commenced to perfect himself in chemistry and pharmacy, because of its complexity gradually separated itself from the practice of the physician and was relegated to the apothecary. In the reign of James I, the apothecaries separated from the grocers and received the first charter of their own.

This vocation has since lost all the character of a Guild and the leaders have steadily striven and are still striving to put it on a true professional basis and obtain professional recognition.

The scientific section of the Federal Employees Union has reversed the process and assumed a status similar to that which the apothecaries *outgrew some 400 years ago*. They have wilfully and thoughtlessly given up that high standing and recognition which pharmacy has been striving for centuries to attain.

"But what shall we say of those who are free yet choose littleness and bondage?" And what shall it profit the profession if it gain a compensation equal to that of a plumber but lose a certain greatness of character?

# ENTOMOLOGICAL NEWS.

PHILADELPHIA, PA., FEBRUARY, 1921.

## Entomology at the Convocation Week Meetings of 1920-21.

The program of the 73rd Meeting of the American Association for the Advancement of Science and of Associated Scientific Societies held at Chicago, December 27, 1920, to January 1, 1921, lists 130 papers on the terrestrial Arthropods, including certain general papers, credited to the following societies:

Joint session of the Association of American Geographers and the Ecological Society of America .....	3
Paleontological Society of America .....	2
American Society of Zoologists .....	14
Entomological Society of America .....	27
American Association of Economic Entomologists .....	69
Botanical Society of America .....	4
Phytopathological Society .....	1
American Society of Naturalists .....	5
Ecological Society of America (see also above) .....	3
American Nature-Study Society .....	1
American Psychological Association .....	1

We are indebted to Mr. W. J. Gerhard for the information that one additional paper\* was given at the Entomological Society of America, although not printed on the program, and that 8 of the 26 listed papers were not given. We have no corresponding figures for the other societies.

The subjects of these 130 papers were as follows:

General Biology .....	15	Odonata .....	1
Physiology .....	10	Mallophaga .....	1
Cytology .....	3	Neuroptera (Hemerobiidae) .	1
Genetics .....	8	Coleoptera .....	13
General Economic Entom. . .	19	Hymenoptera .....	5
Apiculture .....	10	Lepidoptera .....	20
Araneina .....	2	Homoptera .....	12
Ixodoidea .....	2	Heteroptera .....	4
Other Acarina .....	1	Thysanoptera .....	1
Millepedes .....	1	Diptera .....	14
Orthoptera .....	7	Duplications .....	21

\* ? Ripley: The Evolution of the Subterranean Habits of Noctuid Larvae.

The symposium of the Entomological Society of America was on the Relations between Taxonomic Affinities and Food Habits of Insects, with Special Reference to Parasitism, participated in by C. T. Brues (Hymenoptera), J. M. Aldrich (Diptera), and V. Kellogg (Mallophaga); the fourth speaker, F. C. Bishopp (Ixodoidea), not being present. The Annual Address, by Prof. W. A. Riley, was: Some Little-Emphasized Guide Posts to Medical Entomology. Other special addresses were by Dr. L. O. Howard: A Recent Visit to Certain European Entomologists; and by T. H. Frison: The Life-History of the Bumble Bee.

President Wilmon Newell addressed the Economic Entomologists on The Organization of Work in Economic Entomology; an address was given by Prof. C. E. McClung and one by W. C. O'Kane on Industrial Support for Scientific Work.

The total of 130 titles compares with 118 at St. Louis last year, plus 10 at Princeton, and with 139 at New York in 1916-17.

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## Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS  
OF THE GLOBE

### Recent Additions to the Hill Museum at Witley, Surrey, England. (Lepid.)

Mr. J. J. Joicey has recently acquired the important collection of Lepidoptera formed by Mr. H. J. Elwes, F. R. S., and the large collection of *Heliconius* formed by the late H. Riffarth. The Elwes collection contains most of the types of species of the Indo-Australian fauna described by Elwes, as also some types of Doberty, de Nicéville, Christoph and Staudinger; the material which formed the basis of Elwes & Edwards' monograph of Oriental Hesperidae, and of Elwes' papers on *Ypthima*, *Oeneis* and the butterflies of Chile; it is especially rich in Lycaenidae. The Riffarth collection contains over 2000 specimens and includes 360 types and paratypes described by Riffarth and Stichel. Mr. and Mrs. T. A. Barns have recently returned from a twelve months' expedition in Central Africa undertaken on behalf of Mr. Joicey, having obtained a very fine collection of Lepidoptera. The three brothers Pratt are collecting Lepidoptera in the mountainous interior of Dutch New Guinea for Mr. Joicey. Students desirous of comparing specimens and types in the museum are invited to write to the Curator, address as above. [Abridged from a note by GEO. TALBOT in Ent. Mo. Mag., Oct., 1920.]

### New Synonymy in a Recent Paper on the European Corn-Borer, (Lepid.)

At the close of an otherwise valuable paper by W. P. Flint and J. R. Malloch, ("The European Corn-Borer and Some Similar Native Insects" Bull. Ill. Dept. Registration and Education, vol. 13, art. 10, pp. 287-305, June, 1920), the authors describe a new species under the name *Pyrausta caffreii*. The description is drawn from a single crippled male without biological notes and from two females without locality labels. The male type, according to the authors themselves, is in too poor condition for the wing markings to be properly distinguished, but it is described as darker than the females which are said to be very similar in color and markings to *obumbratalis* Flint & Malloch (*obumbratalis* Lederer?) (*ainslicii* Heinrich) with forewings of a pale straw yellow. The specimens were apparently associated as conspecific on the ground that each possesses a conically produced face. A slight acquaintance with the *Pyralidae* should have told the authors that this is a generic character which excludes their supposed new species from the genus *Pyrausta*. In such a difficult group as the *Pyraustinae* the description of new species on such material would be indefensible even for one thoroughly familiar with all the described forms. In the present instance it is entirely unwarranted. Fortunately the authors have given figures of the male genitalia of their type which enables definite fixation of their wrongly placed species as a synonym of the common, widely distributed *Loxostege similalis* Gn. making *caffreii* Flint & Malloch the fourteenth name for this much described species. The female paratype from unknown locality associated with the unique crippled male is obviously another species, but causes no concern, as it does not affect the nomenclature. This case is a conspicuous example of the value of male genitalia in the determination of Lepidoptera. Even a mediocre partial figure enables correction of a wrong generic determination and the definite placing of an otherwise valueless type of an imperfectly described species, the name of which would otherwise remain a burden on our list.

With regard to *Pyrausta obumbratalis* Led. (*obumbratalis* Flint and Malloch) there is no question but that the species treated and figured under this name by Flint and Malloch is *Pyrausta ainslicii* Heinrich. The actual identity of *obumbratalis* Lederer cannot at present be ascertained without an examination of the type. It may prove to be either *ainslicii* or *penitalis* or some other species. For this reason it is advisable at present to have a sure name for a definite concept and to retain the name *ainslicii* for the *Polygonum* feeder.

The figures and interpretations given by Flint and Malloch show a serious lack of knowledge of the parts of the male genitalia. The "basal spur," which the authors refer to as lacking in my figure of *ainslicii*, is evidently the aedoeagus which I stated was purposely omitted from my drawing. This is poorly represented by the black central

part in Flint and Malloch's figure 42. It does not in any way correspond to the similar part, drawn, obviously to correspond, in their figure 41 of *penitalis*. The aedeagus in all three species (*nubilalis*, *penitalis*, and *ainslici*) is strikingly similar; but *penitalis* of the three, alone possesses a stout spur arising ventrally to this organ from the base of the anellus and this the authors have figured as corresponding to the aedeagus in *ainslici*.

CARL HEINRICH, U. S. Bureau of Entomology,  
Washington, D. C.

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## Entomological Literature

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

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), 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.

The records of papers concerning new genera or species occurring north of Mexico are all grouped at the end of each Order of which they treat.

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.

4—Canadian Entomologist, London, Canada. 5—Psyche, Cambridge, Mass. 12—Journal of Economic Entomology, Concord, N. H. 15—Insecutor Inscitiae Menstruus, Washington, D. C. 17—Lepidoptera, Boston, Mass. 19—Bulletin of the Brooklyn Entomological Society. 20—Bulletin de la Societe Entomologique de France, Paris. 21—The Entomologist's Record, London. 33—Annales de la Societe Entomologique de Belgique, Brussels. 45—Zeitschrift fur wissenschaftliche Insektenbiologie, Berlin. 50—Proceedings of the United States National Museum, Washington. 54—Proceedings of the Biological Society of Washington, D. C. 61—Proceedings of the California Academy of Sciences, San Francisco. 62—Bulletin of the American Museum of Natural History, New York. 70—Journal of Morphology, Philadelphia. 71—Novitates Zoologicae, Tring, England. 72—The Annals of Applied Biology, London. 76—Nature, London. 82—The Ohio Journal of Science, Columbus. 100—Biological Bulletin of the Marine Biological Laboratory, Woods Hole, Mass. 105—Proceedings of the Iowa Academy of Sciences, Des Moines. 108—Journal of Genetics, Cambridge, England. 111—Archiv fur Naturgeschichte Berlin. 117—Memorias do Instituto Oswaldo Cruz, Rio de Janeiro. 118—Die Naturwissenschaften, Berlin.

**GENERAL.** Bowen, R. H.—Studies on insect spermatogenesis. I. 100, xxxix, 316-62. Buddenbrock, W. V.—Die lichtkompassbewegungen bei den insekten, insbesondere den schmetterlingsraupen. (Sitz. Heidelb. Akad. Wissensch., Math.-Nat. Klas., viii b, 1-26.) Collier, Dr.—Biochemische feststellung der verwandtschaft bei insekten. 45, xvi, 1-5. Crampton, G. C.—Notes on the lines of descent of lower winged insects. 5, xxvii, 116-27. Pierce W. D.—Commercial entomology and the service it can render to organized agriculture. 12, xiii, 449-56. Lectures in applied entomology. Ser. 1, Pt. O., No. 5. Economic entomology as a profession. Poulton, E. B.—Heredity and acquired characters. 76, cvi, 532. Stoner, D.—Some interesting insect habitats in the tropics. 105, xxvi, 129-32.

**ARACHNIDA &c.** Chamberlin, R. V.—A new Leptodesmoid diplopod from Louisiana. A new diplopod of the genus Atopetholus. 54, xxxiii, 97-100; 101-2. Ressler, I. L.—Thomisidae of the Ames region. 105, xxvi, 151-6.

**NEUROPTERA.** Esben-Petersen, P.—Revision of some of the type-specimens of Myrmeleonidae described by Navas and placed in the Vienna museum. 33, lx, 190-6. Foot, K.—Notes on *Pediculus vestimenti*. 100, xxxix, 262-79. Fuller, C.—Studies on the post-embryonic development of the antennae of Termites. (An. Natal Mus., iv, 235-95.) Thompson & Snyder.—The "Third form," the wingless reproductive type of termites: *Reticulitermes* and *Prorethinos*. 70, xxxiv, 591-635.

Kennedy, C. H.—The phylogeny of the Zygopterous dragon-flies as based on the evidence of the penes. Forty-two hitherto unrecognized genera and subgenera of Zygoptera. 82, xxi, 19-29; 83-88.

**ORTHOPTERA.** Hebard, M.—Dermaptera and Orthoptera of the Galapagos Islands. 61, ii, 311-46. Hutchings, C. B.—Walking sticks. 4, lii, 241-5.

Hebard, M.—A new genus and species of grasshopper from California. 61, x, 71-5.

**HEMIPTERA.** da Costa Lima, A.—Nota sobre o mimetismo da nympha do *Alydus* (*Magalotomus*) *pallelescens* com *furmiga* e *consideracoes* relativas a especie *Galeottus formicarius*. (Arch. Sup. Agr. e Med. Vet., Nictheroy, Brazil, iv, 5-8.) Hempel, A.—Duas novas especies de coccidas. (Rev. Mus. Paulista, xi, 451-57.) de la Torre-Bueno, J. R.—Remarks on Heteroptera in beach drift. 19, xv, 142-5.

Baker, A. C.—*Anuraphis longicauda*, a new aphid injurious to plum trees. 54, xxxiii, 93-6. Ball, E. D.—Notes on the Cercopidae with descriptions of some n. sps. 105, xxvi, 143-50. McAtee, W. L.—Cercopidae of the vicinity of Washington, D. C., with descriptions of new varieties of Clastoptera. 54, xxxiii, 171-6. Van Duzee,

**E. P.**—New hemipterous insects of the genera *Aradus*, *Phytocoris* and *Camptobrochys*. **61**, ix, 331-56.

**LEPIDOPTERA.** **Bell, E. I.**—Collecting *Libythea bachmani*. **19**, xv, 130. **Dyar, H. G.**—New L., chiefly from Mexico, with synonymic notes. **15**, viii, 187-98. **Goldschmidt, R.**—Untersuchungen zur entwicklungsphysiologie des flugelmusters der schmetterlinge. (Arch. f. Entwickl. d. Organ. Berlin, xlvii, 1-24.) **Hebert, F. B.**—Observations upon the instars of *Phryganidia caterpillars*. **20**, xxii, 193-200. **Johnson, H. L.**—Additional notes on *Utethesia bella*. **17**, iv, 91. **Leuderwaldt, H.**—Sobre a biologia de *Tanaphysa adornatilis*. (Rev. Mus. Paulista, xi, 461-2.) **McMurray, N.**—Collecting in November. *Sesia ithaca*. **17**, iv, 90; 91-3. **Miles Moss, A.**—Sphingidae of Para, Brazil. Early stages, food plants, habits, etc. **71**, xxvii, 333-424. **Prout, L. B.**—Supplementary notes on Diopitidae. **71**, xxvii, 508-9. **Schultze, E. A.**—Beitrage zur kenntnis der pedes spurii der lepidopterenlarven. **111**, 1919, A., 1., 1-72. **Smith, M. R.**—An insect supposed to breed in corn (*Achatodes zea*.) **12**, xiii, 493. **Swaine, J. M.**—The nervous system of the larva of *Sthenopsis thule*. **4**, lii, 275-83. **Warren, B. C. S.**—Some records of, and observations on, the flying habit of butterflies when paired. **21**, xxxii, 218-23.

**Blackmore, E. H.**—New L. from British Columbia. **4**, lii, 266-71. **Heinrich, C.**—The pea moth, a new species. **4**, lii, 257-8.

**DIPTERA.** **Alexander & McAtee.**—Diptera of the superfamily Tipuloidea found in the District of Columbia. **50**, lviii, 385-435. **Barber, G. W.**—A note on migration of larvae of the housefly. **12**, xiii, 493. **Brolemann, H. W.**—Encore un mot les eulicides. **12**, 1920, 269-72. **Johnson, C. W.**—Descriptions of some new tropical *Pachygastrinae*. **5**, xxvii, 112-15. **Leonard, M. D.**—A dipterous parasite of the parsnip webworm. **12**, xiii, 491. **Lutz, A.**—Dipteros da familia *Blepharoceridae*, observados no Brazil. **117**, xii, 21-43. **Malloch, J. R.**—A synopsis of the anthomyiid genus *Trichopticus*. **4**, lii, 271-4. **Nonidez, J. F.**—The internal phenomena of reproduction in *Drosophila*. **100**, xxxix, 207-230. **Roch, O.**—Über die larve von *Mycetobia pallipes*. **111**, 1919, A., 277-98. **Surcouf, J. M. R.**—Sur une critique recente de J. Villeneuve. **20**, 1920, 249-51. **Speyer, E. R.**—Notes on chemotropism in the housefly. **72**, vii, 124-40. **Tonnoir, A.**—Contribution a l'etude des *Psychodidae*. **33**, ix, 149-57.

**Alexander, C. P.**—Undescribed Tipulidae from western North America. **61**, x 35-16. **Dyar, H. G.**—The *Aedes* of the mountains of California and Oregon. A new *Culex* from Panama. Note on *Aedes fulvus*. Note on the distribution of the flood-mosquitoes of the west. The earliest name of the yellow fever mosquito. **15**, viii, 165-173; 173-7; 174-5; 198-9; 201. **Lovett, A. L.**—Two new



species of Syrphidae. **61**, x, 51-2. **Malloch, J. R.**—Some new species of the genus *Lonchaea*. A synoptic revision of the anthomyiid genus *Hydrophoria*. **4**, lii, 246-7; 253-7. A synopsis of the North American species of the genus *Pegomyia* (Anthomyiidae.) A new genus of Agromyzidae. **19**, xv, 121-7; 147-8. **Van Duzee, M. C.**—Three new species of Dolichopodidae from California and Nevada. **61**, x 47-9. **Melander, A. L.**—Synopsis of the dipterous family Psilidae. **5**, xxvii, 91-101.

**COLEOPTERA.** **Arendsen Hein, S. A.**—Studies on variation in the mealworm *Tenebrio molitor*. **103**, x, 227-64. **Bertin, L.**—Le dimorphisme sexuel chez les Dynastes. (La Nature, 1920, 319-20.) **da Costa Lima, A.**—Sobre os casulos de dois curculionídeos, um dos quaes e uma especie nova de um novo genero da familia Orobítidae. (Arch. Escola Sup.<sup>o</sup> Agr. e Med. Vet. Nietheroy, Brazil, iv, 9-14.) **Davis, W. T.**—Notes on beetles of the genera *Melasoma* and *Gonioctena*. **19**, xv, 145-6. **Frost & Weiss.**—An addition to bibliography on *Agrilus*. **5**, lii, 247. **Leng, C. W.**—Catalogue of the C. of America, north of Mexico. 469 pp. (Mount Vernon, N. Y., 1920.) **Melezer, J.**—Os longicornes Brasileiros da sub-familia Prioninae. (Rev. Mus. Paulista, xi, 1-208.) **Warren, E.**—Observations on the comparative anatomy of the termitophilous Aleocharine *Paracortocakermani*. (An. Natal Mus., iv, 297-366.) **Wilke, S.**—Beitrag zur kenntnis der gattung *Cybister*. **111**, 1919, A, 2, 243-76.

**Blatchley, W. S.**—Notes on some C. taken in the vicinity of Dunedin, Florida, in the spring of 1920, with descriptions of new species. **4**, lii, 259-64. **Fall, H. C.**—On certain species of *Haltica*, old and new. **5**, xxvii, 101-111. **Notman, H.**—Staphylinidae from Florida in the collection of the Am. Mus. N. H., with descriptions of n. gen. and sps. **62**, xlii, 693-732. **Schwarz, E. A.**—A new scolytiid beetle from tropical Florida. **20**, xxii, 222-6.

**HYMENOPTERA.** **Davis, W. T.**—Mating habits of *Sphecius speciosus*, the cicada killing wasp. **19**, xv, 128-9. **Haber, V. R.**—Oviposition by an evaniid, *Evania appendigaster*. **4**, lii, 248. **Hess, C.**—Neues zur frage nach einen farben sinne bei bienen. **118**, xlvi, 927-9. **Kinsey, A. C.**—Life histories of American Cynipidae. Phylogeny of cynipid genera and biological characteristics. **62**, xlii, 319-357; 357-402. **Mann, W. M.**—Additions to the ant fauna of the West Indies and Central America. **62**, xlii, 403-39.

**Kinsey, A. C.**—New species and synonymy of American Cynipidae. **62**, xlii, 293-317. **Lutz & Cockerell.**—Notes on the distribution and bibliography of N. A. bees of the families, Apidae, Meliponidae, Bombidae, Euglossidae and Anthophoridae. **62**, xlii, 491-641.

CATALOGUE OF THE COLEOPTERA OF AMERICA, NORTH OF MEXICO.  
BY CHARLES W. LENG.

We are able to announce the appearance of this longlooked-for catalogue. It will be especially welcomed by the North American coleopterists, and we expect to have a thorough review of it appear in a subsequent issue of this journal. We will say, however, from a general student's casual glance, that it is a thoroughly practical work of its kind. Copies can be purchased at Ten Dollars each from John D. Sherman, Jr., 132 Primrose Avenue, Mount Vernon, New York.

Regarding the dates of issue of this catalogue, the following information was received from Mr. Sherman.

The first copy of the paper edition was delivered to Dr. Samuel Henshaw, of The Museum of Comparative Zoology, Cambridge, Mass., December 24, 1920, and other copies mailed the same date to Dr. E. A. Schwarz, of the United States National Museum, Washington, D. C., and to Prof. H. F. Wickham, Iowa City, Iowa. Copies were on sale by Mr. Sherman, December 27th, and on December 28th copies were sent to the Editor of Science, Garrison, N. Y., The American Entomological Society, Philadelphia, and to A. S. Mutchler, of the American Museum of Natural History, New York. A copy was purchased from Mr. Sherman, December 29th, by H. L. Gifford, 2426 Palmetto St., Brooklyn, N. Y., and on the same date one was delivered to Prof. H. C. Fall while in New York City. The copy sent to The American Entomological Society was received by it December 30th, so stamped and placed in its Library.—E. T. CRESSON, JR., Librarian  
A. E. S.

## Doings of Societies.

### The American Entomological Society.

Meeting of December 8, 1919, in the hall of The Academy of Natural Sciences of Philadelphia. Twelve persons present, including Messrs. J. J. Davis and C. H. Hadley, of the Riverton (New Jersey) Entomological Laboratory. The President, Dr. Henry Skinner, in the chair.

Dr. Skinner announced the death of Mr. George B. Cresson, who became a member of the Society April 11, 1879, and made some remarks in appreciation of his character and entomological work.\*

On motion the following dates were chosen for the meetings of the Society in 1920: the fourth Thursdays of February, April and October; the first Monday of June, and the second Monday of December.

The following were regularly nominated and elected to serve as officers and on committees of the Society for 1920: *President*, Henry Skinner; *Vice President*, J. A. G. Rehn; *Corresponding Secretary*, Morgan Hebard; *Recording Secretary*, R. C. Williams; *Treasurer*, E. T.

\* See the News for Jan., 1920, vol. xxxi, p. 29.

Cresson: *Publication Committee*, J. A. G. Rehn, E. T. Cresson and P. F. Calvert; *Finance Committee*, D. M. Castle, Morgan Hebard and J. A. G. Rehn; *Property Committee*, E. T. Cresson, Jr., Morgan Hebard and Philip Laurent.

Meeting of February 26, 1920, in the same hall. Seven persons present. The President, Dr. Skinner, in the chair.

ORTHOPTERA.—Mr. J. A. G. Rehn exhibited a copy of J. Gundlach's *Contribucion a la Entomologia Cubana*, Parte IV, treating of the Orthoptera, which he had recently received and is turning over to the Society's library in which it has been lacking. This is a very rare publication. He called attention to Dr. Calvert's paper on Gundlach's publications in the Society's Transactions, vol. xlv, no. 4. He also made a few remarks upon sexual dimorphism in the Dermaptera, illustrating them chiefly by African forms which he had been studying recently, and spoke concerning the macrolabic and cyclolabic development of the forceps in the males of certain genera.

HEMIPTERA.—Mr. W. T. Davis exhibited and presented to The Academy of Natural Sciences specimens of *Okanagana magnifica* Davis from the Jemez Mountains of New Mexico (Woodgate), from Arizona and Colorado.

LEPIDOPTERA.—Dr. Skinner exhibited boxes of Pyrrhopyginae and Hesperinae showing curious mimicry.

GENERAL.—He also exhibited a piece of lead sheathing from a telephone cable in Texas which was curiously punctured by an insect which bores through the lead. The identity of the species is unknown, but it has done damage to the lines in that region.

R. C. WILLIAMS, *Recording Secretary*.

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## OBITUARY.

JAMES S. JOHNSON—died at his home, 3314 Benner Street, Wisconsin, Philadelphia, December the 14th, 1920, aged eighty-four years. Mr. Johnson was one of the first to engage in the upholstery business in Frankford, where he was born. During the Civil War he was in command of a hospital ship. Interment was made at Cedar Hill Cemetery.

He was interested in moths and had an excellent local collection. The genus *Catocala* appealed particularly to him and near his home he captured and recorded fifty-one species and varieties.

Mr. Johnson also conducted *The Naturalist's Journal*, published at Philadelphia, and in it he published a number of popular articles on various species of moths. In the *Canadian*

*Entomologist* for 1881 appeared an article on *Hyphantria textor* and in the year before one on "Early Appearance of *Catocalas*." In *Entomological News* for 1891 three articles were by him, the most important being entitled "Hunting *Catocalae*," a list of the local species being given with dates of appearance. Mr. Johnson was a genial man and an ardent collector and naturalist.—H. S.

---

Obituary notices of the following entomologists have been published in recent numbers (September--November, 1920) of the *Entomologist's Monthly Magazine* (London):

WILLIAM WEST, born at Rotherhithe in 1836, died at Haringay, Middlesex, July 20, 1920. His work was in the brass foundry of John Penn & Sons, Greenwich, for nearly fifty years. He was one of the founders of the South London Entomological and Natural History Society and Curator of their collections. He presented his collection of Homoptera (ca. 3500 spms.) to the Natural History Museum at South Kensington. His few written communications concern British insects.

F. C. ADAMS, an extensive collector of Diptera, who presented his specimens (ca. 9000), chiefly taken in the New Forest, to the same Museum, died in February, 1920.

FRANK MILBURN HOWLETT, Second Imperial Entomologist of India (1907) and, at the time of his death, Imperial Pathological Entomologist at Pusa, died after an operation at Mussoorie, India, August 20, 1920. He was born at Norfolk, in 1877, was a scholar at Christ's College, Cambridge (1896-1900), taught in England, and then at Allahabad University, first in chemistry, then in biology (1905-1907). He contributed some of the sections to Professor Maxwell Lefroy's *Indian Insect Life* (1909). He was especially interested in Diptera and in chemical and physical problems relating to entomology.

ALFRED EDMUND HUDN, who died October 7, 1920, aged 75, contributed articles on British Lepidoptera and Diptera and was also a generous donor to the British Museum of Natural History.

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The Entomologist's Monthly Magazine—A journal devoted to general Entomology, started in 1864, and now edited by G. C. Champion, J. E. Collin, W. W. Fowler, R. W. Lloyd, G. T. Porritt and J. J. Walker.

It contains descriptions of new genera and species in all orders (British and foreign), life histories, reviews of new works, etc. Volume LVI (VI of the second series) was commenced in January, 1920. The subscription for the 12 numbers is 15 shillings per annum, post free, to be sent to R. W. Lloyd, 1, 5, Albany, Piccadilly, London, W., England. For terms for advertisements apply to him also.

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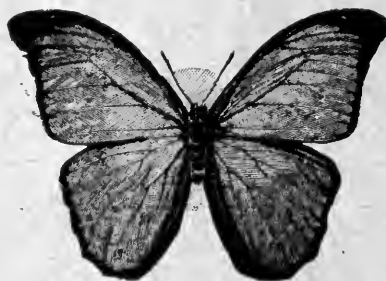
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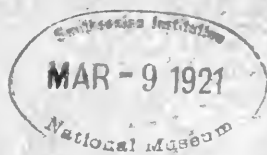
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1807-1865

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E. T. CRESSON, JR., Associate Editor.

HENRY SKINNER, M.D., Sc.D., Editor Emeritus.

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# ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

THE ACADEMY OF NATURAL SCIENCES, PHILADELPHIA

VOL. XXXII

MARCH, 1921

No. 3

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## Moths Collected at Hot Springs, Virginia (Lepid.).

By HENRY SKINNER.

It not infrequently happens that entomologists go on collecting trips or spend their vacation in the country and give no thought to general entomology but confine their entire attention to the group or order in which they are specially interested. This appears rather selfish to the writer and not good for entomology. Mr. Morgan Hebard is an exception to this rule. His principal work is with the Orthoptera but he does not neglect the other orders. The moths listed were in an excellent state of preservation and it was a pleasure to study them. The collection is noteworthy on account of the number of genera and species collected at one place in a short period of time. Butterflies were also collected and the true *Lycæna lygdamus* taken.\* Mr. Hebard has very kindly supplied the following notes in regard to the locality and his method of collecting the specimens.

"Hot Springs, Virginia, is situated close to the western border of the state in its central portion. At an elevation of

\* Ent. News, 1917, xxviii, 212.

two thousand feet, the small village nestles at the foot of heavily wooded parallel ridges, which attain an altitude of from thirty-two hundred to four thousand feet in the immediate vicinity. The rich mountain-valley pastures and deciduous forests were evidently teeming with insect life and, having occupied a small white cottage on the hillside on July 3, 1916, preparations were made for extensive collection of Orthoptera.

"A broad veranda, facing westward over the valley, had its wall and ceiling painted white and the three electric lights were seen to throw their radiance some distance through and over the trees below. Having changed the lights for those of one hundred candle power, the place was found to be ideal for collecting not only the few night-flying Orthoptera, but also the abundant Heterocera.

"In order to secure the moths without rubbing, two large cyanide jars were used; one in which the captures were made, these being dumped into the other jar as soon as movement had ceased. This was found to be a very important detail in the proper preservation of this delicate material.

"The appearance of the moths was very irregular, some nights being inexplicably bad, many good, while on occasional evenings, when no apparent difference in climatic conditions was noted, an extraordinary number of species as well as individuals would make their appearance. Individuals could be taken from twilight throughout the night, the largest number being usually secured between eight and ten. Scarcely any work, however, was done after midnight, and so we have few data for the hours before dawn, during which, we have reason to believe, moths sometimes appear about lights in some regions in remarkable abundance.

"Sultry nights are well known to be very favorable, but during this work almost every warmer afternoon was followed by a thunder storm which, at this altitude, almost invariably lowered the temperature to a point where further collecting proved to be of little avail. It was interesting to note, however, that long after the high winds and rain had commenced, specimens of all sizes would often continue to come in.

"The study of first appearance and duration of the various

species would prove very interesting. During our stay, from July 3 to August 24, species we had not previously seen were constantly appearing, fresh individuals often becoming numerous, while after a comparatively brief period of abundance those which came in would be in large part badly damaged and the number of individuals would show nightly a rapid decrease.

"Many species showed very contrasting behaviour after flying in and having become confused by the lights. Many of the larger species and some of the smaller forms would finally come to rest on the ceiling and its bordering ledges, but the greater number of the small individuals would come to rest on the white posts, back wall and on the screen doors. It also appeared that certain groups were less attracted to the lights and showed less decided confusion than others. Thus only rarely would a Sphingid fly in and, unless it shortly came to rest on the back wall, or became more confused in seeking an impossible exit through the ceiling, would dart out into the darkness, seldom returning.\*

"Though the number of species of small moths which came to light was astonishing to us, still other species were seen and taken in the nearby woodland which did not at any time make their appearance on the porch.

"The number of species taken was 348, representing 219 genera, the total of individuals being 1824. One new species was secured.

"A most satisfactory and compact method of packing this material was followed, as suggested to us by Dr. Skinner. In the morning the storage jar was emptied and the specimens were pinned on fine insect pins. Sorted according to size, three or four of the smaller individuals could be placed on one pin, this being done with the forceps so that at no time was an example touched by the fingers. A small label bearing the date was then placed on the pin and the prepared series packed

---

\* Similar behavior of Sphingidae was recently observed by us in Colombia, South America, where considerable collecting about small electric lights and a relatively high-powered twin gasoline pressure-lamp was accomplished. This type of light is clearly unsatisfactory for the collecting of these, the largest-bodied group of swift-flying moths.

closely in cigar boxes having cork bottoms. This method would not be safe in moist climates, but will prove most satisfactory in temperate regions."

<i>Deilephila lineata</i>	<i>Acronycta ovata</i>
<i>Ampelophaga myron</i>	" <i>inclara</i>
<i>Chlaenogramma jasminearum</i>	" <i>increta</i>
<i>Ceratomia amyntor</i>	" <i>retardata</i>
" <i>undulosa</i>	" <i>distans</i>
<i>Smerinthus jamaicensis</i>	<i>Microcoelia oblitterata</i>
<i>Paonias excaecatus</i>	<i>Bryophila lepidula</i>
" <i>myops</i>	<i>Polygrammate hebraeicum</i>
<i>Cressonia juglandis</i>	<i>Chytonix palliatricula</i>
<i>Actias luna</i>	<i>Baileya dormitans</i>
<i>Telea polyphemus</i>	" <i>ophthalmica</i>
<i>Eacles imperialis</i>	<i>Anorthodes tarda</i>
<i>Citheronia regalis</i>	<i>Caradrina miranda</i>
<i>Dryocampa rubicunda</i>	<i>Perigea vecors</i>
<i>Scepsis ruficollis</i>	<i>Oligia grata</i>
<i>Crambidia pallida</i>	<i>Hadena passer</i>
" <i>cephalica</i>	" <i>arctica</i>
" <i>casta</i>	" <i>verbascoides</i>
<i>Hypoprepia miniata</i>	" <i>lignicolor</i>
" <i>fucosa</i>	" <i>modica</i>
<i>Illice subjecta</i>	<i>Hyppa xylinoides</i>
<i>Nigetia formosalis</i>	<i>Euplexia lucipara</i>
<i>Characoma nilotica</i>	<i>Actinotia ramosula</i>
<i>Eubaphe ferruginosa</i>	<i>Dypterygia scabriuscula</i>
<i>Haploa clymene</i>	<i>Prodenia ornithogalli</i>
" <i>fulvicosta</i>	<i>Laphygma frugiperda</i>
<i>Estigmene acraea</i>	" <i>obscura</i>
<i>Diaerisia virginica</i>	<i>Rhynchagrotis alternata</i>
" <i>latipennis</i>	<i>Eucetagrotis sigmoides</i>
<i>Isia isabella</i>	" <i>inattenta</i>
<i>Apantesis virgo</i>	" <i>attenta</i>
" <i>nais</i>	<i>Semiophora elimata</i>
<i>Halisidota tessellaris</i>	<i>Pachnobia fishi</i>
<i>Demas flavicornis</i>	<i>Agrotis ypsilon</i>
" <i>infanta</i>	" <i>geniculata</i>
<i>Charadra deridens</i>	<i>Peridromia sancia</i>
<i>Acronycta americana</i>	" <i>incivis</i>
" <i>dactylina</i>	<i>Noctua bicarnea</i>
" <i>lobeliae</i>	" <i>c-nigrum</i>
" <i>lithospila</i>	" <i>plecta</i>
" <i>hamamelis</i>	" <i>lubricans</i>

<i>Feltia jaculifera</i>	<i>Plagiomimicus pitychromus</i>
“ <i>herilis</i>	<i>Polychrysia formosa</i>
“ <i>annexa</i>	<i>Plusia aerea</i>
<i>Euoxa redimicula</i>	“ <i>balluca</i>
“ <i>messoria</i>	<i>Autographa precatonis</i>
“ <i>insulsa</i>	“ <i>falcifera</i>
“ <i>tessellata</i>	<i>Ogdoconta cinereola</i>
“ <i>obeliscoides</i>	<i>Paectes oculatrix</i>
<i>Mamestra nimbosa</i>	<i>Scolecocampa liburna</i>
“ <i>purpurissata</i>	<i>Phiprosopus callitrichoides</i>
“ <i>lustralis</i>	<i>Érastria synochitis</i>
“ <i>detracta</i>	“ <i>muscosa</i>
“ <i>subjuncta</i>	“ <i>carneola</i>
“ <i>crisifera</i>	<i>Galgula hepara</i>
“ <i>latex</i>	“ <i>partita</i>
“ <i>adjuncta</i>	<i>Metoponia obtusa</i>
“ <i>legitima</i>	<i>Chamyris cerintha</i>
“ <i>ectypa</i>	<i>Acontia erastrioides</i>
“ <i>renigera</i>	<i>Spragucia leo</i>
“ <i>marinitincta</i>	<i>Metathorasa monetifera</i>
<i>Leucania unipuncta</i>	<i>Phalaenostola larentoides</i>
“ <i>pseudargyria</i>	<i>Pangrapta decoralis</i>
“ <i>albilinea</i>	<i>Homopyralis discalis</i>
“ <i>phragmatidicola</i>	“ <i>contracta</i>
<i>Orthodes crenulata</i>	“ <i>tantillus</i> ?
“ <i>vecors</i>	<i>Drasteria erechtea</i>
<i>Tricholita signata</i>	<i>Melipotis limbolaris</i>
“ <i>syrixa</i>	<i>Catocala nubilis</i>
<i>Cucullia asteroides</i>	“ <i>amica</i>
<i>Achatodes zeae</i>	“ <i>gracilis</i>
<i>Hydroecia velata</i>	“ <i>grynea</i>
“ <i>americana</i>	“ <i>hero</i>
<i>Erythroecia hebardii*</i>	“ <i>similis</i>
<i>Pyrrhia umbra</i>	“ <i>clintoni</i>
<i>Orthosia ferruginoides</i>	“ <i>herodias</i>
“ <i>aurantiago</i>	“ <i>coccinata</i>
“ <i>helva</i>	“ <i>ilia</i>
<i>Calymnia orina</i>	“ <i>cara</i>
“ <i>calami</i>	“ <i>amatrix</i>
<i>Choridea virescens</i>	“ <i>antinymphe</i>
<i>Rhodophora florida</i>	“ <i>palaeogama</i>
<i>Lygranthoecia thoreani</i>	“ <i>neogama</i>
“ <i>marginata</i>	“ <i>epione</i>
<i>Euthisanotia grata</i>	“ <i>dejecta</i>

\*Ent. News, 1917, XXVIII, 329.

Catocala residua	Hyparpax aurora
Panapoda rufimargo	Fentonia marthesia
Agnomonina anilis	Gluphisia septentrionalis
Ypsia undularis	Hemerocampa definita
Homoptera lunata	Olene achatina
Epizeuxis lubricalis	Malacosoma americana
"    rotundalis	"    disstria
"    americalis	Drepana genicula
"    aemula	Dyspteris abortivaria
Zanclognatha laevigata	Eudule mendica
"    ochreipennis	Heterophleps triguttaria
Philometra goasalis	Tephroclystis nebulosa
Bleptina atrimacula	Eucymatoge intestinalis
Tetanolita mynesalis	Venusia comptaria
Renia discoloralis	Euchoeca albovittata
"    flavipunctalis	"    albifera
Heterogramma pyramusalis	Coryphista meadi
Gaberasa ambigualis	"    badiaria
Palthis angulalis	Eustroma gracilineata
"    asopialis	"    atrocolorata
Bomolocha deceptalis	Percnoptilota fluvialata
"    madefactalis	Mesoleuca lacustrata
"    umbralis.	Hydriomena latirupta
Plathypena scabra	Coenocalpe magnoliata
Habrosyne scripta	Gypsochroa sitellata
Pseudothyatira cymatophoroides	Xanthorhoe ferrugata
"    expultrix	Haematopsis grataria
Melalopha apicalis	Calothysanis amaturaria
"    inclusa	Cosymbia myrtaria
Datana ministra	"    lumenaria
"    angusi	"    albo-costaliata
"    perspicua	Synelys enucleata
Hyperaeschra georgica	Leptomeris quinquelinearia
Lophodonta ferruginea	Eois demissaria
Nadata gibbosa	"    nimbicolor
Nerice bidentata	"    obfuscaria
Dasylophia anguina	Chlorochlamys chloroleucaria
Heterocampa obliqua	"    phyllinaria
"    umbrata	Synchlora aerata
"    biundata	Anaploides viridicaria
"    bilineata	Heliomata infulata
Misogada unicolor	Physostegania pustularia
Schizura semirufescens	Sciagraphia heliothidata
"    unicornis	Macaria infimata
"    badia	"    minorata

Cymatophora ribearia	Desmia funeralis
"    distribuaria	Pilocrocis ramentalis
Catopyrrha coloraria	Blepharomastix nymphulalis
"    dissimilaria	Pantographa limata
Alcis sulphuraria	Evergestis rimosalis
Paraphia deplanaria	Crocidophora serratissimalis
Lytrosis unitaria	Nomophila noctuella
Cleora pampinaria	Phlyctaena ferrugalis
"    larvaria	Cindaphia bicoloralis
Melanolophia canadaria	Pyrausta aeglealis
Ectropis crepuscularia	"    thestealis
Epimecis virginaria	"    acronialis
Lycia cognataria	"    insequalis
Anagoga pulveraria	"    generosa
Sicya macularia	Pyrausta signatalis
Therina endropiaria	"    niveiciliis
Metrocampa praegrandaria	Elophila bifascialis
Eugonobapta nivosaria	Scoparia basalis
Ennomos subsignarius	"    strigilis
Xanthotype crocotaria	Aglossa cuprealis
Plagodis phlogosaria	Herculia olinalis
Hyperitis amicarica	Galasa rubidana
Euchlaena serrata	Crambus alboclavellus
"    johnsonaria	"    elegans
Metanema excelsa	"    teterellus
"    quercivoraria	"    trisectus
Azelina ancetaria	"    luteolellus
Caberodes confusaria	Argyria nivalis
"    majoraria	Tetralopha militella
Tetracis crocallata	Exartema inornatana
Sabulodes sulphurata	Olethreutes daeckeaana
"    arcasaria	Enarmonia interstinctana
"    transversata	Ecdytolopha insiticiana
Euclia querceti	Epagoge sulphurana
"    indetermina	Cenopsis reticulatana
"    chloris	Archips rosaceana
Natada nasoni	"    purpurana
Prolimacodes scapha	Platynota sentana
Limacodes biguttata	Tortrix peritana
"    y-inversa	Eulia alisellana
Lithacodes fasciola	Brachiloma unipunctella
Tortricidia flexuosa	Holocera chalcfrontella
Glaphyria sesquialis	Xylestia pruniramella
Symphysa eripalis	Acrolophus plumifrontellus
Hymenia perspectalis	

## Undescribed Crane-Flies from Argentina (Tipulidae, Diptera)—Part II.

By CHARLES P. ALEXANDER, Urbana, Illinois.

This paper is a continuation of the first part under this title (ENTOMOLOGICAL NEWS, vol. xxxi, pp. 215-221, 1920). The material herein considered was sent to me by my friend, Señor Charles Bruch, and is based principally on specimens sent him by Engineer Weiser, collected in the Puna Region of the Province of Jujuy. The types are preserved in the writer's collection.

### *Geranomyia subserotina* sp. n.

Allied to *G. serotina*; mesonotal praescutum reddish grey with three narrow longitudinal stripes, the median one black, the lateral stripes dark reddish brown, these latter continued caudad onto the scutal lobes; femora brownish testaceous, the tips more yellowish, before the tips with an indistinct brownish ring; wings yellowish white with a sparse brown pattern; *Sc* short.

♂. Length (excluding the rostrum) about 8 mm.; wing 8 mm.; rostrum alone, about 3.8—4 mm. Rostrum moderately elongated, black; palpi black. Antennae black, the flagellar segments rounded oval. Head yellowish gray; a pale silvery line extending from the front to the occiput; two narrow brownish black lines extending from the posterior margin of the eyes to the occiput, subequal in width to the pale line enclosed; these black lines are sometimes nearly obsolete.

Mesonotal praescutum reddish grey with three narrow longitudinal stripes, the median stripe broader and more deeply colored, black; lateral stripes dark reddish brown, very narrow anteriorly, posteriorly extending slightly beyond the level of the median stripe; scutum heavily light grey pruinose; scutellum brown, the posterior margin indistinctly yellowish; postnotum light brown, sparsely pruinose. Pleura reddish gray pruinose, the dorsal sclerites a little darker. Halteres obscure yellow, the knobs brown.

Legs with the coxae and trochanters yellowish testaceous; femora brownish testaceous, before the more yellowish tips with an indistinct, subterminal, light brown ring; remainder of the legs brown, gradually passing into black on the tarsi.

Wings with a faint yellowish white tinge; stigma small, brown; small brown seams as follows: on the supernumerary crossvein in cell *Sc*; origin of *Rs*; tip of *Sc*; along the cord and outer end of cell 1st *M2*; veins yellowish. Venation: *Sc* rather short, extending to about opposite one fourth the length of *Rs*, *Sc2* at the tip of *Sc1*; *Rs* long, arcuated at origin; *r* at tip of *R1* and at about one-third the length of *R2+3*; basal deflection of *R4+5* arcuated; cell 1st *M2*



closed, about as long as vein *M*3 beyond it; basal deflection of *Cu*1 beyond the fork of *M*, equal to or longer than *Cu*2 alone.

Abdominal tergites dark brown; sternites paler; hypopygium obscure reddish yellow.

*Holotype*: ♂, Ciudad, Province of Jujuy, May 23, 1920 (V. Weiser). *Paratopotypes*: 2 ♂'s, May 22-23, 1920.

*Geranomyia subscrotina* is closely related to *G. serotina* Alex. (Argentina: Sierra Córdoba) from which it is readily told by the different coloration of the mesonotum (there being three distinct dark stripes) and the much shorter subcosta.

#### **Geranomyia (Gonomyella) maesta** sp. n.

Antennae dark brown; mesonotum black, grayish brown pruinose; pleura with a conspicuous whitish yellow longitudinal stripe; wings with a brownish tinge; *Sc* moderately long; male hypopygium with three pleural appendages, the longest of which is slender, near mid-length dilated into a collar-like structure, one side of which is slightly produced into a spine; penis-guard with the apex simple.

♂. Length about 4.5 mm.; wing 5.2 mm. ♀. Length about 5.5 mm.; wing 5.4 mm.

Rostrum and palpi dark brown. Antennae dark brown with a sparse yellowish pubescence; flagellar segments in the male cylindrical, in the female oval. Head gray.

Pronotum dark gray pruinose, the scutellum obscure yellow. Mesonotum black, sparsely grayish brown pruinose; pseudosutural foveae conspicuous, elongate, shiny black. Pleura black, sparsely gray pruinose; a conspicuous obscure whitish yellow longitudinal stripe extending from behind the fore coxae to near the hind coxae; a pale yellow spot on the mesepimeron in front of the base of the halteres. Halteres brown.

Legs with the coxae blackish, paler apically; trochanters dark brown; remainder of the legs brownish black, the bases of the femora paler.

Wings with a strong brownish tinge; stigma oval, darker brown; veins almost black. Venation: *Sc* moderately long, *Sc*1 ending about opposite midlength of *Rs*; *Rs* long, gently arcuated; *R*2+3 shorter than *R*2; *r* obliterated or approximately so; basal deflection of *R*4+5 longer than *r-m*; basal deflection of *Cu*1 at the fork of *M*.

Abdomen dark brownish black. Male hypopygium with the outer lateral angle produced into a short spine; three pleural appendages, the longest a cylindrical chitinized rod, the basal half stout, at about mid-length dilated into an irregular collar, the lower angle produced into a sharp spine, the face of which is setigerous; the distal half of this appendage is slender; intermediate appendage fleshy, the surface covered with numerous short sensory setae; outer appendage slightly curved, gradually narrowed to the subacute blackened apex. Penis-guard with the tip simple.

*Holotype*: ♂, Ciudad, Province of Jujuy, May 22, 1920 (V. Weiser). *Allotopotype*: ♀, May 23, 1920.

**Gonomyia (Gonomyia) illicis** sp. n.

Antennae black, the scape orange; thoracic pleura yellow with a narrow dark brown longitudinal stripe; halteres long, brown; wings tinged with gray; *Sc* very short, cell 1st *M2* open, basal deflection of *Cu1* at the fork of *M*; abdomen dark brown, the sternites yellow; male hypopygium with two pleural appendages; gonapophyses elongate, needle-like.

♂. Length about 4 mm.; wing 4.6 mm. ♀. Length about 5 mm.; wing 5.8 mm.

Rostrum and palpi dark brown. Antennae with the scape orange; flagellum dark brownish black. Head obscure yellow, the vertex marked with darker.

Pronotum light sulphur yellow, darker laterally. Mesonotum brown, the lateral margins of the praescutum and scutum more yellowish; scutellum light brown, the caudal margin narrowly yellowish; postnotum brown medially, the lateral margins of the median sclerite and all of the lateral sclerites yellow. In the female ascribed to this species the postnotum is yellow except posteriorly. Pleura yellow, more obscure ventrally; a narrow dark brown longitudinal stripe extending from the lateral margins of the pronotum above the fore coxae, through the base of the halteres to the abdomen; sternites dark brown. Halteres relatively long and slender, brown.

Legs with the coxae yellowish flesh color; trochanters yellowish testaceous; remainder of the legs light brown.

Wings faintly grayish; stigma slightly darker, grayish brown; veins dark brown. Venation: *Sc* short, *Sc1* ending far before the origin of *Rs*, the distance being about two-thirds the length of *Rs*; *Rs* arcuated; *R2+3* long, strongly arcuated, about twice *R2* but shorter than *Rs*; basal deflection of *R4+5* short; cell 1st *M2* open; basal deflection of *Cu1* at the fork of *M*. In the female, cell 1st *M2* is closed in both wings.

Abdominal tergites dark brown; sternites and the hypopygium obscure yellow. Male hypopygium with the pleurites stout, the outer lateral angle produced caudad into a slender, fleshy setigerous lobe; pleural appendages two in number, one fleshy, the tip narrowly chitinized and flattened into a small beak; a row of about twenty stout setae along its face; the other appendage is fleshy, but at about two-thirds the length there is borne a stout chitinized spine that is about as long as the fleshy apex beyond it; the fleshy parts on the outer half of the appendage are provided with abundant long bristles. Penis-guard long and slender, the apex slightly bifid; gonapophyses two, subtending the penis-guard, these very long and slender, needle-like, the tips acute, not attaining the ends of the guard.

*Holotype*: ♂, Ciudad, Province of Jujuy, May 22, 1920 (V. Weiser). *Allotopotype*: ♀. *Paratopotype*: ♂, May 25, 1920.

*Gonomyia illicis* is related to *G. jejuna* Alex. (Peru) but differs in the structure of the male hypopygium.

***Gonomyia (Leiponeura) trispinosa* sp. n.**

Allied to *G. cinerea*; male hypopygium with three pleural appendages, each of which bears a chitinized spine.

♂. Length about 3.5 mm.; wing 4.3 mm. Belongs to the *cinerea* group; allied to *G. helophila* and other species.

Head broken. Mesonotum clove-brown. Pleura brown, the dorso-pleural region yellowish; a narrow yellowish white longitudinal stripe passing below the root of the halteres to the base of the abdomen, this pale line bordered on either side by a dark brown margin. Halteres short, brown.

Legs with the coxae and trochanters testaceous yellow; fore and middle legs broken; hind femora obscure yellow, before the tips with a narrow brown subterminal ring; tibiae light yellow, conspicuously tipped with black; metatarsi brown, the distal half and the remainder of the tarsi black.

Wings with a grayish yellow tinge, the costal and subcostal regions paler yellow; stigma indistinctly pale brown; veins brown, the cross-veins and deflections comprising the cord darker brown. Venation: *Sc* short, *Sc1* ending far before the origin of *Rs*, the distance being greater than *Rs* alone; *Sc2* a short distance from the tip of *Sc1*; *Rs* comparatively short, strongly arcuated at origin; inner ends of cells *R3*, *R5* and *1st M2* in alignment; cell *2nd M2* a little longer than its petiole; basal deflection of *Cu1* at the fork of *M*.

Abdominal tergites dark brown, the posterior margins of the segments broadly but obscurely yellowish; sternites more yellowish. Male hypopygium with the pleurites rather stout; three pleural appendages, each of which bears a sharp blackened spine; ventral appendage longest, produced caudad as a flattened, ribbon-like blade, the tip narrowly darkened, obtuse; near the base of this lobe on the proximal face a short but acute slightly curved black spine; intermediate appendage a short, slightly curved black spine of approximately the same shape and size as the one just described; dorsal pleural appendage a fleshy lobe whose caudal angle is produced into a very long, strong, chitinized hook that is several times larger than either of the two spines just described; the blackened apex of this hook is bent almost at a right angle to the base; the base of the appendage bears several powerful setae. Gonapophyses and penis-guard elongate but of simple structure as in this group of species.

*Holotype*: ♂, Ciudad, Province of Jujuy, May 22, 1920 (V. Weiser).

*Brachypremna subsimilis* sp. n.

Related to *B. similis*; mesonotal praescutum obscure yellow with four distinct brown stripes, the outer ones curved strongly laterad to the margin of the sclerite; abdominal sternites each with a linear dark brown median mark that covers approximately one-half of the length of each segment.

♂. Length 16 mm.; wing 22 mm. Closely related to *B. similis* Will. (Mexico to Panama), differing as follows:

Frontal prolongation of the head tumid, light yellow above, brown laterally; mouthparts dark brown; basal segment of the palpus dark brown, the other segments broken.

Pronotum pale brownish yellow with four darker brown spots. Mesonotal praescutum obscure yellow with four distinct stripes; the intermediate pair dark brown behind, more reddish anteriorly, the extreme cephalic ends of each more shiny and with a small dark brown spot; lateral stripes bent outward almost at a right angle, enclosing a circular area of the ground-color between it and the transverse suture; postnotum with the pale sublateral stripes approximately as wide as the fusiform median stripe.

The coloration of the legs is practically identical in the two species, but the tibiae in the present species are paler and the feet somewhat more yellowish.

The wings are likewise almost identical but here the stigma is paler and *Rs* less strongly angulated at its origin.

Abdomen dark brown, the lateral margins of the segments yellowish, very broad on segment one and the base of segment two; sternites obscure yellow with a linear dark brown dash on each, these much longer and more conspicuous than in *B. similis*, occupying about one-half the length of the segments, on sternites six and seven much longer, occupying almost all of the sclerite.

*Holotype*: ♂, San Roque, Corrientes, February, 1920 (Señor Juan Bosq).

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### The Bee-genus *Ancylosceles* Haliday (Hym.).

By T. D. A. COCKERELL

Much confusion has arisen through the misinterpretation of the Anthophorid genus *Ancylosceles*, usually written *Ancyloscelis*. It was first published with a described species by Haliday, but his *A. ursinus* was so imperfectly defined that it was impossible to place it with certainty. I have found Haliday's unique type in the British Museum, and it represents a genus which includes *Ancyloscelis turmalis* Vachal, 1904, and such species as *armata* Smith, recently referred to *Leptergatis*. *Leptergatis halictoides* Holmberg, represented by five speci-

mens in the museum, belongs to a different genus, with a very long tongue, closely related to *Melitoma*. It differs from *Melitoma* in the long six-jointed maxillary palpi, lacking conspicuous lateral brush of hairs, and in the venation of hind wing, the separation of discoidal and cubital nervures being about equally distant from transversomedial and transversocubital. True *Ancylosceles*, including *ursinus*, *armatus* and *turmalis*, is a distinct genus, peculiar to the neotropical region, but widely spread therein. Haliday's type may be redescribed as follows:

***Ancylosceles ursinus* Haliday.**

♂. Length about 9 mm., anterior wing 8.3 mm.; head and thorax with rather short ferruginous hair; abdomen densely covered with appressed velvet-like ferruginous hair; legs with ferruginous hair; base of mandibles yellow, with a black spot on upper part of yellow area; labrum yellow; clypeus yellow, with two large black triangles above, joined in the middle line, so that the lower margin of the black is W-like; apical part of scape red in front; flagellum dark reddish, not very long; tongue broadened and fan-like at tip; hind femora very greatly swollen, oval, with the inner face flattened and ferruginous; hind tibiae much swollen, with an angle or low tooth on outer side beneath, not far from apex; hind basitarsi pale yellowish, somewhat swollen, but otherwise simple; wings dusky; transversomedial of hind wing a little oblique, a little (but distinctly) nearer to separation of discoidal and cubital nervures than is transversocubital; third submarginal of anterior wing broad above, its breadth on marginal more than half as great as its lower side; first recurrent nervure joining second submarginal cell at about the beginning of its last third; stigma well developed; apex of abdomen not bidentate.

*Ancylosceles turmalis* (Vach.) is closely allied to *A. ursinus*, but smaller, with no black spot on yellow of mandibles. The clypeus is more reddish, but the two black triangles are present, and the insect has the same red pubescence. In the hind wing the separation of the discoidal and cubital nervures is a little nearer transversocubital than transversomedial. The hind legs are of the same type, but the hind basitarsi have a tooth-like angulation on the anterior side, a structure much more developed (thorn-like) in *A. armatus*.

*Diadasia* is a perfectly distinct genus, closely related to *Ptilothrix*, but having a pulvillus. *Ptilothrix riparia* Ducke has a pulvillus and long third submarginal cell, and it is to be called *Diadasia riparia*.

## On Some Species of *Hesperia* (Lepid., Hesperidae).

By W. M. BARNES, M.D. and A. W. LINDSEY, Ph.D.,  
Decatur, Illinois.

In the *Bulletin de la Société lépidoptérologique de Genève*, vol. IV, pp. 96-107, Dr. Reverdin considers in his usual painstaking way the North American species *Hesperia syrictus*, describing a new form, *fumosa*. In the same paper he gives the name *syrictides* to the Central American species which has been called *orcus* Cram. by some writers. Dr. Skinner, in ENTOMOLOGICAL NEWS for December, 1919, p. 297, calls attention to this paper and adds some interesting information regarding the types of *montivagus* Reak.

It was our pleasure during the summer of 1919 to investigate these names as thoroughly as possible, and only the lack of definite information on the actual identity of *syrictus* prevented an earlier publication of our conclusions. Fabricius stated the locality of *syrictus* in the original description (*Syst. Ent.*, 534, 1775) as America, and Butler (*Cat. Fab. Diurn. Lep. B. M.*, p. 280, 1869) applied the name to specimens from Honduras. This led us to the conclusion that the name might properly refer to *syrictides*, rather than to the more northern form, and specimens were sent to the British Museum for comparison with the specimens mentioned by Butler. An answer recently received from Mr. N. D. Riley, who has kindly examined all the material in his care, informs us that these specimens are no longer to be found, and that the two species are mixed under the name *syrictus* in the museum series. He further states that our North American species alone is represented by specimens from Honduras, among a series from Mexico to Costa Rica, while of the other form specimens from Panama and various parts of South America are in the collection. Dr. Reverdin, in his paper, adds Brazil to the range of both species, and Mexico to that of *syrictides*, in addition to other records. From the aggregated data it would thus seem impossible to arrive at any conclusion based on distribution, and we can only retain *syrictus* Fab. as it has hitherto been used.

*Montivagus* Reak., based on two specimens in the Field Mus-

eum which are very fully discussed by Dr. Skinner in the paper mentioned above, refers to the brown suffused form of *syrichtus*. Unfortunately Reakirt's original description does not mention any of the absolute distinguishing characters of *syrichtus*, but neither does it mention their absence, so we see no reason whatever to doubt the validity of the types, a contingency which Dr. Skinner suggests. We have examined these types, and there is a compared male in the Barnes collection. The brown suffusion on the under surface of the secondaries is very conspicuous, and offers, in our opinion, ample basis for the separation of *montivagus* as a form of *syrichtus*. This is the form described by Dr. Reverdin as *fumosa*. The specimen which he figures is one of the most heavily suffused, but this character is subject to considerable variation. A recent note from Dr. Reverdin advises us that he was not acquainted with the true identity of *montivagus* at the time he described *fumosa*, due, no doubt, to the misuse of the name for *tessellata* for so many years even in our own country. Unfortunately Dr. Reverdin's name must be regarded as a synonym.

The species described as *syrichtides* by Dr. Reverdin does not come within our province, and so we have indulged in no speculation on its possible identity with *orcus* Cr. It is undoubtedly distinct from our species, as shown by the excellent figures of the male genitalia published by our esteemed colleague.

The arrangement of *syrichtus* in the "Check List" should be modified thus:

- 493    *syrichtus* Fab.  
           *form montivagus* Reak.  
           *fumosa* Rev.  
           \* \* \* \* \*

A note by Mr. Roswell C. Williams (Ent. News, XXX, p. 38) regarding the apparent specific distinctness of *H. occidentalis* Skin. and *tessellata* Scud. on the basis of genital structure led us to examine a long series of these races recently. The genitalia do undoubtedly show two very easily separable forms of valves, but these are connected by a great variety of intermediate forms. In true *tessellata* the valve is provided with a

slender dorsal projection near its tip, which may show a slight lateral projection; in *occidentalis* from California the valve is without this spine-like process, but in its place exhibits two low angular prominences in all the specimens examined. In specimens from Texas, Arizona, Utah, Nevada and California we find a variable development of two slender processes from a common base, a slender process with a long branch, or a long, rather thick process more or less deeply bifurcate at its tip. It is impossible to draw a definite line between the extreme forms, so we prefer to retain the old conception of *occidentalis* as a pale western race of *tessellata*, limited in range to the Pacific Coast States and portions of those immediately to the east. The race is not at all well marked, for in any part of the country the extent of the white areas of *tessellata* is subject to great variation.

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The difficulty of formulating any superficial distinction between *macdunnoughi* Oberth. and *xanthus* Edw. recently led us to examine the genitalia of the two species, which prove to be identical. Our three specimens of *macdunnoughi* and one now in the National Museum are quite similar in appearance, while four specimens of *xanthus* are of as many different forms. The specimens of *macdunnoughi*, however, are all from one place, Redington, Arizona, while those of *xanthus* are from four different localities. We may, therefore, safely conclude that *macdunnoughi* is a synonym of *xanthus*, a variable species as are all of our others in this genus.

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### **Sympetrum atripes (Hagen) a good Species (Odon.).**

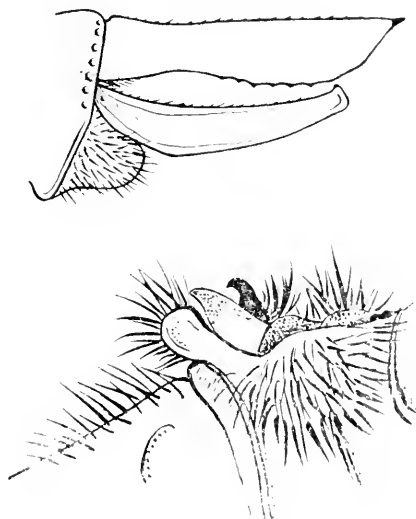
By R. HEBER HOWE, JR., Thoreau Museum of Natural History,  
Concord, Massachusetts.

In a collection of New England Odonata that Mr. George C. Wheeler has given me for determination I have found two interesting captures. The first, three specimens of *Agrion amatum* (Hagen) from Petersham, Massachusetts (1000 ft.) taken along the Swift River, July 19, 1920. The second, two (damaged) males of *Sympetrum atripes* (Hagen) col-



lected September 9, 1919, along the shore of one of the arms of Lake Winnepesaukee (500 ft.) in the town of Meredith, New Hampshire. These specimens at once attracted my attention on account of their very "villous" thoraces and black legs. The wings are somewhat "smoky," and without flavescent costal margins, and with the genitalia and abdominal appendages unlike those of other New England species. Through the kindness of Dr. Banks they have been compared with the Hagen types preserved in the Museum of Comparative Zoölogy, Cambridge, and found to be identical. Though undoubtedly *atripes* is, on account of its genitalia in the *semicinctum-vicinum-costiferum* section, and as stated by Hagen a near relative of *S. costiferum*, the costal margins as already noted are not flavescent as in that species.

*Sympetrum atripes* since it was described from the Yellowstone in the Report of the Pseudo-neuroptera and Neuroptera collected by Lieut. W. L. Carpenter in 1873 in Colorado (page 588, 1874) has never been again recorded. It has recently been



*Sympetrum atripes* Hagen, ♂, Lake Winnepesaukee, New Hampshire, September 9, 1919, collected by Mr. George C. Wheeler.

Above, left profile view of abdominal appendages. Below, left profile view of genitalia of abdominal segment 2, inverted.

questionably placed in the synonymy of *S. costiferum* by Dr. Ris, and is catalogued by Dr. Muttkowski (Bull. Publ. Mus. Milwaukee 160, 1910) as "Canadian; Yellowstone."

The most perfect specimen measures length 34 mm., alar expansion 55 mm., pterostigma 2.5 mm. One specimen lacks the head, the other the six distal segments of the abdomen. The genitalia and abdominal appendages are here figured. Mr. Wheeler has generously given the author one of the specimens, the other remains in his own collection.

This capture adds a new species to the New England fauna which now numbers 159, as *Cordulegaster erroneus* Hagen and *Sympetrum corruptum* (Hagen) have also been added since the publication of the author's *Manual*.

Since writing the above I have found a reference by Dr. Muttkowski (Bull. Wis. Nat. Hist. Soc. 6:167, 1908) to a teneral "*Sympetrum sp.*" taken at Fox Lake, Dodge County, Wisconsin, which he states suggests *S. costiferum* "save that the tarsi are entirely black." He figures the abdominal appendages and genitalia which resemble closely the figures here given. In fact the genitalia as figured in Dr. Needham's *Aquatic Insects* (520) of *S. semicinctum* resemble much more closely these than they do those given for *S. costiferum*, and as they do actual material examined. In a later paper (*ibid.* 8:58, 1910) Dr. Muttkowski refers to another similar specimen (teneral) taken Aug. 13-14, 1909 at North Hudson, St. Croix County, Wisconsin, which also has "entirely black tarsi." Except for his remark that the "costal area of all wings is flavescent" it would appear that his specimens were *S. atripes*, and in all teneral specimens before me of *S. costiferum* the flavescence is more marked than in the adults.\*

[\*In my collection, at The Academy of Natural Sciences of Philadelphia, are a male and a female of *S. atripes*, labeled "Yellowstone, Aug. 30, 1894, C. C. Adams" and "Compared with H's type by P. P. C." The male has the denticles on the inferior surface of the superior appendages, four in number, nearer together than in Dr. Howe's figure and occupying only the terminal fourth of the inferior margin as seen in profile view (excluding the upward slope to the apex), sides of abdominal segment 2 not hairy, a very slight flavescence along the anterior margin of both front and hind wings.—Philip P. Calvert.]

## Observations on *Psyllobora taedata* LeConte, a Coccinellid Attacking Mildews (Col.).<sup>1</sup>

By W. M. DAVIDSON,<sup>2</sup> Alhambra, California.

*Psyllobora taedata* LeConte is a common coccinellid throughout the cultivated portions of California and the writer has observed it the past eight years in numerous localities. It occurs in about equal abundance in the coastal regions and in the interior valleys.

In all stages the insect is to be found associated with fungus infestations of the mildew type and it appears to be especially attracted to rose and apple powdery mildew (*Sphaerotheca pannosa* Lev. and *Podosphaera oxycanthae* De Bary respectively).

The adult beetles hibernate either singly or in small colonies in sheltered locations. They issue forth in April and thenceforth breeding takes place until November and even December. Pre-eminently a phytophagous insect, the species, nevertheless, is wholly beneficial in that it confines its feeding to destructive fungi. It, however, rarely attacks incipient mildew outbreaks, but rather well established infestations and in this respect conforms to the normal character of predatory coccinellids.

The adult beetles are small convex insects, about 2.2 mm. in length by 1.6 mm. in width; sordid yellowish-white, liberally blotched and spotted with brown and brownish-black maculations. Immature stages are whitish; the larvae and pupae bearing grayish markings.

### DESCRIPTION OF STAGES.

The *ovum* is white, elongate, oval, deposited with the long axis at right angles to the leaf or stem surface. Length .6 mm., width .2 mm. The eggs are generally deposited on the surface of a leaf attacked by fungus, more rarely on the stem. When the foliage is being curled by the action of the fungus the eggs are usually placed inside the curl. They are rarely deposited in groups larger than 4; most often there are either 2 or 4 in a group.

The newly-hatched *larva* is short oval, light gray, armed with long

<sup>1</sup> Published with the permission of the Secretary of Agriculture.

<sup>2</sup> Deciduous Fruit Insect Investigations, Bureau of Entomology, U. S. Dept. of Agriculture.

slender whitish hairs, legs hyaline. Size .77 mm. x .23 mm. Twenty-four hours after hatching the larva is white with a gray head. The lateral pairs of thoracic and abdominal tubercles are white, the dorso-lateral and medio-dorsal gray. The tubercles bear whitish hairs and those of the lateral rows are the longest, about seven-eighths the length of the anterior margin of the pro-thorax.

After each molt the body color of the larva is gray with a median lighter stripe, the general color becoming paler as the instar progresses, so that at the end of each instar the insect is white. Following the first molt the larva measures about 1.6 mm. x .55 mm., following the second about 2.2 mm. x .62 mm., and following the third about 2.7 mm. x .8 mm.

The full-grown larva measures 3.1 mm. x 1.2 mm. It is elongate, sordid white, the eyes black, the head gray. The thoracic sclerites have ovoid, dusky gray tubercles armed on the margins with rather long pale hairs. The medio-dorsal and dorso-lateral tubercles of abdominal segments 2 to 7, inclusive, are circular and gray, the color on those of segment 7 inconspicuous; segment 1 has a pair of medio-dorsal gray tubercles and the dorso-lateral pair yellow. On each lateral margin is a row of sordid white tubercles. Each tubercle bears several pale hairs, those on the lateral tubercles being longest. Legs sordid whitish, coxae gray. Venter white.

Following the fourth molt or cecidysis the insect becomes a pupa. The *pupa* is short, oval, sordid white or whitish gray in ground color; head white, eyes black; prothorax white, the margin sometimes light gray; wing pads gray, darker towards the apices; legs whitish; second abdominal segment bears two small, light gray spots, one on either side of the medio-dorsum; third segment with 6 sub-circular black spots in a transverse row, innermost pair largest, outermost pair smallest; fourth segment with four smaller black spots corresponding to the two inner pairs on preceding segment; venter whitish; short whitish vestiture occurs all over the body. Darker individuals have six black spots on segment 2 and on the fifth segment four spots like those on the fourth, also two small blackish spots at the medio-dorsum of the suture dividing the second and third thoracic sclerites. Length of pupa 1.9 mm. to 2.1 mm. Width 1.2 mm. to 1.3 mm. Height .85 mm. to 1.05 mm.

The *adult beetle*, which emerges from the pupa, is convex and broadly oval; the pronotum subimpunctate, whitish with a median and four other brown spots arranged in a semi-circle and sometimes coalescing into an arc; elytra whitish or yellowish-white, each with three brownish-black subcircular spots, two variably shaped light brown spots and a median light brown vitta; the maculation of the elytra is variable as to the relative sizes of the spots, but the markings occupy a collective area slightly greater than that of the pale ground color. Antennae and legs yellowish-brown. Venter of thorax and abdomen dark brownish-black.

## BIOLOGY.

In rearing the immature forms, glass vials with cotton stoppers were used and when records of the length of instars were desired the food given was rose mildew (*Sphaerotheca pannosa*).

Between September 12 and 30, 1918, a female deposited 110 ova, or 6 per day; another deposited 106 ova between September 10 and October 4, 1918, or 4.2 per day. The largest number deposited in a single day by an individual was 14, each female on one occasion reaching this amount. During the egg-laying period the beetles fed on rose mildew. The adult female commences oviposition about ten days after emergence.

Out of a total of 74 eggs under observation during August and September, 1918, all but two hatched. Field observations also indicate that very few eggs of this species are infertile.

TABLE I.  
*Incubation periods of 14 clusters of eggs during 1918;  
Sacramento, Calif.*

Cluster No.	Number of Eggs	Date of Deposition	Date of Hatching	Incubation Period (Days)
1	10	July 17	July 22	5
2	2	Aug. 25	Aug. 30	5
3	17	Aug. 29	Sept. 3	5
4	8	Aug. 30	Sept. 4	5
5	6	Aug. 31	Sept. 5	5
6	2	Sept. 18	Sept. 27	9
7	4	Sept. 18	Sept. 26	8
8	5	Sept. 19	Sept. 28	9
9	9	Sept. 20	Sept. 28	8
10	5	Sept. 20	Sept. 29	9
11	3	Sept. 21	Sept. 29	8
12	13	Sept. 21	Oct. 1	10
13	18	Sept. 25	Oct. 2	7
14	3	Sept. 26	Oct. 3	7

From Table 1, it is seen that the minimum incubation period at the warmest part of the year is about 5 days and that in the second half of September around the autumnal equinox it is increased to about 8½ days.

In the field the eggs are always placed close by a fungus infestation so that newly hatched larvae find a food supply at hand. All through their larval existence the insects under observation fed on the fungi; when the mycelial filaments were thick the insects cut semicircular swaths through them, somewhat reminiscent of the manner of feeding of certain lepidopterous and saw-fly larvae on leaves.

TABLE II.  
*Larval and pupal instars of twenty-one individuals, 1918,  
 Sacramento, Calif.*

		DATE LARVA					Date Adult Emerged	Larval and Pupal Stages (Days)
Hatched	Molt 1	Molt 2	Molt 3	Tailed	Pupated			
July 15	July 20	July 21	July 22	July 25	July 26	July 30	15 (11-1-4)	
" 15	" 20	" 21	" 22	" 25	" 26	" 30	15 (11-1-4)	
" 15				" 25	" 26	" 30	15 (11-1-4)	
" 15				" 25	" 28	Aug. 1	17 (13-1-4)	
Aug. 30	Sep. 4	Sep. 10	Sep. 16	Sep. 20	Sep. 22	Sep. 29	30 (23-1-7)	
" 30	" 4	" 10	" 16	" 22	" 25	" 30	31 (25-1-5)	
Sep. 4		" 12	" 14	" 21	" 23	" 30	26 (19-1-7)	
" 4		" 12	" 14	" 21	" 24	Oct. 1	27 (20-1-7)	
" 5	" 8		" 16	" 20	" 22	" 1	26 (17-1-9)	
" 16			" 27	" 30	Oct. 2	" 10	24 (16-1-8)	
" 16			" 27	Oct. 1	" 2	" 10	24 (16-1-8)	
" 19	" 21	" 25	" 28	" 1	" 2	" 10	21 (13-1-8)	
" 24	" 28		Oct. 4	" 9	" 14	" 25	31 (20-1-11)	
" 27			" 6	" 10	" 13	" 26	29 (16-1-13)	
" 27			" 6	" 10	" 14	" 26	29 (17-1-12)	
" 29		Oct. 7	" 10	" 16	" 18	" 29	30 (19-1-11)	
" 29		" 7	" 10	" 16	" 19	" 29	30 (20-1-10)	
" 29		" 7	" 10	" 16	" 19	" 30	31 (20-1-11)	
Oct. 3	Oct. 8	" 12	" 17	" 23	" 26	Nov. 9	37 (23-1-14)	
" 3	" 8	" 12	" 17	" 24	" 20	" 10	38 (23-1-15)	
" 3	" 8	" 12	" 17	" 26	" 29	" 14	42 (26-1-16)	

Previous to the final ecdysis the larva casts three skins; the average length in days for the four larval instars was found to be respectively 4.6, 3.7, 4, 7.1 (8 individuals), but the average for the last instar included 2.1 days from the time the larva tailed (attached itself for pupation) until the molt to the pupa actually took place.

The increase in the duration of the larval and pupal stages synchronized in general with the gradual lowering of temperature. Thus in October the larval stage was over twice as long and the pupal stage four times as long as the corresponding stages in July.

The cycle from egg deposition to adult emergence is passed in July in about 20 days, towards the end of September in about 33 days, a month later in about 50 days. Allowing an additional ten days to cover the period from emergence of the beetle to oviposition, it is found that the life cycle in mid-summer is passed in a month. It appears doubtful if there are ever more than five generations in a year. All the experimental larvae recorded above were supplied only with rose

mildew for food. In no instance was cannibalism displayed by either adults or larvae.

#### Experiments with Animal food.

Since this coccinellid has been reported as feeding on certain animal forms (red spiders, aphids, scales) the writer made a series of experiments to determine whether larvae under laboratory conditions would thrive on such food.

#### Experiment A.

Two *Psyllobora* larvae hatched July 19. Until the 23rd they were fed on mildew; on that date and up to the 28th they were offered walnut aphids (*Chromaphis juglandicola* Kaltenbach). On the 25th, two aphids appeared attacked but otherwise no aphids were injured. July 28th both larvae were alive, having molted on the 25th, and another species of aphidid (*Macrosiphum* sp.) was substituted for the walnut aphid. July 29 one of the *Psyllobora* died, having exhibited no visible increase in bulk since the 23rd; the other was alive and was offered *Macrosiphum rosae* Linne. The following day the surviving beetle larva not having attacked the aphids was returned to a mildew diet, but it died August 3 without having shown visible increase in bulk since July 23. Contemporaneous beetle larvae were completing their cycle in 11 days.

#### Experiment B.

Five larvae hatched September 5; at once two were offered rose mildew, and 3 provided with *Aphis gossypii* Glover (instars ii-v). Two days later one of the latter group died and the following day both the survivors died; no aphids had been attacked, nor did the larvae show visible growth. Both the larvae fed on mildew cast the third molt September 16; one of these was cast out, but the other pupated on the 22nd, the imago subsequently emerging October 1. This beetle was offered walnut aphids from October 2 to 8, but refused them.

#### Experiment C.

Eight larvae hatched September 16; all were fed on mildew until the 20th, when two were offered red spiders (*Tetranychus* sp.). These two larvae died on the 26th without having visibly grown, and having been daily offered *Tetranychus*. September 21 three other larvae were offered young black scales (*Saissetia oleae*). On the 23rd one was returned to a mildew diet and subsequently pupated October 2. September 25 the two remaining not having exhibited any visible growth and not having attacked any scales were offered *Aphis gossypii*. They refused the aphids and died subsequently without exhibiting visible increase in bulk. The three remaining larvae of the lot were fed on rose mildew throughout the larval period and pupated October 2 to 4.

## Experiment D.

Four larvae hatched on September 25 and were supplied with rose mildew. On the 27th two of the larvae were offered *Aspidiotus* sp. from *Dracaena*, the "armor" of the scales having been removed to enable the *Psylloboræ* to feed on the soft bodies of the scales. These two larvae died respectively September 30 and October 1 without having attacked any scales or visibly increased in size since September 27. The other two were fed continuously on rose mildew and pupated October 14 and 17.

## Experiment E.

Two larvae in the third instar were collected on a mildewed rose-bush, September 27, transferred to a vial and offered *Aspidiotus* sp., the "armor" removed from the scales as in Experiment D. On October 2 one of them died, the other was alive and was offered rose mildew. Neither larva showed visible increase in bulk and no scales had been attacked. The survivor subsequently transformed normally.

## Experiment F.

Seventeen larvae hatched September 3 and previous to the 6th were fed rose mildew. On that day and thereafter two of the larvae were offered aphids (*M. persicæ*). Both larvae died September 12. They exhibited no visible increase in size since the 6th, and no aphids had been attacked. The remaining larvae of the lot transformed normally on a mildew diet.

## Experiment G.

Three larvae in the third instar were collected on a mildewed rose-bush August 27, transferred to a vial and offered red spiders (*Tetranychus*). All died on the 30th, showing no visible increase in bulk since the 27th, although one molted on the 29th. A fourth larva collected with them, fed on mildew, pupated September 2.

From the foregoing experiments it appears that under laboratory conditions aphids, red spiders, black scale and "armored" scales were refused by the larvae, the latter starving rather than partake of such animal foods.

Some similar experiments with the adult beetles had a similar result. In these aphids and red spiders were offered and in no case were eaten. The adult beetles are capable of prolonging their life without food for long periods not only during their hibernation but also in the period of activity in the spring and summer months.

The larvae of *Psyllobora* and *Thea* are said by Böving<sup>3</sup> to

<sup>3</sup>Böving, Adam. A Generic Synopsis of the Coccinellid Larvae in the United States National Museum, with a Description of the Larva of *Hyperaspis binotata* Say. Proc. U. S. Nat. Mus., vol. 51, Jan. 15, 1917.



be the only coccinellid larvae observed by him to have the mandibles produced at the apex into five teeth. The retinaculum of the mandibles (in *Psyllobora*) is also produced into five teeth. Is it possible that this is an adaptation to assist the larvae to grasp the tissues of the fungus host, the simple type of mandible sufficing for those species which grasp their animal prey? The phytophagous *Epilachna* larvae have no distinguishable retinaculum (Böving) but have the mandibular apex produced into several teeth.

### A New Species of *Melitaea* from Montana (Lepid., Rhop.).

By HENRY SKINNER.

*Melitaea glacialis* n. sp.

♀. Palpi ferruginous, annulated black and white above, ferruginous below. Thorax and abdomen above black. Pectus below with long white hairs; legs ferruginous.

Primaries *above*: Base black; in the cell are four spots, the inner one white, small, linear and V-shaped; next one is quadrate and ferruginous, then a small white one, and an outer ferruginous spot. Beyond the cell are three small white dots, and beyond these a medial line of white spots, extending across the wing. Crossing the wing is a ferruginous fascia, 5 mm. wide. Secondaries *above*: The markings are quite similar to those of the primaries.

*Underside* with the markings nearly repeated. The secondaries below have the ferruginous fascia, a medial yellow fascia, a ferruginous inner half, with four yellow spots, two near the centre and one near the costa, the latter divided by the nervures into three parts. Expanse (one wing) 24 mm.

One specimen, taken at Two Medicine Lake, Glacier National Park, Montana, July 15, 1920, by Miss Amette F. Braun, to whom I am greatly indebted for permission to study the interesting butterflies she captured in the Park. *Type* in the collection of the Academy of Natural Sciences of Philadelphia.

This is a remarkable insect and the wide ferruginous fascia above and below distinguishes it from any species in the genus. In *Melitaea* one always thinks of aberrations, but if this specimen is an aberration I am at a loss to know the species at present. Perhaps when we know more of the butterfly fauna of the locality we can solve the problem.

# ENTOMOLOGICAL NEWS.

PHILADELPHIA, PA., MARCH, 1921.

## The Influence of Insects on Human History.

The United States Department of Agriculture has recently issued Department Circular 163 (from the Bureau of Entomology), entitled *Dispersion of the Boll Weevil in 1920*, by B. R. Coad and R. W. Moreland. It states, among other things:

The outstanding feature of the weevil movement during 1920 has been its retardation in the eastern portion of the cotton belt. For many years the most important movements took place east of the Mississippi River, but during 1920 there was comparatively little gain in that section. By far the most significant change is the dispersion in Oklahoma and Texas by which a large territory infested a number of years ago, but uninfested for the past five or six years, has been regained by the weevil.

A table shows the areas gained by the weevil in 1920 to have been 7749 square miles in Texas, 19,695 in Oklahoma, 4567 in Arkansas, 869 in Tennessee, 1603 in Georgia, 3266 in South Carolina, 4120 in North Carolina, a total of 41,869 square miles. As there are no losses to offset this, it appears that the total area in the United States infested by the weevil in 1920 was 534,109 square miles, compared with 492,240 square miles in 1919.

The subject of the influence of insects upon human civilization has never been adequately treated. We hope that some day some one of insight and of genius will follow this influence into all its ramifications, showing how the boll-weevil, the disease-carrying mosquitoes, the grasshopper and the locust, the insects destroying cereals and forest trees have had their part in the downfall of states and of empires—all from the standpoint, not of the entomologist, but of the historian of man. When this is done we shall have some ground for expecting that the value and importance of Entomology will be appreciated justly.

## Entomological Literature

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

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), 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.

The records of papers containing new genera or species occurring north of Mexico are all grouped at the end of each Order of which they treat.

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.

6—Journal of the New York Entomological Society. 8—The Entomologist's Monthly Magazine, London. 9—The Entomologist, London. 11—Annals and Magazine of Natural History, London. 13—Journal of Entomology and Zoology, Claremont, Cal. 14—Proceedings of the Zoological Society of London. 15—Insector Inscitiae Menstruus, Washington, D. C. 25—Bullettino della Societa Entomologica Italiana, Firenze. 29—Annual Report of the Entomological Society of Ontario, Toronto, Canada. 42—Entomologiske Meddelelser udgivne af Entomologisk Forening, Kjobenhavn. 43—Proceedings of the Entomological Society of British Columbia, Victoria, B. C. 50—Proceedings of the United States National Museum, Washington. 81—The Journal of Parasitology, Urbana, Illinois. 85—The Journal of Experimental Zoology, Philadelphia. 101—Journal of the Linnean Society of London. 111—Archiv fur Naturgeschichte, Berlin. 114—Entomologische Rundschau, Stuttgart.

**GENERAL.** Crampton, G. C.—Remarks on the ancestry of insects and their allies. 29, 1919, 105-110. Gibson & Criddle.—The entomological record, 1919. 29, 1919, 112-34. Lochhead, W.—Hopkins' bioclimatic law. 29, 1919, 43-8. Rainbow, W. J.—Obituary notice. (Records of Australian Mus., xiii, 87.) Rowland-Brown, H.—The entomological society of London. An announcement and an appeal. 9, 1921, 1-3.

**ANATOMY, PHYSIOLOGY, etc.** Bodine, J. H.—Factors influencing the water content and the rate of metabolism of certain orthoptera. 85, xxxii, 137-64. Hogben, L. T.—On certain nuclear phenomena in the oocytes of the gallfly *Neuroterus*. 101, xxxiv, 327-333. Jordan, K.—A link between the double and single receptacula seminis of Siphonaptera. (Ectoparasites, i, 127-30.) Lenz, F.—Die metamorphose der Cylindrotomiden. 111, 1919, A, 6, 113-

46. Metz & Nonidez.—Spermatogenesis in the fly, *Asilus sericeus*. 85, xxxii, 165-85.

ARACHNIDA, &c. Deichmann, E.—Oversigt over de danske Theridier samt over Slaegten Dictyna. 42, xiv, 231-56. Emerton, J. H.—The spiders of Canada (Canadian Field Nat., xxxiv, 106-8.)

Hirst, S.—On three new parasitic mites (*Leptus*, *Schongastia* and *Demodex*.) 11, vii, 37-9.

ORTHOPTERA. Buckell, E. R.—Life history notes on some species of Acrididae found in Br. Columbia. 29, 1919, 53-61. Bruner, L.—Saltatorial O. from South America and the Isle of Pines. (An. Carnegie Mus., xiii, 5-91.) Davis, W. T.—Book reviews: Orthoptera of northeastern America, by W. S. Blatchley. Manual of the Orthoptera of New England, by A. P. Morse. 6, xxviii, 239-41.

HEMIPTERA. Downes, W.—The tree-hoppers of Br. Columbia. 43, No. 14, 17-19. Jensen-Haarup, A. C.—Hemipterological notes and descriptions, I. 42, xiv, 209-224. Moore, G. A.—Our common Cercopidae. 29, 1919, 21-5. Woodruff, L. B.—Further notes on the membracid genus *Ophiderma*. 6, xxviii, 212-14.

LEPIDOPTERA. Bell, E. L.—Winter collecting notes on Florida *Rhopalocera*. 6, xxviii, 235-37. Blackmore, E. H.—The Lycaeninae of British Columbia. 43, No. 14, 5-11. Bryk, F.—Bibliotheca sphragidologica. 111, 1919, A, 5, 102-83. Cockle, J. W.—A swarm of *Vanessa californica* and some notes on a swarm of *Plusia californica*. 43, No. 14, 20-1. Day, G. O.—Notes on *Oporinia autumnata*. 43, No. 14, 16. Fassl, A. H.—Zwei neue Castnien aus Brasilien. 114, xxxviii, 1-2. Hallinan, T.—General notes on the L. of the Canal Zone, Isthmus of Panama. 6, xxviii, 238-9. Klugi, A. B.—A doped butterfly. (Can. Field Nat., xxxiv, 119.) Rober, J.—Ueber bekannte und neue schmetterlinge. 114, xxxviii, 4-5. Reuss, A.—*Urania croesus*. 114, xxxviii, 2-3. Strand, E.—Lepidopterorum catalogus. Pars 24: Arctiidae: subf. Nolinae.

Dyar, H. G.—New American Noctuidae and notes. 15, ix, 40-5. Forbes, W. T. M.—Notes on the Crambinae. 6, xxviii, 214-27. Watson, F. E.—Miscellaneous notes and records of local L. with the description of a new form. 6, xxviii, 227-35.

DIPTERA. Bonne-Wepster & Bonne.—Notes on So. Amer. mosquitoes in the British Museum. 15, ix, 1-26. Dyar, H. G.—Comment on the preceding paper. [Notes on So. Amer. mosquitoes in the Br. Museum, by Bonne-Wepster & Bonne.] 15, ix, 26-31. The male of *Psorophora coffini*. The swarming of *Culex quinquefasciatus*. Ring-legged *Culex* in Texas. Three new mosquitoes from Costa Rica. 15, ix, 31-36. Herms & Freeborn.—The egg lay-

ing habits of Californian Anophelines. **81**, vii, 69-79. **Jordan & Rothschild**.—New genera and species of bat-fleas. On *Ceratophyllus fasciatus* and some allied Indian species of fleas. (Ectoparasites, i, 142-62; 178-98.) **Klugi, A. B.**—A unique entomological experience. (Can. Field Nat., xxxiv, 120.) **Sherman, R. S.**—Notes on the Mycetophilidae of Br. Columbia. **43**, No. 14, 12-15.

**Alexander, C. P.**—New species of craneflies from the U. S. and Canada. **13**, xii, 85-92. **Dyar, H. G.**—Notes on the No. Amer. species of *Choeromorpha*. **15**, ix, 37-9. **Dyar & Ludlow**.—Two new American mosquitoes. **15**, ix, 46-50.

**COLEOPTERA.** **Champion, G. C.**—*Hemeticus germanicus* and *H. serratus*.—synonymical note, etc. **8**, 1921, 12. **Sampson, W.**—Further notes on *Platyopidae* and *Scolytiidae* collected by G. E. Bryant and others. **11**, vii, 25-37. **Steinke, G.**—Die Stigmen der Käferlarven. **111**, 1919, A, 7, 1-58. **Verhoeff, K. W.**—Studien ueber die organisation und biologie der Staphylinoida. IV. Zur kenntnis der staphyliniden-larven. **111**, 1919, A, 6, 1-111.

**Barber & Ellis**.—The beetles of the family Cupedidae of America north of Mexico. **6**, xxviii, 197-208. **Dawson, R. W.**—New species of *Serica* (Scarabaeidae). III. **6**, xxviii, 208-12.

**HYMENOPTERA.** **Altson, A. M.**—The life-history and habits of two parasites of blow-flies. **14**, 1920, 195-244. **Chawner, E. F.**—The egg-laying of sawflies. **8**, 1921, 19. **Crawley, W. C.**—New and little-known sps. of ants from various localities. **11**, vii, 87-97. **Emery, C.**—Studi sui *Camponotus*. **25**, lii, 1-49. **Stumper, R.**—Ueber einige anomalien des ameisenlebens. **111**, 1919, A, 5, 184-91.

**Cushman, R. A.**—The N. Amer. ichneumon-flies of the tribe Ephialtini. **50**, lviii, 327-62. **Muesebeck, C. F. W.**—A revision of the N. Amer. sps. of ichneumon flies belonging to the genus *Apanteles*. **50**, lviii, 483-576.

ETUDES DE LÉPIDOPTÉROLOGIE COMPARÉE. By Charles Oberthür. Fascicule XVII, Rennes, France, November, 1920.—We are again called upon to notice this monumental work. Mr. Oberthür has continued to place American Lepidopterists under great obligations by figuring many of the types of Dr. Boisduval, Boisduval and Leconte and A. Guenée. Thirty-nine species of North American moths and three butterflies are accurately figured in color. The butterflies figured are *Thecla arsace*, *hyperici* and *Lycaena pseudargiolus*. There has previously been much doubt as to what these names represented. There are 573 pages of text, 27 colored plates, with many figures, and 27 photographic illustrations. Harold Powell contributes interesting and valuable articles on

the life history of *Lycaena alcon* and *L. euphemus*. M. Oberthür treats of the variation of certain palaearctic species of Lepidoptera. *Anthocharis bellezia* Bd. and *crameri* Butler = *belia* Cramer, by Gédéon Foulquier. A notice of the Andrae Avinoff collection, by C. Oberthür and A. Avinoff. Revision of the Aegeriidae of Barbary, by Le Cerf.—H. S.

THE HESPERIOIDEA OF AMERICA NORTH OF MEXICO. By ARTHUR WARD LINDSEY. University of Iowa Studies, Vol. IX, No. 2. Received January 11th, 1921.—One hundred and ten pages, bibliography and two plates. The author makes a superfamily of these butterflies, divided into two families, Hesperiidae and Megathymidae, the former with three subfamilies, Pyrrhopyginae, Hesperiinae and Pamphilinae, and the latter further divided into four groups. A new genus of Pyrrhopyginae is proposed, with *Erycides araxes* Hew. as the type. Descriptions and tables for the separation of the families are given, and tables for the separation of the species. The synonymy and distribution are recorded. Useful cuts showing the neuration, antennae and palpi are given for most of the genera. This is a valuable addition to the literature of the subject and will be very useful to the students of this very interesting group of butterflies.—H. S.

## Doings of Societies.

### The Entomological Section of The Academy of Natural Sciences of Philadelphia.

Meeting of March 25, 1920, Dr. Henry Skinner presiding. R. T. Weber, of Melrose Highlands, Mass., visitor.

Mr. Rehn spoke about the tendencies of some authors to make single types for their species, but do not carry out the same in the proper spirit. He emphasized the importance of a proper understanding of the terms type, cotype, and paratype, and that we all should insist on the correct use of these terms.

ORTHOPTERA.—Mr. Rehn exhibited specimens of the four species of the Tettigoniid genus *Rehnia*, also discussed their relationship to one another and to the genus *Neobarrettia*, which was also on exhibition. The distribution of the species was graphically illustrated. Remarks were made by Messrs. Hebard and Hornig.

DIPTERA.—Mr. Hornig exhibited living larvae of *Aedes curriei* three days old. He spoke about the habits of this species and the methods of control. His experience revealed that oil spraying has little or no effect on their eggs. *Aedes canadensis* is now about six days old. Mr. Weber gave an interesting account of his work with Dr. Aldrich, of the National Museum, on the dipterous genera *Exorista* and *Phorocera*. He also spoke about his work in the study of the parasites of the gipsy moth, and other lepidopterous larvae, as well as about the

work done by these parasites. Remarks and discussions by Messrs. Hebard, Cresson, Skinner and Hornig followed, especially dwelling on the general ineffectiveness of quarantine for the control of insect pests.

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Meeting of May 27, 1920, with Director Philip Laurent presiding. Mr. David E. Harrower was elected a member.

LEPIDOPTERA.—Mr. Coxey exhibited a specimen of *Papilio laglaizei* Dep. from New Guinea, which strongly mimics a moth of the genus *Nyctalemon*. Dr. Skinner made some remarks on the synonymy and distribution in the Hesperidae. He spoke about the difficulty he experienced in trying to establish some of the old species on account of their inadequate descriptions and the uncertainty of determined material. He emphasized that care should be exercised in taking for granted the determinations of others.

ORTHOPTERA.—Mr. Rehn spoke about his recent studies in the groups allied to the genus *Trimerotropis*.

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Meeting of September 23, 1920. Vice-Director R. C. Williams presiding. Dr. Charles T. Ramsden, of Guantánamo, Cuba, a visitor.

Dr. Skinner gave a short account of his summer trip to the Sierra La Sal mountains of Utah. He mentioned some of the insects collected, especially the Lepidoptera, but found the country dry and insect life scarce. Discussion and remarks by Messrs. Hebard and Williams. Mr. Cresson exhibited a recently acquired book, *Singulorum Genera Curculionidum*, by Labrum & Imhoff. This work was originally issued in nineteen fascicles, appearing from 1828 to 1845, and contains descriptions and figures of some new species. In the general arrangement in which this work was bound, and quoted in the literature, the actual dates of publication were not secured. Mr. Rehn mentioned other works of which the dates of issue were difficult or impossible to obtain.

LEPIDOPTERA.—Dr. Ramsden made some interesting remarks on his experiences in collecting at light in Cuba. He found that certain kinds of light were better than others, which, he thinks, is due more to the color or quality than to the strength. He spoke of the curious habits of some moths at light, especially at certain periods of the night. He said that sometimes one could pick the specimens by hand much better than catching by net. Discussion by Messrs. Hebard, Hornig and others, especially on collecting Sphingidae. Mr. Lorup exhibited two specimens of *Prionoxystus robiniae* and *Limenitis arthemis*. The latter, he said, was found dead last Labor Day at Folcroft, Delaware County, Pennsylvania.

ORTHOPTERA.—Mr. Hebard spoke on the predaceous habits of the common house cricket, especially in the tropics; that strenuous means had to be employed in order to preserve the day's catch of insects from these cannibals. The generally effective ring of naphthalene spread

around the kill on the table, where it was spread preparatory to packing, was disregarded by these pests, so one had to be constantly on the watch that specimens were not carried off.

DIPTERA.—Mr. Hornig spoke about the noticeable absence of mosquitoes this season, especially during the early part, and thought it was due to the long cool winter and spring. He also stated that he has secured live larvae by putting the dirt from the holes and crotches of trees, in water. He believes that the egg-masses may be able to over-winter, or, at least, lie dormant for some time in such situations.

ODONATA.—Dr. Calvert gave an interesting communication, illustrated by drawings, on the methods by which the males of certain dragon flies (*Epigomphus*) grasp the females during copulation. He showed the presence of especially developed processes and impressions on the heads of the females which, he considered, were for the accommodation of the male claspers.\*

Meeting of November 18, 1920. Director Philip Laurent presiding.

ORTHOPTERA.—Mr. Rehn exhibited the exotic collections of Dermaptera belonging to the Academy and Mr. Hebard, contained in six large boxes. He made mention of the other large comparative collections, especially those of Burr, Dohrn and the Paris Museum, stating that the present combined collection is the largest as regards the number of representative species, and possesses many rare ones. He called attention to several of the species as having peculiar habits, among which is that found, and supposed to be parasitic, on a kind of rat occurring in Africa. Another species is found in a pouch of a hairless bat of the East Indies. The speaker also drew attention to the various forms of the forceps and to their probable functions. Mr. Hebard augmented Mr. Rehn's remarks by giving an account of their experiences in collecting members of this order in South America the past summer. He dwelt on the scarcity of these insects, and said that most of the places in which they are found, under bark, in the dead leaves and wood soil, are probably their day-time resting and hiding places and not their normal habitat, but being nocturnal, probably spend their normal active life in other ways. He stated also that the collection exhibited contains twenty species not represented in any other.

LEPIDOPTERA.—Mr. Laurent made some remarks regarding a habit of *Scoparia basalis*, a small moth belonging to the Pyralidae. When disturbed from its resting place, which is generally a rough-barked tree, instead of flying off to any great distance, would fly to about four feet, immediately turn and come back to the tree again.

DIPTERA.—Mr. Hornig said that he has been trying to rear some *Cuterebra* larvae, but the present indications are not encouraging.—E. T. CRESSON, JR., Recorder.

\* Cf. Transactions, Amer. Ent. Soc. xlvii, pp. 323-354.



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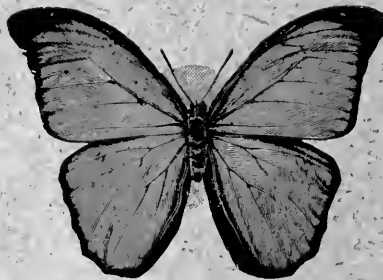
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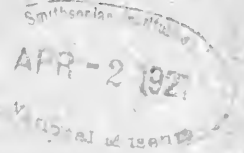
# ENTOMOLOGICAL NEWS

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1807-1865



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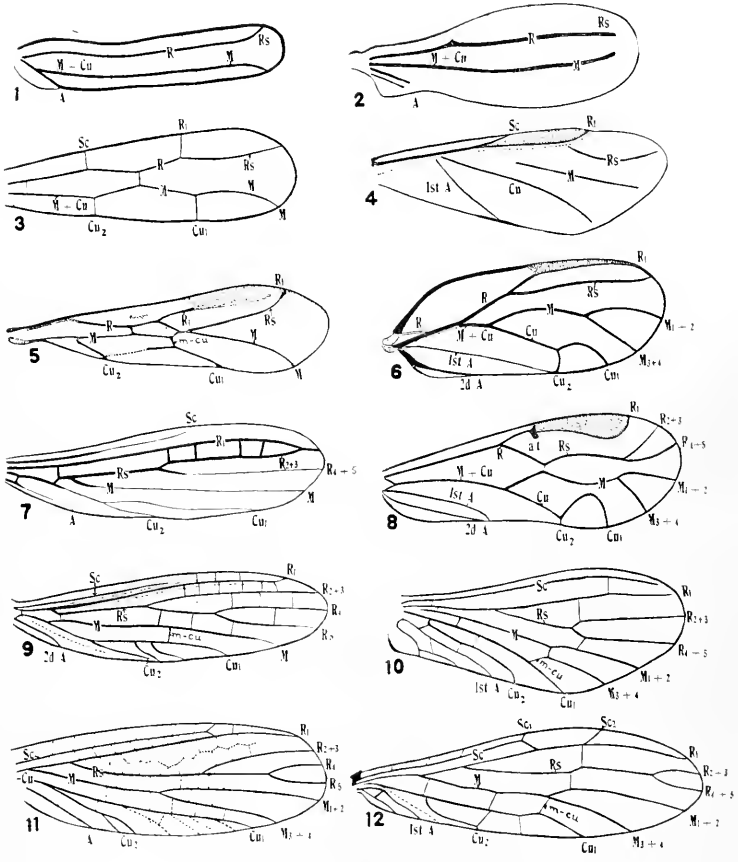
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PHYLOGENETIC STUDY OF VENATION OF FORE WINGS.—CRAMPTON.

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AND

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## A Phylogenetic Study of the Venation of the Fore Wings of the Homoptera, Thysanoptera, Psocida, Zoraptera, Neuroptera, Embiida, Plecoptera and Hadenomoida—with notes on the Hymenoptera and Coleoptera.

By G. C. CRAMPTON, Ph.D., Massachusetts Agricultural College, Amherst, Mass.

(Plate II)

Through the kindness of Mr. A. N. Caudell, I have been able to make a study of the venation of the wings of *Zorotypus snyderi*, which is of a much more primitive type than the venation of the wings of *Zorotypus hubbardi* (the only alate Zorapteron thus far figured) and is, therefore, much better for the purpose of determining the interpretation of the homologies of the Zorapteron venation, or for indicating the origin and affinities of the Zoraptera, which are among the most important forms connecting the higher with the lower types of insects. In addition to pointing out the probable homologies of the venation of the wings of the Zoraptera, I would present the evidence of the venation of these and allied

forms in support of the view that the Homoptera and Thysanoptera were descended from ancestors resembling the Psocida, and that the common ancestors of all of these forms were closely allied to the Zoraptera, which in turn lead back to ancestors resembling the Embiida (with their allies the Plecoptera) and ultimately to forms not unlike the fossil Hadenomoida, Haplopteroida, and other related insects derived from the Palaeodictyoptera.

Before taking up the subject of the evolution of the Zorapteron type of wing, I would call attention to the fact that there are two ancient tendencies traceable in the development of the wing veins, the one tending toward an *oligoneurous* type of wing with comparatively few cross veins and few branches of the main longitudinal veins, while the other tends toward a *polyneurous* type of venation with more numerous cross veins, more branches of the longitudinal veins and other features. These two tendencies apparently originated at an early date—possibly at the very beginning of the evolution of winged insects—and continuing even into the more highly modified orders, they affect the venation of these forms in varying degrees. A great development (in the hind wing) of what Handlirsch, 1906, terms the anal fan, or the feeble development of the anal region of the wing, the presence of numerous cross veins in the costal region of the wing, or the tendency to develop but few of the cross veins in this region, and the branching, or the non-branching of the subcosta, are some of the features which apparently developed at an early stage of the evolution of winged insects—possibly manifesting themselves to some extent at the very beginning of the development of the Pterygota—and it is necessary to trace such of these tendencies as are carried over into the insects related to the Zoraptera, from their earliest inception, if the lines of development of these forms are to be represented with any degree of completeness in a diagram of the phylogenetic tree of Pterygotan insects. For the purpose of the present paper, however, it will be sufficient to begin the evolutionary series with those forms arising directly from the Palaeodictyopteron stock, such as the Hadenomoida, Haplopteroida, etc., which gave rise to the types ancestral to the Zoraptera and their allies.



The Dermaptera, Embiida, Plecoptera, Haplopteroida, Hadentomoida, etc., have been grouped into a superorder called the Panplecoptera and, with the exception of some of the Plecoptera and the Dermaptera, the members of this order have not inherited much of the tendency toward the great development of the anal fan, which has passed into most of the Orthopteroid insects and those related to the Isoptera, although the Isoptera themselves were but slightly touched by it (only such primitive Isoptera as *Mastotermes* have a pronounced anal fan), and their allies, the Zoraptera, escaped it wholly. The Embiid members of the superorder Panplecoptera, lack the anal fan, and exhibit certain oligoneurous tendencies indicative of a close approach to the Zorapteron type, so that these insects, rather than the Plecoptera (which are in other respects much nearer the type ancestral to the Zoraptera), furnish the best intermediate stages in tracing the wings of the Zoraptera to the point of origin in the Palaeodictyopteroid types, from which the Embiids, Plecoptera, Haplopteroida, Hadentomoida, and allied ancestral forms, were derived.

The Haplopteroid type of wing is very like that of certain Plecoptera (although certain other Plecoptera are more like some of the Palaeodictyoptera), while the Hadentomoid type of wing, such as that shown in Plate II, Fig. 11, more nearly represents the first stages in the origin of the Embiid types (such as that shown in Fig. 9) from the Palaeodictyopteroid ancestral stock. Thus, the anal vein *A* is quite similar in Figs. 11 and 9, and the character of the cross veins between *Cu1* and *Cu2* in Fig. 11, is very suggestive of that occurring in the Embiid shown in Fig. 9. Vein *M* has only two branches in Fig. 11, while the reduction is carried still further in Fig. 9, in which *M* is unbranched, and this tendency for *M* to remain unbranched is carried over into the Zoraptera (Fig. 5) also. In both insects shown in Figs. 11 and 9, *R4* and *R5* are distinct, while *R2* and *R3* have apparently united to form *R2+3*, although I am not certain of the latter point in Fig. 11. Some of the cross veins are still retained in Fig. 9, but in the other Embiid shown in Fig. 7 most of them have become lost, and certain of the longitudinal veins have become

very faint, although one is still able to trace their course in the wing.

In comparing the Embiid shown in Fig. 7 with the Zorapteron shown in Fig. 5, the following points of resemblance may be noted. The cross veins between *Cu1* and *Cu2* have been lost (although some of them were still retained in the Embiid shown in Fig. 9), and the vein *M* is apparently unbranched. The cross vein *m-cu* of Fig. 5 is not present in Fig. 7, but its homologue occurs in the Embiid shown in Fig. 9. Vein *Rs* has only two branches in Fig. 7, while the reduction is carried still further in Fig. 5, in which *Rs* is unbranched; and in both insects, there is a tendency for *Rs* (or its branch *R2+3*) to approach *R1*. Vein *Sc* has begun to fade out in Fig. 7, and it is not visible in Fig. 5, although it may have united with radius or costa in the latter insect. In Fig. 7 there is exhibited a tendency for the veins *Rs* and *M* to extend parallel to each other down the central portion of the wing, and this tendency reappears in the insects shown in Figs. 2 and 1.

The Zorapteron type of wing (Fig. 5) approaches the Psocid type shown in Fig. 8, and it is also suggestive of other more highly modified types such as those shown in Figs. 3 and 4. On the other hand, the Psocid type of wing (Fig. 8) is also approached by that of certain Neuroptera (Fig. 10), which apparently originated from a type very like that of the Plecopteron shown in Fig. 12. Thus, the two branched condition of *M* and of *Rs* occurs in all three insects shown in Figs. 12, 10 and 8; and the character of the anals is quite similar in the three insects under consideration. From these and other features of resemblance, it is evident that collateral branches may preserve certain structures in an intermediate condition much better than is done by the more direct lines of descent, as far as these particular features are concerned, and on this account it is frequently almost as instructive to study the collateral lines as the more direct ones, if one wishes to trace the evolution of all of the features of an insect's body, or all of the modifications met with throughout an order of insects. Furthermore, the evidence furnished by a study of the venation

of the wings of the Zoraptera is suitable only for tracing the development of the oligoneurous tendencies of the Homoptera and other derived forms, while a study of the polyneurous types of Neuroptera would be of more value for tracing the origin of the tendency toward the development of polyneurous types of venation in certain Homoptera. In the present paper, however, I have concerned myself only with the oligoneurous tendencies, since it is better to discuss only one tendency at a time, and the chief aim of this paper is to point out the position of the Zoraptera, which are oligoneurous forms, in the developmental scale of the higher insects.

The contour of the head capsule, the character of the thoracic sclerites (especially the thoracic terga), the terminal abdominal segments and certain of the internal organs, such as the tightly coiled testes of the male, clearly indicate a very close relationship between the Zoraptera and the Psocida. It is, therefore, rather disappointing,\* to find that the wings of the Zoraptera do not resemble those of the Psocida which I have been able to examine more strikingly than they do—although there is an undeniable resemblance between the wing of the Zorapteron shown in Fig. 5 and that of the Psocid shown in Fig. 8 in the character of the pterostigma (i. e. the stippled area in the two figures) and the tendency for the parts of the vein *Rs* to move toward *R1*. The same resemblance is traceable in the Homopteron shown in Fig. 6, since the vein *Rs* is unbranched in this insect, and approaches *R1* near the tip of the pterostigma, or stippled area, as in Fig. 5.

The Homopteron shown in Fig. 6 is strikingly similar to the Psocid shown in Fig. 8 in the character of the anal veins, the two-branched *Cu* and *M*, and in the development of a pterostigma (stippled area); and the evidence of a close relationship between the Psyllids (Homoptera) and the Psocids drawn from other sources fully confirms that of the wing venation. I would therefore maintain that the Psyllid Homoptera and the Psocida are very closely related, and were de-

\* The resemblance of both fore and hind wings of the Psocid *Archipsocus lextor* to the wings of the Zoraptera is strikingly close, as has been pointed out in a paper to be published in the *Canadian Entomologist*.

scended from a common ancestry, which, from evidence drawn from other sources, was apparently closely related to the Zoraptera. In fact, the hind wing of one of the Aphid Homoptera resembles the hind wing of a Zorapteron more closely than any other insect I know of, and even in the fore wings of the two groups (*i. e.*, Aphids and Zoraptera) one can find many points of resemblance, as one may see by comparing Fig. 5 with Fig. 4.

The character of the thoracic sclerites of certain Psocida indicates a close relationship to the Thysanoptera, as is also true of the terminal abdominal structures of both sexes, and I have even found a Psocid in which the head has begun to take on the elongate form characteristic of the Thysanoptera. The wing venation furnishes a brilliant confirmation of the view that the Thysanoptera and Psocida are extremely closely related, since the wing of the Psocid shown in Fig. 2 is more like that of the Thysanopteron shown in Fig. 1, than it is like the wing of other Psocids such as the one shown in Fig. 8; and the study of the Psocids furnishes us with a ready solution of the difficult problem of determining the origin and closest affinities of that aberrant group, the Thysanoptera, which has so long puzzled the students of insect phylogeny; and the study of the venation of the wings of the Psocidae also furnishes the key to proper interpretation of the Thysanopteron venation, which is still a matter of dispute.

In both of the wings shown in Figs. 1 and 2, there are two longitudinal veins extending almost parallel to each other down the centre of the wing, while the only other veins present are relegated to the small anal lobe at the base of the wing. The veins of both wings are evidently completely homologous, and by comparing the venation of the Psocid shown in Fig. 2 with that of the Psocid shown in Fig. 8 it is a comparatively simple matter to determine the homologies of the veins of Fig. 2, and apply the interpretations thus determined, to the venation of the wing shown in Fig. 1. In the Psocid shown in Fig. 8, the veins  $M+Cu$ , and  $M$ , if straightened out would assume the position of the vein bearing the labels  $M+Cu$  and  $M$  in Fig. 2, while the veins labeled  $R$  and  $Rs$  in Fig. 8, if straightened out,

would assume the position of the vein bearing these labels in Fig. 2. I would therefore maintain that the veins extending almost parallel to each other down the center of the wing shown in Fig. 2 represent the radius ( $R$ ) and the media plus cubitus ( $M+Cu$ ), and therefore the corresponding veins in the Thysanopteron shown in Fig. 1 would also represent the radius ( $R$ ) and the media plus cubitus ( $M+Cu$ ). The veins labeled  $A$  in Figs. 1 and 2, evidently represent the anals, as may be seen by comparing them with the anals (1st  $A$  and 2d  $A$ ) in Fig. 8.

In Fig. 3 is shown the venation of a primitive fossil Thysanopteron, *Palacothrips fossilis*, in which there extend from the veins  $R$  and  $M+Cu$  four large vertical veins connecting them with the margins of the wings. These vertical veins correspond to the small veins which have been dotted in Fig. 1, since they do not occur in the Thysanopteron there figured, although they do occur in many other recent Thysanoptera. Judging from the size and greater importance of these vertical veins in Fig. 3, I am inclined to regard them as modified branches of the longitudinal veins, rather than as mere cross veins, although in the recent Thysanoptera (Fig. 1) they have become greatly reduced, and are of relatively slight importance. A comparison of Fig. 3 with Fig. 4 would indicate that the veins labeled  $R1$  and  $Sc$  in Fig. 3 may represent portions of  $R1$  and  $Sc$  of Fig. 4, which have become bent forward and have assumed a vertical position. The interpretation of the veins labeled  $Cu1$  and  $Cu2$  in Fig. 3, however, is more difficult. The vein labeled  $M$  in Fig. 3 is clearly  $M$ , or a branch of it (*i. e.*,  $M1+2$ ); but the vein labeled  $Cu1$  in Fig. 3 seems to represent a branch of  $M$  (*i. e.*,  $M3+4$ ) instead of representing the vein indicated by the label it bears. In the Zorapteron shown in Fig. 5, vein  $Cu1$  has become detached from  $Cu2$  through the partial fading out of the base of  $Cu1$  (indicated by the dotted line) and if this process were continued until only the portion of  $Cu1$  extending from the vein\* labeled  $m-cu$  to the

\* It might be argued that the vein labeled  $m-cu$  in Fig. 5 represents  $M2+3$  (and that the vein labeled  $M$  represents  $M1+2$ ); but a glance at the figure of the fore wing of *Zorotypus hubbardi* by Caudell, 1920, will show that there is no connection between the veins labeled  $M$  and  $Cu1$  in Fig. 5 in Caudell's figure, and since  $M$  and  $Cu1$  are not connected, it is hardly possible that  $Cu1$  should contain a branch of  $M$ .

margin of the wing were retained, while this portion of *Cu*1 and vein *m-cu* became straightened out to form a vertical line, a condition very like that exhibited by vein *Cu*1 of Fig. 3, would be produced. Similarly, if vein *Cu*2 of Fig. 5 became more vertical, it would assume the position of the vein labeled *Cu*2 in Fig. 3. I would not insist on this interpretation of the venation of Fig. 3, however, since the vein labeled *Cu*2 in Fig. 3, may represent the entire cubitus (*Cu*) and the vein labeled *Cu*1 may represent vein *M*3+4, while the vein labeled *M*, may represent vein *M*1+2, and the latter view seems to be the more probable one.

As was mentioned above, the Zorapteron type of venation (Fig. 5) approaches that of the Aphids (Fig. 4); and the Homoptera, as well as the Zoraptera and Psocida, resemble the Thysanoptera in many respects. Since these forms are all very closely interrelated (judging from other structures than the wing veins) the condition occurring in one type of wing venation should throw some light upon that occurring in other related forms. I would, therefore, suggest that the basal portion of the vein labeled *R*, in Figures 3, 5 and 8, may possibly represent *Sc*+*R*, rather than *R* alone, since, in the type of venation shown in Fig. 4, the basal portion of the vein in the corresponding region of the wing evidently represents *Sc*+*R* (with which *M*, *Cu* and *A* have also united) rather than *R* alone.

(To be continued)

#### ABBREVIATIONS.

The abbreviations commonly employed in the Comstockian system have been used for designating the veins in the text and in figures 1-12 as follows: *Sc* (Subcosta), *R* (Radius), *M* (Media), *Cu* (Cubitus) and *A* (Anals). The numerals following the letters indicate the branches of the veins in question, thus *R*1 denotes the first branch of radius, etc. *Rs* denotes the radial sector. *m-cu* denotes the medio-cubital cross vein connecting media with cubitus. *M*+*Cu* denotes the fusion product of media and cubitus. *al* is the alatenaculum, or lobe for holding the fore wing above the hind wing when at rest.

#### EXPLANATION OF PLATE II.

All figures are of the right fore wing alone.

Fig. 1.—*Aelothrips nasturii* (Thysanopteron), based on figure by Jones, 1912. The dotted cross-veins do not occur in this species, but are found in many other Thysanoptera.

Fig. 2—*Embidotroctes paradoxus* (Psocid), based on figure by Enderlein, 1901.

Fig. 3—*Palaeothrips fossilis* (Thysanopteron), based on figure by Scudder, 1890.

Fig. 4—*Pemphigus venafuscus* (Aphid), based on figure by Patch, 1909.

Fig. 5—*Zorotypus snyderi* (Zorapteron). The dotted portion of *Cul* had faded out of the right wing, but was preserved in the left wing.

Fig. 6—(Psyllid).

Fig. 7—*Oligotoma saundersi* (Embiid), based on figure by Wood-Mason, 1883.

Fig. 8—*Hemicaccilius bogotanus* (Psocid), based on figure by Enderlein, 1903.

Fig. 9—*Clothoda nobilis* (Embiid), based on figure by Enderlein, 1912.

Fig. 10—*Scmidalis alcurodiformis* (Coniopterygid Neuropteran), after Enderlein.

Fig. 11—*Hadentomum americanum* (fossil Hadentomoid), after Handlirsch, 1906.

Fig. 12—*Chloroperla cydippe* (Plecopteran), after Comstock, 1918.

## A New Noctuid from California (Lep., Noctuidae).

By CHAS. A. HILL, Los Angeles, California.

### *Litoprosopus coachella*, sp. nov.

Head, palpi, collar, thorax and abdomen yellow ochre, antennae simple.

Primaries yellow ochre, ordinary spots obsolete. T. A. and T. P. lines subobsolete, prominent only as a short dash from costal margin, outcurved, both of a Van Dyke brown and being only faintly traceable below subcostal vein. Apical area washed inwardly with a muddy brown in cells only, leaving the venation in slight contrast.

Secondaries concolorous with primaries, with a line in cells parallel to exterior line, both of a Van Dyke brown. In cubital cells approaching outer margin are two small white ocelli-like spots with a ring of black-brown scales, bringing same into sharp relief. Wings beneath concolorous, faint yellow ochre. Alar expanse 34-36 mm.

*Habitat*: Palm Springs, Coachella Valley, Riverside County, Southern California, June 13th (H. Place). *Types*: 1 ♂ and 1 ♀ in coll. Hill. Described from two specimens. Allied to *L. futilis* in that the characteristic ocelli-like spots in secondaries are present, but of a lighter color and with parallel lines in secondaries. I am indebted to Dr. Wm. Barnes, for calling my attention to the fact that this moth has not been described as being from the United States or Mexico, so I venture to describe it as a new species.

In the near future this species, with a number of rarities, taken by the author, in the same locality will be figured and an account given of this fascinating desert region.

## A Synopsis of the Genera of the Anthomyiid Subfamily Coenosiinae (Diptera).

By J. R. MALLOCH, Urbana, Illinois.

The members of this subfamily very closely resemble those of Phaoniinae, possessing in common with them the following characters: scutellum bare below; ventral surface of prothorax with the chitinised plate between and cephalad of the fore coxae elongate, not broadly, triangularly dilated anteriorly, so that there is a large membranous area on each side of the plate; hind tarsus rarely with an outstanding setula near base on ventral surface of basal segment.

Characters which distinguish species of the subfamily from Phaoniinae are as follows: Frons without cruciate interfrontal bristles; each orbit with from 3 to 5 bristles, only the upper one directed backward, and no forwardly directed bristles in any species; thorax normally with but one well-developed pair of presutural dorso-central bristles or, if there are two pairs, the hind tibia has only three bristles, one anteroventral, one anterodorsal, and one posterodorsal, and the fifth sternite is cleft to near base; lower stigmatal bristle usually directed downward, sometimes weak or absent, in a few species directed slightly upward.

### KEY TO GENERA.

1. Lower calyptra much larger than the upper, projecting beyond it about as far as length of upper .....2
- Lower calyptra not much larger than upper, projecting but little beyond it .....9
2. Thorax with two pairs of postsutural dorsocentrals; hind tibia with 4 median bristles, posteroventral, posterodorsal, anterodorsal, and anterior; basal segment of hind tarsus with a long bristle near base on ventral surface .....*Bithoracochaeta* Stein
- Thorax with three pairs of postsutural dorsocentral bristles; hind tibia with at most three median bristles .....3
3. Thorax with two pairs of presutural dorsocentral bristles,  
*Macrorchis* Rondani
- Thorax with one pair of presutural dorsocentral bristles.....4
- Thorax with the presutural dorsocentrals very short, barely distinguishable from the dorsal setulose hairs; fore femur without a continuous series of bristles on posteroventral surface,  
*Atherigona* Rondani
4. Costa discontinued at or slightly beyond apex of third wing-vein,  
*Allognotha* Pokorny



- Costa continued to apex of fourth wing-vein .....5
5. Hind tibia with three median bristles, posterodorsal, anterodorsal, and anteroventral, the two former very long, the last sometimes weak or absent .....6
- Hind tibia without the long posterodorsal bristle, sometimes with one or two setulae .....7
6. Abdomen in male short and broad, fifth sternite with short processes which are frequently covered by the fourth tergite; fore tibia without an anterodorsal bristle in both sexes, the mid femur with a series of strong bristles on anterior surface, which does not extend much beyond middle.....*Neoderiopsis* Malloch
- Abdomen in male elongate, narrow, fifth sternite with large processes which are always conspicuously exposed; fore tibia with an anterodorsal bristle in both sexes, the mid femur with a series of widely placed strong bristles on anterior surface, the outer one about one-fourth from apex.....*Macrocoenosia* Malloch
7. Hind tibia without an anteroventral bristle; abdomen in male short and stout, sometimes with two bare glossy areas on each side; fore femur in both sexes with short setulae on entire length of anteroventral surface; ocellar bristles very short and weak,  
*Xenocoenosia* Malloch
- Hind tibia with an anteroventral bristle; fore femur without short setulae on anteroventral surface, or the ocellar bristles long and strong .....8
8. Hind tibia with two strong, long bristles at middle, one on the anterodorsal and the other on the anterior surface, their bases very close together, almost contiguous; hind tarsus usually with a setula near base of ventral surface of basal segment,  
*Caricca* Robineau-Desvoidy
- Hind tibia with an anteroventral and an anterodorsal bristle which are not nearly contiguous at bases; hind tarsus usually without a setula at base on ventral surface of basal segment,  
*Cocnosia* Meigen
9. Frons longer than broad, its sides parallel, or slightly divergent anteriorly .....*Hoplogaster* Rondani
- Frons broader than long, its sides convergent anteriorly,  
*Schoenomyza* Haliday

Of the genera included in this key there are two which have not been previously listed by me, *Bithoracochaeta* and *Atherigona*. The former is represented in North America by *leuco-procta* Weidemann, (*antica* Walker, *insignis* Stein), and the latter by *varia* Meigen. The specimen of *Atherigona varia* on which I base the inclusion of the genus in our list was taken by Mr. Charles Robertson at Inverness, Florida.

## **Gargara genistae Fabr., a European Membracid in New Jersey (Homop.).**

By HARRY B. WEISS and EDGAR L. DICKERSON,  
New Brunswick, N. J.

The following notes are the results of observations made during the past two years on *Gargara genistae* found inhabiting *Caragana arborescens* at Springfield and Milburn, New Jersey. The species was identified by Mr. Funkhouser, who stated that it was very common in Europe and northern Asia, but had never before been reported from the United States. The host *Caragana arborescens* Lam., is a shrub or small tree reaching a height of 20 feet. In Bailey's Encyclopedia of Horticulture, its native home is given as Siberia and Manchuria. The members of the group to which *C. arborescens* belongs are known as pea trees. They are really ornamental shrubs grown on account of their bright yellow flowers. More than fifty species are known from south Russia to China, most of them being in central Asia. They grow in almost any kind of soil, but best in that which is sandy, and in sunny places. *Gargara genistae* was undoubtedly introduced into New Jersey in the egg stage with its host, as it was found in nurseries at both of the above mentioned localities.

According to observations made in New Jersey, overwintering takes place in the egg stage, the eggs being deposited during the latter part of July, in the two-year old wood. They were found in groups of 2 to 6, usually 4 or 5, in the bark tissue at more or less right angles to the grain. Each whitish, elongate egg rests close to and parallel with its neighbor and the bark over each group of eggs is raised or swollen somewhat like a small blister. As a rule, one side of the swelling where the eggs are inserted becomes cracked longitudinally and somewhat whitish.

Hatching takes place during the second week of June and the combined nymphal stages require about one month, the adults emerging and becoming plentiful during the second week of July. The young nymphs are somewhat greenish and resemble closely the color of the bark. As they become older,

they get darker in color. In the early stages they feed at the bases of the leaf petioles, but later migrate to the branches and main stems, where they apparently remain and complete development. Both the nymphs and adults are attended by ants and in our cages ants\* were observed at various times carrying fifth stage nymphs and an adult, although no action of this kind was observed in the field. Mann (*Psyche* xxii, 5, 162, 1915) writes as follows, "Enslin has recently observed (*Zeits. f. wiss. Insektenbiol.* vol. vii, pp. 19-21) that the European ant *Formica cinerca* F., often carries into its nests nymphs and adults of *Gargara genistae* F., a common European Homopteron. Those which he observed soon died, probably because of lack of food in the subterranean nests of the ants." Both adults and nymphs are sluggish and readily captured. When disturbed they move around to the side of the twig away from the observer. The adults scatter considerably and may be found on all parts of the plant resting, usually on the twigs.

*Egg.* Length, 1.1 mm. Width, 0.31 mm. Whitish, translucent, obtusely rounded at one end, tapering to an acute angle at opposite end. Sides almost parallel from rounded end to about three-fifths of length, then gradually tapering to acute tip, with one side slightly flat. Alcoholic specimens show granulated appearance beneath chorion.

*First Stage Nymph.* Length, 3 mm. Width of head, including eyes, 0.6 mm. Form elongate, thoracic and first abdominal segments of about equal width, from which the body tapers posteriorly to acute tip. A transverse section would be triangular with median dorsal portion somewhat ridged.

Head transverse dorsally, about four times as broad as long, extending ventrally to first pair of legs. Eyes prominent, lateral. Antennae, bristle-like, on ventral side of head between the eyes, three-jointed, two basal joints sub-quadrangular, apical joint long and narrow, tapering to tip.

Prothorax somewhat longer and broader than head with sides lobed. Mesothorax slightly shorter and broader than prothorax. Metathorax slightly shorter than mesothorax at centre and about same width. Posterior margin of metathorax slightly concave and sinuate at centre. Lateral lobes of thoracic segments, especially those of meso- and metathorax, extending somewhat posteriorly.

Abdominal segments two to seven, short and broad and of about

\*The species was kindly identified by Mr. M. R. Smith as *Formica fusca* var. *subsericeae*.

equal length, gradually narrowing posteriorly and with sides lobed; lobes more pronounced posteriorly. Eighth abdominal segment approximating the first seven in length, long, narrow, slightly tapering apically. Anal segment or tube linear, sides parallel, about two-thirds length of preceding segment, protrusible, in some specimens drawn within the preceding segment.

Head bearing a number of minute tuberculate spines; minute tuberculate spines on thoracic and abdominal lobes; a number of minute spines on eighth abdominal segment; dorsal, median pair of minute tuberculate spines on meso- and metathoracic and abdominal segments 2 to 7.

Legs well-developed, tibiae and tarsi bearing several minute tuberculate spines. Rostrum extending to posterior margins of metathoracic legs; lancets long.

Color: upper surface mottled brown. Ventral surface similar in color except that of abdomen, which is yellowish white. Tibia and tarsus amulated in some specimens.

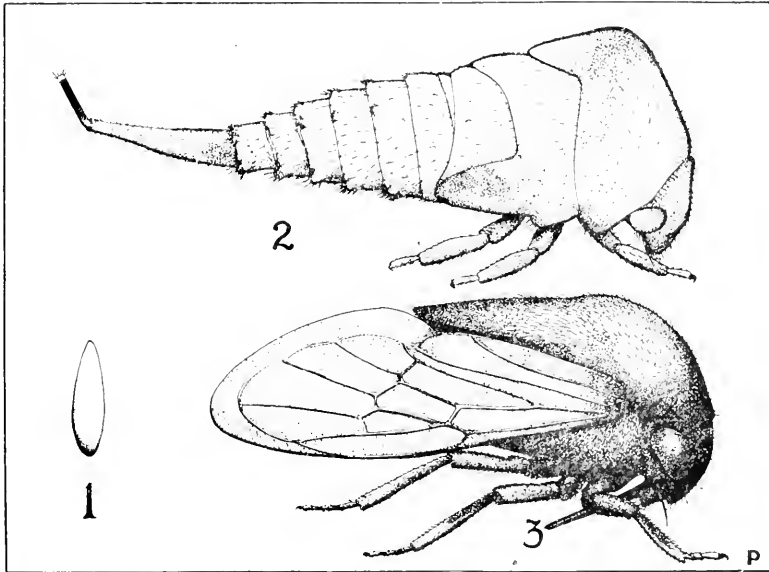
*Second Stage Nymph.* Length, 3.5 mm. Width of head, including eyes, 0.8 mm. Somewhat similar to preceding stage. Triangular shape and dorsal ridge more pronounced. Body less elongate, broadest at second abdominal segment. Head bent ventrally, triangular, notched at anterior dorsal apex. Mesothorax extending medianly anteriorly. Minute spines more numerous and more pronounced. Viewed laterally, thorax presents a distinct, gradually rounded crest. Eighth abdominal segment bearing double row of median spines and a lateral row on either side, together with smaller scattered spines. Dorsal tubercle bearing spines extending posteriorly. Antennae comparatively shorter than in preceding stage. Rostrum extending to second abdominal segment. Color similar to those of preceding stage.

*Third Stage Nymph.* Length, 4.5 mm. Width of head, including eyes, 1.1 mm. Somewhat similar to preceding stage, but less elongate and broadest across anterior portion of abdomen. Anterior ventral margin of head somewhat keeled and extending laterally in front of eyes. Crest of prothorax more pronounced. Dorsal median portion of prothorax extending posteriorly. Dorsal median portions and lateral margins of mesothorax extending posteriorly. Ridge of crest on first two thoracic segments tuberculate. A median depression between the pairs of minute dorsal spine-bearing tubercles of abdominal segments. Tubercles and spines more pronounced. Rostrum extending to second abdominal segment. Color similar to that of preceding stage; mottling more pronounced. Tip of eighth and all of ninth abdominal segment dark. Tip of ninth abdominal segment bears a circle of minute apical spines.

*Fourth Stage Nymph.* Length, 5.5 mm. Width of head, including eyes, 1.5 mm. Somewhat similar to preceding stage. Head bent more ventrally, being fairly well covered by prothoracic segment. Crest of prothorax more pronounced anteriorly. Wing pads of mesothorax

covering those of metathorax, which extend laterally posteriorly to second abdominal segment. Armature more pronounced. Color variable, some light, some dark.

*Fifth Stage Nymph.* Length, 6.7 mm. Width of head, including eyes, 1.8 mm. Somewhat similar to preceding stage. Anterior portion appearing robust on account of pronounced crest, which is largely confined to prothoracic segment, which extends medially and posteriorly.



*Gargara genistae*.—Fig. 1, Egg. Fig. 2, Last stage nymph.  
Fig. 3, Adult.

Mesothorax extending somewhat posteriorly and medially. Wing pads of metathorax extending laterally to third abdominal segment and being almost completely covered by those of mesothorax. Color variable, from light mottled brown to uniformly dark brown.

The tubercles and spines referred to in all stages are comparatively minute and scarcely visible to the naked eye.

*Adult.* *Gargara genistae* Fabr. This was described in 1781 (Fabr. Sp. Ins. II, 318) as *Cicada genistae*. "M. thorace inermi fusco, postice producto, abdomine dimidio brevior. Syst. Ent. 677.14.

*Cicada thorace inermi pone producto.* Geoff. Ins. I. 424.19. Habitat in *Genista tinctoria.* Angliæ. Dom. Lee."

Mr. W. D. Funkhouser very generously supplied us with forty European references to this species from his MS. Cata-

logue of Membracidae and Mr. C. E. Olsen furnished us with nine additional ones. Through the kindness of Mr. Olsen and Mr. A. J. Mutchler, about half of these references were looked over in the library of the American Museum of Natural History. From them it was gathered that the species is quite common in many parts of Europe. Curtis in 1840 (Brit. Ent. Pl. 313) figured the adult and structural details together with an illustration of the food plant, *Genista tinctoria*. Buckton (1840 Mon. Brit. Cicad. vol. I, p. 7) stated that but one species of the genus was known from Britain and that it was rare and smaller than *cornutus* with which it was confused. He also figures the adults.

Distant (1907 Fauna Brit. Ind. IV, 60) states that *genistae* is a Palearctic species, the genus being distributed as follows: Palearctic, Ethiopian, Oriental, Malayan and some portions of Australasian Region.

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### **Butterflies of the Chiricahua Mountains, Arizona (Lepid., Rhop.).**

By WITMER STONE,

The Academy of Natural Sciences, Philadelphia, Pa.

This collection was made during a sojourn in Pinery Canyon, in the Chiricahua Mountains, from May 19 to August 1, 1919, as the guest of Mr. Eugene Law, of Berkeley, California. Most of our time was spent in camp in the oak and juniper belt, at 6000 feet, where openings near the stream made possible the raising of small patches of alfalfa which when in bloom simply swarmed with butterflies. Later we camped at 6500 feet, in a region in which pines predominated, and from which the trail ascended to the high peaks—Ida's, Barfoot and Monument, which tower above the head of the canyon. The slopes of these mountains are covered with pines and Douglas fir, while the peaks themselves are more or less bald and flanked by aspen thickets. From our lower camp numerous trips were made to the foot hills at the mouth of the canyon and out onto the desert, which has an average altitude of 4000 feet.

While the collection is fairly representative, it is probably by no means complete, as it was made at odd times when opportunity offered, our main object being the collecting of birds, mammals and botanical specimens.

The identification of the specimens, which constitutes the real value of the paper, is entirely the work of Dr. Henry Skinner, to whom my sincere thanks are due. My contribution consists merely of the field notes. The entire collection of several hundred specimens has been presented to the Academy of Natural Sciences of Philadelphia.

*Danaüs berenice strigosa*. A common species in the canyon, 5000-6000 ft., during June.

*Agraulis vanillae*. Took one specimen on the floor of the canyon on May 21.

*Euptoieta claudia*. Rather common at 6000 ft., on alfalfa, in June.

*Melitaea thekla*. One taken in the foothills 4500 ft., June 26.

*Melitaea cyneas*. Common at 6000 ft., on alfalfa, during June.

*Melitaea chara*. Took one at our upper camp, 6500 ft., June 15.

*Melitaea theona*. Took one in the foothills, 4500 ft., July 29.

*Synchlloe nigrescens*. Several seen and one obtained along a wash on the desert, 12 miles south of Dos Cabezos, May 27. (4000 ft.)

*Vanessa antiopa*. Saw one on the desert, May 27, and took one on Ida's Peak, 7000 ft., June 28.

*Pyrameis caryae*. Occasional in the canyon at 6000 ft., on thistles, June 11.

*Pyrameis cardui*. One secured in the foothills, 4500 ft., May 22.

*Pyrameis huntera*. One taken at our upper camp (6500 ft.), June 29.

*Limenitis arizonensis*. Rather common in narrow side canyons, flying about the trees and alighting on the foliage, closely associated with *Heterochroa*, June 1, 6000 ft.

*Limenitis weidemeyeri angustifascia*. Several on the summit of Monument Peak, 8826 ft., July 24. One secured.

*Heterochroa bredowi*. Frequent, especially flying about the trees in small side canyons, 6000-6500 ft., during June.

*Epinephile xicaque*. Frequent on the top of Monument Peak, 8826 ft., July 24.

*Neonympha henshawi*. Common on the sides of the canyon, 6000-7000 ft., among bushes close to the ground, from May to July.

*Neonympha rubricata*. One obtained on slopes of Ida's Peak, 7000 ft., June 15.

*Lemonias nais*. Took a specimen, June 23, in the canyon, 6500 ft., and another on Barfoot Peak, 8000 ft.

- Lemonias palmeri*. Took a single specimen, June 11, at 6000 ft., in the canyon.
- Lemonias cythera*. One taken on the desert at the mouth of the canyon, May 22. (4500 ft.)
- Calephelis nemesis*. One secured, June 12, in the canyon, 6000 ft.
- Thecla siva*. One obtained and others seen, June 23, on alfalfa, in the canyon, at 6000 ft.
- Thecla melinus*. Common at 6000-6500 ft., during June and early July, on various flowers.
- Lycaena pseudargiolus echo*. Common at 6000 ft., on alfalfa. May 26 to July 10.
- Lycaena marina*. Abundant with the last, also up to 8000 ft., on Ida's Peak.
- Lycaena isola*. Common with the preceding, 6000-6500 ft.
- Neophasia terlooti*. One secured on Ida's Peak, at 7000 ft., on June 20, and another in the canyon, at 6500 ft. Both in pine and Douglas fir forest.
- Pieris monuste*. Seen only on the desert and at the mouth of the canyon (4500 ft.), July 29.
- Pieris occidentalis*. Common in the canyon up to 6000 ft. and occasionally at 6500 ft.; also taken on the desert (4000 ft.), May and June.
- Nathalis iole*. Common in the canyon, at 6000 ft., May and June.
- Colias caesonina*. Abundant on alfalfa, at 6000 ft., May and June.
- Colias eurytheme*. Abundant on alfalfa with the last.
- Terias mexicana*. Frequent with the preceding on alfalfa, in June.
- Terias damaris*. One specimen obtained on June 23 with the above.
- Terias nicippe*. Frequent at 6000 ft. on the alfalfa, June and July 28; also on the desert (4000 ft.), May 29.
- Papilio daunus*. Occasional in the canyon, 6000 to 6500 ft., usually flying high over the stream, June 2 and July 20.
- Papilio asterias*. Common on the alfalfa, at 6000 ft., June and July.
- Papilio philenor*. Frequent along washes on the desert at the mouth of the canyon, May 27-29 (4000 ft.) and rarely up the canyon to 6000 ft., June 6.
- Pyrrhopyge arizonensis*. One specimen obtained at 6000 ft., July 29, the only one seen during the summer.
- Eudamus tityrus*. Frequent, 6000-6500 ft., in the canyon.
- Eudamus pylades*. Common at 6000 ft. in June, and one also secured on Ida's Peak at 8000 ft., June 20.
- Pyrgus occidentalis*. Frequent at 6000 ft. during June, and also on the desert (4000 ft.), May 29.
- Thanaos clitus*. One taken in the foothills, July 29 (5000 ft.)
- Thanaos tristis*. One taken with the preceding.
- Thanaos funeralis*. One taken in the canyon at 6500 ft., June 23.
- Pamphila taxiles*. One taken in canyon at 6500 ft., June 29.



- Pamphila snowi.** One taken on top of Monument Peak, 8826 ft., on July 24.
- Pamphila phylaeus.** Several taken in the canyon at 6000 ft.
- Pamphila deva.** Frequent during June at 6000 ft., on the alfalfa with the last, and one on Ida's Peak, 8000 ft., June 28.
- Pamphila carus.** One taken, June 23, at 6000 ft.
- Pamphila campestris.** One secured at same place, June 22.
- Pamphila python.** June 16.
- Copaeodes aurantiaca.** One secured in the foothills, 5500 ft., July 29.

#### NOTE BY HENRY SKINNER.

In addition to being an ornithologist, mammalogist and botanist, Dr. Stone is a naturalist and takes a keen interest in all living things. Some of the butterflies collected are of special interest. *Melitaea cyneas* is not common in collections. It has been recorded in the *Biologia Centrali-Americana* from Oaxaca, Mexico. *Melitaea theona* is another species better known from farther south. *Limnitis weidemeyeri angustifascia* is an interesting race, the types having been taken in the White Mountains of Arizona. So far as I am aware, *Neophasia icrlooti* has not before been taken in the United States except in the Huachuca Mountains. The specimen of *Terias damaris* taken by Dr. Stone is the first one I have seen from the United States. Exact records, with date of capture, are becoming very important in the study of specific values and our conception of some of the older work is gradually changing. Every year we are learning more about the species of our western country. It was hardly possible in the past to form much of an opinion of a single specimen with only a State label.

#### The Maggot of the Guava in Costa Rica (Dipt., Trypetidae).

Señor C. Picado C., author of the valuable study on the epiphytic Bromeliaceae considered as a biological medium (1913) has recently worked out the life-history of the maggot which infests the guava fruit (*Psidium guajava* L.). His results appear in the *Publicaciones del Colegio de Señoritas*, of San José, Costa Rica, Serie A, *Estudios Científicos*, No. 2, 1920, entitled "Historia del Gusano de la Guayaba." The maggot is the larva of *Anastrepha striata* Sehner, as determined by Professor Bezzi. Its structure, both external and internal, and that of its parasite, *Diachasma craxfordi* n. sp. (Braconidae), are described and figured in detail and methods of control are considered. It is an interesting and valuable piece of research which, we hope, will be followed by others from the same pen.

## Some Factors in the Classification of the Microlepidoptera.

By ANNETTE F. BRAUN, Cincinnati, Ohio.

It is conceded that any truly scientific system of classification should result in the grouping together of genetically related forms. Classification by means of convenient characters which arbitrarily assign species and genera to different groups without regard to phylogeny, may result in a heterogeneous mixture of species which, while possessing all the characters assigned to their respective group, and traceable to that group in a "key," are of diverse ancestry. Such a system of grouping adds nothing to our knowledge of relationship and phylogeny.

The writing of the present paper was suggested by the all too common tendency in systematic work to place undue emphasis upon some single character or set of characters which appears to solve some of the puzzling questions of relationship. It is the purpose here to point out briefly—and without intention of covering the ground completely—a few of the guiding principles which should be followed in classification and a few of the errors which it is necessary to avoid. The examples are taken from the field of Microlepidoptera not because other groups would not serve for illustration as well, but because the writer is more familiar with this group and better able to give examples.

Classification rests on the affinities shown by weighing the sum of all the characters of a form, the whole organism in all its stages. It is to be expected that in related groups, certain characters may reappear, because of a common inheritance. In genetically unrelated groups the same character may develop independently. This is one reason why no single character can be relied upon exclusively.

In classification, due regard must be paid to the relative value of different characters. The adult indicates better than any other stage the position of the species, because it represents the structure of the species after growth has ceased; it is the most specialized and most complex (except in the case of certain internal parasites). At any event it is the last product in the evolution of that species, a structure which is the final result and is influenced by all changes which have taken place in evolution both in early and adult life.

Larval and pupal characters are only of value within certain limits in determining relationships. Where larval characters contradict the evidence of the imago, they are of little or no value. In the case of free-living larvae, adaptations develop in the course of the struggle for existence. In insects with complete metamorphosis, the habits of larva and adult may differ widely, and hence the modifications of the larva may be entirely independent and of no value in classification. Thus, one only of two related organisms may have a specialized larval stage or the same adaptation may have been added independently in different groups to meet similar conditions of environment. The use of pupal characters is perhaps open to less serious criticism than the use of larval characters, as the pupa is less obviously adaptive; but it must be remembered that the pupa is an interpolated stage, due to the differences between larval and imaginal habits.

Larval and pupal characters often afford valuable confirmatory evidence in classification. For example, the similarity of the pupae of the Micropterygidae and the Trichoptera, confirms the conclusion of their near relationship based on adult structure. Where a larval character is not liable to change in evolution, and has been handed down through a group without change, for example, the fourteen-legged larva of the Gracilariidae, it can be used as a diagnostic character in placing a form in that group, where the other characters are not decisive. Even such a character must be used with care, as it may be retained in several groups merely as an inheritance from a common ancestor, and the adults may have diverged so far from one another that they would never be placed together except on larval characters.

Apparent similarity and consequent apparent relationship may result in errors of classification unless due regard be paid to the course of evolution before taking the final result as a basis of comparison. The placing of *Opostega* close to *Neptica* is an example; while they have certain characters in common, the course of evolution in vein reduction has been totally different. It may be mentioned here that specimens of *Opostega* may be found in which the cell is faintly outlined and additional veins present in the fore wing, showing clearly

the derivation of its venation from a more generalized Lyonetiid type. This is still more strikingly shown in *Helice constrictella*, which, on the basis of empirical characters alone, would be and has been placed in the Cosmopterygidae. It is a Gelechiid, as shown by conservation of Gelechiid characters in the female only of another member of the same genus. This example is all the more significant, as the Gelechiidae are usually easily recognized by very definite characters, and emphasizes the need of a thorough study of all the characters of an organism for an understanding of its relationships.

The necessity of such a thorough study of an organism in order to determine its real phylogenetic relationship is shown nowhere better than in the Microlepidoptera. Families in the Microlepidoptera are often not distinguished by any rigid characters, although a combination of characters may be used in definition, but rather by certain general tendencies in evolution. Definite progressive changes, once initiated, continue until we find that the end product, *i. e.*, the most specialized member of a group, may be so different, that without a knowledge of the intervening phylogenetic changes, as shown by a study of homologies in existing connecting forms, we would never guess its relationship to the more primitive members of the same group.

A new method of classification for the Microlepidoptera is coming to the front. It is the science of genitalia. While there is no objection to the use of these characters in specific differentiation, or in larger group classification if used in combination with other characters, are these characters of such pre-eminent value that they can be used unsupported or in opposition to the testimony of other characters? It may eventually be possible to identify any Microlepidopteron by the male genitalia, but that is not the object of scientific classification, which seeks to show by its system of grouping, the phylogeny of the organism as a whole. Though the science of genitalia is still in its infancy, it may be necessary some day to turn our males around in our collections and let them travel backward. This new science will not classify the females, so it is a pleasant reflection in these days of equal suffrage to know that the females will still look forward.

# ENTOMOLOGICAL NEWS.

PHILADELPHIA, PA., APRIL, 1921.

## Thomas Bellerby Wilson.

When a man has made himself a benefactor of the human family by devoting his life and a large fortune to the promotion of science, gratitude demands that we perpetuate his memory, and uphold his example for the advancement of those sciences for which he lived. Therefore we form this memoir to commemorate the life and character of our late associate THOMAS BELLERBY WILSON.

So wrote a committee of the Entomological Society of Philadelphia, in 1865, in an appendix to the fifth volume of the *Proceedings* of the Society. Similar motives have induced the editors of the NEWS to place Dr. Wilson's portrait on the covers of this journal for 1921. Dr. Wilson was not a publishing entomologist. He was, among many other things, a collector of insects and a word picture of him in this capacity is given in the memoir quoted:

During his residence in New London [Chester County, Pennsylvania, 1833-1841] tradition reports the surprise of the people in that vicinity when they saw him in his long walks along the brooks and through the fields, groves and woods, with his botany box on his back, his entomological net in his hands, the handle of his geological hammer extending from his coat-pocket and his hat covered all around with beetles, butterflies and other insects which he had pinned thereon.

The last item recalls the stories of the famous Napoleonic General, Comte Dejean, whom Wilson may have seen the year (1830) he studied medicine in Paris and attended the lectures of Cuvier. To the end of his life Wilson accumulated insects and especially Diptera, which he gathered around his home near Newark, Delaware, and, in earlier years, on extensive travels through the eastern United States and Canada.

But Wilson's claims to a grateful remembrance by naturalists and entomologists rest upon his gifts of money, books, collections of natural history and equipment to The Academy of

Natural Sciences and The Entomological Society, both of Philadelphia. The Memoir Committee estimated the value of these as \$200,000 and \$26,000 respectively. To his munificence was due the beginning and the maintenance of the publication fund of the Society, which has enabled entomologists from all parts of the United States—not from Philadelphia alone—for more than sixty years, to find means of acquainting the scientific world with their observations and reflections.

He was the first man of wealth in America who understood the importance of founding an Entomological Society with appropriate means of study. . . . The number of young men especially who devoted themselves to scientific labors in the institutions founded by him, is remarkable. And through them and through others yet to rise up, his influence will be felt in coming time beyond any definite period we can fix.

We feel sure that a reading of this memoir will more than repay for the time required and will justify our selection for our cover.

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## Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS  
OF THE GLOBE

### A Nomenclatorial Tangle in Anthomyiidae (Diptera).

In 1846 Macquart described *Spilogaster nitens* from Africa. Stein in 1897 described a species under the same name from North America, and it remained in that genus till removed to *Pogonomyia* by Aldrich in 1917. During those twenty years it was a straight homonym and ought to have been renamed. In 1914 I described Stein's species as *Pogonomyia flavinervis*. In his recent paper on the Anthomyiidae of the world Stein lists Macquart's species as *Spilogaster nitens* and his own as *Hylemia nitens*. The same author in his last paper on North American Anthomyiidae (1920) omits *nitens* Stein entirely as such and redescribes it as *Pogonomyia flavipennis* sp. n.

It appears from the above data that the proper specific name ought to be *Pogonomyia flavinervis* Malloch. But apart from this a fact which is more important is brought to light—that the haphazard relegation of species to genera in this or any other group of animals by even our leading authorities should be checked by making a clearcut definition of genera imperative at the time the genera are erected, and a knowledge of generic limits essential to present day authors of specific descriptions. I realize that the latter requirement is too drastic for acceptance by entomologists at least, but some check is necessary on most authors and some in particular.—J. R. MALLOCH, Urbana, Illinois.

### Cicadas Make Final Moults Upon Leaves of Trees (Homop.).

Ordinarily cicadas make the final moult upon trunks of trees, telephone poles, fence posts and similar elevated, rather firm structures; but during last August the authors took cast skins of the last moult of cicadas from the leaves of numerous trees, among them linden, chestnut, maple, oak, elm and catalpa.

Many spent skins were noticed upon the trunks of some trees, and they occurred at miscellaneous places upon the leaves, such as upon the petioles and various places upon the blades. As many as three skins were seen upon a single leaf, some upon the lower surfaces and some upon the upper. Usually the leaves were from twenty to thirty feet from the ground, although some were lower and some were higher, and the skins were not nearly as common upon leaves as they were upon the trunks and branches. Most of the skins which were found upon the leaves were headed toward the petiole or stem end.

Since we did not see the adult insects which emerged from the spent skins we do not know the species. We do not know this habit to be common to any one particular species of the family Cicadidae.—VERNON R. HABER and W. BRUCE MABEE, Division of Entomology, Dept. of Agriculture, Raleigh, North Carolina.

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## Entomological Literature

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

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), 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.

The records of papers containing new genera or species occurring north of Mexico are all grouped at the end of each Order of which they treat.

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.

The titles occurring in the *Entomological News* are not listed.

4—Canadian Entomologist, London, Canada. 5—Psyche, Cambridge, Mass. 9—The Entomologist, London. 10—Proceedings of the Entomological Society of Washington, D. C. 11—Annals and Magazine of Natural History, London. 15—Insector Inscitiae Menstruus, Washington, D. C. 20—Bulletin de la Societe Entomologique de France, Paris. 39—The Florida Entomologist, Gainesville. 45—Zeitschrift für wissenschaftliche Insektenbiologie, Berlin. 48—Wiener Entomologische Zeitung. 49—Entomologische Mitteilungen, Berlin-Dahlem. 57—Biologisches Zentralblatt, Leipzig.

59—Journal of Agricultural Research, Washington, D. C. 72—The Annals of Applied Biology, London. 76—Nature, London. 82—The Ohio Journal of Science, Columbus. 86—The Quarterly Journal of Microscopical Science, London. 88—Occasional Papers of the Museum of Zoology, University of Michigan, Ann Arbor. 89—Zoologische Jahrbucher, Jena. 90—The American Naturalist, Lancaster, Pa. 103—Biologisches Centralblatt, Leipzig. 119—Proceedings of the National Academy of Sciences of the U. S. A., Washington, D. C. 120—Annalen des Naturhistorischen Museums in Wien.

**GENERAL.** Bateson, W.—The determination of sex [Review of Mechanismus und physiologie der geschlechtsbestimmung by R. Goldschmidt.] 76, cvi, 719-21. Britton, W. E.—Check list of the insects of Connecticut. (Conn. Geol. & Nat. Hist. Surv., Bull., 31, 397 pp.) Gibson, A.—Retirement of Dr. E. M. Walker as editor. 4, liii, 25. Goldschmidt, R.—Die quantitative grundlage von vererbung und artbildung (Vortr. u. Aufs. u. Entwick. der Organis., Berlin, xxiv, 163 pp.) Pickard-Cambridge, O.—In memoriam. (Proc. Dorset Nat. Hist. & Ant. Field Club, xxxviii, xli-lii, 1917.) Reitter, E.—Ein nachruf von F. Heikertinger. 48, xxxviii, 1-20.

**ANATOMY, PHYSIOLOGY, &c.** Bridges, C. B.—Gametic and observed ratios in *Drosophila*. 90, lv, 51-61. The mutant cross-veinless in *Drosophila melanogaster*. 119, vi, 660-3. Haviland, M. D.—On the bionomics and development of *Lygocerus testaceimanus*, and *L. cameroni*, parasites of *Aphidius*. 86, lxx, 101-27. Jackson, D. J.—Bionomics of weevils of the genus *Sitones* injurious to leguminous crops in Britain. 72, vii, 269-98. Klatt, B.—Beitrage zur sexualphysiologie des schwammerspinner. 103, xl, 539-58. Payne, F.—Selection for high and low bristle number in the mutant strain "reduced." (Genetics, v, 501-42.) Ritchie, W.—The structure, bionomics, and economic importance of *Saperda carcharias*. 72, vii, 299-343. Safir, S. R.—Genetic and cytological examination of the phenomena of primary non-disjunction in *Drosophila melanogaster*. (Genetics, v, 459-87.) Snodgrass, R. E.—The mouthparts of the Cicada. 10, xxiii, 1-15. Sturtevant, A. H.—Genetic studies on *Drosophila simulans*. I. Introduction. Hybrids with *D. melanogaster*. (Genetics, v, 488-500.) Verlain, L.—Note sur la spermiogenese et la double spermatogenese des lepidopteres. (Mem. Acad. Roy. Belgique, Clas. Sci., iv, fasc. 4.)

**MEDICAL.** Brues, C. T.—Insects and human welfare. (Harvard Univ. Press, 1920, 104 pp.)

**NEUROPTERA.** Howe, R. H.—Two interesting additions to the odonate fauna of Concord, Mass. 5, xxvii, 154-5. McDunnough, J.—Dragonflies of the Lake of Bays region. Additional records of dragonflies from the Ottawa region. 4, liii, 6-8; 14. Tillyard, R. J.



—A new classification of the order Perlaria. **4**, liii, 35-43. **Williamson, E. B.**—Two new Neotropical genera of Lestinae (Odonata). **88**, 96, 9 pp.

**ORTHOPTERA.** **Buddenbrock, W. V.**—Der rhythmus der schreibbewegungen der stabheuschrecke *Dyxippus*. **57**, xli, 41-8.

**HEMIPTERA.** **Barber, G. W.**—A 1919 collection of Cicadellidae in the environs of Boston. **5**, xxvii, 146-50. **Bollweg, W.**—Beitrag zur faunistik und oekologie der in der umgebung Bonn's vorkommenden aquatilen rhynchoten mit sonderer beruecksichtigung ihrer larvenverhaeltnisse. (Ver., Naturh. Ver., Preus. Rheinl. u. Westf., lxxi, 137-87.) **Parshley, H. M.**—Hemiptera collected in western New England, chiefly from mountains. **5**, xxvii, 139-43. **Riley, C. F. C.**—Distribution of the large water-strider, *Gerris remigis*, throughout a river system. (Ecology, ii, 32-6.) **St. George, R. A.**—Notes on the periodical Cicada in 1919. **10**, xxii, 227-31. **Stahl, C. F.**—Studies on the life history and habits of the beet leafhopper. **59**, xx, 245-52. **Weiss, H. B.**—Notes on the life history of *Pachypsylla celtidis-gemma*. **4**, liii, 19-21. Notes on the life history and early stages of *Corythucha celtidis*. **82**, xxi, 104-6.

**Herbert, F. B.**—The genus *Matsucoccus* with a new species. **10**, xxiii, 15-22. **Knight, H. H.**—Hemiptera of the family Miridae of the Katmai expedition. **82**, xxi, 107-9.

**LEPIDOPTERA.** **van Bemmelen, J. F.**—The wing markings of Arctiidae. (Proc. Kon. Akad. v. Wetens., Amsterdam, xx, 849-60.) **Bowman, K.**—Annotated check list of the macrolepidoptera of Alberta—additions, 1919. **4**, liii, 13-14. Annotated check list of the macrolepidoptera of Alberta. (Alberta Nat. Hist. Soc., Red Deer, Alberta, Canada, 16 pp.) **Fassl, A. H.**—Beschreibung einer neuen Saturniide aus Bolivien. **120**, xxxi, 63-4. **Gschwandner, R.**—Eine neue Saturniide aus Ecuador. **120**, xxxiii, 86-7. **Heinrich, C.**—Synonymical note in Aecophoridae. **10**, xxii, 232. **Roeber, J.**—Ueber mimikry und verwandte erscheinungen bei schmetterlingen. **49**, x, 23-30 (Cont.) **Schaus, W.**—New sps. of Heterocera from South America. **15**, ix, 52-8. **Weiss & Beckwith.**—Notes on *Coptodisca kalniella*, a leaf miner of *Kalmia angustifolia*. **4**, liii, 41-5.

**Dietz, W. G.**—A new species of *Coptodisca*. **4**, liii, 44. **Dyar, H. G.**—New forms of American moths. Note on *Schizura apicalis*. Change of preoccupied name. **15**, ix, 59-68; 99. **McDunnough, J.**—A new race of *Strymon melinus*. **4**, liii, 47.

**DIPTERA.** **Becker, T.**—Dipterologische studien. (N. A., Abh. Kais. Leop. Cr. Deut. Akad. Naturf., cii, Nr. 2, 115-361. Cont.) **Bonne-Wepster & Bonne.**—The first *Sabethes* larva found. **15**, ix, 98-99. **Dyar, H. G.**—The American *Aedes* of the punctor group.

Two new *Culex* from Costa Rica. **15**, ix, 69-80; 100. **Hearle, E.**—The larva and breeding place of *Aedes aldrichi*. **4**, liii, 48. **Johnson, C. W.**—The female of *Glutops singularis*. **5**, xxxvii, 153-4. **Malloch, J. R.**—Synopsis of the anthomyiid genera *Mydaea*, *Ophyra*, *Phyllogaster*, *Tetramerinx*, and *Eulimnophora*. **4**, liii, 9-13. Exotic Muscaridae.—I. . . . . South American species. **11**, vii, 170-3. **Seguy, E.**—Remarques sur quelques larves de moustiques. **20**, 1920, 309-11.

**Aldrich, J. M.**—The muscoid genera *Pseudeuantha* and *Uramyia*. The anthomyiid genus *Atherigona* in America. **15**, ix, 83-92; 93-8. **Greene, C. T.**—A new genus of Bombyliidae. **10**, xxiii, 23-4.

**COLEOPTERA.** **Bernhauer, M.**—Neue arten der Staphyliniden-fauna von Sudamerika, insbesondere aus den gattungen *Osorius* und *Megalops*. **47**, ii, 9-11 (Cont.) Neue Staphyliniden aus Mittelamerika. **48**, xxxviii, 44-7. **Bowditch, F. C.**—South American Eumolpidae, mostly of the group *Colaspini*. **9**, liv, 25-30. (Cont.) **Cotton, R. T.**—Rice weevil (*Calandra*) *Sitophilus oryza*. Tamarind pod-borer, *Sitophilus linearis*. **59**, xx, 409-22; 439-46. **Denier, P.**—Description d'un genre nouveau de la tribu des *Lyttni*. (Meloidae.) **20**, 1920, 332. **Dietz & Barber.**—A new avocado weevil from the Canal Zone. **59**, xx, 111-15. **Kleine, R.**—Der stridulationsapparat der *Hylobiini*. **49**, x, 16-23. **Kolbe, H.**—Ueber mutationsformen bei coleopteren. **45**, xvi, 49-63. **Thery, A.**—Description de cinq *Colobogaster* nouveaux (Buprestidae.) **20**, 1920, 286-90. **Watson, J. R.**—Notes on some Florida weevils. A food plant of *Languria discoidea*. **39**, iv, 33-5; 40-1. **Weiss, H. B.**—Notes on the fungus-beetle. *Cis vitula*. Coleoptera associated with *Polyporus versicolor*, in New Jersey. **5**, xxvii, 130; 133-4; 137-9. **Zimmermann, A.**—Coleopterorum catalogus (Junk). Pars. 71 Dytiscidae, Haliplidae, Hygrobiidae, Amphizoidae. 326 pp.

**Achard, J.**—Identification du *Scaphidium concolor*. **20**, 1920, 307. **Blaisdell, F. E.**—Four new sps. of *Melyridae*. **4**, liii, 15-19. **Wickham, H. F.**—New species of *Perthalyera* and *Osmoderma*. **10**, xxii, 232-34.

**HYMENOPTERA.** **Brues, C. T.**—A dimorphic species of *Cephalonomia* from Trinidad. **5**, xxvii, 151-3. **Friese, H.**—*Canephorula apiformis*, eine bienen-art mit dem beginne der korb-schenbildung aus Argentinien. **89**, xliii, Ab. f. Syst., 461-70. **Gahan, A. B.**—On the identity of several species of Chalcidoidea. **10**, xxii, 235-43. **Kohl, F.**—Die hautflugergruppe "sphecinae." Die natuerliche gattung *Sceliphron* (*Pelopoeus*.) **120**, xxxii, 1-171. **Nininger, H. H.**—Notes on the life history of *Anthophora stanfordiana*. **5**, xxvii, 135-7. **Stellwaag, F.**—Die schmarotzerwespen (schlupfwespen) als parasiten. (Monog. z. Angewandt. Entom., Nr. 6).

INSECTS AND HUMAN WELFARE. An Account of the More Important Relations of Insects to the Health of Man, to Agriculture and to Forestry. By CHARLES THOMAS BRUES, Assistant Professor of Economic Entomology, Bussey Institution, Harvard University, Cambridge [Mass.], Harvard University Press, 1920. 8vo., pp. xii, 104, 42 figs., \$2.50.—“The present volume is an attempt to present some of the principles and practices of economic entomology in a form that will illustrate the biological relationships of insects to their environment. . . . The past few decades have witnessed great changes, whereby the field of the entomologist has been greatly extended, and he has been compelled, not unwillingly, to improve his methods of investigation and to take advantage of the rapid progress made not only in zoology and botany, but in medicine and chemistry as well. He has naturally greatly improved his efficiency, and has been enabled to increase his usefulness to humanity many fold. The general public rarely appreciates fully the many economic problems in relation to insects which continually present themselves . . . the entomologist . . . has to deal with a wonderfully varied and extensive series of animals. This very fact makes it difficult to deal with insects in the brief and generalized manner applicable to other groups of animals. . . . In the following pages I have considered few of the details which may be found in many other carefully prepared volumes, but have rather attempted to avoid, as consistently as possible, matters not directly necessary for a brief consideration of insects as they affect human welfare.” Having thus sketched the plan of the work in the preface, the subject matter is treated in five chapters: Insects and the Public Health (pp. 3-38), Insects and the Food Supply (pp. 39-62), Forest Insects (pp. 63-86), Household Insects (pp. 87-99), The Outlook for the Future (pp. 100-104).

In this last, after referring to the general, but unfortunate, viewpoint from which all living things are regarded as either useful or injurious to man, emphasis is laid on the variety of the methods by which noxious insects are combated, the most promising way being regarded as the biological, the use of parasites. The appearance of insect pests in countries hitherto free from them will continue and “the specific problems of the entomologist will become more international in character.” Quarantines will result only in retardation, not in exclusion, of the immigrants, and the extension of the ranges of certain disease-bearing insects will doubtless afford many unpleasant surprises.

Some curious errors occur in figure 20, on page 44, where *Colias* [*Eurymus*] *philodice* appears as “*Pontia philodice*,” the American congener of the European cabbage butterfly, and is stated to have the same food plant. The remark that the economic entomologist has no criticism to make of non-rotation of crops (on page 45) is hardly comprehensible until one reads page 57. The text reference to fig. 39, on page 91, should be transferred to *Periplaneta americana* from *Blatta*

*orientalis*. One wonders why the spread of insects is not impeded *inversely* as the difficulty of inspection, rather than in proportion to that difficulty (page 103).

PHILIP P. CALVERT.

CATALOGUE OF THE COLEOPTERA OF AMERICA, NORTH OF MEXICO. By CHARLES W. LENG, B.Sc. Published by John D. Sherman, Jr., Mount Vernon, N. Y., 1920. [See Ent. News, xxxii, p. 62, Feb., 1921.]—The long desired and most useful work on North American Coleoptera has at last appeared. So extensive is the literature on our beetles, so tangled the generic reference of many species, so many changes have been made in the nomenclature of European Coleoptera, that Coleopterists well-nigh despaired of ever having a catalogue to our species.

The volume is of 470 pages, and includes, as an introduction, an essay on classification; then follows the catalogue of the species, an appendix on Strepsiptera, a catalogue of the fossil forms by Mr. Wickham, a bibliography, and the index to genera and higher groups. The essay on classification is a succinct account of the various proposed arrangements, with critical remarks concerning them, and ends with a conspectus of families. Here the Coleoptera are arranged in two suborders, Adephaga and Polyphaga, and 22 super-families. Under the super-families are 109 families. The series ends in the Rhynchophora and Scolytoidea, the Scarabaeidae being placed before the longicorns.

In the catalogue proper the species are numbered, the whole totalling 18,547. Each species is cited by author, year and page of publication, which refers to the complete reference in the bibliography, and the known distribution by states. It is printed in double columns. Under the family, sub-family, or tribe, are references to revisional papers. Under each genus the species are arranged according to their relationships, as given by the last reviser. In the case of all but small genera it would have been far more useful to have the species arranged alphabetically.

A number of generic and several family names are strange to American entomologists, but the author has been very conservative in adopting changes in nomenclature. Coleopterists so far have been spared that confusion of nomenclature which has fallen on some of the other orders of insects. In the preparation of this catalogue proper the author has had the help of special students on certain families, Mr. Schaeffer in the Ostomidae, Mr. Sherman in Dytiscidae, Mr. Woodruff in Melandryidae, Mr. Wolcott in the Cleridae, etc. This gives added authority to the work. Species from Lower California are included, and introduced species are so marked.

The appendix on Strepsiptera lists 97 species. The catalogue of the fossil forms includes over 800 species.

The bibliography is a most useful feature; here are listed over 4,000 titles, all that have a bearing on the taxonomic study of our beetles.

In a work of this magnitude it is inevitable that there should be mistakes, but these are of a minor character, and gradually will be corrected. Anyone who, through experience, appreciates the enormous grind that this bibliographic work has entailed cannot but congratulate Mr. Leng on having successfully driven through his labor to completion. The work will undoubtedly give a new impetus to the study of beetles in our country, and we hope that before many years the interest in this dominant order of insects will be such that it will be financially possible to publish a catalogue with references to original and later descriptions after each species in the manner of other catalogues of insects. The publisher, Mr. Sherman, is also a Coleopterist, and it is largely due to his unremitting energy that the catalogue is in print.

NATHAN BANKS.

CHECK LIST OF THE INSECTS OF CONNECTICUT. By WILTON EVERETT BRITTON, Ph.D., State Entomologist and Entomologist of the Agricultural Experiment Station, New Haven, Conn. Hartford. Printed for the State Geological and Natural History Survey, 1920.—This work of 397 pages should accomplish what its author had in mind when he prepared it, to stimulate an interest in the study of insects in the State, in relation to man in the broadest sense, but with a special interest in economy.

"A work entitled a Guide to the Insects of Connecticut, containing keys to orders, families, genera, and species and including much information about life-histories, habits, distribution, etc., is already in progress."

The Check List will be very useful in the preparation of parts of the Guide to be issued, as additional species and additional facts are the natural result of such a list; in other words, interest is stimulated. Doubtless errors have crept into the list, but think of the joy that will accrue to the person finding and reporting them.

Dr. Britton is to be congratulated on the publication of such a useful list and we would like to see every State in the Union do likewise.—H. SKINNER.

LEPIDOPTERA OF THE CONGO, Being a Systematic List of the Butterflies and Moths Collected by The American Museum of Natural History Congo Expedition, Together with Descriptions of Some Hitherto Undescribed Species. By W. J. HOLLAND. Bulletin of the American of Natural History, 1920, XLIII, pp. 109-369.—This paper is well illustrated with excellent colored half-tones of numerous species and some text figures. Dr. Holland has been a student of the African fauna for many years and is well qualified to prepare such a work and the present contribution is one of real merit and value. The collection contained nearly nine thousand specimens and upwards of seven hundred and twenty-five species.—H. SKINNER.

## Doings of Societies.

### Entomological Workers in Ohio Institutions.

The annual state meeting of Entomological Workers in Ohio Institutions was held in the Botany and Zoology Building, Ohio State University, Columbus, Ohio, on Thursday, Feb. 3, 1921, with the following officers: Pres., J. S. Houser; Vice-Pres., H. J. Spaker; Sec., T. H. Parks.

The following papers were given:

GENERAL ENTOMOLOGY—W. M. Barrows—Insect Orientation to Heat Rays. R. C. Osborn—Next Steps in Entomological Study. W. C. Kraatz—Notes on Aquatic Insects in Ohio. C. L. Metcalf—The Elementary Course in Economic Entomology. F. H. McMillen—How Entomology is Taught by the Smith-Hughes Teacher. Ford S. Prince—Entomology's Place in County Agent Work. H. E. Evans—The Farmer and Taxpayer's Opinion of the Application of Entomological Control Methods. E. L. Wickliff—Insect Food of Certain Ohio Fishes.

ECONOMIC AGRICULTURAL ENTOMOLOGY—E. L. Chambers—Greenhouse Insect Control on a Commercial Scale. P. R. Lowry—Economic Importance of Mealy Bugs in Ohio. E. C. Cotton—Recent Developments of Gypsy Moth and European Corn-borer Liable to be Introduced. W. O. Hollister—The Tree Surgeon's Knowledge of Entomology. J. S. Houser—Control of the Cucumber Beetle. H. A. Gossard—Devices for Recording the Emergence of Hessian Fly Broods. T. H. Parks—Some Remarks on Hessian Fly and Its Control. E. W. Mendenhall—Some of the Insect Pests Found in Northeastern Ohio. W. S. Hough—Methods Employed to Control and Eradicate the Pink Boll Worm.

ODONATA—C. H. Kennedy—Notes on Dragon Flies.

HOMOPTERA—E. A. Hartley—Remarks on Some Aphid Parasites.

HYMENOPTERA—L. L. Huber—Remarks on a Chalcidoid Parasite.

COLEOPTERA—W. V. Balduf—Life History and Habits of the Cucumber Beetle.

INSECTS AND DISEASE—J. S. Hine—Blood-sucking Insects Observed on the Katmai Expedition.

Newly elected officers: *President*, C. L. Metcalf; *Vice-President*, E. W. Mendenhall; *Secretary*, T. H. Parks.

The following additional entomologists were in attendance: W. H. Larrimer, Lafayette, Ind.; R. W. Kelly, Cleveland, Ohio.; Richard Faxon, Elyria, Ohio.; R. S. McKay, Batavia, Ohio.; C. R. Cutright, C. O. Eddy, F. E. Guyton, A. E. Miller, W. B. Noble, of the Ohio State University.

T. H. PARKS, *Secretary*.

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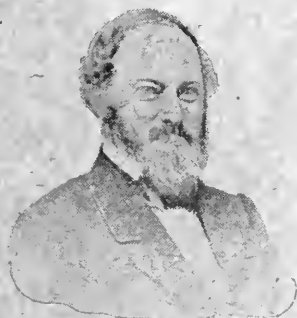
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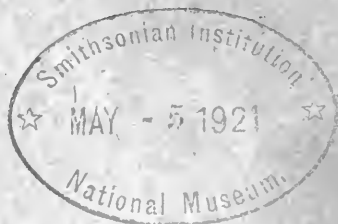
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1807-1865



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

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# ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

THE ACADEMY OF NATURAL SCIENCES, PHILADELPHIA

VOL. XXXII

MAY, 1921

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## Charles Henry Fernald.

By the death of Prof. Charles Henry Fernald at Amherst, Massachusetts, on February 22 of this year, the scientific world has lost one of its great pioneer entomological teachers and investigators.

Charles Henry Fernald was born March 16, 1838, at Fernald's Point, Mount Desert Island, Maine, the son of Eben and Sophronia (Wasgatt) Fernald. Opportunities for education, as we know them, were very limited, but he early showed the ability to choose and direct his own studies. His boyhood ambition was to become a ship captain—his father was a ship-owner—and to this end he set out to prepare himself. His summers from the age of fifteen to twenty-one he spent at sea, the winters in studying and teaching. His first interest in natural history began during these voyages with the collection of marine forms, but at this time the love of the sea was still paramount. At twenty-one, still with the desire better to prepare himself for a ship captaincy, he entered the Maine Wesleyan Seminary. But here the atmosphere of learning aroused

in him other interests and other ambitions which were to determine the future course of his life.

During three years here he prepared for entrance to Bowdoin College. But the Civil War intervened. His classmates enlisted, most of them in the army, but his earlier experience inclined him to the navy, where he served for three years (1862-1865), rising to the rank of ensign. Just before sailing, he was married to Miss Maria Elizabeth Smith, whose death occurred in 1919. During his service in the navy, by the aid of books carried with him, he completed the Bowdoin College course. Later (1871) he received the degree of Master of Arts from Bowdoin College.

On his return from the war, he was made principal of Litchfield Academy, Maine. Here he began the study of geology, which was continued at Houlton Academy, of which he was principal from 1866 to 1871. Finding it necessary to his progress in geology to know more of botany and zoology, he undertook an intensive study of these subjects. During this period also, he began the collection and study of insects, with all the attending difficulties of scattered literature.

Through his independent study and through his correspondence with the foremost men of science, he was not only familiar with a great variety of subjects but became known to the scientists of this country and abroad.

In 1871, he was made professor of natural history in the Maine State College (now the University of Maine), and was called upon to teach botany, physical geography, human anatomy and physiology, comparative anatomy, veterinary science and zoology, with special attention to entomology, geology and mineralogy. During this time (1871-1886) insects came more and more to occupy his attention, as is shown by the titles of his papers. While connected with the Maine State College, he wrote "Grasses of Maine," "Butterflies of Maine" (1884), "Sphingidae of New England" (1886), and "A Synonymical Catalogue of the described Tortricidae of North America" (1882). The conclusions in the last named paper were based on his studies and comparisons of specimens in the museums of this country and of Europe. Numerous other shorter entomological papers appeared during this time, chiefly notes and

descriptions of new species in the Pyralidae and Tortricidae. At the close of his service here, the Maine State College conferred upon him the degree of Doctor of Philosophy.

In 1886, Prof. Fernald accepted the position of Professor of Zoology in the Massachusetts Agricultural College, retaining this position until his retirement from active work in the college in 1910. During the last ten years of his service here, his work consisted mainly in the development of the post-graduate courses in Entomology. From 1908 to 1910 he was director of the Graduate School.

In 1887, with the establishment of the Hatch Experiment Station, he was made entomologist, remaining in this position until 1910. The establishment of experiment stations, with the consequent opportunities for entomological work, and the demand for trained entomological workers, together with the impetus given to economic entomology by the discovery of the Gypsy Moth in Massachusetts in 1889 and the fight against it directed by Prof. Fernald, resulted in a rapid growth of the college work in entomology, to which Prof. Fernald's time was increasingly and finally exclusively given.

As a much esteemed and beloved teacher of entomology, Prof. Fernald will always rank as one of the great pioneers, whose enthusiasm and self-sacrificing devotion to his work is reflected in the lives and work of the students who received their instruction and inspiration from him. To him, and to the sympathetic cooperation of his son, Dr. H. T. Fernald, is due the development of the facilities for entomological work at the Massachusetts Agricultural College.

His greatest work in economic entomology centered around the fight against the Gypsy Moth in Massachusetts. As scientific director of this work, and as entomologist of the Hatch Experiment Station, he was active in the successful controlling of this pest during the ten-year period from 1889 to 1899. He brought to this work executive ability combined with a broad conception of the problems and difficulties involved. Accounts of this work are embodied in the annual "Gypsy Moth Reports" and in the more complete volume on "The Gypsy Moth" (1896), prepared in cooperation with E. H. Forbush, field director of the work. Other records of his work as entomolo-

gist of the Hatch Experiment Station may be found in the "Reports of the Entomologist" and in the bulletins of the Hatch Experiment Station.

As a systematic entomologist he is known, throughout the world for his work on the Microlepidoptera, particularly on the Tortricids and Pyralids. His published work on the Tortricidae includes "A synonymical Catalogue of the described Tortricidae of North America, north of Mexico" (1882), "The Genera of the Tortricidae and their Types" (1908) and many short papers, of which the earliest appeared in the *Canadian Entomologist* in 1878. His early work on the Tortricidae of North America was the first attempt to bring order out of the chaos resulting from inadequate descriptions, often made from poorly preserved material, incorrect generic determinations and the confusion in nomenclature existing in this group at that time. In any critical estimate of the scientific value of the published results of his studies, as given in the Synonymical Catalogue and in later shorter papers and lists, it must be borne in mind that his was a pioneer work. The correctness of his conceptions of the genera and the care with which the species were examined is perhaps best attested by the fact that apart from changes due to modification in ideas of the limits of genera and changes resulting from the application of the law of priority after more critical study of the work of the early authors, the synonymy and generic position of most of the species is not different from that determined by Fernald. "The Genera of the Tortricidae and their Types," published in 1908, was the result of painstaking investigation undertaken for the purpose of establishing a stable nomenclature based upon priority and correct conceptions of the genera as determined from their types. The great merit of the work lies in the trustworthiness of the references, the unprejudiced presentation of the evidence and the critical analysis of the facts. Some workers may not accept all of his conclusions, for reasons among which are the non-acceptance of Hübner's "Tentamen" names, an unwillingness to accept accidental fixation of types by Stephen's use, and differences of opinion as to the amount

of structural variation allowable within generic limits; but none can gainsay its value as a basis for all future work.

The work on the Pyralids consists of a number of scattered papers giving descriptions of new species, several papers on separate genera giving keys to the species with critical notes, and the monographic papers "The Crambidae of North America," and "The Pterophoridae of North America." The plan of the two monographs is essentially similar; geographic distribution, history and nomenclature, general structure and habits, followed by keys and descriptions of the genera and species. Prof. Fernald had that rare faculty of choosing and stating clearly, essential characters; as a result these papers are as usable to the amateur collector who wishes merely to name his captures, as to the deeper scientific student. Prof. Fernald's familiarity with the Pyralids went far beyond that shown in his published writings as is proved in his correspondence, and by the critical notes given in his reviews of others' work.

In the Tineina, Fernald's principal contribution is the paper, "On the North American Species of *Choreutis* and its Allies" (1900).

The diversity of interests and the breadth of his studies is shown by the titles of other taxonomic papers, among which are "The Orthoptera of New England," designed especially for the use of students, "The Sphingidae, of New England," and in the character of his reviews, which show a first-hand knowledge of the subject matter under discussion and by their constructive criticism are of real scientific value.

With his retirement from official duties in 1910, Prof. Fernald had hoped to have the time and opportunity to continue his studies in the Microlepidoptera. Although failing health and later serious illness several years before his death denied the fulfillment of this hope, he kept up always his unflinching enthusiasm and eager interest in these insects and in the work being carried out by others.

We have lost a scientist whose work will endure; a loyal friend, and a man of the highest Christian character, whose life will always be an inspiration to others.

ANNETTE F. BRAUN.

## Two New Species of the Genus *Coenosia* (Anthomyiidae, Diptera).

By J. R. MALLOCH, Urbana, Illinois.

The two species described herein have been in my possession for two years, but I delayed printing the descriptions as I knew that Professor Stein had a large paper on the family in the press and as I knew that much of his material had been supplied by western collectors I assumed that there was considerable probability he had the species and I did not want to create unnecessary synonyms. The descriptions are now presented, as he had apparently no specimens of the species.

### *Coenosia aliena* sp. n.

♀.—Black, slightly shining, densely gray pruinose. Inter-frontalia black, less densely gray pruinose than orbits; antennae and palpi black. Thorax with three linear brown vittae. Abdomen with the paired dorsal spots not very conspicuous, large, forming two almost continuous vittae. Legs black, trochanters, apices of femora and the tibiae reddish yellow. Wings clear. Calyptrae white. Halteres yellow.

Arista pubescent; third antennal segment extending three-fourths of the distance to mouth-margin. Presutural acrostichals in an irregular series; lower stigmatal bristle directed ventrad. Tibial bristles as in *lata* Walker, but there are in the type two additional bristles on antero-dorsal surface of hind tibia, one above and one below the normal bristle, both weaker than the median one. Otherwise as *lata*. Body length, 3.5 mm.

*Type*, Gallatin, Montana, August 22, 1917.

### *Coenosia anthracina* sp. n.

♀.—Similar in color to the foregoing, the entire body black, shining, without distinct pruinescence and without distinct dorsal abdominal spots. Legs black, bases of tibiae reddish. Halteres yellow.

The species structurally resembles *fraterna* Malloch and the principal differences lie in the color of the interfrontalia. In *fraterna* the interfrontalia is almost as densely gray pruinose as the orbits, while in *anthracina* it is brownish yellow when seen from in front and velvety black when seen from behind. The thorax and abdomen in *fraterna* are rather densely gray pruinose and the median bristles on the apical and preapical abdominal tergites are much stronger than in *anthracina*. Body length, 2-2.5 mm.

*Type*, Gallatin County, Montana, August 15, 1912, 5400 feet elevation. *Paratype*, Unita National Forest, Utah, August 21, 1917, 8000 feet elevation (J. Silver).

Types in collection of Illinois Natural History Survey. *Paratype* in collection of U. S. Bureau of Biological Survey.



**A Phylogenetic Study of the Venation of the Fore Wings of the Homoptera, Thysanoptera, Psocida, Zoraptera, Neuroptera, Embiida, Plecoptera and Hadentomoida—with notes on the Hymenoptera and Coleoptera.**

By G. C. CRAMPTON, Ph.D., Massachusetts Agricultural College, Amherst, Mass.

(Continued from p. 104)

From the foregoing discussion, it is clear that the evidence of the wing venation would not be opposed to the view that the Homoptera, Thysanoptera and Psocida are very closely related, and that all of them approach the Zorapteron type, which in turn was derived from types resembling the Embiida and Plecoptera, and these lead back through forms resembling the Hadentomoida, etc., to the Palaeodictyoptera. In fact, the wing venation corroborates the evidence from other sources very strikingly in many cases, but in other cases I do not think that the wing veins offer as reliable sources of information concerning the interrelationships of insects as do other features of the body, such as the thoracic sclerites, head and terminal abdominal structures; and it is only when its evidence is in full agreement with that from other sources as well, that we are justified in giving so great a value to the evidence of the wing venation as done by many students of this phase of anatomy, who have made a veritable fetish of the venation, seemingly regarding it as a sort of infallible Delphic oracle, and paying no attention to evidences of relationship furnished by other features, which in many cases offer far better indications of relationship than the venation does!

It is apparent to anyone who has made a study of a wide range of structures from different parts of the body that no one set of structures can be trusted in attempting to trace the lines of development of the different insectan orders, since in one group of insects a set of structures, such as the wing veins, will remain very conservative, while another set of structures, such as the mouthparts, will become quite highly modified. In another group, on the other hand, the mouthparts may remain very conservative, while the wings become

highly modified. Thus, in the fossil insect *Eugereon*, which some investigators consider as representing the type ancestral to the Hemipteroid insects, the wings are still in the primitive stage of development represented by the Palaeodictyoptera, while the mouthparts have become as greatly modified as those of the highly specialized parasites forming the order Siphonaptera, or the fleas. In fact, the labial palpi, hypopharynx, etc., of *Eugereon* are remarkably similar to those of the fleas (as well as those of the Neuropteroids related to the fleas, such as the Diptera, Mecoptera, Neuroptera, etc.) and the mouthparts of *Eugereon* are so similar to these forms, rather than the Hemipteroid insects, that it would hardly seem that *Eugereon* stands in the direct line of descent of the Hemipteroid insects, and in fact it is no nearer to them than the rest of the Neuropteroids are. At any rate, *Eugereon* furnishes us with an example of an insect in which the wing veins have remained practically unchanged from the ancient Palaeodictyopteron type, while the mouthparts have become as greatly modified as those of the highly specialized order Siphonaptera. On the other hand, the head of the Zoraptera is very much like that of the primitive order Plecoptera, while the wings of the Zoraptera have become so highly modified that they approach the types found in the Homoptera. On this account, if we were to regard the wing venation alone in these insects, we would not be able to fit them into their proper places in the developmental series as accurately as we are able to do by taking into consideration *all* of the features of the body, etc., and whatever evidence is available from all other sources (*e. g.*, embryology, etc.) as well. I would therefore treat the evidence of relationship furnished by the wing veins as merely a part of the whole evidence, and until it is supported by evidence from other sources as well, I would give it no greater weight than that furnished by the study of any other single set of structures. On the other hand it must be admitted that it would be perfectly possible to trace the origin and development of all of the lines of descent of the insectan orders by using one set of structures alone—such as the evolution of the antennae, legs, mouthparts, etc.,—pro-

vided we had all of the stages arranged before us, and knew which features of resemblance were due to consanguinity, and which to convergence or parallelism; but, in the present state of our knowledge, no one is justified in using one set of structures alone in tracing the evolution of the orders of insects, and opinions based upon a study of the wing veins alone are of no more value than those based upon the study of any other one set of structures. I would, therefore, relegate the evidence of the wing veins to a more subordinate position than its votaries are willing to do, although I, too, fully appreciate its value as corroborative evidence, which must be taken into consideration (with that from *any* available source) if we are to come to a correct conclusion concerning the origin and interrelationships of the insectan orders.

The venation of the wings of the Coleoptera and Hymenoptera is so greatly modified, that it is of little value in the study of insect phylogeny, although it is of some value as corroborative evidence if taken in conjunction with that drawn from the study of other features, such as the thoracic sclerites, terminal abdominal structures, ontogenetic development, etc. Taking their anatomy as a whole, the Hymenoptera show undoubted affinities with the Neuropteroid insects (*i. e.*, the Neuroptera, Mecoptera, Trichoptera, etc.); but they also present certain points of similarity to the Psocoid insects such as the Homoptera, Thysanoptera, Psocida, etc. The lines of development of all of these forms apparently arose from ancestors intermediate between the Zoraptera (with the Isoptera) on the one side, and the Coleoptera (with the Dermaptera) on the other—much as a family of children inherit traits from the father's side and from the mother's side as well—and I am inclined to consider that the Hymenoptera inherited their social tendencies from the side of the Zoraptera (with the Isoptera), while their type of genitalia apparently comes from the side of the Coleoptera (with the Dermaptera). The venation of the Hymenoptera would not run counter to this view, and in fact, the fore wings of the Siricids are rather suggestive of those of the Zoraptera in certain features, while the hind wings of certain sawflies resemble the hind wings of

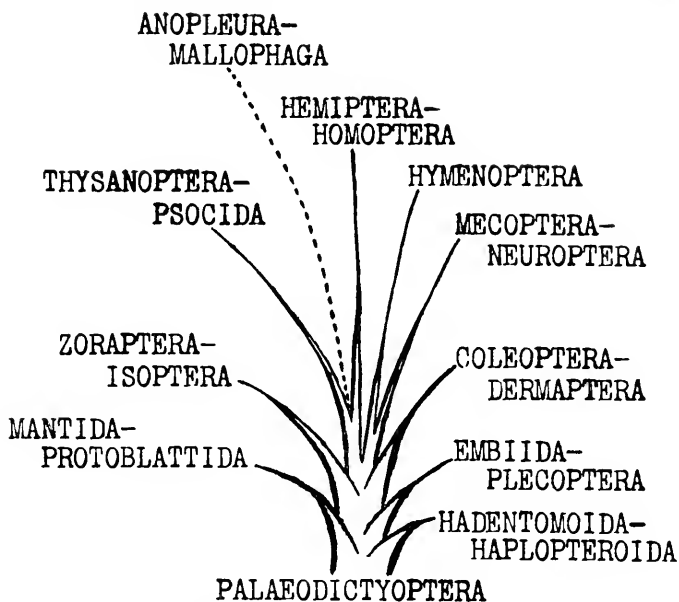
the Coleopterous types in some respects. Taking their anatomy as a whole, I would therefore maintain that the closest affinities of the Hymenoptera are with the Neuropteroid insects (Mecoptera, Neuroptera, etc.), and that the lines of development of the Hymenoptera and other Neuropteroids quickly merge with those of the Psocoid insects (*i. e.*, the Homoptera, Thysanoptera, etc.) as we trace them back to a common ancestry anatomically intermediate between the Zoraptera (with the Isoptera) and the Coleoptera (with the Dermaptera).

The Zoraptera in turn lead back to forms closely resembling the Embiida and Plecoptera, as is also true of the Coleoptera and Dermaptera. In fact, the resemblance between the Coleoptera and Embiida is quite marked in the character of the mouthparts, metathoracic coxae and other features; and the tendency for the fore wing of the Embiida to preserve the longitudinal veins in the form of long nervures extending almost parallel to each other down the wing (*e. g.*, as shown in Fig. 7) is certainly very suggestive of the condition occurring in the fore wings of Coleoptera. The venation, therefore, would admit of a close relationship between the Coleoptera\* and the Embiida which is indicated by the mouthparts and other structures, and it is evident that the lines of development of all of the forms mentioned above quickly merge as we trace them back to ancestors resembling the Embiida and Plecoptera, which in turn, are connected with the Palaeodictyoptera by such forms as the Hadentomoida, Haplopteroida, etc., if we may judge by the nature of their wing veins.

The appended diagram, in which the principal lines of descent have been linked together "in twos" (merely for the sake of convenience) will serve to illustrate the derivation and interrelationships of the orders of insects mentioned above. Since several lines of descent may arise at the same "point" on the ancestral tree (*i. e.*, their common ancestors were enough alike to be grouped in a single order) these lines of descent should be considered as though drawn in a figure of

\* The ancestors of the Coleoptera were anatomically intermediate between the Isoptera on the one side, and the Dermaptera on the other, and all three of these lines of descent lead back to ancestral types resembling the Embiida (with the Plecoptera) on the one side, and the Protoblattida on the other.

three dimensions, rather than merely in a single plane. The lines of descent of the Phasmida and Grylloblattida have been omitted in order to make the figure less complicated, although it should be borne in mind that the ancestors of the Coleop-



tera, etc., were related to these forms as well as to those whose lines of descent are represented in the diagram. The positions of the insects in question in the superorders of pterygotan insects have been indicated below.

**PALAEODICTYOPTEROID SUPERORDER—**

(Panplecoptera, or Ephemeriformia)—Protephemerida, Ephemerida, Protodonata, Odonata, Palaeodictyoptera (in part), etc.

**PLECOPTEROID SUPERORDER—**

(Panplecoptera, or Perliformia)—Haplopteroida, Hadentomoida, Plecoptera, Embiida, Dermaptera, etc. The Coleoptera are closely related to these insects, but may provisionally be grouped with the Neuropteroids.

**ORTHOPTEROID SUPERORDER—**

(Panorthoptera, or Phasmiformia)—Protorthoptera, Grylloblattida, Phasmida, Orthoptera (*sensu stricto*), etc.

**ISOPTEROID SUPERORDER—**

(Panisoptera, or Blattiformia)—Protoblattida, Isoptera, Blattida, Mantida, etc.

## PSOCOID SUPERORDER—

(Panhomoptera, or Psociformia)—Zoraptera, Psocida, Mallophaga, Anopleura, Homoptera, Hemiptera, Thysanoptera, etc.

## NEUROPTEROID SUPERORDER—

(Panneuroptera, or Sialiformia)—Neuroptera, Hymenoptera, Mecoptera, Protomecoptera, Paramecoptera, Paratrichoptera, Trichoptera, Lepidoptera, Diptera, Siphonaptera, etc. The Coleoptera and Strepsiptera may be provisionally placed here, although the Coleoptera are very close to the Dermaptera, and the Strepsiptera resemble the Homoptera in many respects.

## BIBLIOGRAPHY.

1920. CAUDELL—Zoraptera not an Apterous Order. Proc. Ent. Soc. Washington, vol. 22, p. 84.
1918. COMSTOCK—Wings of Insects. Ithaca, 1918.
1901. ENDERLEIN—Morphologie, Systematik und Biologie der Atropiden und Trociden. Results of the Swedish Zool. Expedit. to Egypt, etc., No. 18.
1903. *Id.*—Americanische Psociden. Zool. Jahrb., Abt. Systemat., vol. 18, p. 251.
1908. *Id.*—Coniopterygidae. Genera Insectorum, Fasc. 67.
1912. *Id.*—Embiidinen. Coll. Zool. Baron Selys Longchamps, Fasc. 3.
1906. HANDBIRSCH—Revision of American Palaeozoic Insects. Proc. U. S. Nat. Mus., vol. 29, p. 661.
1912. JONES—Some New California and Georgia Thysanoptera. Tech. Ser., No. 23, Pt. 1, U. S. D. A. Bur. Ent. Misc. Papers.
1909. PATCH—Homologies of the Wing Veins of Aphididae, etc. Ann. Ent. Soc. America, vol. 2, p. 101.
1890. SCUDDER—Tertiary Insects of North America. Rpt. U. S. Geol. Survey, Vol. 13.
1883. WOOD-MASON—Embiidae. Proc. Zool. Soc. London, 1883, p. 628.

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### An Appeal from Hungary.

EDITOR, ENTOMOLOGICAL NEWS—The Hungarian Entomological Society has come by very well known circumstances into such a situation that its further existence is very doubtful. Entomology is in danger in Hungary! We lost with the greatest part of our country the most of our subscribers and are not able to publish even a page from our income. The scientific men are turned, consequently, into beggars.

The Board resolved therefore to apply for help to the entomologists of foreign countries, especially to those of the United States of America. We want to receive only as much as to be able to maintain our society as long as the present situation lasts.

I am sure you are able to do very much for us and I take, therefore, the liberty of asking you the favor to assist us to our relief and collect a sum amongst your entomological friends. The sum will be employed only for the printing of our journal, "Rovartani Lapok."

Money may be sent to my address.—DR. K. KERTESZ, Treasurer of the Hungarian Entom. Soc., Hungarian National Museum, Budapest.

### Three New Sub-tropical Gall Midges (Itonididae, Dipt.).

By E. P. FELT, State Entomologist, Albany, New York.

The gall midge fauna of the warmer parts of the earth is comparatively unknown and it is, therefore, with more than usual interest that we record the characters of several new species.

#### ALEXOMYIA n. g.

This Porricondylid genus is easily recognized by the short, distinct cross vein forming a well marked angle with costa, the forked fifth vein not close to the posterior wing margin, the supernumerary vein at the base of subcosta extending almost to the cross vein, the simple claws and the rudimentary pulvilli. It is easily separated from the related and possibly associated Argentine *Liebeliola* Kieff. & Jorg. by the unarticulate palpi and the short spine-tipped ovipositor. Type: *A. ciliata* n. sp.

#### *Alexomyia ciliata* n. sp.

The species described below was received under date of September 22, 1919, from Professor C. P. Alexander, Urbana, Illinois. It was collected at Prata, State of Para, Brazil, and labeled 6-7-19. The type (Cecid. 1805) is deposited in the New York State Museum and is unusually interesting because of its close relationship to a striking Argentine species.

♀.—Length, 4.5 mm. Antennae nearly as long as the body, sparsely haired, black or nearly so, probably with 14 and possibly with 16 segments, the first obconic, the second with a length about half its diameter, the 3rd and 4th fused, the 5th with a stem one-third the length of the cylindrical basal enlargement, which latter has a length about four times its diameter, a sparse whorl of stout setae basally and a scattering whorl of long setae subapically. Circumfila at the basal fourth and apically are connected with irregular longitudinal moderately high and heavy fila. Terminal segment missing. Palpi unarticulate, the segment broadly oval and with a thick group of rather short, stout sensory spines apically.

Mesonotum shining dark brown, the submedian lines thickly haired. Scutellum and postscutellum dark yellowish brown. Abdomen dark reddish brown.

Wings hyaline with a length fully three times the width, costa dark brown, the supernumerary vein extending nearly to the cross vein, subcosta uniting with the margin near the basal half, the cross vein short, well-developed, at a distinct angle with costa, the third vein

nearly straight and uniting with the margin a little beyond the apex of the wing, there being a distinct break at this point, the fifth vein joining the posterior margin at the distal third, its branch near the basal half. Halteres fuscous.

Legs mostly dark brown, the 2nd to the 4th tarsal segments with long, fuscous hairs, the 5th yellowish or whitish, the claws moderately long, stout, fuscous, simple, the pulvilli rudimentary.

Ovipositor short, stout, the distal portion greatly reduced, its basal part with a length about equal to its diameter and tapering distally to a rather slender spine nearly as long as the basal part. At the base of the distal portion of the ovipositor, there is a pair of thickly setose, triangular plates, partly separated by a triangular incision.

**Porricondyla pennulae** n. sp.

This peculiar male in general appearances suggests *Colpodia* Winn., rather than the genus to which it is assigned, because the cross vein is parallel with subcosta. It is also remarkable for the greatly produced terminal clasp segments. The specimen was collected by Professor C. W. Johnson, April 12, 1919, at St. Augustine, Florida. Type Cecid. 1802, in the New York State Museum.

♂.—Length, 1.5 mm. Antennae one-half longer than the body, sparsely haired, dark brown, the stems whitish, 15 segments, the 5th with a stem twice the length of the cylindrical basal enlargement, which latter has a length one-half greater than its diameter. Terminal segment reduced, with a length nearly two and one-half times its diameter, the stem rudimentary. Palpi probably quadriarticulate, though this is not clearly demonstrable in the preparation. First segment with a length over three times its diameter, the second one-half longer, slender, the third with a length more than twice the second, and what appears to be the fourth a little shorter than the third (the last two may be fused).

Mesonotum brownish yellow. Scutellum fuscous yellowish, postscutellum darker, abdomen yellowish brown. Genitalia fuscous yellowish.

Wings hyaline, with a length four times the width, the cross vein nearly parallel with costa, the fifth vein forked. Halteres fuscous yellowish, fuscous subapically.

Coxae pale yellowish, legs a variable straw. Claws rather slender, strongly curved, unidentate, the pulvilli as long as the claws.

Genitalia: basal clasp segment very short, and exceptionally broad, the length being about three-fourths the diameter. Terminal clasp segment longer than the basal clasp segment, irregularly curved, finger-like. Dorsal plate short, broad, triangularly emarginate, the lobes broadly rounded and thickly setose. Ventral plate short, broad, deeply and triangularly emarginate. The lobes rather broadly rounded and thickly setose. Harpes represented by chitinous hooks.



**Phytophaga floridensis** n. sp.

The one specimen described below was collected at St. Augustine, Florida, April 16, 1919, by Professor C. W. Johnson. It runs in our key to *P. thalictri* Felt, from which it is most easily separated by the distinctly longer antennal segments. A comparison of the two insects shows that they are entirely different. Type Cecid. 1801, in the New York State Museum.

♂.—Length, 1.5 mm. Antennae as long as the body, rather thickly haired, 14 segments, the 5th with a stem one-half the length of the cylindrical basal enlargement, which latter has a length two and one-half times its diameter. Terminal segment produced, with a length over four times its diameter. Palpi, first segment with a length about three times its diameter, the second a little longer, the third one-half longer than the second and the fourth nearly twice the length of the third.

Mesonotum dark yellowish brown, the submedian lines impressed, yellowish, scutellum yellowish, postscutellum a little darker, abdomen yellowish.

Wings hyaline, the third vein uniting with the margin well beyond the apex of the wing. Halteres pale yellowish.

Coxae yellowish, legs mostly dark straw. Claws long, slender, rather strongly curved, simple, the pulvilli a little shorter than the claws.

Genitalia; basal clasp segment short, stout, broad, terminal clasp segment rather short, stout. Dorsal plate broad, broadly and roundly emarginate, the lobes broadly rounded and thickly setose. Ventral plate rather long, narrow, deeply and almost triangularly emarginate, the lobes broad, broadly rounded apically and rather thickly setose.

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**PREVENT FOREST FIRES—IT PAYS!**

EDITOR, ENTOMOLOGICAL NEWS—As a newspaper man you know without any telling what is the paper situation. Substantially every other industry using wood in any of its forms is in the same kind of trouble, or very soon will be.

In Pennsylvania the root of the whole trouble has been and still is the unmitigated curse of forest fire. Fire has destroyed more growing and prospective timber than all land clearing and cutting put together. Forest fires keep down production. Every acre of soil not needed for purposes more important should be growing trees. To do so they must be made secure against fire.

Because of the open winter and early spring the present fire season threatens to be one of the worst in years. I should appreciate it greatly if you would help by carrying, during May and June, the slogan of the Department of Forestry, which is, "Prevent Forest Fires—It Pays."

Your co-operation will be specially useful in making the idea of forest protection a part of the every day thought and consciousness of our people—GIFFORD PINCHOT, *Commissioner of Forestry, State of Pennsylvania.*

## New Distribution Records for North American Bremidae, with the Description of a New Species (Hym.).

By THEODORE H. FRISON, Urbana, Illinois.

In the course of examining a large number of specimens of *Bremus* (*Bombus*) and *Psithyrus* from various parts of North America, the writer has obtained many new records of distribution for members of these two genera. Dr. Franklin in his monograph on "The Bombidae of the New World" gives a table in which he tabulates the species as they occur in the various political divisions. He says "Gaps in the known habitat have, in this list, been filled in, as far as they reasonably could be, according to the author's judgment of the unknown habitat based on the known." Additions to this original list were published by Franklin in the November number of the *Entomological News* for 1915, and Lutz (1916) and Sladen (1916, 1919) have added several more records.

Besides those species given below that are not listed by Franklin from certain political divisions or states, there are others accredited to certain states by Franklin on the basis of their known range, which are here actually recorded from those states.

1. *Bremus occidentalis* Greene. Nogales, Arizona, seven queens, July 1-12, 1917 (E. J. Osler—Author's Collection).
2. *Bremus occidentalis* subsp. *nigroscutatus* Franklin. Nogales, Arizona, one queen, July 7, 1917 (E. J. Osler—Author's Collection).
3. *Bremus terricola* Kirby. Ames, Iowa, one female, June 12, 1888 (Gillette—Ames Agr. College Collection, Ames, Iowa); Algonquin, Illinois, one worker, July 21, 1914 (Nason—Illinois State Natural History Survey Collection); Northern Illinois, two workers (Bolter Collection—University of Illinois Museum); Mt. Mitchell, North Carolina, three queens and five workers, July 18, 1919, about 6700 ft. alt. (R. W. Leiby—North Carolina State Ent. and Author's Collections), and Yonablossee Road, near Blowing Rock, North Carolina, one male, mid-Sept., 1912 (C. L. Metcalf—North Carolina State Ent. Collection); Kempt Shore, Nova Scotia, six workers, August 14, 1914 (E. Mosher—Author's Collection); Digby, Nova Scotia, many workers, June 2-20, 1908, and many males, June 23-July 15, 1908 (Russell—Nason Collection, University of Illinois Museum); Alpena, Michigan, eight males, Sept. 25, 1908 (Nason—

University of Illinois Museum); Onckamo, Michigan, ten workers and one male July 12, 1914 (M. MacGillivray—Author's Collection); Griswolda, Michigan, one worker, August 21, 1915 (T. H. Frison—Author's Collection); Lake County, Illinois, one queen, May 7, 1911 (Milwaukee Public Museum Collection No. 47936). All the specimens of this species from North Carolina have a large amount of yellow pile on the scutellum.

4. *Bremus affinis* Cress. Dane County, Wisconsin, one queen, May 26, 1914 (W. S. Marshall—University of Wisconsin Collection); Milwaukee, Wisconsin, all forms (University of Wisconsin and Milwaukee Public Museum Collections).

5. *Bremus borealis* Kirby. Waukegan, Illinois, two queens and two workers, August 24-25, 1917 (J. R. Malloch and T. H. Frison—Ill. State Nat. Hist. Survey and Author's Collections); Digby, Nova Scotia, one worker, June 20, 1908 (Russell—Nason Collection, University of Illinois Museum); Kempt Shore, Nova Scotia, one queen, two workers and one male, August 14-22, 1916 (E. Mosher—Author's Collection).

6. *Bremus appositus* Cress. Patagonia Mountains, Arizona, seven queens and one worker, July 12-14, 1917 (E. J. Oslar—Author's Collection); Catalina Mountains, Arizona, two queens, June 24, 1917 (E. J. Oslar—Author's Collection).

7. *Bremus ternarius* Say. Ames, Iowa, one specimen (Ames Agr. College Collection); Digby, Nova Scotia, two queens and forty-seven workers, June 22-July 15, 1908 (Russell—Nason Collection, University of Illinois Museum); Kempt Shore, Nova Scotia, two workers, August 16, 1916 (E. Mosher—Author's Collection); Alpena, Michigan, thirteen workers and twenty-one males, September 25, 1908 (Nason—Nason Collection, University of Illinois and Author's Collection).

8. *Bremus fernaldi* Franklin. Catalina Mountains, Arizona, two queens, three workers and two males, June 24, 1917; Nogales, Arizona, two queens, July 12, 1917 (E. J. Oslar—Author's Collection).

The two queens from Nogales and one of the workers from the Catalina Mountains exhibit considerable yellow pile on the basal middle portion of the second dorsal abdominal segment, thus slightly differing from the type females as described by Franklin and agreeing more with the male in this respect. Likewise, in all of the workers and queens the fifth and sixth abdominal segments have a large amount of yellowish-white pile, the corbicular fringes are slightly ferruginous in several specimens and the hind femur, especially in the queen, has only a very little yellow pile.

9. *Bremus vosnesenskii* Rad. Nogales, Arizona, eight queens, July 8-17, 1917; Patagonia Mountains, Arizona, seven queens, July 11, 1917; Catalina Mountains, Arizona, three workers and one male, June 24-25, 1917 (E. J. Oslar—Author's Collection).

10. *Bremus vagans* F. Sm. Kempt Shore, Nova Scotia, two queens, three workers and one male, August 14-16, 1916 (E. Mosher—Author's Collection).

11. *Bremus mixtus* Cress. Salt Lake City, Utah, one queen (Bolter Collection—University of Illinois Museum).

12. *Bremus flavifrons* Cress. Forest Grove, Oregon, one queen, May 21, 1919 (A. C. Burrill—Author's Collection).

13. *Bremus ambiguus* Franklin. Catalina Mountains, Arizona, two workers, June 24 and 26, 1917 (E. J. Oslar—Author's Collection). Dr. Franklin very kindly confirmed my identification of this species, which, thus far, has been recorded only from the type localities of Washington and California.

14. *Bremus fervidus* Fabr. Kempt Shore, Nova Scotia, one male and many workers, August 11-22, 1916 (E. Mosher—Author's Collection).

15. *Bremus californicus* F. Sm. Nogales, Arizona, four queens, July 7-8, 1917 (E. J. Oslar—Author's Collection).

16. *Bremus pennsylvanicus* DeGeer. Dane County, Wisconsin, three queens and one worker, July 2-25, 1904 (C. T. Vorhies—University of Wisconsin Collection); Dane County, Wisconsin, one queen, July, 1913, and one worker October 16, 1906 (W. S. Marshall—University of Wisconsin Collection); Dane County, Wisconsin, many specimens of all forms (Milwaukee Public Museum and Wisconsin State Ent. Collection). Alpena, Michigan, one worker, Sept. 25, 1908 (Nason—University of Illinois Museum). Franklin asks, "Is it present and, if so, rare or abundant in northern Wisconsin. . . .?" This species is not very rare in any part of Wisconsin, but is much commoner in the southern and central parts of the state than in the northern part. Also recorded from Wisconsin by Graenicher, in 1911, under the name *B. americanorum* Fabr.

17. *Bremus nevadensis* Cress. Northern Illinois, one queen (Bolter Collection—University of Illinois Museum).

18. *Bremus fraternus* F. Sm. Green Lake, Wisconsin, one worker, July, 1911 (University of Wisconsin Collection).

19. *Psithyrus laboriosus* Fabr. Digby, Nova Scotia, one female, July 15, 1908 (Russell—Nason Collection, University of Illinois Museum).

20. *Psithyrus variabilis* Cress. Raleigh, North Carolina, many queens and males, August-November (C. S. Brimley and J. E. Eckert—North Carolina State Entomologist's and Author's Collections); Poy Sippe, Wisconsin, one male, July 7, 1920 (T. H. Frison—Author's Collection). Previously listed from Wisconsin by Graenicher in 1911, but not recorded by Franklin from this state.

21. *Psithyrus crawfordi* Franklin. Nogales, Arizona, three queens, July 7-9, 1917; Oracle, Arizona, one male, June 5, 1917 (E. J. Oslar—Author's Collection). Franklin says, "It is quite possible that

these two specimens [the queen from California and the male from Oregon], coming from such widely separated localities, do not belong to the same species, but they are so much alike in general appearance that it is my belief that they belong together." The capture of both sexes within the same general region is further evidence that the queen and male described by Franklin are the same species.

**22. *Psithyrus ashtoni* Cress.** New London, Wisconsin, six males, July 11, 1920 (T. H. Frison—Wisconsin State Ent. and Author's Collections); Two Rivers, Wisconsin, twenty-eight males, August 26, 1912 (J. W. Folsom—Author's Collection); Vilas County, Wisconsin, one queen and five males, August, 1913 (W. M. Marshall—University of Wisconsin Collection); Madison, Wisconsin, one male, August 5, 1919 (Z. T. Brown—Wisconsin State Ent. Collection); Selon Springs, Wisconsin, one queen, July 7, 1909 (Milwaukee Public Museum Collection); Alpena, Michigan, two small females, June 16, 1910 (Nason Collection—University of Illinois Museum); Onekamo, Michigan, two males, July 12, 1914 (H. MacGillivray—Author's Collection); Griswolda, Michigan, five males, August 21, 1915 (T. H. Frison—Author's Collection).

**23. *Psithyrus tricolor* Franklin.** New London, Wisconsin, sixteen males, July 11, 1920 (T. H. Frison—Wisconsin State Entomologist's and Author's Collections). This is the first record of this species in any of the North Central States, the species being previously recorded in the United States from New York, New Hampshire, Washington and Colorado.

Among a collection of bumblebees from the region of Nogales, Oracle, and the Patagonia and Catalina Mountains, Arizona, is the following new species.

***Bremus (Bombus) franklini* n. sp.**

♀. Queen. Face with black and whitish-yellow pile intermixed, the black pile dominant, the whitish-yellow pile most abundant ventrad of the articulation of the antennae. Occipital orbits dark, nearly destitute of pile adjacent to outer margin of eye, somewhat coarsely and densely punctate. Occiput with a triangular patch of nearly pure whitish-yellow pile. Labrum with tubercle-like areas large and well separated, coarsely punctate; shelf-like projection moderately wide and conspicuous; pile on ventral margin of labrum long and ferruginous. Mandible distinctly four-toothed, with coarse scattered punctures; pile at distal end short, on outer proximal margin very long, ferruginous. Clypeus well punctate, particularly so in anterior corners and on dorsal portion. Malar space somewhat shorter than its width at articulation of mandibles, one-half greatest width of eye, impunctate, polished. Ocelli situated just above supra-orbital line or narrowest part of vertex; lateral ocelli as far distant from each other as distant from median edge of

eye; area just laterad of lateral ocelli impunctate, polished, but becoming punctate again near median edge of eye. Flagellum about one and three-fourths times as long as the scape; third antennal segment longer than the fifth, the fifth a trifle longer than the fourth.

Thorax with dorsal cephalic portion covered with pure yellow pile, the yellow pile extending (except for a little black pile on the middle of its posterior border) caudad to the cephalic margin of the scutellum. Scutellum with pure black pile; disk naked, impunctate, polished. Mesopleura, except for the yellow pile of dorsum slightly extending down below the level of the bases of wings, jet black. Metapleura and propodeum jet black.

Abdomen with the first four dorsal segments entirely jet black, the fifth dorsal segment with some whitish-yellow pile on its lateral and apical margins, sixth dorsal segment black. Venter black. Hypopygium without a median carina.

Legs mostly jet black, but with some lighter or ferruginous short pile on tarsal segments. Corbicular fringes black. Hind metatarsi distinctly arcuate.

Wings very dark, with a slight violaceous reflection.

Length, 23 mm.; spread of wings, 44 mm.; width of abdomen at second segment, 10.5 mm.

*Holotype* queen, July 7, 1917 (Collector E. J. Oslar). *Paratopotype* queen, July 8, 1917 (Collector E. J. Oslar). Nogales, Arizona. Male and worker unknown.

This large species, judging from the queens alone, is apparently closely related to *B. occidentalis* Greene. It may be distinguished easily from *B. occidentalis* Greene and its varieties, by the marked differences in the color pattern of the dorsum of the thorax, apical segments, the prominent whitish-yellow pile on the occiput, violaceous wings, and black corbicular fringes. *B. franklini* also lacks the transverse yellow band on the fourth dorsal abdominal segment, so characteristic of *B. vosnesenskii* Rad. and usually of *B. californicus* F. Sm., two other species with contrasting yellow and black pubescence from this region.

I name this species in honor of Dr. Henry J. Franklin, whose monograph of this group of bees brought order out of chaos in the American species.

*B. franklini* and *B. occidentalis* are the first species of the *Terrestris* Group Rad. to be found south of the southwestern deserts of the United States. *B. franklini* probably occurs in the mountain ranges in the northwest of Mexico.

**Hippiscus olancha** Caudell, an Apparently Undescribed Grasshopper from California  
(Orthop., Acrididae).

By A. N. CAUDELL, of the Bureau of Entomology, U. S. Department of Agriculture, Washington, D. C.

The species here described has for some time been represented in the collection of the United States National Museum by four specimens, three males and one female, kindly donated by Mr. Wm. T. Davis, of Staten Island, New York. The description of this handsome grasshopper is now ventured, because after comparison with the Scudder Collection of Orthoptera and a quite thorough search of the literature on this genus of insects, it is believed to be an undescribed form.

**Hippiscus olancha** n. sp.

♂ *holotype*; Olancha, California, April 24, 1917.

Head moderate in size, ashy gray in color, with obscure fuscous lateral variegation, the occiput blackish; eyes moderately prominent, reddish brown in color; antennae more than one and one-half times as long as the pronotum, slightly flattened toward the apex and gently curved, the color blackish in about the apical two-thirds the basal third black and ashy-banded, the basal segment wholly light; frontal costa smooth, deeply dentate at the median ocellus, the lateral margins slightly elevated at and below the ocellar depression and continued almost to the clypeal suture; the sides of the frontal costa are broadly expanded opposite the ocellus and then converge to where the frontal costa meets the scutellum of the vertex, where it is scarcely more than one-half as broad as at the ocellar expansion; scutellum of the vertex with very moderately elevated margins, the narrowing anterior portion rounding into the frontal costa, from which it is separated by a shallow transverse depression with a slight median longitudinal carina; foveolae somewhat longer than broad, anteriorly pointed, the sides slightly rounded.

Pronotum ash-gray, with numerous dark maculations; disk flat, with very moderately elevated rugosities, a depression on each side of the very gently elevated median carina on the anterior part of the posterior lobe, which is fully twice as long as the anterior lobe, the median carina being cut by two sulci much anterior to the middle, the carina obliterated between these sulci, and anterior to them scarcely attaining the anterior truncated margin of the pronotal disk; posterior margin of disk rectangular; lateral lobes slightly higher than long, not noticeably narrowed mesially, the lateral sulci extending down across them as distinct depressed lines; lateral carina distinct and fairly prominent on the posterior lobe, not, or barely, indicated anterior of the transverse sulci.

Abdomen uniformly yellowish in color, with the basal portion of the dorsum somewhat darker.

Fore and intermediate legs ashy-gray with darker markings, the spines piceous in the apical half or more; hind femora moderately expanded above and below, grayish in color, with two conspicuously black bands above, dividing the length into equal portions, the apical, and most conspicuous, band continued entirely around the entire femora, the anterior band only vaguely across the outer face; lower sulci of hind femora red on the inner longitudinal half and black on the outer, including the inner surface of the ventrally expanded flange of the femora; the inner face of these femora is mostly black, the upper portion, comprising the inner surface of the dorsal expanded flange, being light with blackish markings basally and at the location of the two dorsal bands; posterior of the apical black band the inner surface and ventral sulcus of the femora are uniformly light, the genicular arcs darker, the inner one with the lower central portion black; hind tibiae pale red, brighter on the inner side, the spines piceous in the apical half or less; hind tarsi yellowish, the claws black in the distal half.

Elytra grayish, with a number of moderate-sized blackish spots, segregated to form three roughly-outlined transverse bands, none continuous and probably better designated as dark areas; apex with a few smaller spots; anal stripe yellow and distinct; intercalary vein apically much nearer the median than the ulnar vein. Wings rather slender, the black band very narrow, but entire, continued below along the lower margin more than half-way to the base of the wing, the humeral taenia not quite reaching the base; beyond the black band the apex of the wing is hyaline with a few infuscated spots; disk of wing red, as is also the costal margin outside the humeral taenia, forming a very narrow stripe not nearly as broad as the taenia; the colored disk is noticeably longer than the greatest width.

♀ *allotype*; same data as the holotype.

Very like the male, but larger. Head less noticeably infuscated on the occiput; antennae shorter, much shorter than the pronotum, and scarcely more flattened apically than elsewhere, the color for the entire length ashy-gray, mottled with darker, the basal segment reddish-brown; scutellum of the vertex broader than in the male. Pronotum, abdomen and legs essentially as in the male, the hind femora being, however, more strongly expanded. Elytra with fuscous areas more broken, forming smaller more separated spots, several of which range along the radius in a semi-connected row and at the humeral angle extended to the costa as a short solid diagonal elongated spot. Wings differing from those of the holotypic male only in being without apical fulgination beyond the black band.

Length, antennae ♂ 11 mm., ♀ about 7 mm.; pronotum ♂ 6.25 mm., ♀ 9.5 mm.; hind femur ♂ 14 mm.; ♀ 20 mm.; elytron ♂ 27 mm.,



♀ 39 mm. Width, pronotum at widest point ♂ 4.5 mm., ♀ 8.5 mm.; elytron at middle ♂ 4.5 mm., ♀ 8 mm.; hind femur at widest point ♂ 4 mm., ♀ 6.25 mm.

Besides the holotype and allotype there are two other specimens, paratypes A and B, both males with the same data. These exhibit very little divergence from the holotype described above. One shows the antennae somewhat more uniformly dark for the entire length and the color of the insect as a whole slightly more intensive, most noticeable in the darkening of the pronotal disk. The size varies slightly, one specimen showing a wing-length of 29 mm., and the other measurements in about the same proportion.

The above type material is in the National Museum, Catalogue No. 24069.

The name of the collector of these specimens is not stated, but Mr. Davis informs me it is G. R. Pilate.

This beautiful red-winged *Hippiscus* has an elytral maculation somewhat similar to that of the macropterous form of *Agymnastus ingens*, imparting to this more slender insect a superficial resemblance to that rare and more robust species.

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#### Note on the Genus *Cryptonotus* (Membracidae, Homop.).

In his Monograph of the Membracidae (London, 1903), G. B. Buckton erected the genus *Cryptonotus* (p. 43) for the accommodation of a single species *Cryptonotus militaris*. The species has never been mentioned in literature since its original description and has apparently not been recognized. No other species have been added to the genus.

A study of a series of specimens of this species collected by Mr. H. L. Parish in Iquitos, Peru, Feb. 28, 1920, shows that the insect undoubtedly belongs in the old genus *Membracis*. Buckton apparently separated *Cryptonotus* from *Membracis* entirely on the character of the wrinkled and irregular margin of the pronotum, as suggested by the generic name. This condition is, of course, common in cabinet specimens of many of the very foliaceous forms of the genus *Membracis* and cannot be considered a generic or even a specific character. The insect is a well-marked and distinct species, but shows no characters which can be considered of generic value and the species must therefore be placed in the genus *Membracis*.

The specific name *militaris* is, however, preoccupied in the genus *Membracis* (Fabr. Syst. Rhyng. 15: 39, 1803) so that a new name must be given to Buckton's species. This seems necessary even though the Fabrician species has since been placed in the genus *Gelastogonia*. I therefore propose the name *Membracis bucktoni*, for this species to take the place of *Cryptonotus militaris* Buckton.—W. D. FUNKHOUSER, Lexington, Kentucky.

# ENTOMOLOGICAL NEWS.

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PHILADELPHIA, PA., MAY, 1921.

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## "This Means You."

The editors of the NEWS are particularly fortunate in that this present number contains six articles on what may be termed current topics by writers outside their own body. Five of these came in without solicitation, a third was very willingly contributed as soon as requested. We have at various times emphasized one of the ideas included in the original announcement of the NEWS, that one of its chief functions was to give entomological *news*. We do not, indeed, think it desirable to repeat items published in such of our contemporaries as are easily accessible to our own readers. We are also mindful of the fact that in these days of "contracted volumes," it would not be possible to publish everything. Nevertheless, within these limitations, it is feasible to notice many topics of interest in our field.

Entomological publications are appearing in many different places, entomological events of all kinds are occurring with which one or other of our readers is much more conversant than are the editors of the NEWS. We try to give you what we can, at the sacrifice of time for our own studies and researches. It would make this journal more useful and attractive to all if each one of you would send to the NEWS a concise account of such important entomological happenings and researches in your own special field as come to your notice. Such items are given preference over formal papers and notes of more technical nature.

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### Mr. J. H. Williamson Collecting in Florida.

Mr. Jesse H. Williamson, who last year collected Odonata and other insects in Venezuela and Peru, as related in the NEWS, has been collecting in Florida in March and April, at such points as Labelle, Moore Haven (on part of the former site of Lake Okeechobee), Fort Myers and the Caloosahatchie River. He had taken over 1200 specimens of 28 species of Odonata by the end of March. He expected to cross the State to Miami.

## Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS  
OF THE GLOBE

### Mr. E. P. Van Duzee Collecting in Mexico.

Mr. Edward P. Van Duzee, curator of entomology at the California Academy of Sciences, left San Francisco, March 30th, for Guaymas, Mexico, where he will join an expedition organized by the Academy for the scientific exploration of portions of Lower California and the adjacent islands. He goes as entomologist of the expedition and expects to be back in San Francisco in August.

### Aid for Entomological Publications Asked.

Our mutual friend, Custos F. F. Kohl, at Vienna, lately celebrated his 70th birthday. He is the author of several monographs, such as *Die Gattungen der Sphingides*, *Sphex*, *Ammophila*, *Podium*, *Sceliphron*, *Crabro* (palaeartic species) and of many other valuable hymenopterological publications.

The bad conditions in Austria and the small pension he receives, don't allow him to live at Vienna any longer. He is now residing at Traismauer, near St. Pölten. But the journey to Vienna is so expensive that Mr. Kohl is not able to visit the museum and to finish a lot of publications he is preparing. It seems that publications on Russian and Siberian fossore are nearly ready to be printed. It is probable that Kohl may soon finish a monograph of the difficult genus *Oxybelus* and complete his monograph of *Ammophila*, of which genus only the palaeartic species are treated.

We think it would be deplorable indeed if these bad circumstances would deprive us of books which may really be called standard works.

So the Swiss hymenopterists thought it might be suitable to collect some money to enable our friend to continue his studies and to add to his valuable publications on our beloved hymenoptera.

If you will join our collection, we beg you to kindly send your contribution to one of us.—DR. THEODOR STERK or DR. CH. FERRIERE, Museum of Natural History, Berne, Switzerland; DR. MED. A. v. SCHULTHESS-SCHINDLER, Zürich 6-U., Wasserwerkstrasse 53.

### The Value of the Classics.

EDITOR, ENTOMOLOGICAL NEWS:—It is quite customary nowadays to see the value of the classics and of the "dead" languages contemptuously decried. An era of "efficiency" and of practical utility has apparently little use for Latin and for Greek. May I call attention to a recent instance in which a better acquaintance with the classics would have saved an eminent author from an unfortunate misconception. In

a somewhat "popular" book on our butterflies, recently published, the author says, in describing *G. interrogationis*:

"But Fabricius evidently never stopped to 'count two' when he saw this, as he should have done had he been versed in the proper way of regarding pauses, but at once named the species *interrogationis*, to the utter confusion of beginners in butterfly study, who try in vain to make the interrogation-mark out of the very plain semicolon."

The Greek interrogation mark is the same as our semicolon. A reference to this may be found in Harris' *Insects Injurious to Vegetation*, edited by Charles L. Flint, Boston, Crosby and Nichols, 1863, page 299, where a footnote reads as follows: ("This butterfly receives its name from the Greek note of interrogation, which is identical with our semicolon.—Ed.")

It is perhaps too much to hope that all entomologists be Greek scholars, but they would surely be better equipped, and probably happier men, if they were.—WM. C. WOOD, New York City.

#### A Supplementary Note to the Biography of W. H. Patton.

EDITOR, ENTOMOLOGICAL NEWS—In the interesting biography of William Hampton Patton, by W. E. Britton and L. O. Howard, which appeared in the February, 1921, number of the ENTOMOLOGICAL NEWS (Vol. 32, No. 2, pp. 33-40), the authors fail to mention one historically noteworthy contribution made by him which, although outside the strict limits of entomology, is, nevertheless, of a certain entomological interest, not only because it was made by Patton, but also because of its relation to the subject of insect transmission of disease. In 1895 (*Amer. Naturalist*, Vol. 29, May, p. 498) he proposed the generic name *Piroplasma* for the Texas fever parasite to replace the name *Pyrosoma* Smith and Kilborne, 1893 [not *Pyrosoma* Péren, 1804; mollusc]. Wandolleck also in 1895 (*Centralbl. f. Bakteriol.*, 1. Abt., v. 17, 4 Mai, pp. 554-556) recognized that *Pyrosoma* Smith and Kilborne was a homonym and renamed it *Apiosoma*. This name, however, irrespective of the relative dates of publication of Patton's and Wandolleck's papers (both appeared in May, 1895) is not available, as it is preoccupied by *Apiosoma* Blanchard, 1885. The standing of Patton's name *Piroplasma* is affected by the name *Babesia* Starcovici, 1893, but there is some question as to whether the Texas fever parasite should be considered congeneric with *Babesia bovis* (Babes, 1888) Starcovici, 1893, the type of *Babesia*, especially since there is considerable uncertainty as to the nature of the organism described by Babes, who originally named it *Haematococcus bovis*. Accordingly, if the two forms be considered generically distinct, the correct name of the Texas fever parasite is *Piroplasma bigeminum* (Smith and Kilborne, 1893) W. H. Patton, 1895, and it is by this name that it is most generally known.—B. H. RANSOM, Chief, Zoological Division, Bureau of Animal Industry, U. S. Dept. Agriculture, Washington, D. C.

## Entomological Literature

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

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), 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.

The records of papers containing new genera or species occurring north of Mexico are all grouped at the end of each Order of which they treat.

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.

The titles occurring in the *Entomological News* are not listed.

**10**—Proceedings of the Entomological Society of Washington, D. C. **11**—Annals and Magazine of Natural History, London. **19**—Bulletin of the Brooklyn Entomological Society. **20**—Bulletin de la Societe Entomologique de France, Paris. **23**—Bollettino del Laboratorio di Zoologia Generale e Agraria, Portici, Italy. **33**—Annales de la Societe Entomologique de Belgique, Brussels. **34**—Bulletin de la Societe Entomologique de Belgique, Brussels. **59**—Journal of Agricultural Research, Washington, D. C. **90**—The American Naturalist, Lancaster, Pa. **91**—The Scientific Monthly, Lancaster, Pa. **111**—Archiv fur Naturgeschichte, Berlin. **114**—Entomologische Rundschau, Stuttgart. **116**—Entomologische Zeitschrift, Frankfurt A. M.

**GENERAL.** **Baunacke, Dr.**—Die spiegelnadel ein unentbehrliches hilfsgerat bei entomolog. Arbeiten. **114**, xxxviii, 8-9. **Rohwer, S. A.**—The nomenclature of subgeneric names. (Jour. Wash. Acad. Sci., xi, 106-9.) **de la Torre-Bueno, J. R.**—Entomologists—professional and amateur. **19**, xvi, 26.

**ANATOMY, PHYSIOLOGY, &c.** **Eyer, J. R.**—The comparative morphology of the male genitalia of the lepidopterous family Hepialidae. **19**, xvi, 1-8. **Thompson, W. R.**—Contributions a la connaissance des formes larvaires des Sarcophagides. **20**, 1921, 27-31.

**HEMIPTERA.** **Andrews, E. A.**—Periodical cicadas in Baltimore. Md. **91**, xii, 310-20. **Olsen, C. E.**—Two seasons' collecting of Aphididae, principally on Long Island, with notes on some of the species. **19**, xvi, 14-9. **Parshley, H. M.**—The Montandon collection of Geocorinae. **19**, xvi, 20-1.

**Barber, H. G.**—Revision of the genus *Lygacus*. **10**, xxiii, 63-8. **Malloch, J. R.**—A new sp. of *Erythroneura*. **19**, xvi, 25.

**LEPIDOPTERA.** **Ainslie & Cartwright.**—Biology of the smartweed borer, *Pyrausta ainsliei*. **59**, xx, 837-44. **Fassl, A. H.**—*Callithea*

leprieuri durecki n. subsp. nov. und uber Callithea-raupen. **116**, xxxiv, 98-9. **Roeber, J.**—Ueber bekannte und neue schmetterlinge. **114**, xxxviii, 7-8 (cont.) **Rummel, C.**—Adita chionanthi, feeding on *Triosteum perfoliatum*. **19**, xvi, 24. **Strand, E.**—Beitrage zur kenntnis der verbreitung und formen exotischer Heterocera, insbesondere Pyraliden... **111**, 1919, A., 12, 114-66.

**Heinrich, C.**—Some lepidoptera likely to be confused with the pink bollworm. **59**, xx, 807-36.

**DIPTERA.** **Greene, C. T.**—Dipterous parasites of sawflies. **10**, xxiii, 41-3. **Marchand, W. W.**—The early stages of Tabanidae. (Monog. Rockefeller Inst. Med. Res., No. 13, 203 pp.) **Shannon, R. C.**—Another anomalous dipteran added to the Rhyphidae. **10**, xxiii, 50-1.

**Chapin, E. A.**—Remarks on the genus *Hystriehopsylla*, with descriptions of a n. sp. (Siphonoptera). **10**, xxiii, 25-7. **McAtee, W. L.**—Description of a new genus of nemocera. **10**, xxiii, 49. **Sturtevant, A. H.**—The North American species of *Drosophila*. (Carnegie Inst., Wash., Pub. No. 301, 150 pp.) **Van Duzee, Cole & Aldrich.**—The dipterous genus *Dolichopus* in North America. (Bul. U. S. N. M., 116, 304 pp.)

**COLEOPTERA.** **Boving, A. G.**—The larva of *Popilla japonica*, and a closely related undetermined Ruteline larva. A systematic and morphological study. **10**, xxiii, 51-62. **Craighead, F. C.**—Larva of the North American beetle *Sandalus niger*. **10**, xxiii, 44-8. **Fleutiaux, E.**—Etudes sur les Melasidae. **33**, lxi, 23-41; 68-87 (Cont.) **Kleine, R.**—Der Brenthidenflugel. **111**, 1919, A., 8, 1-30. **Knisch, A.**—Die exotischen Hydrophiliden des Deutschen Entomologischen Museums. **111**, 1919, A., 8, 55-88.

**HYMENOPTERA.** **Brues, C. T.**—Correlation of taxonomic affinities with food habits in H., with special reference to parasitism. **90**, lv, 135-64. **Crampton, G. C.**—Notes on the ancestry of the hymenoptera. **10**, xxiii, 35-40. **Escherich, K.**—Die ameise. Schilderung ihrer lebensweise. (Braunschweig, 1917, 348 pp.) **Grandi, G.**—Studio morfologico e biologico della *Blastophaga psenes*. Descrizione di una nuova *Blastophaga* a maschi completamente astomi e di una nuova *Julianella* di Costarica. **23**, xiv, 63-204; 251-64. **Keys, J. H.**—Ants' nest beetles and other myrmecophiles. (An. Rept. & Trans. Plymouth Inst., xvi, 171-8.) **Stumper, R.**—Etudes sur les fourmis. Recherches critiques sur l'odorat. **34**, iii, 24-30. **Porter & Alden.**—*Anaphoidea conotracheli*, an egg parasite of the apple maggot. **10**, xxiii, 62-3.

**Cockerell, T. D. A.**—Descriptions and records of bees. **11**, vii, 201-12. **MacGillivray, A. D.**—New species of sawflies. **19**, xvi, 22-4.

MONOGRAFIA DELLE COCCINIGLIE ITALIANE. GUSTAVO LEONARDI. Opera Postumà. Edizione curata e accresciuta di un'appendice dal Prof. F. SILVESTRI. Portici, 1920, VI + 555 pp., 375 text figs.—In this posthumous volume, edited by Professor Silvestri, there have been brought together the results of Professor Leonardi's more than twenty years of work on the Coccidae of Italy. The result is a volume that no serious student of the Coccidae can afford to overlook. There is but little place among the students of this group for anyone with the provincial viewpoint that is content to stop at national or even continental boundaries. The wide dispersal of many species of Coccidae through the agencies of commerce, and even more, the remarkable peculiarities in their natural distribution, render necessary the adoption of a cosmopolitan attitude. Toward the acquiring of this cosmopolitanism this monograph will be of very considerable aid. While most of the included material has been published before it has appeared in the form of scattered papers and is here for the first time brought together.

I may not here undertake any detailed review of the book, for there is too much of its contents with which I have no acquaintance. But there are some points to which attention may be called.

While the figures are numerous and clear, they are not especially satisfying, particularly in the subfamily Diaspinae. Leonardi seems too often to have been content with figuring, in the case of the adult females, merely the margin of the pygidium, thus neglecting the dorsal ducts which, in many species, are the most useful of all characters. This is the more unfortunate as the complete and precise figuring of certain of the European species that are the types of genera is especially to be desired. Furthermore, there is in this book, as well as in Leonardi's earlier work, a marked disregard of the commonly accepted rules of nomenclature. The subfamily name, *Hemicoccinae*, is employed, although there is no genus *Hemicoccus*, the only included genus being *Kermes*, or, as it is here called, *Kermococcus*. The excuse for the substitution of *Kermococcus* for *Kermes* is the similarity in pronunciation between the latter and *Chermes*. Unfortunate though this similarity may be, the change is not justified under the International Code. Another instance of the same type is the employment of the subfamily name *Lecaniinae*, although this subfamily includes the genus *Coccus*, which is the type of the family.

With certain of Leonardi's conceptions of genera and even of the larger groups I cannot agree, but these points have in part been discussed elsewhere and may be passed over.

The book lists 147 species, which are distributed among 50 genera. For a country as large as Italy and as favorably situated climatically, this seems a rather small number. Indeed, from this side of the Atlantic, it appears that the knowledge of the Coccidae of Europe in general is strangely limited. Until such time as there appears a treatise dealing with the Coccidae of the entire continent, this volume will contain a very large proportion of the available information.—G. F. FERRIS, Stanford University, Calif.

REPORT UPON A COLLECTION OF COCCIDAE FROM LOWER CALIFORNIA. By GORDON FLOYD FERRIS, Instructor in Entomology. Stanford University Publications, University Series, Biological Sciences, Vol. I, No. 2, pp. 61-132, 52 text figs. 1921.—As far as Mr. Ferris is able to determine, not a single species of Coccidae, or scale insects, has heretofore been recorded from the peninsula of Lower California, 800 miles in length. In the summer of 1919, with the financial support of the California Academy of Sciences, the Department of Entomology of Stanford University, and the United States Bureau of Entomology, he made an expedition to the southern parts of the peninsula to extend our knowledge of these insects. His itinerary was from La Paz, on the gulf coast, by riding animals and a pack train, to San José del Cabo, Cape San Lucas, Todos Santos, on the western coast, and thence across the peninsula back to La Paz. In the present paper he records 79 species of Coccidae from the Cape region of Lower California, of which 24 are identified as having been previously recorded from the southwestern United States or northern Mexico, and 29 as new. Several new genera are recognized. Mr. Ferris tells us that:

"The affinities of the scale insect fauna of this region are most intimately related with the fauna of southwestern United States and northwestern Mexico, which is quite in accord with the known facts concerning the other groups that have been studied to any extent. What connection, if any, there may be with the fauna of the tropical west coast of Mexico, below Mazatlan, remains to be determined, for the scale insects of the latter region are still almost entirely unknown.

"In general the collector in this area cannot fail to be impressed by the absence of conspicuous forms, especially in the Coccinae. A very large proportion of the species are only to be found by the stripping off of loose bark, the uprooting of such things as may be uprooted, or the digging about the roots of those that may not. Practically all of the soft scales are attended by ants of the genus *Crematogaster* and are protected by shelters of a papery consistency built by the ants across the cracks in which the scales are hidden, or even over individuals that may otherwise be freely exposed upon the twigs. It is frequently only by the presence of the ants that any indication is given of the presence of the scales."

To compare such slowly moving insects as the scales with those of powerful flight is probably not very useful, but it may be of some interest to point out that the collections of dragonflies, made by the expeditions of the California Academy of Sciences between 1889 and 1894, showed for the peninsula as a whole that about half the species were chiefly nearctic, or more widely distributed, the other half mainly neotropical, the latter being still more strongly evident in the Cape region (Proc. Calif. Acad. Sci.—2—IV, 464-466).—PHILIP P. CALVERT.



## AN IMPORTANT NEW WORK ON AMERICAN CADDISWORMS.

The publication in a new place of a very important entomological paper needs, perhaps, to be called to the attention of entomologists, especially of those who are interested in aquatic insects. Dr. J. T. Lloyd, of Cincinnati, formerly Instructor in Limnology in Cornell University, well known for his excellent short papers on the Biology of Trichoptera, has just published the collected results of his many years' work upon this group in a paper of 124 pages, containing more than 200 separate text figures. Its title is "The Biology of North American Caddis Fly Larvae," and it constitutes Bulletin 21 of the Lloyd Library, of Cincinnati.

After an excellent introduction of 13 pages, which includes tables for the recognition of the thirteen North American families of the order, the families are dealt with severally. There is a concise account of the biology of each, followed by a statement of the habits and characters of genera and species, with adequate and excellent illustrations. A good idea of the range and completeness of the work done by Dr. Lloyd on the Ithaca fauna is furnished by a bare list of the life histories treated:

Phryganeidae—		Brachycentrus . . . . .	1 spp.
Neuronia . . . . .	3 spp.	Calamoceratidae—	
Phryganea . . . . .	3 "	Ganonema . . . . .	1 "
Limnophilidae—		Odontoceridae—	
Glyphotaelius . . . . .	1 "	Psilotreta . . . . .	1 "
Limnophilus . . . . .	3 "	Leptoceridae—	
Arctoecia . . . . .	1 "	Leptocerus . . . . .	1 "
Astenophylax . . . . .	1 "	Mystacides . . . . .	1 "
Pycnopsyche . . . . .	1 "	Triaenodes . . . . .	1 "
Platyphylax . . . . .	1 "	Setodes . . . . .	1 "
Halesus . . . . .	1 "	Molannidae—	
Platycentropus . . . . .	1 "	Molanna . . . . .	1 "
Chilostigma . . . . .	1 "	Ryacophilidae—	
Neophylax . . . . .	2 "	Ryacophila . . . . .	2 "
Sericostomatidae—		Agapetus . . . . .	1 "
Helicopsyche . . . . .	1 "	Glossosoma . . . . .	1 "
Goera . . . . .	1 "		—
		Total . . . . .	33 "

Besides these there is a summarized account of the families Hydroptilidae, Polycentropidae and Philopotomidae that have been dealt with by Alice A. Noyes (in papers that are as yet in part only in course of publication).

The Psychomyiidae and the family of micros, Hydroptilidae, alone remain in America practically untouched.

Habits, food, cases, pupation, haunts, seasonal distribution, etc., are given throughout, as well as structures, and many interesting alterations of cases during the life of their occupants are illustrated. It is excellent pioneer work.

The bulletin is also marked upon the title page "Entomological Series No. 1:" and entomologists, seeing the excellent shape in which this work is gotten out will certainly hope that the series may be continued.—  
JAMES G. NEEDHAM.

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## OBITUARY.

The death of Dr. ODOARDO BECCARI, on October 25, 1920, at Florence, Italy, where he was lately Director of the Botanical Garden, was announced in *Science* for February 11, 1921. He explored Indo-Malaysia and Papua from 1865 to 1876 and in 1904 published in London, in English, his *Wanderings in the Great Forests of Borneo, Travels and Researches of a Naturalist in Sarawak*. He made a special study of palms but also collected insects, his Odonata from his eastern travels, for example, being enumerated by de Selys in the *Annali* of the Genoa Museum in 1879, and he published an account of the fornicary plants of Malaysia and Papuasia in *Malesia*, 2.

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Prof. TSUNEKATA MIYAKE, of the department of zoology, Agricultural College, Imperial University of Tokyo, died of typhoid fever on February 2, 1921, according to *Science* for March 11. He was the author of *Konchugaku Hanron Jokwan* (General Treatise on Entomology), 1917, 1919, two volumes of which were briefly and favorably reviewed by Dr. L. O. Howard in *Science* for August 3, 1917 (p. 113), and December 5, 1919 (p. 527), respectively. In the latter Dr. Howard stated that the author expected to publish two additional volumes, but we do not know whether they have appeared or not. Among the researches of Prof. Miyake were *The Life History of Panorpa Klugi McLachlan* (1912), *Studies on the Mecoptera of Japan* (1913) and *Studies on the Fruit Flies of Japan. I. Japanese Orange Fly* (1919, see ENT. NEWS, xxx, p. 237), all published in the *Journal of the College of Agriculture* of Tokyo University.

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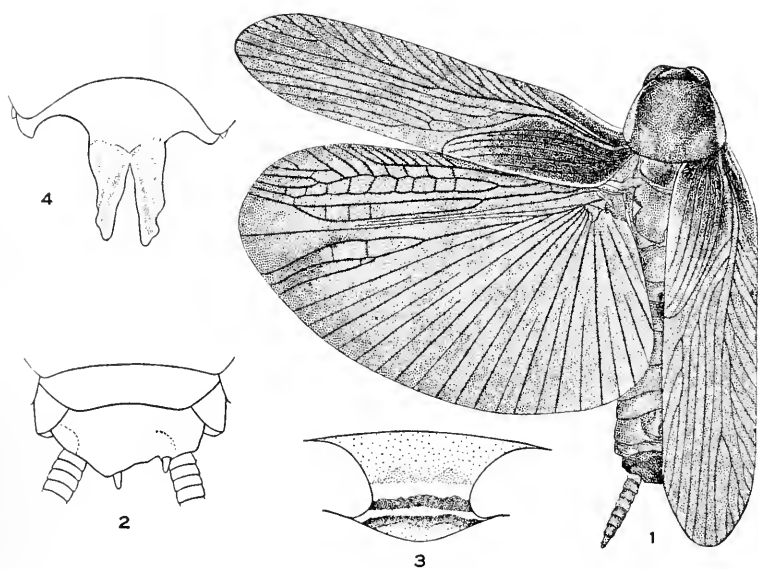
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1, 2.—EUPHYNORNA GRATA.  
2, 3.—CHORISONAURA GATUNAE.

—HEBARD.

# ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION  
THE ACADEMY OF NATURAL SCIENCES, PHILADELPHIA

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## A Note on Panamanian Blattidae, with the Description of a new Genus and two new Species (Orth.).

By MORGAN HEBARD, Philadelphia, Pa.

(Plate III)

During the summer of 1920, while going to and returning from Colombia, our ship remained at Cristobal, Canal Zone, Panama, July seventh and eighth and August eighteenth, long enough for us to make five short excursions into the adjacent country. In spite of frequent heavy showers we were able to secure a number of species of Orthoptera, and, as the Blattidae in the Philadelphia collections from this region have been studied,<sup>1</sup> the material representing that family is here recorded.

We were able to note several features of interest for this region. Both visits showed that the season was not sufficiently advanced for the best results in collecting Orthoptera. On the first visit a high percentage of many species seen were immature, on the second this percentage was lower, but it was evident that, as in Colombia, September would probably reveal the largest number of species present in the adult condition.

<sup>1</sup>Mem. Am. Ent. Soc., No. 4, pp. 1 to 148, (1920).

The rain hampered collecting mainly by making it almost impossible to beat the vegetation. A water-soaked net cannot be properly handled, and the drenched foliage prevents many specimens from falling into the net. On the other hand many individuals could be located even during showers and, as soon as the rain stopped, insect life appeared on all sides in favorable situations.

Night work proved on the whole disappointing, due apparently in large part to the fact that few species could be heard stridulating. Such work would probably have proven more profitable later, when adults, particularly of the species of *Tettigoniidae*, would be present in much larger numbers. The *Blattidae* are nocturnal and many species missed in searching their retreats during the day may be secured at night. Such was true in the case of *Euhypnorna grata* here described, the only specimen of which was easily secured at night, being found resting on the upper surface of a green leaf on the edge of a heavy tangle of vegetation.

Only in areas of heavy tangled vegetation, growing on low wet ground, was material found abundantly. Collecting on higher ground proved very unproductive, both in brushy and forested areas, while over extensive pasture lands the only material of interest was taken from under the dead bark of decaying logs.

The localities visited were Paris Field on July 7 and August 18 (referred to below as P7 and P18 respectively), and Gatun on July 8 (referred to below as G).

Adding the additional genus and three species here recorded, which were hitherto unknown from Panama, the total number of *Blattidae* recorded from this region is now fifty-four genera and one hundred and six species. The rich character of the region is better understood when we realize that but forty-nine species and races of the *Blattidae* are known from all of North America north of the Mexican boundary.

*Lissoblatta fulgida* (Saussure). P7, 2 ♂. Both of these males are very dark and immaculate in coloration. Very few specimens were found.

*Anaplecta cabimae* Hebard. P7, 2 ♀; G, 1 ♀. A very few specimens were seen at Paris Field; these were found at night on the leaves of a twenty-foot high reed or grass.



**Ceratinoptera picta** Brunner. G, 2 ♂, 8 ♀, 4 juv. These specimens were found in moderate numbers under the bark of decaying logs and were more active than individuals of the other species found there, running about hurriedly when disturbed. Two females have the cotheca extruded, with suture dorsad. The usual decided size variation in the organs of flight is shown by this series. The males and to a less degree two females, have on the pronotum a pale meso-caudal marking. The other females and all of the juveniles have the pronotum very dark, paling only in a very small area toward the latero-caudal angles. The juveniles are very dark except in that area and on the metanotum, the proximal portion of which is transparent whitish. This gives them a peculiar once-banded facies, particularly noticeable in life.

**Eudromiella bicolorata** Hebard. P7, 1 ♂.

**Latiblattella inornata** Hebard. P7, 1 ♀; P18, 1 juv. These specimens were found under the palm trees in decaying leaf mould and litter.

**Rhytidometopum megalopterum** Hebard. P7, 1 juv.

**Cariblatta imitans** Hebard. P7, 1 ♂; P18, 1 ♂, 2 ♀.

**Neoblattella fratercula** Hebard. P18, 1 juv. in instar preceding maturity.

**Neoblattella impar** Hebard. P18, 1 ♂.

**Neoblattella nahua** (Saussure and Zehntner). P7, 2 ♀.

**Neoblattella fraterna** (Saussure and Zehntner). P7, 4 ♂, 5 ♀; P18, 5 ♂, 4 ♀; G, 1 ♂. At Paris Field this species was common in decaying leaf mould and litter on bare moist ground under palms, while individuals were occasionally found at night, climbing about in the luxuriant vegetation. Specimens were also taken from the dead leaves of *Cecropia* sp.

**Ischnoptera rufa rufa** (De Geer). P7, 4 ♂, 1 ♀, 2 juv. The few adults in this small series show the interocular width to vary from four-fifths that between the ocelli to slightly greater than that dimension. The immatures have the dorsal surface blackish, showing scarcely any trace of a brown tinge, the latter being the usual coloration of immatures of the species. The species was not scarce in decaying leaf mould and litter on bare moist ground under palms.

**Xestoblatta festae** (Griffini). P7, 1 ♂; G, 1 ♀.

#### EUHYPNORNA new genus.

This new genus belongs to the same category as *Hypnorna*, *Hypnornoides* and *Calhypnorna*. The small species included resemble certain forms of Coleoptera and, though delicate in structure, have a more coriaceous pronotum and tegmina than the genera to which apparently nearest relationship is shown.

These genera we place at the end of the Corydiinae and, though very distinct, are in our opinion clearly of closer affinity to the other genera included in that subfamily than to *Oxyhaloa*, *Chorisonaura* and the remaining genera we have recognized, at least tentatively, as members of the subfamily Oxyhaloinae. Material representing a sufficient number of the genera and species of these subfamilies is at present not available for the thorough rearrangement evidently needed.

To the genus *Hypnorna* nearest affinity is indicated, *Euhypnorna* differing in the male sex in the narrower interocular width, pronotum with caudal margin very broadly convex instead of truncate, tegmina which do not taper distad and consequently are more broadly rounded at the apices and tegminal discoidal sectors which are longitudinal instead of oblique.<sup>2</sup> Numerous other distinctive generic differences will probably be found when *Hypnorna* can be more fully characterized.

*Genotype*.—*Euhypnorna grata* new species.

*Generic Description* (based on male sex).—Size small, form slender. Surface of head, pronotum and tegmina well supplied with erect, elongate, scattered hairs. Head with eyes very large and interocular space comparatively narrow, ocelli absent. Antennae supplied with a not unusual number of short hairs. Pronotum symmetrically trapezoidal with margins weakly convex and angles broadly rounded, lateral margins weakly divergent caudad, latero-caudal sulci weakly indicated and very broad. Tegmina elongate and narrow, with margins parallel to near the distal portion, discoidal sectors longitudinal except at sutural margin. Wings with costal veins not clubbed, mediastine vein extending over two-thirds distance to apex of wing, discoidal vein with one branch, ulnar vein with one branch, intercalated triangle large and distinct. Dorsal surface of abdomen with sixth tergite specialized. Subgenital plate

<sup>2</sup>Compared with Saussure and Zehntner's more detailed description of *Hypnorna*, the present genus is seen to differ further in having the head without a carina and sulcus between face and vertex, the wings with costal veins not clubbed distad and the ulnar vein with a single complete branch. These features may be found in *blanda* Saussure and Zehntner, but we cannot determine whether they are true for the genotype, *hummeli* Stål.

asymmetrical, with two simple styles. Ventro-cephalic margin of cephalic femora supplied distad with well-spaced, minutely microscopic, short but heavy spinulae, terminated by two elongate spines. Caudal margins of femora unarmed, except for a distal spine on one of the median femora, cephalic margins of median femora armed with two and one distal elongate spines and with a similar genicular spine.<sup>3</sup> Minute pulvilli present on four proximal tarsal joints. Arolia present between the simple, symmetrical tarsal claws.

In the type of *Hypnornoides burri* Rehn, the small spines of the ventro-cephalic margins of the cephalic femora are pili-form and much more numerous, large pulvilli are present on the four proximal tarsal joints and large arolia are present between the simple, strongly asymmetrical tarsal claws. That genus, known only from the female sex, appears to be extremely close to *Hypnorna* and may indeed represent the female sex of the genotype, *hummeli* Stål.

***Euhypnorna grata*** new species (Plate III, figures 1, 2).

Late at night, while shining the foliage on the swampy jungle border with a hand electric flash lamp, what appeared to be a small beetle was noticed, resting longitudinally on the surface of a leaf. That specimen was seized and placed in the cyanide bottle. It was not until we had returned to the ship and were packing the material taken that we found that insect to be a remarkable cockroach upon which specimen the present new genus and species is based.

The blackish-brown pronotum with narrow hyaline lateral margins, and tegmina, which are blackish mummy brown proximad, weak ochraceous-tawny in all other portions, give this species a strikingly bicolored appearance, not shared by any of the species of the related genera.

*Type*.— $\delta$ ; Paris Field, Cristobal, Canal Zone, Panama. July 7, 1920. (M. Hebard.) [Hebard Collection, Type No. 762.]

We add the following characters of specific value to those given in the generic description:

Eyes very large, occipital ocular depth equal to width between antennal sockets, interocular space two-fifths that width; that area and the

<sup>3</sup>The caudal femora are missing in the single specimen before us.

surface ventrad with minute irregular impressed lines and dots, but with no transverse ridge or sulcus. Maxillary palpi short, third joint two-thirds as long as the large fifth joint, fourth joint three-quarters as long as third, widening evenly distad.

Lateral marginal portions of pronotum very narrow, deplanate. Tegmina with marginal field very narrow and curled dorsad at costal margin; discoidal sectors (five) longitudinal, the last sending (one and three) branches to the sutural margin. Wings very delicate, with conspicuous cross-veins between mediastine and discoidal veins, between discoidal vein and its branch and less decided between ulnar vein and its branch.

Dorsal surface of abdomen with latero-caudal angles of seven tergites bluntly rounded, of eighth very broadly rounded. Sixth tergite with a large, deeply concave, transverse oval depression mesad, containing a prominence meso-caudad which bears a heavy tuft of agglutinated hairs directed cephalad. Eighth tergite with caudal margin above supra-anal plate broadly and roundly obtuse-angulate emarginate. Supra-anal plate with length two-fifths basal width, very slightly produced at bases of cerci, the caudal margin between these nearly transverse, very weakly convex. Sinistral plate of concealed genitalia produced meso-dorsad in a fang-like tooth. Subgenital plate slightly more produced dextrad than sinistrad, the similar styles small, simple, cylindrical, about twice as long as greatest width with apices bluntly rounded, sinistral style at internal margin of cercus, dextral style decidedly mesad of the homologous point dextrad, free margin laterad to these styles irregularly convex, between them irregularly concave.

Head, palpi and ventral surfaces of thoracic segments blackish mummy brown. Mouthparts and proximal joints of antennae dresden brown, remaining portions of antennae blackish mummy brown, except for a meso-distal annulus of light buff, occupying seven joints.

Pronotum blackish mummy brown, except the narrow lateral portions which are hyaline, very faintly tinged with ochraceous-tawny. Tegmina proximad, in area as long as head and pronotum, translucent mummy brown, as dark as pronotum when closed; remaining portions transparent, tinged with ochraceous-tawny, this very weak in area of dextral tegmen, concealed when at rest, the veins of which area are weakly stained with mummy brown in the distal portion.

Dorsal and ventral surfaces of abdomen buffy tinged with tawny, becoming blackish mummy brown distad, sixth tergite with tuft of agglutinated hairs tawny. Cerci light ochraceous-tawny.

Cephalic coxae and all but distal portions of median and caudal coxae blackish mummy brown, the distal portions of the latter ochraceous-buff with a tawny tinge. Cephalic femora blackish mummy brown, becoming ochraceous-buff with a tawny tinge dorsad, median femora ochraceous-buff with a tawny tinge, becoming blackish mummy brown

ventrad. Tibiae blackish mummy brown, tarsi ochraceous-buff tinged with tawny.

Length of body 8.2, length of pronotum 1.9, width of pronotum 2.1, length of tegmen 8.3, width of tegmen 2, length of wing 8.2, width of wing 5.6 mm.

**Euphyllodromia angustata** (Latreille). P7, 3 ♂, 5 ♀. These specimens were beaten from tall herbage growing under tall scattered trees on a low hill.

**Epilampra azteca** Saussure. P7, 1 ♂, 1 juv.; G, 1 ♀. This species was very scarce at Paris Field under the palm trees in decaying leaf mould and litter. The immature specimen jumped actively about like a cricket. Though we have noted that many cockroaches will spring from one projection to another when running about and will also often leap into the air when taking flight, this is the first time we have observed an individual leaping constantly about in its efforts to escape capture. At Gatun a single specimen was found under the decaying bark of a log.

**Epilampra maya** Rehn. P7, 3 ♂, 2 juv.

**Panchlora cubensis** Saussure. P18, 1 ♀; G, 1 ♀, 2 juv. At Paris Field an individual was beaten from low foliage. At Gatun, under the bark of decaying logs, juveniles were occasionally met with and a single adult was found.

**Phortioeca phoraspoidea** (Walker). G, 1 ♀, 2 juv. These three specimens were found under a single piece of decaying bark on a log at Gatun.

**Compsodes delicatulus** (Saussure and Zehntner). G, 1 ♀. This specimen was taken at Gatun, from under the decaying bark of a log, in company with numerous examples of *Ccratinoptera picta* Brunner.

Compared with a Guatemalan female before us, the present specimen is seen to have the pronotum proportionately slightly broader, marginal areas of the dorsal surface slightly paler and extending to apex of abdomen, not confined to the four proximal segments as in that specimen, but lateral areas of mesonotum and metanotum less contrastingly pale. These features may indicate individual variation, or constitute valid specific diagnostic criteria, showing the presence of two distinct species. Additional material will be needed before this problem can be solved. This genus was previously known from Panama only from males of *C. cucullatus* (Saussure and Zehntner).

**Chorisonera parishi** Rehn. P7, 1 ♂, 1 ♀; P18, 1 ♀, 2 juv. G, 2 ♂, 3 juv.

**Chorisonera gatunae** new species. (Plate III, figures 3, 4).

This species agrees closely with *C. translucida* (Saussure), the male before us differing in the head with two transverse

whitish interocular bands, of which the dorsal is the wider, separated by a dark brown band of intermediate width and with the whitish bands margined with a broad suffusion of brown dorsad and a darker narrow margin of brown ventrad. The styles are also much more elongate, with internal portions decidedly more produced than external portions and narrow interval between the bases of the styles apparently unspecialized.

*Type*.—♂; Gatun, Canal Zone, Panama. July 8, 1920. (M. Hebard.) [Hebard Collection, Type No. 763.]

Size medium for the small species of the genus, form depressed, surface glabrous. Head with occiput largely exposed. Interocular space about one and one-third times the occipital ocular width, slightly over three-quarters the width between the antennal sockets. Maxillary palpi with fifth joint enlarged and elongate, slightly shorter than third joint, fourth joint three-fifths as long as third.

Pronotum transverse, subelliptical, greatest width slightly caudad of median point; cephalic margin distinctly though broadly convex, caudal margin transverse, feebly convex; latero-cephalic angles distinctly more broadly rounded than latero-caudal angles. Tegmina reaching nearly as far caudad as cerci, strongly elongate lanceolate, much as in *translucida*; costal and sutural margins evenly and feebly convergent, straight from proximal third to the sharply rounded apex; discoidal vein with (ten to eleven appreciable) costal veins, which are almost straight, discoidal sectors (eight) oblique.<sup>4</sup>

Subgenital plate small, brief lateral margins concave and nearly transverse each side of the large styles, this emargination deeper and broader dextrad than sinistrad; interval between styles very small, triangular and apparently unspecialized. Styles similar, elongate compressed structures, much longer than in *translucida*, each with external section heavy, vertical in transverse section, tapering to its apex which rounds into the external margin of the internal section; that section longer, delicate, horizontal in transverse section, with ventral surface concave longitudinally, of equal width to near apex, there a narrowing is caused by a convexity of the external margin, which results in the immediate apex being narrowly though not sharply rounded. Armament of limbs, tarsi, pulvilli, arolia and tarsal claws as in the related species.<sup>5</sup>

<sup>4</sup>We have not examined the wings or dorsal surface of the abdomen in this delicate unique. To do so might have caused serious damage and we feel that the species is readily recognizable without these parts being described.

<sup>5</sup>Described Mem. Am. Ent. Soc., No. 4, p. 132, (1920).

Head with vertex weak ochraceous-tawny, a moderately broad transverse band of light buff between the eyes, margined dorsad with a broad but weak suffusion of cinnamon brown, below the light band a slightly narrower band of blackish mummy brown, below this a narrow band of light buff, which margins the eyes laterad to the ocellar spots, this bordered ventrad in all but brief lateral portions by a scarcely wider but heavy suffusion of mummy brown; remaining portions of head, antennae and palpi light ochraceous-buff.

Pronotum with disk weak ochraceous-tawny, remaining portions hyaline, faintly tinged with the same color, this more apparent along the caudal margin. Tegmina hyaline tinged with light ochraceous-tawny, this faint along the costal margin, veins and interspaces between them not contrastingly colored. Wings transparent, tinged with ochraceous-tawny, heavily clubbed apices of costal veins opaque, light buff.

Ventral surface of abdomen light ochraceous-tawny, becoming slightly darker distad, the free margins of the sternites tinged with light buff, narrowly caudad and more broadly laterad and appearing more opaque, subgenital plate wholly light ochraceous-tawny.

Length of body 7.6, length of pronotum 1.8, width of pronotum 2.7, length of tegmen 6.9, width of tegmen 2.1 mm.

This specimen was beaten from the large, leathery leaves of a small tree, growing in the open on a grassy hillock. This tree was infested with a long, slender, pale yellowish ant, which bit painfully.

**Chorisonaura cabimae** Hebard. G, 1 ♀.

**Chorisonaura specilliger** Hebard. P7, 1 juv.; G, 3 ♂. At Gatun three males were beaten from the foliage of large leaved trees of the same species, on the bank of the French Canal.

#### EXPLANATION OF PLATE III.

Fig. 1. *Euhypnorna grata* new species. Dorsal view of male type. (X 7).

Fig. 2. *Euhypnorna grata* new species. Ventral outline of subgenital plate of male type. (Greatly enlarged.)

Fig. 3. *Chorisonaura gatunae* new species. Cephalic view of occiput of male type. (Greatly enlarged.)

Fig. 4. *Chorisonaura gatunae* new species. Ventral view of subgenital plate of male type. (Greatly enlarged.)

#### All of One Species!

At the Annual Exhibition of the South London Entomological and Natural History Society on November 25, 1920, Lord Rothschild exhibited the series of 1277 specimens of *Abravav grossulariata* L. from the British collection of the Tring Museum: they consisted of the series from the Bright and Gibb collection, and those collected by himself; the larger number of the more extreme varieties have been bred by the Rev. Gilbert Raynor. (*Ent. Mo. Mag.*, March, 1921, p. 68.)

## The Bee Flies of North Carolina (*Bombyliidae*, *Dip.*).

By C. S. BRIMLEY, N. C. Dept. of Agriculture, Div. of Entomology, Raleigh, N. C.

The following is a summary of our Bombyliid records to date, the initials following the records being those of the following persons who have collected specimens of this group: F. Sherman, Chief of the Division; R. S. Woglum, G. M. Bentley, R. W. Leiby, T. B. Mitchell, C. L. Metcalf, S. W. Foster and C. S. Brimley, his assistants at various times.

**Anastoechus nitidulus** Fab. Southern Pines, Sept., 1906, RSW; Wilmington, Sept. 19, Oct. 4, 1919, M. Kisiuk, Jr.

**Anthrax alternata** Say. Blowing Rock, July 24, 1904, FS.

**Anthrax celer** Wiedemann. Raleigh, common mid-July to mid-September on flowers of water parsnip and wild carrot. Beaufort, Aug. 11, 1902, FS.

**Anthrax ceyx** Loew. A very dark specimen of this group taken at Highlands, Sept., 1906, by R. S. Woglum; doubtfully referred here; the third posterior cell is undivided.

**Anthrax fulvohirta** Wied. Raleigh, common early June to early September. Beaufort, late June and early August, FS. Southern Pines, mid-August, FS.

**Anthrax gracilis** Macq. Cranberry, June 10, H. W. Wenzel, received from C. W. Johnson.

**Anthrax halcyon** Say. Raleigh, mid and late June, four, CSB and CLM; Southern Pines, one without date from A. H. Manee, one collected Sept., 1906, RSW; Lumberton, Oct. 8, 1920, three, TBM. All these are much paler than the Highlands "ceyx," and have the third posterior cell transversely divided by a cross vein.

**Anthrax hypomelas** Macq. Burnsville, Oct. 3, 1902, Blowing Rock, July 24, 1904, Watauga County, July 22, 1904. All mountain localities and all FS records.

**Anthrax lucifer** Fab. Previous to last year we had only taken three specimens at Lumberton, Sept. 6, 1902, FS; Fayetteville, July 10, 1903, SWF, and Raleigh, Oct. 20, 1916, CSB; but in 1920 the species was common at Raleigh, from early September to early November, and was also taken at Laurinburg, Gibson, Wadesboro and Maxton, all near the South Carolina line, by T. B. Mitchell in early and mid-October.

**Anthrax lateralis** Say. Common, May to early November. Localities: Raleigh, Beaufort, Terra Ceia, Whiteville, White Lake, Southern Pines, Gibson, Elizabethtown, Highlands and Blowing Rock. Bred from pupae of *Plathypena scabra* by R. W. Leiby at Terra Ceia in August and September, 1919.



*Anthrax sinuosa* Wied. Raleigh, late May to mid-September, not common, CSB & FS.

*Anthrax tegminipennis* Say. Oct. 4, 1919, M. Kisliuk, Jr.

*Bombylius azaleae* Shannon. Raleigh, not uncommon in late April, CSB, Norlina, April 21, 1905, FS; Spruce (Sunburst), late May, common, FS and CSB; Black Mountain, May 21, 1904, CSB; White Lake, mid-April, 1910, FS; Lake Waccamaw, April 23, 1920, RWL.

*Bombylius incanus* Johnson. Havelock (Lake Ellis), late May, 1907, common, FS.

*Bombylius major* Linn. Common in late March and in April. Raleigh, Southern Pines (earliest date March 12, 1913, common, CLM.), Lake Waccamaw, Burgaw.

*Bombylius pulchellus* Loew. Spruce (Sunburst), late May, 1912, two, CSB.

*Bombylius pygmaeus* Fab. Raleigh, not common, in April and early May, CSB; Spruce (Sunburst), common in late May, 1912-13, CSB; Asheville, April 20, 1905, FS.

*Bombylius subvarius* Johnson. White Lake, late May, 1909, one, FS.

*Bombylius varius* Fab. Late April and May, rather common. Raleigh, Charlotte, Blowing Rock, Southern Pines, Hendersonville.

*Exoprosopa decora* Loew. Old Fort, Aug. 11, 1903, SWF, late Oct., 1920, FS.

*Exoprosopa eremita* O. S. Southern Pines, Aug. 15, 1902, FS, Lakeview, June 12, 1912, CSB.

*Exoprosopa emarginata* Macq. Raleigh, June 21, 24, 1904, CSB; Southern Pines, June 6, 1906, RSW; Elkin, June 18, 1901, FS.

*Exoprosopa fasciata* Macq. Late July to mid-September common, Raleigh, Oakdale, Southern Pines, Beaufort, Newton.

*Exoprosopa fascipennis* Say. June to September, common, Raleigh, Southern Pines, Brinkleyville, Beaufort, Blowing Rock, Lakeview, Statesville.

*Exoprosopa titubans* O. S. Raleigh, July 15, 1902, FS.

*Geron senilis* Fabr. Rather common at Raleigh, from mid-June to late September on flowers of *Helenium tenuifolium*.

*Pseudogeron sigma* Coq. "North Carolina, H. K. Morrison," Coquillett Proc. U. S. N. M., XXV, 101.

*Sparnopolius fulvus* Wied. Abundant in fall, at Raleigh from mid-September to early November. Throughout the state.

*Spogostylum analis* Wied. Raleigh, early July, 1903, FS, Sept. 5, 1919, CSB; Beaufort, mid-Aug., 1902, FS; Elkin, mid-June, 1901, FS; Pendleton, June 7, C. W. Johnson; Andrews, Aug. 19, 1904, FS; Lexington, early August, 1910, G. B. Lay.

*Spogostylum argropyga* Wied. Raleigh, June, not common, CSB.

*Spogostylum cephus* Fab. Raleigh, June 23, 1920, CSB.

*Spogostylum limatulus* Say. Raleigh, June 19, 1919, CSB; White Lake, early June, 1915, FS.

**Spogostylum oedipus** Fabr. Raleigh, mid-August to mid-September, CSB; Spruce (Sunburst), late May, 1912, CSB; Andrews, mid-August, 1904, FS.

**Spogostylum simson** Fabr. Has been received from Raleigh, Southern Pines, Andrews, Bushnell, Stecoah, Lexington and Asheville, at dates varying from July 16 to September 1. Never common. Has been known to be attracted by the smell of fresh paint, and also, like others of the genus, seems to have tendency to alight on human beings, possibly attracted by the smell of perspiration. Not recorded so far east of Raleigh.

**Systoechus vulgaris** Loew. Raleigh, August 30, 1904, CSB; Southern Pines, August 15, 1902, FS; Bushnell, September, 1904, GMB.

**Systropus imbecillus** Karsch. Early and mid-September, not uncommon in open woods, CSB; Wadesboro, Oct. 23, 1920, TBM; Lucama, Sept. 27, 1920, TBM.

**Systropus macer** Loew. Raleigh, July 21, 1912, one bred from pupa of *Euclea delphinii*, CSB, early September, one, FS. Lucama, Sept. 27, 1920, two, TBM.

**Toxophora amphitea** Walker. Raleigh, late July, 1912, early August, 1914, mid-July, 1916, CSB.

**Toxophora leucopyga** Wied. Early July, 1910, CSB, late July, 1912. CLM, three specimens taken at Raleigh. Of these one has three submarginal cells in each wing, a second has two in each wing, while the third has two in one wing and three in the other.

## A New *Pristomerine* from California (Hym., Ichneumonidae).

By HENRY L. VIERECK, U. S. Bureau of Biological Survey,  
Washington, D. C.

The *Pristomerinae* are a subfamily of Ichneumon-flies, the species of which are so far known to be parasitic on moths of the families Tortricidae and Gelechiidae. The host relationship of the present species is as yet unknown.

***Neopristomerus woodworthi*** n. sp.

*Type* and *allotype*.—No. 33, on deposit at the California Academy of Sciences from the University of California. *Type* locality.—Berkeley, California, May 20, '07. Collector.—Prof. C. W. Woodworth.

♀ *Type*.—Length 7.5 mm.; sheaths of ovipositor almost as long as the abdomen; of the North American species of the tribe *Pristomerini* this agrees best with *Neopristomerus ? coloradensis* Brues, as originally described; black; head, legs and abdomen partly reddish; front excavated above the antennae, shagreened and dullish; clypeus convex, shining, the anterior two-thirds mostly reddish, its anterior edge rounded;

mandibles bidentate, yellowish with black tips; face below antennae punctured, dullish and distinctly clothed with silvery pubescence, temples finely reticulated, a reddish brown orbital line extending along the eye-margin from over half-way down on the inner margin to nearly all the way down along the outer margin of the eyes; antennae blackish throughout, first joint of flagel four times as long as thick, second and third joints each shorter than the first, subequal and at least three times as long as thick, the succeeding joints also subequal in length, becoming quadrate at the 28th joint, then thicker than long with the exception of the terminal joint, which is a little more than twice as long as thick; palpi blackish at base, then fuscous, lateral ocelli nearer to the eye-margin than to each other.

Thorax black and punctured, its pleurae especially pubescent like the face, notauli distinct anteriorly, tegulae and wing bases yellowish; wings transparent with a brownish tinge, stigma and veins dark brownish except toward the wing-base, where the veins become yellowish, transverse cubitus a little longer than the cubital abscissa between the transverse cubitus and the recurrent vein, the latter a little longer than the brownish portion of the cubitus beyond the recurrent vein, second abscissa of the discoidal vein a little longer than the third abscissa of the discoidal vein, nervellus slightly angulated at the middle, from which point there extends toward the anterior edge of the hind wing a bulla, representing the subdiscoidal vein; legs mostly reddish stramineous, fore and mid coxae brownish stramineous beneath, blackish above, hind coxae and proximal trochanters mostly blackish, fore and mid tarsi stramineous to brownish stramineous except their onychii and their appendages, which are fuscous, distal trochanters of hind legs blackish in part, hind tibiae at base and apex and hind tarsi throughout fuscous; propodeum pubescent like the face, its carinae well developed, except the longitudinal carinae, which are poorly developed between the basal and apical transverse carinae, basal area narrowly truncate posteriorly, the areola with a central impunctate area, the petiole area apparently as long as the areola, but wider, both the areola and the petiole area not much longer than wide, the latter transversely striate.

Abdomen mostly reddish and polished, petiole black except at base and beneath where it is translucent brownish, post petiole black except at apex, where it is translucent brownish, and beneath, where it is yellowish, second dorsal segment mostly black, finely striate laterally, the apical half mostly reddish, second ventral segment yellowish, third to fifth dorsal segments inclusive reddish with a blackish border along the lateral margin and with a blackish streak down the back that is interrupted on the apical half of the third segment, seventh and eighth dorsal segments mostly blackish.

*Allotype*-locality—San Diego, California, April 29, 1913, collector E. P. Van Duzee.

♂. Agrees with the description of the type except as follows:—Length 6 mm.; reddish brown orbital line not extending as far as half-way down along the inner eye-margin, twenty-eighth and following joints of the flagel apparently a little longer than thick, penultimate joint apparently as long as thick, last joint apparently twice as long as thick; second abscissa of the discoidal vein distinctly shorter than the third abscissa of the discoidal vein, nervellus angulated a little above the middle; hind femora blackish along the edge between the great tooth and the apex of the femur; areola nearly twice as long as broad, the dorsal, abdominal blackish streak represented by a basal, median, blackish mark on the third to fifth segments.

### A New Species of *Habrobracon* (Hym., Braconidae).

By HENRY L. VIERECK.

The species of this genus are on record as parasites of many species of moths, the most notable of which is the Mediterranean Flour Moth. The host relationship of the present species is unknown.

*Habrobracon diversicolor* n. sp.

*Type*.—No. 124, on deposit at the California Academy of Sciences from the University of California. *Type-locality*—Berkeley, California.

♀ *Type*.—Length 2.5 mm.; related to *H. variabilis* Cushman; black and finely sculptured, a yellowish, interrupted orbital mark along the inner and upper eye-margin, lowest part of the outer eye-margin with a brownish mark, a brownish mark on each side of the face adjoining the antennal scrobes, clypeus and lower edge of malar space brownish, mandibles yellowish with dark tips, scape blackish, pedicel and lower half of flagel dark brownish, apical half of flagel blackish, flagellar joints subequal, the first joint the longest and the last joint the shortest, all the joints longer than thick, the first joint at least twice as long as thick.

Tegulae blackish brown; wings with a brownish tinge, stigma and veins brownish stramineous, costa brownish; coxae blackish, rest of legs mostly reddish brown, tarsi, forelegs and mid femora more or less infuscated.

Abdomen, finely, reticulately sculptured above, smooth, blackish, except for the apical margin of the first segment, the lateral margin of second to fifth segments inclusive and most of the rest of the third and basal half of the fourth segments, which are reddish brown, seventh segment, ventral segments, yellowish and brownish; abdomen nearly twice as long as wide and apparently a little wider than the thorax, sheaths of the ovipositor apparently two-thirds as long as the abdomen.

## Undescribed Crane-Flies from Argentina (Tipulidae, Dipt.)—Part III.

By CHARLES P. ALEXANDER, Urbana, Illinois.

The types of the novelties described in this paper are preserved in the collection of the writer, except where indicated as occurring in the Museum of La Plata. The writer is greatly indebted to Dr. Bruch and Engineer Weiser for their kind co-operation in making known the interesting crane-fly fauna of Argentina.

### *Rhipidia subterminalis* new species.

Antennae dark brown; mesonotum yellowish fawn color, the praescutum with a broad dark brown median stripe; pleura brownish yellow with two narrow dark brown longitudinal stripes; femora obscure yellow with a narrow dark brown subterminal ring; wings brown, the costal region variegated with dark brown and subhyaline; basal deflection of *Cu*1 at the fork of *M*; abdomen reddish orange, segments six and seven black.

♀. Length 7.8 mm.; wing 8.7 mm. Rostrum chestnut brown; palpi dark brown. Antennae dark brown, the first segment pruinose; flagellar segments unipectinate. Head dark with a sparse yellow pollen.

Mesonotal praescutum fawn-colored, yellowish pollinose, with a broad, median, dark brown stripe, broadest and most distinct on the posterior half; lateral stripes barely indicated; scutal lobes dark brown; scutellum and anterior part of postnotum brown, the posterior half of the latter more fulvous. Pleura light brownish yellow, pollinose, with two narrow and indistinct dark brown longitudinal stripes, the more ventral traversing the bases of the coxae and the dorsal portions of the mesosternum. Halteres dark brown, bases of stem yellow. Legs with the coxae yellow, dark brown basally; femora obscure yellow with a narrow dark brown subterminal ring; tibiae and tarsi brownish black. Wings with a strong brownish tinge, with large, dark brown and subhyaline blotches, more evident along the costal region; the dark brown areas include cell *C*; *Sc* except three narrow yellowish areas; conspicuous brown clouds at stigma, origin and fork of *Rs*; tip of *Sc*; along the cord and outer end of cell 1st *M*2 and the dark centers of cells 2nd *R*1, *R*3 and less distinctly, *R*5 and 2nd *M*2; the subhyaline areas appear in cell *R* before the origin of *Rs*; beneath *Rs*; in cells 1st *R*1, 2nd *R*1 and *R*3; a rounded subhyaline area in cell 1st *A* at the end of vein 2nd *A*; veins dark brown. Venation: *Sc* long, *Sc*1 ending about opposite two-fifths *Rs*, *Sc*2 at the extreme tip of *Sc*1 and much longer than *Sc*1 alone; no supernumerary cross-vein in cell *Sc*; inner end of cell 1st *M*2 arcuated; basal deflection of *Cu*1 at the fork of *M*.

Abdomen reddish orange; segments six and seven black; lateral margins of the tergites narrowly darkened.

*Habitat*: Argentina. *Holotype*, ♀, La Plata, Bosque, May 23, 1920 (C. Bruch), in the collection of the Museum of La Plata.

### *Rhipidia microsticta* new species.

General coloration brownish buff; antennae brown, only the pedicels of the flagellar segments paler; mesonotal praescutum with an interrupted median stripe and short lateral stripes; pleura buffy with two

narrow and indistinct longitudinal brown stripes; femora brownish yellow with a narrow brown subterminal ring; wings subhyaline with an abundant pale gray dotting in all the cells.

♂. Length 5.5 mm.; wing 6.3 mm. ♀. Length 6.5-7 mm.; wing 7.8-8 mm.

Rostrum and palpi dark brown. Antennae dark brown; in the male specimens available the flagella are broken and the nature of the pectinations cannot be described; in the female the flagellum is submoniliform to short unipectinate, each segment with a conspicuous pedicel, this latter paler than the remainder of the segment. Head dark gray, the vertex with an indistinct brown median line.

Mesonotal praescutum grayish brown, more buffy laterally, with dark brown stripes; a broad median stripe that is narrowly and rather indistinctly bisected, in many cases these stripes entirely interrupted near midlength; lateral stripes shorter and narrower; remainder of mesonotum more brownish plumbeous, the scutal lobes a little darker, the scutellum pruinose; postnotum not darkened as in the somewhat similar *R. shannoni*. Pleura buffy with two narrow and somewhat indistinct dark brown longitudinal stripes. Halteres pale, knobs dark brown. Legs with the coxae and trochanters pale yellow; femora brownish yellow with a narrow dark brown subterminal ring; tibiae brown, the tips very narrowly and indistinctly darkened; tarsi brown, the terminal segments black. Wings subhyaline with an abundant pale gray dotting in all the cells; slightly darker spots at the origin of *Rs*, tip of *Sc1* and at stigma; the dots in the costal cell number only three or four; cell 1st *M2* has but few dots; veins yellow, darker in the infuscated areas. Venation: *Sc* moderately long, *Sc1* extending to about opposite one-fourth the length of *Rs*, *Sc2* at the tip of *Sc1*; *Rs* long, strongly angulated at origin; cell 1st *M2* rectangular; basal deflection of *Cu1* close to or before the fork of *M*.

Abdomen dark brown, the genital segments paler.

*Habitat*: Argentina. *Holotype*, ♂, Ciudad, Jujuy, May 22, 1920 (V. Weiser). *Allotopotype*, ♀. *Paratopotypes*, 6 ♂ ♀.

#### *Epiphragma annulicornis* new species.

Related to *E. circinata* Osten Sacken; antennae annulate dark brown and yellow; head gray; mesonotal praescutum dark brown, the three discal stripes buffy, confluent; pleura gray, longitudinally striped with dark brown; femora with a narrow dark brown subterminal ring; wings pale yellowish with an abundant ocellate brown pattern.

♂. Length 11.4 mm.; wing 12 mm.; antenna about 4.8 mm. ♀. Length 10.5 mm.; wing 10.5-10.8 mm.

Rostrum and palpi dark brown. Antennae elongate in both sexes, but more so in the male; first flagellar segment dark brown, sparsely pruinose; second segment reddish brown; first flagellar segment yellow, cylindrical; remaining segments of flagellum dimidiate, the base of each dark brown, the apex yellow; only on the terminal segments are the segments more uniformly infuscated. Head gray; vertical tubercle slightly infuscated; frons in male very narrow.

Pronotum buffy yellow, dark brown medially. Mesonotal praescutum deep velvety brown, this color restricted to the margins of the sclerite, the disk almost entirely occupied by three broad confluent buffy stripes, the intermediate stripe split by a capillary pale brownish gray line; the usual praescutal inter-spaces are likewise narrowly pale brownish gray; scutum buffy, each lobe with a dark center; median line of scutum with a capillary brownish gray line; scutellum gray pruinose with a capillary median brownish gray line; a pit on either side of median line of

scutellum at base; postnotum silvery pruinose with a capillary brown line; a brown mark before midlength on either side of median line. Pleura gray, longitudinally striped with dark brown, the most conspicuous dorsal in position, extending from the cervical sclerites to the postnotum; dorso-pleural region variegated buffy and brown; mesosternum dark brown. Halteres rather elongate, yellow, the knobs dark brown. Legs with the coxae dark brown, the apices narrowly gray; trochanters obscure yellow, the inner face at apex dark brown; femora brownish yellow; a narrow dark brown subterminal ring, followed and preceded by a clearer yellow annulus; tibiae and tarsi yellow, the terminal tarsal segments brownish black. Wings pale yellowish, variegated with brown; darker brown areas along the costa at *h*, above the arculus; above origin of *Rs*; at the supernumerary cross-vein in cell *C*; tips of *Sc1*, *R1* and *R2*; a very extensive paler brown ocelliform pattern covers the wing disk, circles having their centers at the origin of *Rs*; fork of *Rs*; fork of *R2+3*; *m*; fork of *M1+2*; at basal deflection of *Cu1* and at the ends of the posterior cells; a series of ten to twelve more or less confluent spots in cell *Cu*; a series of brown dashes along the margin of the anal cells, the base of cell 1st *A* unicolorous. Venation: *Rs* angulated and spurred at origin; *R2+3* a little less than one-half the basal section of *R2*; *r* about one and one-half times its length from the tip of *R1*; cell 1st *M2* rectangular, widened distally; basal deflection of *Cu1* at or before midlength of cell 1st *M2*; petiole of cell *M1* shorter than cell.

Abdominal tergites dark brown; sternites obscure brownish yellow.

*Habitat*: Argentina. *Holotype*, ♂, Quebrada Famaillá, Tucumán, altitude 1600 meters, October 16, 1920 (V. Weiser). *Allotopotype*, ♀. *Paratopotypes*, 3 ♂ ♀; *paratype*, ♀, Sauce Gaucho, Tucumán, altitude 500 meters, October 12, 1920 (V. Weiser).

#### *Limnophila subfuscata* new species.

Antennae short; flagellum bicolorous; head light gray; mesonotum grayish buff, praescutum and scutum trilineate with dark brown; scutellum and postnotum dark brown medially; pleura with a dorsal longitudinal dark brown stripe that continues to the postnotum; legs yellow, the femoral tips broadly infuscated, bases and tips of tibiae narrowly infuscated; wings subhyaline, heavily spotted with brown, the radial cells almost uniformly washed with pale brown; first section of *R2* short; abdomen obscure yellow, the caudal margins of the segments brown.

♂. Length 9.4 mm.; wing 8.5 mm. Rostrum brown, pruinose; palpi dark brown. Antennae with the first scapal segment brown, gray pruinose; second scapal segment brownish testaceous; flagellum bicolorous, the base of the segments brownish black, the apices obscure yellow, the terminal flagellar segments more uniformly darkened; antennae short, the flagellar segments oval. Head gray, bluish gray on the occiput; a short, linear, brown, median line between the eyes.

Pronotum buffy with a median brown line and small irrorations of the same color; prosternum separating the fore coxae. Mesonotal praescutum grayish buff with three brown stripes, the anterior end of the median stripe gray pruinose; thoracic inter-spaces with a few conspicuous brown spots; scutum grayish buff, trilineate with dark brown; scutellum and postnotum gray, the former with a median dark brown line, the latter with a median brown spot at the base; lateral and caudal margins of the median sclerite of the postnotum dark velvety brown.

Pleura buffy gray with a conspicuous, longitudinal dark brown line extending from the cervical sclerites to the postnotum, interrupted on the lateral sclerites of the latter; a small brown spot immediately before the root of the halteres; dorso-pleural membranes yellow; mesosternum blue-gray. Halteres yellow, the knobs and outer ends of the stems brown. Legs with the coxae grayish buff, sparsely dotted with pale brown; trochanters light brown; femora obscure yellow, the tips broadly dark brown; tibiae concolorous, the extreme bases and tips brown; tarsi yellow, the terminal segments dark brown. Wings subhyaline, the costal region more yellowish; entire surface of wing heavily suffused and spotted with brown; a series of dark brown areas in the costal and subcostal cells, these areas more extensive than the interspaces; cells *R*, *R1* and the bases of cells *R2*, *R3* and *R5* are washed almost uniformly with pale brown, sparsely variegated with hyaline dots; remainder of the wing surface extensively covered with circular pale brown spots that are largely confluent and more extensive than the restricted pale interspaces. Venation: *Sc2* not indicated; *R1* beyond *r* only about one-half longer than the latter; *R2*+3 short, about equal to *r*; *R2* before *r* about equal to the deflection of *R4*+5; cell 1st *M2* rectangular, about equal to the petiole of cell *M1*; basal deflection of *Cu1* at about one-quarter the length of cell 1st *M2*.

Abdomen with the basal tergites light gray, dark brown medially; remaining tergites obscure yellow, the caudal margin broadly brown, the lateral margins less broadly so; sternites obscure yellow, the segments with a broad median caudal marking; both sternites and tergites with abundant brown setigerous punctures, more numerous and conspicuous laterally.

*Habitat*: Argentina. *Holotype*, ♂, Province of Buenos Aires, October 10, 1920 (C. Bruch), in the collection of the Museum of La Plata.

#### OROLIMNOPHILA new name

*Orolimnophila*, new name for *Oromyia* Alexander, Journ. N. Y. Ent. Soc., vol. 21, p. 203, 1913; preoccupied by *Orosomyza* Pokorný, 1887, *Orosomyia* Rondani, 1856.

#### *Orolimnophila argentinicola* new species.

General coloration brownish testaceous; antennae of male elongate, the flagellar segments densely covered with spinous setae; wings with no distinct stigma; *Sc1* ending about opposite one-third the length of *Rs*; outer pleural appendage of male hypopygium elongate, chitinized, the outer margin with short, appressed spines, which continue to the apex.

♂. Length about 5.5 mm.; wing 6.7 mm. Rostrum and palpi testaceous. Antennae elongate in the male; scape obscure yellow; flagellum brown; flagellar segments elongate cylindrical, densely set with conspicuous spinous setae, none of which are developed into verticils. Head testaceous yellow.

Mesonotum brownish testaceous without distinct darker stripes; postnotum sparsely white pollinose. Pleura pale brown, sparsely pruinose. Halteres testaceous, knobs brownish. Legs dark brown; tibial spurs short. Wings with a pale gray tinge; stigma lacking; veins pale brown. Venation: *Sc* moderately long, *Sc1* extending to about opposite one-third *Rs*; *Rs* arcuated at origin; *R2*+3 very long, exceeding *R3*; *R2* oblique; cell 1st *M2* small, subrectangular; outer deflection of *M3* with-



out macrotrichiae; basal deflection of *Cu1* at about one-fourth the length of cell *1st M2*.

Abdomen brownish testaceous. Male hypopygium with the pleural appendages elongate; outer pleural appendage heavily chitinized, arcuated, the outer margin with microscopic appressed spines that continue to the apex; inner pleural appendage a little longer, tapering to the narrow obtuse apex, which is provided with a few microscopic setae. In the microscope mount of the hypopygium are two slender, chitinized horns that appear to be gonapophyses. What appears to be the homologue of the lyriform plate of the ninth sternite of *O. lloydi* is represented by a short, fleshy median plate, the lateral angles of which are produced into rather short, blunt lobes, the caudal margin of the plate thus appearing concave.

*Habitat*: Argentina. *Holotype*, ♂, Quebrada Famailá, Tucumán, altitude 1600 meters, October 16, 1920 (V. Weiser), in the collection of the Museum of La Plata.

*Orolimmophila argentinicola* differs from the genotype, *O. lloydi* (Alexander) of Colombia, in the coloration of the wings, the venation and the structure of the male hypopygium.

#### ***Polymera unipunctata* new species.**

General coloration light brown, the scutellum and postnotum pruinose; thoracic pleura with a dark longitudinal stripe; femora with a subterminal brown ring; tarsi brownish yellow; wings with strong brownish tinge; a conspicuous brown seam along the cord.

♀. Length 6.5 mm.; wing 7.7 mm. Rostrum reddish brown; palpi light brown. Antennae of female uniformly brown, only the second scapal segment a little more testaceous. Head black with a yellowish gray bloom.

Pronotum pale. Mesonotum light brown without markings; scutellum and postnotum darker, gray pruinose. Pleura gray pruinose, with a comparatively narrow dark brown pleural stripe, extending from the cervical sclerites beneath the root of the halteres to the abdomen. Halteres yellow, the knobs light brown. Legs with the coxae testaceous, the fore coxae a little darkened basally; trochanters yellow; femora pale brown, the tips narrowly yellow; a narrow dark brown subterminal ring; tibiae light brown, the tips dark brown; tarsi pale brownish yellow, the metatarsi yellowish brown, the terminal segments darker brown. Wings with a strong brownish tinge; very faint brown clouds at the origin of *Rs* and the forks of *R2+3* and *M3* plus *Cu1*; a larger and more conspicuous brown cloud along the cord; veins dark brown. Venation: *r* on *R1* comparatively near its tip, the ultimate section of *R1* a little more than one and one-half the basal deflection of *Cu1*; cell *M1* present; basal deflection of *Cu1* more than one-half its length beyond the fork of *M*.

Abdomen brown, the lateral margins of the tergites darker brown; sternites pale brown.

*Habitat*: Argentina. *Holotype*, ♀, Ciudad, Jujuy, May 22, 1920 (V. Weiser), in the collection of the Museum of La Plata.

*Polymera unipunctata* is related to *P. obscura* but is a very different fly. The general effect of the wing-pattern is a conspicuous brown cloud near the center of the paler brown disk.

# ENTOMOLOGICAL NEWS.

PHILADELPHIA, PA., JUNE, 1921.

## Depositories of Type Material.

In the minutes of the last Annual Meeting of the Entomological Society of America, as published in a recent number of the *Annals* of that Society, we find an interesting report of the "Committee on U. S. National Museum." This report is divided into three sections; the first, detailing the activities of the Committee in its efforts to secure more adequate appropriations for the work of the Division of Insects of the United States National Museum; the second, asking for the support of members of the Society and of various related organizations to assist in every way possible toward securing such desired appropriations from Congress, and the third, an appeal for the deposit of types in the Museum.

With the first and second of these sections we find ourselves in hearty accord. The U. S. National Museum, in all its divisions, should be so adequately supported that no possible temporary or permanent curtailment of appropriations to the various departments of the federal government would, directly or indirectly, affect the invaluable reference collections there deposited. Such is always a possibility to-day, as a very large part of the supervisory work on the collections of the Museum is performed and maintained by other government bureaus, which are vitally interested in the matter. The efforts of the Committee in endeavoring to secure adequate continuing financial support for the care and maintenance of the collections of the Division of Insects is most laudable, and the *News* gives its hearty commendation and support.

Relative to the deposit and centralization of types in the Museum, differences of opinion may and do exist. Theoretically it would be best to have all types deposited in one great center, or several centers, as the case might be. The natural corollary of this would be that workers should similarly cen-

tralize to be near the types, to facilitate study and reduce travel. Practically such an arrangement cannot exist, as the world, or, for that matter, our country, has local or sectional influences, if this term be permitted, which cannot be ignored and which should not be disregarded, as these influences, or centers, largely have been the means of developing the present state of our knowledge of the sciences.

Reduced to practicalities the U. S. National Museum possesses no endowment and is supported by government appropriation. The size of this appropriation governs the amount of care and attention, as well as housing, the collections in the care of the Museum receive. It is virtually impossible to bind Congress to set aside or guarantee public funds in perpetuity for the care and preservation of these collections. We all agree the appropriations are at present grossly inadequate and should be greatly increased, and as individuals we should work toward that end. It should be realized, however, that other institutions, some of longer, equally productive activity, possess endowments not subject to legislative whims, and whose collections are of very great extent, extremely rich in types, in many groups of zoology as rich or richer, occasionally far richer, than the National Museum. These organizations have claims for consideration as type depositories which seem to be disregarded, or at least given little consideration, in the report as presented.

Collections of types, all will agree, should be housed in fire-proof buildings, in modern cases, guarded as far as possible from damage of all sort, and open to examination under reasonable regulations to safeguard the material, yet not hamper the student who needs to consult it. Types should be preserved intact, and dismembering to place them in Riker mounts should not only be discouraged but prohibited. Yet, to a recent date, this destructive policy has been followed with certain insect type material at the National Museum. Here a matter of personal opinion as to what constitutes "preservation" is involved, and many students would say exactly the reverse is the result.

The National Museum can well be made a national repository of valuable and important collections, but it does not follow that the legitimate claims of other great institutions in the United States devoted to biological research, and which possess

in trust priceless collections of type material, should be ignored. It is, moreover, a piece of practical wisdom not to put all eggs (types) in any one basket, be it ever so "fireproof."

The point which we would emphasize is that scattered types, and the smaller collections of similar material, should be placed in fireproof buildings, under continuing care and guaranteed maintenance. The U. S. National Museum is one of these depositories, and most of the entomological workers in the East have made frequent use of the great type collections there located. However, other great repositories exist, their collections are maintained in excellent condition and preservation and are in constant use by entomological workers. Without reflection upon the U. S. National Museum, its administration, its staff or the maintenance of its entomological collections as a whole, the other institutions appeal as earnestly as the National Museum for the deposit of type material. Let the Entomological Society of America hold a brief for no one institution or collection, but urge the support and upbuilding of all those which have done and are doing their "bit" in the development of entomological science.

J. A. G. R.

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**Dr. H. H. Field and the Concilium Bibliographicum.**

The recently announced sudden death on April 5, 1921, of Dr. Herbert Haviland Field, at Zürich, Switzerland, merits more than a passing notice by entomologists. Born in Brooklyn, New York, April 25, 1868, educated at the Brooklyn Polytechnic and at Harvard, he made researches on the anatomy and development of vertebrates until failing eyesight forced their abandonment. Impelled to further the progress of zoology in some line, he organized the *Concilium Bibliographicum* at Zürich. This institution undertook the compilation and publication of titles and references to place of publication of current zoological books and papers, in book form for the *Zoologischer Anzeiger*, of Leipsic, and as a card catalog for libraries and individuals. A classification of the subject matter of zoology was devised, each division and subdivision designated by index numbers, and usually several appropriate numbers accompanied the title of

each work catalogued. Anyone might subscribe to all of the catalog, or to any section of it, and the writer desires to express here his gratitude—as he did to Dr. Field in person—for the great saving of time and aid in research which his subscription to the card catalog afforded.

Unfortunately the financial difficulties of the undertaking, begun in 1895, were great. Dr. Field sacrificed all of his private means in its maintenance. The issuance of the cards ceased in 1918. About a year ago, Dr. Field was in the United States seeking support for the *Concilium* and various zoological societies warmly endorsed his attempt. The collection of funds was not easy, although money was secured to permit resuming work for the year, pending the development of plans for permanent support which appeared in sight. It is cheering to know that his death will not halt the development of the *Concilium*, but it is a source of regret that he could not have lived to see the re-establishment of his most helpful and worthy project.

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## Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS  
OF THE GLOBE

### **The Entomological Society of London Appeals For Aid.**

The fine old Entomological Society of London, founded in 1834, and which since 1875 has been meeting at 11 Chandos Street by the courtesy of the Medical Society of London, has, through the growth of its library, outgrown its quarters and is practically forced to move. It has bought a house at 41 Queen's Gate, South Kensington, near the Natural History Museum, and is leasing a portion of the building to the Imperial Bureau of Entomology. The cost price of the property was ten thousand pounds, and an additional sum is required for furnishing.

The cost price has been largely met by subscription from members, both as donations and as loans, the loans being secured by a debenture on the property and bearing five per cent. interest. After exhausting all the available resources of the resident members, there still remains a sum approximating fifteen hundred pounds, and the Society is making an appeal to foreign members, to entomologists in the dominions, and to interested entomologists in other parts of the world. Donations and loans are received by the Treasurer of the Society, Mr. W. G. Sheldon, who may be addressed at 11 Chandos Street, Cavendish Square, London, W. I.

The London Society is the oldest of the great entomological societies, excepting the Entomological Society of France, which was founded a year earlier. Its *Transactions* and *Proceedings* have been largely used by American entomologists, and many of the latter, when traveling abroad, have been welcomed at the meetings of the Society and have cordially been given the use of the magnificent library. L. O. HOWARD.

#### J. H. Williamson Collecting in Florida—II.

Additional particulars of Mr. Jesse H. Williamson's collecting in Florida have come to hand since the note published in the NEWS for May, page 152. On April 15th he left Miami, where he collected but one day, and arrived at Enterprise. Here, the hotel having closed the preceding day, he obtained room and board with a private family and speaks very highly of his accommodations. Collecting began in the yard of this house and was extended to Lake Monroe, several creeks which were "followed back into a heavy humid forest," other lakes, ponds and swamps. "Am getting accustomed to the startled grunt and sudden stampede of razor-back hogs in the bush." By April 21st he had taken at least 12 additional species of Odonata not met with in the previous weeks, and on April 26th, still at Enterprise, he estimated his total collection of this order in Florida at 53 species and 4100 specimens.

#### The John Macoun Memorial Fund.

At the request of naturalists generally throughout Canada, the Ottawa Field Naturalists' Club has decided to receive subscriptions for a portrait of the late Professor John Macoun, naturalist of the Geological Survey of Canada, who died at Sidney, British Columbia, July 18, 1920. The portrait will be painted by Mr. Franklin Brownell, of Ottawa, and will be hung in the Victoria Memorial Museum, and the expenses in connection therewith are estimated at about \$700. Should the amount be oversubscribed, arrangements may be made whereby those subscribing above a certain sum, which cannot now be defined, will receive a reproduction of the painting. Subscriptions should be sent to Mr. Arthur Gibson, Dominion Entomologist, Ottawa.

#### A New Entomological Journal—and in Austria!

Herr Fritz Wagner, of Haizingergasse 4, Vienna XVIII, has sent out a circular letter, dated March 24, 1921, stating that, considering the delays in publication of entomological papers, he is planning the publication of a new journal, the *Zeitschrift für Systematische Insektenkunde*, excluding Coleopterology and Lepidopterology. Dr. Reinhold Meyer, of Landsberg a. W., has agreed to act as editor. Provided 200 subscribers are obtained, the subscription price will be 40 Marks for a volume of six bimonthly numbers of 3-4 signatures (Bogen) each, with text figures and plates when practicable, — in Germany and German Austria. In countries like the United States, England, France, Italy, Holland, Switzerland, with higher rates of exchange, an addition of 150

per cent. is to be made to this price. Herr Wagner asks for subscription orders.

It is difficult to reconcile such a project with the appeals for assistance for existing journals such as that published in the May number of the NEWS.

### PREVENT FOREST FIRES—IT PAYS!

EDITOR, ENTOMOLOGICAL NEWS—As a newspaper man you know without any telling what is the paper situation. Substantially every other industry using wood in any of its forms is in the same kind of trouble, or very soon will be.

In Pennsylvania the root of the whole trouble has been and still is the unmitigated curse of forest fire. Fire has destroyed more growing and prospective timber than all land clearing and cutting put together. Forest fires keep down production. Every acre of soil not needed for purposes more important should be growing trees. To do so they must be made secure against fire.

Because of the open winter and early spring the present fire season threatens to be one of the worst in years. I should appreciate it greatly if you would help by carrying, during May and June, the slogan of the Department of Forestry, which is, "Prevent Forest Fires—It Pays."

Your co-operation will be specially useful in making the idea of forest protection a part of the every day thought and consciousness of our people—GIFFORD PINCHOT, *Commissioner of Forestry, State of Pennsylvania.*

## Entomological Literature

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

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), 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.

The records of papers containing new genera or species occurring north of Mexico are all grouped at the end of each Order of which they treat.

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.

The titles occurring in the Entomological News are not listed.

2—Transactions of the American Entomological Society, Philadelphia. 4—Canadian Entomologist, London, Canada. 5—Psyche, Cambridge, Mass. 6—Journal of the New York Entomological Society. 7—Annals of the Entomological Society of America, Columbus, Ohio. 10—Proceedings of the Entomological Society of Washington, D. C. 12—Journal of Economic Entomology, Concord, N. H. 13—Journal of Entomology and Zoology, Claremont, Cal. 14—Proceedings of the Zoological Society of London. 20—Bulletin

de la Societe Entomologique de France, Paris. 24—Annales de la Societe Entomologique de France, Paris. 33—Annales de la Societe Entomologique de Belgique, Brussels. 39—The Florida Entomologist, Gainesville. 45—Zeitschrift fur wissenschaftliche Insektenbiologie, Berlin. 50—Proceedings of the United States National Museum, Washington. 52—Zoologischer Anzeiger, Leipsic. 54—Proceedings of the Biological Society of Washington, D. C. 61—Proceedings of the California Academy of Sciences, San Francisco. 67—Le Naturaliste Canadien, Quebec. 68—Science, Lancaster, Pa. 69—Comptes Rendus des Seances de l'Academie des Sciences, Paris. 77—Comptes Rendus des Seances de la Societe de Biologie, Paris. 80—Revue Suisse de Zoologie, Geneve. 81—The Journal of Parasitology, Urbana, Illinois. 82—The Ohio Journal of Science, Columbus. 99—Bulletin du Muséum National d'Histoire Naturelle, Paris. 100—Biological Bulletin of the Marine Biological Laboratory, Woods Hole, Mass. 116—Entomologische Zeitschrift, Frankfurt a. M. 121—Boletin del Museo Nacional de Chile.

**GENERAL.** Aldrich, J. M.—*Coloradia pandora*, a moth of which the caterpillar is used as food by Mono Lake Indians. 7, xiv, 36-8. Bertin, L. L.—L'etude experimentale de la variation chez les insectes. (La Nature, 1921, 184-9; 196-200.) Dozier, H. L.—An ecological study of hammock and piney woods insects in Florida. 7, xii, 325-80. Fernald, C. H.—Obituary by A. F. Burgess. 12, xiv, 242-3. Kraatz, W. C.—A preliminary general survey of the macrofauna of Mirrow Lake on the Ohio State University campus. 82, xxi, 137-82. Meissner, O.—*Varia entomologica*. 116, xxxiv, 105-6. Merrill, G. B.—Entomological training at the University of Florida. 39, iv, 54-5; 58-60. Needham, J. G.—A biological examination of Lake George, N. Y. (Scientific Monthly, xxii, 434-8.) Paillet, A.—Role des humeurs dans la destruction extracellulaire des microbes chez les insectes. 69, clxxii, 876-8. Schroder, C.—Handbuch der Entomologie. Lief. 5-6. Gustav Fischer, Jena. Walton, W. R.—Entomological drawings and draughtsmen: their relation to the development of economic entomology in the U. S. 10, xxiii, 69-99. Wheeler, W. M.—A new case of parabiosis and the "ant gardens" of British Guiana. (Ecology, ii, 89-103.)

**ANATOMY, PHYSIOLOGY, ETC.** Bridges, C. B.—Proof of non-disjunction for the fourth chromosome of *Drosophila melanogaster*. 68, liii, 308. Crampton, G. C.—Corrections of a statement concerning the terminal abdominal structures of male insects. 4, liii, 72. Herrmann, E.—Ueber besondere zellelemente im fettkorper der fliege. 52, lii, 193-200. Little, C. C.—Non-disjunction of the fourth chromosome of *Drosophila*. 68, liii, 167. Showalter, A. M.—The chromosomes of *Conocephalum conicum*. 68, liii, 333. Wilke, E.—Fettkorper, speicheldruse und vasa Malpighi der blattwespenlarven. 52, lii, 249-54.



**ARACHNIDA, ETC.** Brolemann, H. W.—Mesure d'un arc meridien en Amerique du Sud. Myriapods. (Tome x, 235-75.)

**Moles & Moore**—A list of California Arachnida. I. Pseudoscorpionida. 13, xiii, 6-9. **Ochoterena, I.**—El alacran de durango (*Centrus exilicauda*). (Mem. Rev. Soc. Cien. "Antonio Alzate," Mexico, xxxvii, 215-26.) **Roewer, C. F.**—Mesure d'un arc de meridien en Amerique du Sud. Arachnida. (Tome x, 121-42.)

**Chamberlin, R. V.**—A new genus and a new species of spiders in the group Phrurolitheae. 4, liii, 69-70. Linyphiidae of St. Paul Island, Alaska. 6, xxix, 35-43. **Ewing, H. E.**—The genus *Trombicula*, in America and the Orient. 7, xiii, 381-90.

**NEUROPTERA.** Enderlein, G.—Psyllidologia, VI. 52, lii, 115-22. **Morse, A. P.**—*Sympetrum corruptum* in Massachusetts. 5, xxviii, 7. **Samal J.**—Plecopteres Sud-Americains nouveaux. 33, lxi, 109-12. **Smith, R. C.**—A study of the biology of the Chysopidae. 7, xiv, 27-35.

**ORTHOPTERA.** Chopard, L.—Diagnoses d'especes nouvelles de Gryllidae. Diagnoses de Gryllides nouveaux, de la Guyane francaise. 99, 1920, 208-15; 310-15. **Hebard, M.**—Dermaptera and Orthoptera of the Galapagos expedition. 61, ii, 311-46. **Regen, J.**—Eine nymphe von *Gryllus campestris* (female), mit drei cerci. 52, lii, 189-90.

**Hebard, M.**—A new genus and species of grasshopper from California. 61, x, 71-5.

**HEMIPTERA.** Chapais, J. C.—L'aphis du meleze. 67, xlvii, 194-5. **Ferris, G. F.**—Notes on Coccidae. A review of MacGillivray's "The Coccidae." 4, liii, 57-60 (cont.). **Johnson, C. W.**—*Okanagana rimosa* in Nova Scotia. 5, xxviii, 15. **Morse, A. P.**—*Monephora bicincta* in New England. 5, xxviii, 27-8. **Peterson, A.**—Some studies on the influence of environmental factors on the hatching of the eggs of *Aphis avenae*, and *A. pomi*. 7, xiii, 391-401.

**Ball, E. D.**—The smallest known leaf hopper. 54, xxxiv, 23-4. **Davis, W. T.**—Records of cicadas from North America, with descriptions of n. sps. An annotated list of the cicadas of Colorado with description of a n. sp. 6, xxix, 1-16; 43-57. **Drake, C. J.**—Notes on some American Tingidae, with descriptions of n. sps. 39, iv, 49-54. **Hussey, R. F.**—Distributional notes on Hemiptera, with the description of a n. sp. 5, xxviii, 8-15. **Parshley, H. M.**—Essay on the American species of *Aradus*. 2, xlvii, 1-106.

**LEPIDOPTERA.** Figueroa, C. S.—Un nuevo *Lasiocampido* chileno. Revision de los lepidopteros rhopaloceros de Chile. 121, xi, 1-8; 198-214. **Fletcher, T. B.**—Life histories of Indian insects.

Microlepidoptera. (Mon. Dept. Agric. in India, Ent. Ser., vi, 217 pp.).

**Braun, A. F.**—Notes on *Elachista*, II. **82**, xxi, 207-10. **McDunough, J.**—New British Columbia tussock moth, *Hemerocampa pseudotsugata*. **4**, liii, 53-6.

**DIPTERA.** **Bezzi, M.**—The correct name for the dipterous genus *Dicrania*. **7**, xiii, 408. **Cotterell, G. S.**—The life-history and habits of the yellow dung-fly (*Scatophaga stercoraria*); a possible blow-fly check. **14**, 1920, 629-47. **Edwards, Becker & Surcouf**—Mesure d'un arc de meridian en Amerique du Sud. Dipteres. (Tome x, 143-233.) **Enderlein, G.**—Zur kenntnis der Pterocallinen. Dipterologische studien, XVII. **52**, lii, 211-19; 219-32. **Gemmell, E.**—A note on a local member of the family Psychodidae. **13**, xiii, 1. **Johannsen, O. A.**—The first instar of *Wohlfahrtia vigil*. **81**, vii, 154-5. **Juday, C.**—Observations on the larvae of *Corethra punctipennis*. **100**, xl, 271-86. **Legendre & Oliveau**—Role du lapin domestique dans l'attraction et la nutrition d'*Anopheles maculipennis*. **77**, clxxii, 833-3. **Malloch, J. R.**—A synopsis of the North American species of the genera *Melanochelia* and *Limnophora*. **4**, liii, 61-4. **Surcouf, J. M. R.**—Note sur un accouplement aberrant chez les dipteres. **20**, 1921, 46-7.

**Alexander, C. P.**—A new subfamily of Tanyderid flies. **7**, xiii, 402-5. **Dietz, W. G.**—The impudica group of the dipterous genus *Tipula*. **7**, xiv, 1-15. **Johnson, C. W.**—A review of the American species of the genus *Palloptera*. **5**, xxviii, 20-3.

**COLEOPTERA.** **Denier, P.**—Description d'especes nouvelles du genre *Pseudomocloe*. **24**, lxxxix, 204-8. **Drake, C. J.**—A new ambrosia beetle from the Adirondacks; notes on the work of *Nylosterinus politus*. **82**, xxi, 201-5. **Fleutiaux, E.**—Collections recueillies par la mission geodesique de l'Equateur. Elaterides. **99**, 1920, 300-5. **Frost & Weiss**—Additions to *Agrilus* bibliography. **4**, liii, 72. **Gage, J. H.**—The larvae of the Coccinellidae. (Illinois Biol. Monogr., vi, No. 4. 62 pp.) **Hawkes, O. A. M.**—Observations on the life-history, biology and genetics of the lady-bird, *Adalia bipunctata*. **14**, 1920, 475-90. **Heymons, R.**—Die frassfiguren der Hypoborinen. **45**, xvi, 81-90. **Howard, L. O.**—Catalogue of the coleoptera of America, north of Mexico. (Review.) **68**, liii, 441-2. **Hyslop, J. A.**—Genotypes of the elaterid beetles of the world. **50**, lviii, 621-80. **Johnson, C. W.**—A new Ptinid for New England. **5**, xxviii, 7. **Kleine, R.**—Haben die Hylobius-arten einen stridulationsapparat? **45**, xvi, 109-14. **Schenkling, S.**—Coleopterorum catalogus. Pars 72: Scarabaeidae, Cetoniinae. 431 pp. **Spence & Prater**—"Hopping" pupa of a curculionid beetle. (Jour. Bombay Nat. Hist. Soc., xxvii, 407-8.) **Strand, E.**—Neue namen dreier insektengat-

tungen. 116, xxxiv, 106. Weiss & West—Additional fungous insects and their hosts. 54, xxxiv, 59-62.

Blatchley, W. S.—Notes on Indiana Halticini with characterization of a new genus and descriptions of new species. 6, xxix, 16-27.

Portevin, G.—Silphides nouveaux de la collection du museum. 99, 1920, 505-8

**HYMENOPTERA.** Emery, C.—Specific names repeated in the Linnean genus Formica. 5, xxviii, 24-6. Herbst, P.—Un nuevo jenero de avispas cavadoras (Sphegidae). 121, xi, 217-20. Montet, G.—Hymenopteres nouveaux du genre Pepsis de la collection du museum d'histoire naturelle de Geneve. 80, xxviii, 205-19. Porter, C. E.—Un nuevo braconido del sur de Chile. 121, xi, 215-6. Stevens, O. A.—Further notes on evening flowers, Panurgine and Halictine bees. 4, liii, 65-9. Wheeler, W. M.—Professor Emery's subgenera of the genus Camponotus. 5, xxviii, 16-19.

Banks, N.—New Nearctic fossorial H. 7, xiv, 16-26. Fenton, F. A.—New parasitic H. of the subfamily Ateoninae. 4, liii, 70-1. MacGillivray, A. D.—New species of Nematinae. 6, xxix, 27-35.

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SOME SOIL FUMIGATION EXPERIMENTS WITH PARADICHLOROBENZINE FOR THE CONTROL OF THE PEACH-TREE BORER, *SANNINOIDEA EXITIOSA* SAY, by ALVAH PETERSON (Soil Science, vol. xi, No. 4, pp. 305-318, pl. 1, April, 1921).—This paper deals with paradichlorobenzine as a soil fumigant, taking into consideration such factors as soil texture, acidity, alkalinity, moisture and temperature, methods and time of application, effects on trees and borers, and costs and represents the results of numerous and varied experiments conducted by Dr. Peterson since 1917. Topics receiving consideration are: strength of application, injury to trees, short exposures, time of application, method of application, soil conditions, especially temperature and moisture, costs and rate of evaporation of material. Tables are presented showing the results of short exposures and early and late summer treatments in various types of soil and also the influence of soil moisture and temperature. The author concludes that paradichlorobenzine gives considerable promise as a valuable insecticide for the control of the peach-tree borer; that the use of this material is still in the experimental stage and recommends that peach growers be encouraged to try out this substance for a year or so on a small block of trees 6 years of age or older before treating large plantings. From three-fourths to one ounce of paradichlorobenzine will kill 90 to 100 per cent of the borers if the soil temperature is 55 to 60 degrees F., or higher, and if the soil is not too wet. The margin of safety is considerable if the trees treated are 6 years old or over.

The finely divided crystals should be evenly distributed in a narrow,

continuous, circular band approximately 2 inches from the tree (never closer than 1 inch) on smooth ground about the base of the tree. If indications point to the presence of borers from 1 to 6 inches above the ground, the soil should be mounded about the tree so that the upper level is even with the highest point where the gum is exuding. The application then should be made on the new soil level. After the crystals are distributed, several shovels of earth should be placed over them and packed down with the back of the shovel. This earth should be free of weeds, grass, large stones, etc. In New Jersey, the best time of application is from August 25th to September 10th.

Paradichlorobenzene is a white, crystalline substance occurring as a by-product in the manufacture of monochlorobenzene. It is insoluble in water and evaporates slowly at ordinary temperatures (70 degrees F.). The gas is heavier than air, non-poisonous to man under ordinary conditions, but toxic to insects during long exposures.

The paper is accompanied by a series of photographs, showing the correct and incorrect ways of applying the insecticide. It is to be regretted that Dr. Peterson's interesting and valuable paper could not have appeared in a journal devoted entirely to entomology, although a wide distribution of separates will overcome this drawback in part. While the paper in question deals in part with such factors as soil texture, moisture, temperature, etc., in so far as they have a bearing on the effectiveness of the fumigant, the paper is really a contribution to our knowledge on the control of the peach-tree borer and as such, is of importance mainly to entomologists. One of the results of the "shortage of entomological space" is a tendency on the part of authors to publish their material wherever facilities are afforded, and this means a greater scattering of the literature and, to a certain extent, inaccessibility for many workers.—HARRY B. WEISS, New Brunswick, New Jersey.



THE COCCIDAE. Tables for the Identification of the Sub-families and some of the more Important Genera and Species, together with Discussions of their Anatomy and Life History. By Prof. ALEX D. MACGILLIVRAY. Pages I-VIII, 1-502, Scarab Co., Urbana, Ill. 1921. \$6.00—Those of Prof. MacGillivray's associates, students and friends who have long known of his plan to prepare a volume on the Coccids will welcome the appearance of the finished work. The complete title of the book really leaves little to be said concerning its scope, for it is at once a thorough morphological and taxonomic treatise of the family, the keys extending in many instances as far down as the species. In some sections considerable is given concerning the life history and economic status of the groups and species under discussion. Since most of the keys have been used extensively by advanced students taking work under Prof. MacGillivray, it has thus been possible to revise them from time

to time so that the majority of their weaknesses should have been eliminated.

The work is comprehensive, yet detailed where detail is most needed, and will at once meet a long felt want among students, teachers and official entomologists. One cannot help but admire the boldness of the author in his attempt to bring about order in a family where chaos has so long reigned and particularly in his endeavor to develop a satisfactory nomenclature.—J. S. HOUSER.

## OBITUARY.

Prof. LOUIS COMPTON MIALI, Emeritus Professor of Biology in the University of Leeds, England, died on February 21, 1921. From an obituary notice in the *Entomologist's Monthly Magazine* for April, 1921, we learn that he was born seventy-eight years ago, son of a Congregational minister at Bradford, attended Silcoates School, began teaching in a private school in Bradford when fifteen, and became interested in natural history through his brother, a medical student. He had no systematic training in biology, but subsequently learned something of its technique at the Leeds School of Medicine. He became Secretary of the Bradford Philosophical Society at the age of about 20, Curator of the Museum of the Leeds Philosophical Society in 1871, first professor of biology in the Yorkshire College of Science in 1876, and later in the University of Leeds until he retired in 1907. He was elected a fellow of the Royal Society in 1892, of the Entomological Society of London in 1894 and a Special Life Fellow of the latter in 1916.

While his earlier researches were in vertebrate paleontology and morphology, he soon became interested in the anatomy, physiology and development of insects, publishing:

*The Structure and Life History of the Cockroach, An Introduction to the Study of Insects* (With Alfred Denny, 1886); *Some Difficulties in the Life of Aquatic Insects* (in *Nature*, 1891); *Dicranota, a Carnivorous Tipulid larva* (Trans. Ent. Soc., Lond., 1893); *The Development of the Head of the Imago of Chironomus* (with A. R. Hammond, in Trans. Linn. Soc. Lond. 1893); *The Natural History of Aquatic Insects* (London and New York, Macmillan, 1895, with new editions in 1903 and 1912); *The Transformations of Insects* (in *Nature*, 1895); *The Life History of Pericoma canescens (Psychodidae), with a bibliographical and critical appendix* by Baron Osten Sacken (Trans. Ent. Soc. Lond. 1895); *The Structure and Life History of Phalacroccra replicata [Tipulidae], With an appendix on the literature of the earlier stages of the Cylindro-*

*tomina* (with R. Shelford, in same Trans. 1897); *The Structure and Life History of the Harlequin Fly (Chironomus)* (with A. R. Hammond, Oxford, 1900); *Injurious and Useful Insects, an Introduction to the Study of Economic Entomology* (London, 1902); *On a new cricket of aquatic habits found in Fiji* (with Prof. G. Gilson, in Trans. Ent. Soc. Lond. 1902); *The Structure and Life History of the Holly-Fly* (with T. H. Taylor in same Trans. 1907).

Among his more general writings were his Vice-Presidential address to the British Association for the Advancement of Science, Zoology, at Toronto in 1897, on *Life-history Studies of Animals* (reprinted in Ann. Rept. Smithsonian. Inst. for 1897), and his books *Round the Year, Short Nature Studies* (1896); *House, Garden and Field* (1904); *Object Lessons from Nature*; and *Thirty Years of Teaching*; while with W. W. Fowler he furnished an introduction and notes to an edition of Gilbert White's *Natural History and Antiquities of Selborne* (1901).

Of all of these his *Natural History of Aquatic Insects* is the best known; in it and in *The Cockroach* he displays that admiration for the work of Réaumur and others which perhaps led him to those studies resulting in his brief *History of Biology* (1911), one of the History of the Sciences series published by the Putnams of New York, and *The Early Naturalists, their Lives and Work, 1530-1789* (London, Macmillan, 1912). In the preface to this last he wrote:

The early naturalists have occupied so much of my leisure of late years that it becomes a pleasant task to write about them. My chief aim is to induce such readers as I may find to make themselves better acquainted with the founders of modern natural history. . . . Insects take up more than their due share of space, partly because they are really prominent in the works of early naturalists, partly because old books about insects give me more than common pleasure.

To those unacquainted with this volume it may well be commended.—P. P. C.

Other English entomologists whose recent deaths are recorded in the March and April numbers of the same *Magazine* are DR. HERBERT HENRY CORBETT, of Doncaster, died January 5, 1921, in his 65th year; JOHN WILLIAM CARTER, of Bradford, died December 15, 1920, aged 67, and JOHN CLARKE HAWKSHAW, of Hollycombe, near Liphook, Sussex, died February 12, 1921, in his 80th year; he was the eldest son of Sir John Hawkshaw, F.R.S., eminent engineer. All three were largely interested in Microlepidoptera as well as in other orders.

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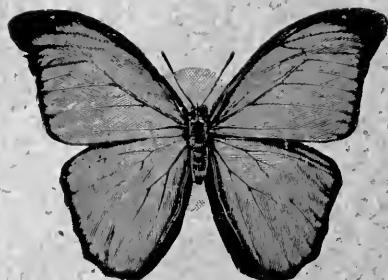
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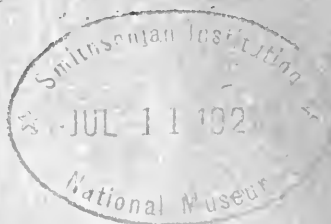
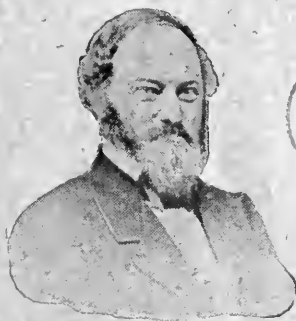


JULY, 1921

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No. 7



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1807-1865

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

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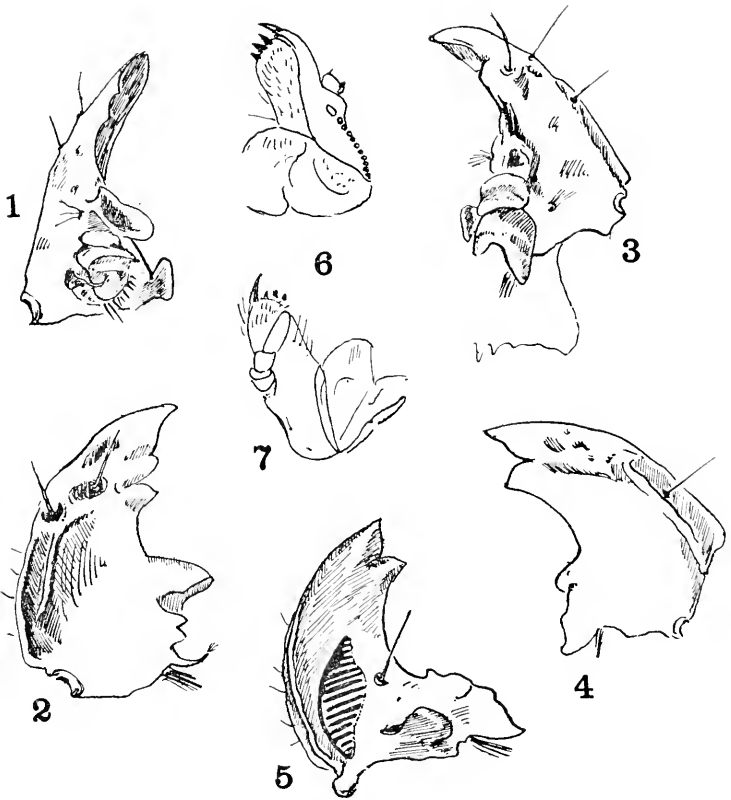
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XYLORYCTES SATYRUS FAB.—WEISS.



# ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

THE ACADEMY OF NATURAL SCIENCES, PHILADELPHIA

VOL. XXXII

JULY, 1921

No. 7

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## Notes on the Larval and Pupal Stages of *Xyloryctes satyrus* Fab. (Col.: Scarabaeidae).

By HARRY B. WEISS, New Brunswick, New Jersey.

(Plate IV)

Through the kindness of Dr. Alvah Peterson I recently came into the possession of several specimens of the larvae and pupae of the Rhinoceros Beetle (*Xyloryctes satyrus* Fab.), which he had reared and it seemed desirable to describe these stages and to bring together the notes of various authors on the larval habits. Dr. Peterson's material was collected at Urbana, Illinois, in a deciduous woods from soil rich in humus and heavily mulched with leaves. Dr. Adam Böving, Bureau of Entomology, Department of Agriculture, Washington, D. C., has called my attention to J. C. Schiödte's monographic treatment of the Scarabaeid larvae in the Zoological Museum of Copenhagen, Denmark. He also suggested that I prepare my description of the larva of *Xyloryctes* in almost exact conformity with Schiödte's descriptions of Scarabaeid larvae. This suggestion I have been glad to follow. The figures accompanying this paper were made by Dr. Böving.

The adult was described by Fabricius in 1801 (Syst. Eleut. I, 15) from American specimens. Walsh (Proc. Bost. Soc. Nat. His., IX, 287) briefly noted the larva in 1863 and again in 1868 (Am. Ent. I, 60). In 1873 Glover recorded the finding of great numbers of beetles injuring the roots of young ash trees at Babylon, Long Island (Rept. U. S. Dept. Agric., 1873, 152), and noted larvae as having been taken on the roots of liquidambar in Maryland. In *Insect Life* (Vol. III, p. 358) under the heading "General Notes" is a statement to the effect that the adults and larvae were common in the vicinity of Washington, D. C., among grass roots in pastures and deserted fields, and that they were found in the decaying roots of ash trees.

Howard (Bull. 22, n. s. Div. Ent. U. S. Dept. Agric., 1900, p. 105), quoting a correspondent, records *Xyloryctes satyrus* as attacking ash in the vicinity of the University of Virginia and after boring a hole under the surface of the ground to a depth of one or two inches, "seemed to destroy the bark all around the tree." Blatchley (Col. Ind., p. 992) states that it probably occurs sparingly over the southern two-thirds of Indiana, June 3 to September 8, the adults being found in the vicinity of ash trees. In the U. S. Department of Agriculture *Yearbook for 1906*, p. 516, lilac bushes at Stony Brook, New York, were reported as being badly damaged by this scarabaeid. Smith (Ins. N. J., p. 321) records it from Ft. Lee and Newark and throughout South Jersey, July, never common, larva in roots of ash. In *Insects of Quebec* (Part III, Col., p. 229) Chagnon records it from Rouville County in May.

*Xyloryctes satyrus* Fabricius belongs to the Scarabaeid tribe Dynastini. I. C. Schiödte in his conspectus systematicus of the larvae of the series Lamellicornia has characterized the larvae of this tribe,\* and his statement, translated (from Latin) and in a few places slightly modified, may be presented as follows:

#### CHARACTERIZATION OF THE TRIBE DYNASTINI.

I. Stridulating instrument formed by a dentate carina on the dorsal side of the maxillary stipes, rubbing against a file-like area on the

\* I. C. Schiödte: De metamorphosi Eleutheratorum observationes; Naturhistorisk Tidsskrift, series 3, vol. 9, 1874, pp. 227-376, pl. xi-xix.

ventral side of the mandible. Antenna consisting of four joints. Legs all well developed, gradually increasing in length from first to third pair. Anterior abdominal segments dorsally with three transverse areas. Maxillary palp four-jointed (Schjödte says: "three jointed," interpreting the basal joint as palpiger). No (or one) ocellus [*Xyloryctes* evidently has a single ocellus laterally at the base of the antennal ring; this being a very exceptional development among the Scarabaeids]. Mandible with manducatorial portion (= the portion with the molar or grinding structures) profoundly separated from the scissorial portion (= portion with the cutting edge); molar structure with posterior heel bearing a tuft of bristles.

(By the given combination of characters the Trogini, Geotrupini, Lucanini and Passalini—sensu Schjödte—are excluded.)

A. Respiratory plate of spiracles surrounds the major part of bulla. Legs covered with long hair.

(By these two characters the Copridini—sensu Schjödte—are excluded.)

1. Maxilla with both malae [= inner and outer lobes] completely fused. Anal opening transverse and terminal.

(By these characters the Sericini—sensu Schjödte—are excluded.)

a. Scissorial portion of mandible fornicate. Labrum with lateral margins of ventral side smooth. Length of antenna shorter than length of head; subapical antennal joint distally truncate. Stridulating area of mandible partly placed in manducatorial portion; oblong, transversally costate, with well developed distant ridges.

(By these characters the Rutelini and Melolonthini—sensu Schjödte—are excluded.)

Labrum with anterior margin broadly rounded. Claws slender, subulate. First six abdominal segments dorsally plicate with setae-bearing tubercles densely set. Tenth abdominal segment well defined.

#### *Characterization of Subdivisions and Genera of Dynastini.*

The forms described by Schjödte as typical Dynastine larvae, in which his characterization of this tribe is based, are: *Xyloryctes gidcon* Linnaeus from Malayan Archipelago, *Oryctes nasicornis* Linnaeus from Denmark, and *Parastacia confluens* Westwood from the Nicobar Islands. The first two larvae represent one taxonomic subdivision of the Dynastini, *Parastacia* another. The present larva of *Xyloryctes satyrus* Fabricius belongs to the first subdivision which Schjödte characterizes as follows:

##### *First Dynastine Subdivision.*

Inner mala of maxilla (= lacinia) tridentate. Pars scissorial of mandible dentate [Schjödte has "tridentate," but as *Xyloryctes* has only

two teeth on the right mandible and the second tooth on the left mandible is small; third tooth large, and as the second Dynastine subdivision is characterized as having mandibles without teeth, the original term "tridentate" is here changed to the more correct term "dentate"]. Stridulatory teeth of maxilla short, compressed, truncate. Tibia half as long as femur. Claws of third pair of legs shorter than the other claws.

The two genera of the first Dynastine subdivision are defined by Schiödte as follows:

#### **Xylotrypes.**

Frons one-third broader than long, with posterior frontal angle acuminate. Labrum transverse quadrate. Mandible shorter than head. Pars scissoria with three teeth; posterior tooth of right mandible minute, of left mandible strong. Stridulatory teeth of maxilla six, very coarse. Maxillary palp not reaching apex of exterior mala.

#### **Oryctes.**

Frons twice as broad as long, with posterior frontal angle subrectangular. Labrum transversally orbiculate. Mandible as long as head. Pars scissoria with three teeth; posterior tooth of both mandibles minute. Stridulatory teeth of maxilla ten. Maxillary palp extending beyond apex of mala.

#### **Xyloryctes.**

(The following definition of *Xyloryctes* is given in exact conformity with Schiödte's formula.)

Frons twice as broad as long, with posterior frontal angle subrectangular. Labrum transversally orbiculate. Mandible shorter than head. Pars scissoria of right mandible with two teeth, of left mandible with three teeth; posterior tooth strong. Stridulatory teeth of maxilla ten. Maxillary palp not reaching apex of exterior mala.

*Xyloryctes* differs both from *Xylotrypes* and *Oryctes* by the shape of the mandibles. It seems more closely allied to *Oryctes* than to *Xylotrypes*, even though it has the two characters: "Mandible shorter than head and maxillary palp not reaching apex of exterior mala" common with *Xylotrypes*.

#### **Xyloryctes satyrus** Fab.

Length of mature larva about 50 mm. Extreme width of head about 7.5 mm.

Frons coarsely punctate, twice as broad as long, with posterior frontal angle subrectangular.

Epicranial and frontal sutures faint. Epicranial suture about one-third the length of the frons. Procephalic lobes coarsely punctate.



Clypeus coarsely punctate, subrectangular, about three times as wide as long.

Labrum transversally orbiculate, coarsely punctate, bearing a few setae on dorsal surface, anterior edge fringed with setae, lateral edges each bearing a row of minute setae.

Antennae shorter than length of head, four-jointed, second joint slightly longer than the first; first, third and apical joints subequal in length, each joint except apical one more or less enlarged distally, apical joint bluntly pointed.

Ocelli lateral, one at base of each antennal ring.

Maxillary lobes (lacinia and galea) fused into a single, fleshy, setose structure; exterior lobe (galea) with a single, terminal curved, prominent tooth (uncus), around which are several strong setae; interior lobe (lacinia) with three strong, conical teeth and numerous stiff setae. Stridulatory teeth of maxilla ten.

Maxillary palp not reaching apex of exterior mala, four-jointed, basal joint short, second joint twice as long as basal one, second and subapical joints equal in length, subapical joint bearing two setae, apical joint slightly longer than subapical.

Lingua fleshy, cushioned, densely set with spines.

Mandible: Scissorial portion same length as manducatorial portion and almost as wide; above and below with deep, unequal rugosities and shallow depressions; dorsal surface convex with three large depressions; two setae; ventral surface vaulted; cutting edge thin, terminally very acute; right mandible with two teeth, left mandible with three. Lateral exterior mandibular portion heavily rugose, limited by two longitudinal margins, which posteriorly, between scissorial portion and basis of mandible, are carinate; one or two setae. Stridulating area oval, with rather coarse ridges; that of right and left mandible almost of the same size. Manducatorial portion of right mandible with molar part oblique, anteriorly low, posteriorly prominently projecting, sloping gradually downwards from the upper part of the crown to the heel. Crown with two transverse, obtusely carinate lobes, anterior to which is a round depression framed by a thick and low elevation. Heel large, transverse, subtrapezoidal, grinding surface flat, anteriorly with transverse low elevation, posteriorly deeply emarginate with ventro-posterior angle pointed, tooth-like, about as long as wide and with dorso-posterior angle developed into a broad, long, rather obtuse process, about three times as long as wide, extending over and completely covering bristle-bearing base. Left molar part anteriorly prominent, posteriorly retracted, crown trilobed; upper lobe strong, large, anteriorly with margin projecting and acute, and with grinding surface excavate; median and posterior lobes much smaller, each carrying an obtuse, transverse carina, which dorsally projects into a sharp tooth; ventrally the two lobes fuse, terminating with a small round elevation. Heel suborbiculate, anteriorly limited by a low transverse carina coming from a slender, pointed, dorsal piliferous hook and disappearing towards the ventral

elevation of the preceding lobes; bristle-bearing base posteriorly with obtusely conical, approximately semicircular outline and anteriorly almost contiguous with grinding surface of heel.

Body form clavate cylindrical, between four and five times as long as thick. Dorsal areas of second to sixth abdominal segments bearing several long hairs and numerous minute, stiff setae arranged transversely.

Legs slender, slightly increasing in length from first to third pair, bearing numerous long and short hairs. Claws slightly incurved, about one-third as long as tibiae.

Color: Head dark mahogany, body white to sordid white. Legs flavo-testaceous. Protergum with brown, transverse, lateral foveolae.

Body areas: Prothorax with one dorsal area. Meso- and metathorax with three dorsal areas, prescutum, scutum and scutellum. First abdominal segment with two dorsal areas, prescutum not being developed, and with the spiracle-bearing alar area dorsally developed into a simple triangular prolongation. The following second to sixth abdominal segments with three dorsal areas, prescutum, scutum and scutellum, and, with the spiracle-bearing alar area dorsally split into two prolongations, the anterior of which being adjacent to prescutum. Seventh to ninth abdominal segments with more or less indistinctly marked or completely fused dorsal areas. Tenth abdominal segment about twice as long as head from tip of labrum to occipital foramen, obtusely conical, well separated from ninth segment which is somewhat larger than the tenth; below with numerous, well developed straight setae, promiscuously scattered, medianly not arranged in special rows. Anal slit transverse, terminal; upper anal lips not sharply defined; lower anal lips posteriorly limited by a straight, transverse impression between the ends of the slit. Spiracles orbiculate, eighth abdominal spiracle half as large as the others; area respiratoria almost completely surrounding bulla; bulla with width about one-fifth of the dorso-ventral length of the entire spiracle. Holes of respiratory plate very small, round, numerous and irregularly set.

*Pupa.* Length 2.5 to 3.5 cm. Width about 1.7 cm. Chestnut-colored (alcoholic specimens), smooth. Thorax and first two abdominal segments subequal in width, remaining abdominal segments gradually tapering to tip. Anterior portion of prothorax of male bent down almost perpendicularly and bearing two median, longitudinal, parallel, broad, shallow depressions. Head of male with prominent, anteriorly projecting horn. Anterior portion of prothorax of female sloping. Head of female bearing a tubercle. Wing cases faintly, longitudinally striate, striae few. Ninth abdominal segment triangular, tip clothed with velvety pubescence.

PLATE IV. NYLORYCTES SATYRUS FAB.

- Fig. 1, Left mandible. Fig. 4, Right mandible, dorsal view.  
 Fig. 2, Left mandible, dorsal view. Fig. 5, Right mandible, ventral view.  
 Fig. 3, Right mandible. Fig. 6, Maxilla, dorsal view.  
 Fig. 7, Maxilla, ventral view.

### **An Appeal from Russian Fellow-Entomologists and a List of Russian Entomologists Recently Deceased.**

Before the Great War one of the most flourishing and promising entomological societies in the world was established in Russia, numbering among its members great names in the entomological world, such as Adelung, Alferaki, Bianki, Oshanin, Nicolas Mikailovitch Romanoff and Cholodkovsky. Little reached our ears during the war about these colleagues, cut off from us by circumstances, and today we are no better informed of their work or well-being. Through the efforts of B. Uvarov, now connected with the Imperial Bureau of Entomology in London, we are able to give some information concerning certain of our Russian friends, sad though it is, consisting of the dates of death of nineteen of them. At the end of this appeal we are giving a copy of this list of names and dates, our last sad tribute to some of the leading men of our science. In a forthcoming number of the NEWS we will give biographical notices of the life and work of several of the deceased.

In spite of the fact that Russian entomology has lost about fifty of its devotees, including some of its really great, those still with us are striving to continue their studies as well as conditions will permit. Their main handicap is the lack of literature, as virtually everything published since 1915 never reached Russia. With exchange in its present state the purchase of publications is impossible for them, and they appeal to all American entomological societies to send sets of journals and single papers published since 1915, also authors to send separates of their papers which have appeared since the same date.

All books, journals, etc., may be sent to Mr. G. Jacobson, Secretary of the Russian Entomological Society, Zoological Museum of the Academy of Sciences, Petrograd, Russia. Through the Russian Society distributions can be made as far as possible to the students in Petrograd and adjacent Russia. Kuznetsov, Mordwilko and A. Semenov-Tian-Shanski are at present on the staff of the Zoological Museum, and they earnestly ask for the sending of literature.

We trust our American entomologists will come forward in the spirit which has made the name of America synonymous with charity and unselfishness, and send to our Russian colleagues the needed literature. Without this, as we well know, good constructive study is not possible, so let us help the living Russian fellow students, as well as honoring those who have gone to "the great adventure."

*A list of the more prominent Russian entomologists who died in the years 1916 to 1921.*

Following each name is the date of death.

N. V. ADELUNG, Keeper of Orthoptera in the Zoological Museum of the Academy of Sciences, Petrograd, November 23, 1917.

S. N. ALFERAKI, Lepidopterist, July 27, 1918.

V. L. BIANKI (Bianchi), Zoological Museum of the Academy of Sciences, Petrograd, January 10, 1920.

E. M. VASSILJEV, Professor of economic entomology, July, 1919.

N. A. ZARUDNY, known for his field studies in Persia and Central Asia, March 13, 1919.

V. A. KARAVAJEV, Specialist on Formicidae, 1919.

A. KRULIKOVSKY, Lepidopterist, October, 1920.

N. V. KURDJUMOV, Economic entomologist, September 7, 1917.

V. T. OSHANIN, Keeper of Rhynchota in the Zoological Museum of the Academy of Sciences, Petrograd, January 26, 1917.

E. V. PYLNOV, Orthopterist, 1920.

V. N. RODZJANKO, Economic entomologist, 1919.

N. M. ROMANOFF (the Grand Duke Nicolas Mikailovitch), Lepidopterist, January 29, 1919.\*

A. A. SILANTJEFF, Economic entomologist, March 21, 1918.

D. A. SMIRNOV, Coleopterist: speciality Curculionidae, August 17, 1920.

A. A. SOPOTSKO, Economic entomologist, May 1, 1919.

J. T. SCHREINER, Economic entomologist, July, 1918.

N. A. CHOLODKOVSKY, Professor of general entomology, speciality Aphidodea, April 2, 1921.

TH. STCHERBAKOV, Orthopterist; economic entomologist, September, 1920.

I. SHEVYREV, Chief of the Entomological Laboratory of the Forest Department, July 7, 1920.

J. A. G. REHN.

\*See Ent. News, vol. xxx, p. 210.

## A Key to the Species of the Genus *Coenosia* Meigen (Dipt., Anthomyiidae).

By J. R. MALLOCH.

The species included in this key fall within the limits of the genus as restricted in several of my recent papers on the family.

### Key to species.

1. Legs either entirely yellow or with only a portion of the coxae or tarsi or both blackened.....2
- Legs with at least a portion of one or more pairs of the femora, in addition to the tarsi, blackened.....17
2. Abdomen of male short and broad, segments two and three much narrowed laterally, with a large glossy black patch on apex of former and base of latter on each side; dorsum of abdomen in both sexes with central vitta and paired spots; third antennal segment black; legs usually entirely reddish yellow; anal angle of wing in male usually produced thumblike.....*ovata* Stein
- Abdomen of male not as above, segments two and three not conspicuously narrowed laterally; species not as above in other respects....3
3. Third antennal segment entirely pale yellow.....4
- Third antennal segment largely or entirely black or brown.....10
4. Head including antennae and proboscis yellow; thorax yellow, with or without a grayish or blackish dorsocentral vitta and a similarly colored mark on center of metanotum.....*modesta* Loew
- Thorax largely or entirely black, and usually at least a part of antennae or proboscis black or brown.....5
5. Abdomen unspotted, more or less broadly yellow at base in male and with dense white or pale gray pruinescence; thorax with dense white or pale gray pruinescence, entirely unmarked; antennae short, about two-thirds as long as face.....*nivea* Loew
- Abdomen with paired dorsal spots.....6
6. Antennae entirely yellow; abdomen broadly yellow at base, sometimes entirely yellow, with large, paired dorsal brown spots, fifth sternite yellow, with long slender processes at the base of the inner margins of which there are some black setulae; interfrontalia largely reddish anteriorly; hind tibia with the anterodorsal bristle very strong and of moderate length, the anteroventral one weak, situated much nearer to apex of tibia.....*antennalis* Stein
- Antennae with at least the second segment largely or entirely blackened.....7
7. Anterodorsal and preapical dorsal bristles on hind tibia excessively long and slender, usually three-fourths as long as the tibia; anterodorsal bristle on mid tibia half as long as tibia, the posterodorsal one much shorter.....*longispinosa* Malloch
- Anterodorsal and preapical dorsal bristles on hind tibia not half as long as tibia, or the anterodorsal bristle on mid tibia is shorter than the posterodorsal one.....8

8. Large species, 4.5 to 5 mm. in length; arista with distinct but short hairs; thorax opaque gray, not vittate; base of abdomen narrowly yellow, the dorsum with three pairs of black spots *compressa* Stein  
 — Smaller species, averaging 2.5 mm. in length; arista almost bare, the pubescence visible only under a high-power lens; abdomen either broadly yellow at base or entirely blackish gray.....9
9. Dorsum of thorax opaque gray, with three poorly defined brown lines, one in center and the others along the line of dorsocentrals; base of abdomen broadly yellow, the dorsum with four pairs of black spots: mid and hind femora each with a short posteroventral bristle; longest bristle on hind tibia not one-fourth as long as tibia,  
*frisoni* Malloch  
 — Dorsum of thorax distinctly shining, blackish; base of abdomen not yellow, dorsum with three pairs of black spots; mid and hind femora each with a very long median posteroventral bristle; longest bristle on hind tibia about one-third as long as tibia,  
*oregonensis* Malloch  
 — Dorsum of thorax opaque gray, not vittate; abdomen not yellow at base, with two pairs of distinct dorsal spots, one on the third and the other on the fourth tergite; mid and hind femora each with a very fine median posteroventral bristle, the one on hind femur very long; hind tibia with the bristles very slender, the anterodorsal one over half as long as the tibia.....*argenticeps* Malloch
10. Antennae entirely black; mid tibia with an anterodorsal and a posterodorsal bristle .....11  
 — Antennae partly reddish or yellowish; mid tibia with only the posterodorsal bristle .....14
11. Scutellum with the apical pair of marginal bristles absent or minute, the basal pair very long and strong; abdomen yellowish brown, without paired dorsal spots.....*dichaeta* Malloch  
 — Scutellum with two pairs of strong marginal bristles.....12
12. Large species, averaging 5 mm. in length or over; pruinescence of body brownish yellow; tarsi not longer than tibiae; hind femur with some very strong bristles on basal half of posteroventral surface; abdomen without dorsal spots or with a very poorly defined pair on fourth tergite .....*flavifrons* Stein  
 — Smaller species, not exceeding 3 mm. in length; pruinescence of body either whitish or bluish gray; hind femur without strong bristles on posteroventral surface; abdomen with the dorsal spots fused, so that the surface presents the appearance of having a broad brownish-black dorsal vitta, or a narrowly divided pair of vittae .....13
13. Thorax and abdomen with whitish pruinescence; hind femur with very long anteroventral bristles; hind tibia with the anterodorsal and preapical dorsal bristles over half as long as tibia,  
*setigera* Malloch

- Thorax and abdomen with bluish gray pruinescence; hind femur with short weak anteroventral bristles; hind tibia with the anterodorsal and preapical bristles about one-fourth as long as tibia,  
*dorsovittata* Malloch
14. Hind tibia with one or two short posterodorsal setulae at middle; propleural bristles very short and stout, the anterior one very conspicuously so; lower stigmatal bristle weak or absent,  
*laricata* Malloch
- Hind tibia without posterodorsal setulae; propleura with a long, slender bristle and a fine anterior hair.....15
15. Abdomen yellow, at least at base; basal two antennal segments and palpi yellow; thorax densely white pruinescent; antennae but little shorter than face .....*nudiseta* Stein
- Abdomen entirely black; basal two antennal segments and palpi largely or entirely black.....16
16. Larger species, about 5 mm. in length; processes of fifth abdominal sternite much longer than broad, armed with a few long bristles and numerous long hairs; bristles on posteroventral surfaces of mid and hind femora very long and strong, extending from base to apex, but very widely spaced; basal segment of mid and hind tarsi not one-third as long as tibia.....*johnsoni* Malloch
- Smaller species, averaging about 3 mm. in length; processes of fifth sternite but little longer than broad, their surfaces with a few setulose hairs; bristles on posteroventral surfaces of mid and hind femora short and weak, confined to basal half; basal segment of mid and hind tarsi more than one-third as long as tibia,  
*flavicoxa* Stein
17. Wings very noticeably brownish except at bases; legs very long and slender, gradually darkened from near base of femora apicad, the tibiae and tarsi usually almost entirely black or brownish black; thorax and abdomen densely white pruinescent, without markings. 18
- Wings clear; legs not colored as above, either the femora with clearly limited black markings apically or entirely black, or the tibiae are pale, or the entire legs are black except the knees; if the thorax and abdomen are white pruinescent the latter has distinct paired dorsal spots except in *impunctata*.....19
18. Frons but little longer than broad, densely silvery pruinescent; orbits not clearly defined, the bristles except the anterior pair very weak, sometimes absent; basal scutellar bristles very much weaker than apical .....*argentata* Coquillett
- Frons about twice as long as broad, interfrontalia fuscous, orbits well defined, white pruinescent, the bristles strong; basal scutellar bristles not much weaker than apical.....*fuscifrons* Malloch
19. Third antennal segment with a sharp thornlike point on upper side at apex; fore coxae and femora largely infuscated; lower stigmatal

- bristle weak, directed ventrad; abdomen without paired dorsal spots; interfrontalia reddish anteriorly.....*denticornis* Malloch
- Third antennal segment more or less angulated at apex but not produced thornlike .....20
20. Lower stigmatal bristle very weak, sometimes absent, when present directed upward; fore coxae and femora entirely or almost entirely black .....21
- Lower stigmatal bristle directed outward and ventrad, or the legs not colored as above .....22
21. Male hypopygium very prominent, fifth dorsal segment very large, globose; fifth sternite with very large, exposed processes, which are arcuately emarginate on lower margins and rounded above, presenting a slightly crescentric shape; mid and hind femora in both sexes usually yellow; basal segment of hind tarsi not one-third as long as their tibiae .....*hypopygialis* Stein
- Hypopygium moderately prominent; fifth dorsal segment subequal in length to basal segment of hypopygium; fifth sternite with large processes which are almost straight on their inner or lower margins; mid and hind femora usually yellow; basal segment of hind tarsus a little over one-third as long as hind tibia,  
*errans* n. n. (*steinii* Johnson nec Verrall)
- Hypopygium very small, hardly protruded, fifth sternite with very short processes; mid and hind femora conspicuously blackened at apices; basal segment of mid and hind tarsi at least one-third as long as their tibiae.....*lata* Walker
22. Fore coxae largely or entirely, mid and hind femora entirely yellow .....23
- Fore coxae and all femora largely or entirely black.....25
- Fore coxae yellow, all femora with a black or brownish mark above near apices; abdomen unspotted; antennae and palpi black; thorax and abdomen with pale gray pruinescence.....*impunctata* Malloch
23. Male with a bare glossy black area on each side of abdomen at apex of first segment; abdomen in both sexes with an interrupted central vitta and paired spots on dorsum black.....*ovata* Stein
- Male without a bare glossy area on each side of abdomen; abdomen in both sexes with only paired dorsal spots.....24
24. Antennae short, extending but little below middle of face, upper apical angle of third segment blunt; abdomen in both sexes with very distinct paired dorsal spots.....*flavicoxa* Stein
- Antennae elongate, extending over four-fifths of the distance to mouth-margin, upper apical angle of third segment very acute; abdomen in both sexes with very indistinct paired dorsal spots,  
*pallipes* Stein
25. Hind tibia with two or three median anterodorsal bristles,  
*alicna* Malloch
- Hind tibia with only one anterodorsal bristle.....26



26. Fore tarsi yellow, last segment black; hind tibiae largely black,  
*nigricoxa* Stein  
 — Fore tarsi black .....27
27. Third antennal segment in male very broad; abdomen in both sexes with an interrupted central vitta and paired spots on dorsum; anterior mid tibial bristle much nearer to apex of tibia than is the posterior one; apex of fourth wing-vein much basad of apex of third .....*rufitibia* Stein (*tibialis* Stein)  
 — Third antennal segment of male narrow; abdomen in both sexes with or without paired dorsal spots and without central vitta; anterior bristle on mid tibia almost at same distance from apex as the posterior one; apices of third and fourth veins in vertical line or almost so .....28
28. Lower calyptra barely larger than upper; hind tibia with a median posterodorsal bristle; legs black, bases of tibiae narrowly red,  
*Hoplogaster californiensis* Malloch  
 — Lower calyptra at least twice as large as upper; hind tibia without median posterodorsal bristle .....29
29. Large species, 3.5 to 4.5 mm. in length; tibiae entirely reddish yellow; processes of fifth abdominal sternite of male longer than their basal width .....*alticola* Malloch  
 — Smaller species, not over 3.5 mm. in length; tibiae pale at bases...30
30. Frons grayish pruinose, the interfrontalia when seen from in front grayish, when seen from behind less distinctly so; processes of fifth abdominal sternite of male not longer than their basal width .....*fraterna* Malloch  
 — Frons not grayish pruinose, the interfrontalia when seen from in front brownish, from behind velvety black....*anthracina* Malloch

My species *Cocnosia cilicauda* belongs to *Macrococnosia*.

Professor P. Stein has published (1920) a large paper on North American Anthomyiidae in which he has described several species of this genus, but I am unable to locate with certainty any of his valid species except *nigricoxa* in my key. Several of the species he describes as new are synonyms of previously described species. His *argenticolor* is *argentata* Coquillett, *pallida* is evidently *modesta* Loew, and *albibasis* is *nivea* Loew. In his notes under *argenticolor* he mentions a variant which is *fuscifrons* Malloch, and under *pilosissima* Stein he mentions another which is *oregonensis* Malloch. His *pilosissima* is my *longispinosa*, but I have no exact data as to the publication and distribution of his paper, so cannot decide which name will fall. There are one or two other synonyms involved.

**Pamphila ottoe Edw. and pawnee Dodge, with  
Description of a New Form (Lep., Rhop.).**

By R. A. LEUSSLER, Omaha, Nebraska.

A study of *ottoe* and *pawnee* has recently been undertaken in an endeavor to classify a form of *Pamphila* met with from time to time at Omaha, Sioux City and elsewhere in this vicinity, which appeared to be neither typical *ottoe* nor typical *pawnee* but partakes of the characteristics of both.

*P. ottoe*, described from a single male, is a very lightly marked form in which the fuscous border of the primaries is faint and very narrow. It is apparently correctly illustrated in Holland's *Butterfly Book*, Pl. 46, figs. 11 and 12.

In *pawnee* the male has broad, well defined, fuscous borders on both primaries and secondaries, with a tendency for the fulvous area to creep out over the dark borders, especially at the apex of the primaries where it resolves itself into distinct spots. On the underside of the secondaries there is almost invariably a row of small light spots. The typical female is quite dark with pale spots on both primaries and secondaries, well defined on upper as well as under surface. Dodge, in his original description, makes definite mention of these spots on the secondaries.

Race *montana* Skinner is a very dark form, the upper surface with more extensive fuscous areas, and the under surface more brownish yellow than *pawnee*.

In eastern Nebraska and western Iowa another form is found which differs from both *ottoe* and *pawnee* and it seems desirable to name it. I therefore propose the name

***Pamphila ogallala*, n. form.,**

after the branch of the Sioux Indians of that name. Its characteristics are as follows:

In size it will average slightly larger than *pawnee*, males measuring 40 mm. and females 46 mm. as against 34 mm. and 40 mm. in the case of *pawnee*.

♂ *Primaries* with fairly broad, fuscous border, not clearly defined, with pale fulvous irrorations over the fuscous borders, not forming distinct spots, however, as in *pawnee*. Less duskiness below stigma than in *pawnee*. *Secondaries* with larger fulvous area than in *pawnee*; fulvous tone of both wings tawnier than in *pawnee*. Under surface more ochreous than in *pawnee* and without spots on either wing.

♀. The greatest difference between *pawnee* and *ogallala* appears in this sex. While the ♀ *pawnee* is generally dark with well-defined pale

spots standing out in clear contrast, the ♀ *ogallala* is largely fulvous, with broad fuscous border on *primaries*, not clearly defined, the pale fulvous irrorations over fuscous borders forming fairly well-defined pale spots in apical portion; there is a rather prominent, almost square, semi-translucent spot under the cell, midway between base and outer margin, and a smaller triangular one above it and nearer outer margin; a fuscous patch between the large quadrate spot and base of wings. *Secondaries* fulvous with dentate fuscous border, fuscous costal edge, anal angle and inner margin. On under surface the pale spots of *primaries* show through, but the *secondaries* are unspotted.

*Allotype*—male, captured at Omaha, Nebraska; *holotype*—female, also captured at Omaha, both now in the collection of R. A. Leussler. Ten male and five female *paratypes* from Omaha, West Point, Lincoln and Valentine, Nebraska, and Sioux City, Iowa.

An examination of the genitalia of *patenee* and *ogallala*, by Dr. A. W. Lindsey, indicates that the two forms are conspecific. A male *patenee* which had been compared with specimens pronounced by Mr. E. A. Dodge to be typical (the type having been destroyed by fire) was used for this purpose. It is our opinion that both forms will prove to be conspecific with *ottoe*. In such case the following arrangement would seem to be proper

*Pamphila ottoe* Edw.  
 form *patenee* Dodge  
 form *ogallala* Leussler  
 race *montana* Skinner

As a general thing *patenee* flies in late August and early September and *ogallala* in late June and early July. There are exceptions to this rule, however, and we cannot therefore consider them strictly seasonal forms. Neither can we regard them as geographic races, since both occupy the same territory.

#### The Geographical Distribution of the Machaon-Group of the Genus *Papilio* (Lep., Rhop.).

The view has been expressed that the various species of the Genus *Papilio*, which are related to *P. machaon* Linnaeus, and are found in Eastern Asia and in North America, thence extending southward into South America, are derivatives of the European form first named by the Father of Natural History. As a student of paleontology and phylogeny, I wish to place upon record my dissent from this view. The metropolis of this group in my judgment is the western hemisphere, and the original center of dispersion was the region covered by the northwestern states of the United States and British Columbia. From this center of dispersal have radiated the various forms, and *P. machaon* represents the extreme westward extension of the group of allied forms.

This view is strictly in accord with what we now know as to the origin of certain mammalia; *e. g.*, the horse and the camel.

I have not time at the moment to go deeply into the subject, but desire to state that it appears to me far more reasonable, in view of

the large number of species, sub-species, and varietal forms which are found in North America and are referable to the *machaon*-group, to regard the New World as the original center of distribution, rather than Europe. The Papilionidae are represented in Europe by only a couple of stragglers, one of which is *P. machaon*. It is on the western periphery of the region occupied in migration, the center of original distribution having been as indicated above.

A great deal might be said in amplification of, and to sustain, this view, but I content myself at the moment with a bald statement of my general conclusion.—W. J. HOLLAND, Carnegie Museum, Pittsburgh, Pa.

#### A Race of *Papilio troilus* from Southern Florida (Lep., Rhop.).

In the Royal Palm Hammock, at almost the extreme southern tip of Florida, I found, last winter, an interesting race of *Papilio troilus*. It is a form midway between the typical *troilus* and the var. *texanus* Ehr. The enlargement of the yellow submarginal spots is not so great as in *texanus*, but they are, and particularly on the fore-wings, larger and more brilliantly yellow than in *troilus*. The under side is especially brilliant; more so than either the typical *troilus* or *texanus*.

The Royal Palm Hammock is an interesting place. Made a State Park chiefly through the interest of Theodore Roosevelt, it is under the supervision of the federated women's clubs of the State of Florida. It is a bird sanctuary, and perhaps the last habitat of the great Ivory-billed woodpecker. It abounds in the beautiful and interesting tree-snails, *Liguus*, spec.? At the time of my visit, Feb. 24-28, 1920, the weather was cool and chilly, and insect life not abundant. My first insect on arriving was the *P. troilus* described above. In front of the "Club House" is a large patch of the pretty wild verbena, and it was here that I first, and always, found these butterflies, which fed greedily on the purple blossoms. A few Hesperidae were taken here, chiefly *P. maculata*, with one *P. palatka*. At dusk Spingidae were plentiful, but only *E. lugubria*, *X. tersa*, *X. pluto*, with one *C. grotei* and one *P. lusca*.

I also took at a common weed (?) one *A. tantalus*, probably form *zonata*, in fine condition. Several species of Syntomidae were fairly plentiful.

Dr. Sanford took at Jupiter (Indian River), after my return North, an interesting variation of *P. troilus* ab. *radiatus* Strecker, which is now in my collection. This specimen is in general much like the typical *texanus*, but more intensely colored. The submarginal spots on the secondaries above are so enlarged that the black area between them and the marginal lunules is reduced to a mere line. The corresponding orange spots below are of large size and intense brilliancy. The second and third submarginal spots from anal angle, on the secondaries above, are prolonged into the discal area, being rather "rays" than spots, but only these two are so prolonged.—W. M. C. WOOD, New York.

## Miscellaneous Studies in the Family Aphididae (Hem. Hom.).<sup>1</sup>

By ALBERT F. SWAIN, Fresno, California.

### V. NOTES ON SOME LACHNIDS IN THE BRITISH MUSEUM.

During the spring of 1919 the writer, while a member of the Detachment of United States Army Students in British Universities, had an opportunity to spend a few weeks in study at the Natural History Museum (British Museum), London. Unfortunately his time was limited, so only a portion of the aphid collection in the Museum was studied by him, having confined himself entirely to the study of the Lachnids in the Francis Walker and George Buckton Collections.

It is probable that the specimens in both of these collections are the ones from which Walker and Buckton drew up their descriptions, but unfortunately this is not at all certain. In neither collection do the specimens bear labels which would indicate whether or not they are type specimens, or whether they are the specimens used in the describing of the species. Those in the Buckton collection bear labels showing Buckton's determination, and in some few cases showing host and locality records. In the majority of the specimens the collection data are by means of key letters, the key to which is not now available. In the Walker collection the labels show his determination, host, locality and date of collection. As just stated, there is no certainty that these are the specimens from which Walker and Buckton drew up their descriptions and in some cases there is a discrepancy between their descriptions and the specimens. However the writer believes these were probably due to the lack of modern equipment, such as microscopes and micrometer scales, rather than to the fact that other specimens were used.

In the following notes the writer has listed the actual specimens available, and where discrepancies exist between them and the descriptions, such are noted. In addition the writer has attempted to place these species in their proper place as understood at the present time. In this he has followed the generic classification of A. C. Baker.<sup>2</sup> As for specific determi-

<sup>1</sup>This paper is a continuation of one, the first four parts of which were published in *Entomological News*, December 1918, pp. 361-369.

<sup>2</sup>Baker, A. C., U. S. Dept. Agr. Bull. 826, August, 1920.

nations he has been guided by the works of such aphid students as Cholodkovsky, Del Guercio, Mordwilko and others. Furthermore he wishes to acknowledge the many valuable suggestions received from and the very kind courtesy extended by Mr. Frederick Lainge of the Natural History Museum.

Tribe LACHNINI Baker.

Sub-tribe *Pterochlorina*.

1. *Stomaphis quercus* (Linn.). Walker: five slides (6 apterous ♀ ♀); "*quercus*; oak; Dulwich; Aug. 6-47."<sup>3</sup>

This is the very characteristic species found throughout Europe on oaks and the one for which Walker described the genus *Stomaphis*.<sup>4</sup>

2. *Pterochlorus longipes* (Dufour). Walker; four slides (2 alate, 2 apterous, several immature ♀ ♀); "*roboris*; oak; Southgate; July 5-47" (also July 27, Aug. 5 and Aug. 7, 1847).

These specimens agree very well with Walker's description except that the fourth and fifth antennal segments in the apterous females are equal, while the third is equal to the combined lengths of the two, and the rostrum extends only to the base of the third abdominal segment. Walker states that the fourth antennal segment is "less than half the length of the third; the fifth a little shorter than the fourth," and that the rostrum reaches to the "hind hips."

These differences are however of only minor importance. There is no doubt in the writer's mind that this is the same species that Del Guercio described as *Dryaphis longipes* (Dufour), although Del Guercio makes no mention of the sensoria that appear on the third, fourth and fifth antennal segments of the alate female. As Del Guercio points out, Buckton's *Dryobius croaticus* Koch is in all probability this same species, but his *Dryobius longipes* (Dufour) is not this one. That species belongs to the subtribe *Lachnina* of Baker, and not to the *Pterochlorina*, and specimens in his collection appear to be the same species as Walker's *piccae*, with the possibility of an incorrect host plant determination, or they may be an unnamed species very closely related to that one. See the discussion under *Dilachnus piccae* (Walker) No. 13 below.

<sup>3</sup>In each case the writer has listed the number of slides, with the number of specimens thereon, the collection in which they are found, and the data which appear on the labels.

<sup>4</sup>Walker, Francis. The Zoologist, vol. 28, p. 2000, 1870.

### 3. *Pterochlorus roboris* (Fabr.).

There are no specimens of this species in either the Walker or Buckton collections and it is included here only because it has been recorded by Morley<sup>5</sup> from the Isle of Wight, although it is possible that he had the same species as did Walker and followed him in naming it. However Lainge tells the writer that it is a very common species throughout England and Scotland.

### 4. *Pterochlorus cistatus* (Walker) Buckton.

What this species is the writer has no idea as Buckton's description is very meagre and there are no specimens in either collection that could very well fit the description.

5. *Pterochlorus viminalis* (Boyer). Buckton; four slides (2 alate, 2 apterous ♀♀); "*saligna* Sulz." taken from willow at Charshalton.

This is a common species in southeastern England, and for that matter throughout Europe and America. Morley has recorded it from Ipswich and Theobald from Kent.

#### Sub-tribe *Eulachnina*.

6. *Eulachnus agilis* (Kalt.). Walker; three slides (2 alate, 4 apterous, 1 immature ♀♀); "*agilis*: Scotch Pine; Southgate; June 15-47." Buckton; two slides (2 apterous, 3 immature ♀♀); "*agilis*." These specimens differ from Kaltenbach's description in that the sixth antennal segment of the alate female is subequal to the fifth and not "half as long as the fifth."

Koch figures the apterous of this species as a variety of *pincti* Fabr. Cholodkovsky states that the fourth antennal segment in the alate female is a little shorter than the fifth and much longer than the sixth. In these specimens, however, they are all three subequal. This is without doubt the true *E. agilis* (Kalt.). Theobald records this species from Kent, Morley from Suffolk, and Miss Jackson<sup>6</sup> from Scotland.

#### Sub-tribe *Lachnina*.

7. *Lachnus fasciatus* Burm. Walker; two slides (2 alate, 3 apterous ♀♀); "*costata*; Spruce fir; Southgate; June 25-47." (Also June 30-47).

<sup>5</sup>Morley, Claude. Jottings on Aphides taken during 1907 and 1908. The Entomologist, vol. 41, pp. 233-237, 1908.

<sup>6</sup>Jackson, Dorothy J. Further Notes on Aphides Collected principally in the Scottish Highlands. Scottish Naturalist, pp. 157-165, Sept.-Oct., 1919.

This species is the *fasciatus* Burm. of Del Guercio and other European students (*farinosa* Cholod.), the lanceolate rostrum, short first joint of the hind tarsus, the once-branched media, and the shaded forewings being quite typical. Walker indicates in his description that the media is twice-branched, but such is not the case in his specimens. Theobald records this from Kent, and Jackson from Kent and Scotland.

8. *Schizolachnus tomentosus* (De Geer). Walker; three slides "*pineti*; Scotch pine; Southgate; June 25-47;" one slide; "*pineti*; Scotch fir; Southgate; June 15-47." Buckton; three slides (2 alate, 2 apterous and 1 immature ♀♀); "*Mindarus abietinus* Koch." Buckton; three slides (1 alate, 1 apterous, several immature ♀♀); "*Schizoneura fuliginosa* Buck."

All these are the same species, and are the one described by Del Guercio as *tomentosus* (De Geer), not his *pineti* Koch. The media is once-branched, rather than twice-branched as indicated by Walker. This is indeed the *pineti* of Fabricius, which is a synonym of *tomentosus* De Geer. *Lachnus pineti* Koch is a different species.

9. *Dilachnus cupressi* (Buckton). Buckton; one slide (1 alate, 4 apterous, and 1 immature ♀♀); "*Lachnus cupressi*; Cornwall; Nov." This is the species described by Buckton from cypress at Cornwall, and these are perhaps the type specimens. Additional descriptive notes are herewith appended:

Alate viviparous female. Body rather small; antennae rather long for a Lachnid, reaching to the base of the abdomen, pale except at joint and segment VI. III with 3-4 secondary sensoria on apical half, IV with 2 secondary sensoria on apical half, and V with one secondary and one primary sensorium, VI with the usual primary and accessory sensoria. III is the longest segment, with IV, V, and VI subequal, combined being longer than III (V slightly longer than IV or VI, the latter two being practically equal). Cornicles quite large and prominent, being half as long (high) as wide at the base; dark colored. Cauda prominent, half-moon-shaped. Legs quite long. Body covered with many fine hairs, which appear longest and thickest on cauda, antennae and legs. Beak lanceolate, reaching to the base of the second abdominal segment. Measurements: Body length 2.487, width at thorax 0.969, width between eyes 0.350, antennae total 1.204-1.210, III 0.420-0.434, IV 0.182-0.190, V 0.210-0.215, VI 0.182-0.196 mm.; cornicles height 0.126-0.154, width at base 0.280, width at apex 0.075-0.080; hind tarsi 0.070 x 0.294; 0.070 x 0.312, wings length 3.88-4.06, width 1.39-1.42, expansion 9.04 mm. Media rather distinct for a lachnid, twice-branched. Stigma long and rectangular.



The only other record of this species the writer has been able to locate is that of Cholodkovsky who reports having taken a species which he believes to be this from "Der Krim" in October.

10. *Dilachnus hyalinus* (Koch). Buckton; one slide (2 alate ♂♂, 1 apterous and 1 immature ♀♀); "*macrocephalus*; Bramshot." Buckton; one slide (1 apterous ♀); "*abictis* Walker."

This species from *Picea excelsa* is the one described by Buckton as *Lachnus macrocephalus* sp. n., but which Cholodkovsky and Del Guercio place as a synonym of *Lachnus hyalinus* Koch. Mordwilko states that it is possibly a synonym. Buckton records it from Bramshot and Walthamston and Morley from Ipswich.

11. *Dilachnus juniperi* (De Geer). Walker; three slides (5 alate, 10 apterous, several immature ♀♀); "*juniperi*; juniper; Southgate; June 4-47 (also June 25)." Buckton; three slides (2 alate, 7 apterous ♀♀).

This is the species described by Del Guercio as *Lachniella juniperi* (Fabr.), (De Geer first named and described this species 1780), the sensoriation being typical.

In the alate females secondary sensoria occur as follows, III 6-7, IV 2-5, V 1-2; in the aptera IV 1-2, V 1. Antennal measurements of four alates are III 0.316-0.392 (0.364), IV 0.154-0.196 (0.168), V 0.210-0.238 (0.224), VI 0.210-0.252 (0.238) mm. The venation is irregular inasmuch as although the media is typically twice-branched, in two specimens both wings show the media but once-branched.

This species has been reported by Theobald from Kent and by Jackson from Kent and Scotland.

12. *Dilachnus laricis* (Walker). Walker; two slides (2 alate, 3 apterous, and 1 immature ♀♀); "*laricis*; larch; Southgate; July 25-47" (also August 2-47). The apterae of this species are very characteristic in that the body is covered with more or less distinct tubercles, these being the most prominent on the front of the head.

Without doubt this is the same species that Del Guercio<sup>7</sup> records from larch at Protolina, Italy, and describes as *Lachniella nigrotuberculata* n. sp., the body tubercles on the apterous females being so very characteristic.

(To be continued.)

<sup>7</sup>Redia, vol. 5, pp. 306-309, 1908.

# ENTOMOLOGICAL NEWS

PHILADELPHIA, PA., JULY, 1921.

## The Importance of Collecting.

Elsewhere in the present number of the NEWS we notice the *Report of the Proceedings of the Third Entomological Meeting held at Pusa* (India). To those Proceedings Dr. David Sharp contributed a brief paper entitled "The Importance of Collecting." As few of our readers, probably, will see the original and as the paper, coming from such an eminent entomologist, is of universal application, we believe we cannot do better for our editorial page than to quote from Dr. Sharp's remarks, as follows:

Many who have a taste for entomology begin collecting with enthusiasm, but after a time diminish their efforts or even altogether abandon them. There are numerous reasons that account for this fact, but . . . . I need allude to but one of them, and that is a belief that collections are more advanced and nearer completion than the other branches of entomology are. This I believe to be a great error . . . .

The great sociologist Herbert Spencer held that it was amongst the very first duties of a civilized community to make itself thoroughly acquainted with the environment among which it lives.

Alas, to think how very far we are from this. There is not a single square mile of the earth's surface of which we know thoroughly the fauna and flora. Hence the number of existing forms with which we are totally unacquainted is very great, and I feel that I need not insist on this, for I believe all entomologists will admit it . . . .

But to get together a collection of all the insects of a limited region is merely to lay one of the foundation-stones of the science of entomology in that region. For we have not only to recognize that the creatures exist, but also to become acquainted with their variation, their distribution and their habits; to study the anatomy and the development of each species, and (as many at least among us recognize) their evolution, *i. e.*, the relation of their generations. And what a huge number of specimens is required for all these purposes, of this huge number of kinds that we believe to be in existence.

I say then, do not discontinue collecting but go on with it with the greater knowledge and discretion that your experience may suggest.

I urge this because entomology is the science of many generations. In a hundred years (I might say a thousand with almost equal truth)

entomology will still be in a rudimentary state; but in that period many of the species of animals now existing will have become extinct. The constant extinction of other animals by the extension of civilization is one of the saddest facts that the naturalist is forced to recognize, and we should at least endeavor to preserve some record of them for the instruction of posterity. It is frequently said nowadays that posterity can take care of itself, but it cannot do so in the matter of a knowledge of the animals that we have caused to cease to exist.

. . . . . I can merely add that in my opinion the advancement of collections should be attained by international combination. For want of this the extremely limited resources of entomology are much wasted, and the admirable enthusiasm of collectors is smothered if not entirely extinguished.

"To become acquainted with their distribution, . . . their evolution," "to preserve some record of them," means not only to accumulate the specimens themselves but to attach to them written or printed records of the localities and the dates where and when they were collected, and, if bred, the circumstances and the parentage. Locality is geographical, topographical and ecological. It is often easier to obtain and to attach these data than it is to collect the specimens, and yet how often are these data (as valuable as the insects themselves) lacking!

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## Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS  
OF THE GLOBE

### Rearing Anthomyid Root Maggots on Artificial Media (Dipt.).

The use of nutritive broth (bouillon) for the rearing of Dipterous larvae by the French Entomologist, Jean Henri Fabre, has suggested a practical method for observing the larval changes of certain Anthomyidae which normally feed within the tissue of the host plant. Experiments with the Onion Maggot, *Hylemyia antiqua* Meig., and the Cabbage Maggot, *Hylemyia brassicae* Bouché, have demonstrated that these species may be successfully reared on agar jelly containing a high percent extract of the larval food plant.

Onion agar was prepared by adding ten per cent. commercial agar to a filtered stock of boiled onion. Cabbage agar was made in the same manner, using a stock of boiled cabbage. These media were filtered, tubed and sterilized for fifteen minutes under twenty pounds pressure. Agar slants in large test tubes or poured plates in petri dishes were best adapted for rearing purposes. Female flies fed on these media and laid their egg clusters on the surface. The eggs were removed, washed

in sterile water, and transferred to fresh agar to avoid contamination.

The larvae hatched in several days and fed on or near the surface of the agar and, owing to its transparency, could be observed in each instar. Puparia were formed on the walls of the test tubes or petri dishes, but best results were obtained by transferring the full grown larvae to shallow containers of earth and allowing them to pupate there. Bacterial contamination of the media or the presence of large amounts of water of condensation proved fatal to the larvae and necessitated frequent transferring to fresh agar.—JOHN R. EYRE, Pa. State College Exper. Sta., Girard, Pennsylvania.

### Life History of *Pyrameis caryae* in California (Lep., Rhop.).

*Pyrameis caryae* is a very common butterfly in our State of California, especially in San Francisco and vicinity. It flies abundantly from July to the end of November. I took one *P. caryae* var. *muelleri* Letcher, on January 1st, 1918, and another February 27th, 1919. I captured some every month except March, April and May. My reason for writing these few lines about its life history is because during the past three years I have captured four *P. caryae* var. *muelleri* in my garden, and in 1920 I came to the conclusion that I would employ some of my time in studying carefully their movements in my own garden and try to find out whether there might be some *P. caryae* var. *muelleri* amongst them. As soon as the caterpillars reached almost their full size, I removed and placed them in breeding cages, so as to obtain the best result, but, to my great disappointment, out of such a large number as forty-three caterpillars not one *P. caryae* var. *muelleri* appeared; all those that emerged from the chrysalids (except a few that were parasitized) were typical *P. caryae*.

One adult female carries from 75 to 85 eggs. The eggs are deposited upon the leaf of the food-plant, mallow (*Malva borealis*), upon which the caterpillars, after they are hatched, are destined to live, and the female reveals wonderful instinct in selecting plants which are appropriate to the development of the larvae. No more than five or six eggs are deposited singly upon the same leaf and always on the upper side of it. The eggs resemble the shape of a bird's egg, broken in at the top, and are pale green when first deposited, later changing to a darker color just before hatching. As soon as the young caterpillar emerges from its egg it commences to build its web; I suppose, to be protected against bad weather and also against some injurious insects, especially the ants and the spiders, which are very destructive to the young larvae. It takes eighteen to twenty days for a caterpillar to grow to its full size, namely, 1½ inches when crawling. Sometimes the caterpillar, after having eaten almost the whole leaf before arriving at its natural size, moves away from it and goes to a fresh one, but never does it construct a new web. Generally a full-grown caterpillar, after having been under its web for eighteen to twenty days, leaves its leaf to find a suitable

place to pupate, such as on the walls of the house, stumps, stones, fences, etc.; but never more than six feet from the ground. The caterpillars vary much in color when very small; at the first stage of their existence they are almost black, in the second stage, black and yellow, and in the third stage, black and yellow and sometimes a mouse gray color. Their food plants are also *Ligustrum*, common name California Privet, and Lavander.—J. C. HUGUENIN, San Francisco, California.

## Entomological Literature

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

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), 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.

The records of papers containing new genera or species occurring north of Mexico are all grouped at the end of each Order of which they treat.

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.

The titles occurring in the **Entomological News** are not listed.

5—Psyche, Cambridge, Mass. 6—Journal of the New York Entomological Society. 9—The Entomologist, London. 10—Proceedings of the Entomological Society of Washington, D. C. 11—Annals and Magazine of Natural History, London. 19—Bulletin of the Brooklyn Entomological Society. 20—Bulletin de la Société Entomologique de France, Paris. 33—Annals de la Société Entomologique de Belgique, Brussels. 36—Transactions of the Entomological Society of London. 68—Science, Lancaster, Pa. 71—Novitates Zoologicae Tring, England. 77—Comptes Rendus des Seances de la Société de Biologie, Paris. 87—Arkiv for Zoologi, K. Svenska Ventenskapsakademien, Stockholm. 101—Journal of The Linnean Society of London. 103—Biologisches Centralblatt, Leipzig. 111—Archiv für Naturgeschichte, Berlin. 116—Entomologische Zeitschrift, Frankfurt a. M. 118—Die Naturwissenschaften, Berlin. 122—Proceedings of the Entomological Meetings, Pusa, India.

**GENERAL. Beeson, C. F. C.**—Breeding cages and general insectary technique for wood-borers. Note on the decimal method of subject indexing entomological literature. 122, iii, 892-5; 1018-51. **Fletcher, T. B.**—Notes on rearing insects in hot climates. Hints on collecting and preserving insects. 122, iii, 875-92; 936-74. **Hankin, E. H.**—A method of preserving butterflies and other insects. 122, iii, 974-6. **Hewitt, C. G.**—Obituary by N. Criddle. (Canadian Nat., xxxiv, 174-6). **Muir, F.**—A symbiotic organism in Fulgorids 5,

xxviii, 59-60. **Sharp, D.**—The importance of collecting. **122**, iii, 976-8. **Slater, A. W.**—The preparation and reproduction of scientific illustrations. **122**, iii, 1043-48. **de la Torre Bueno, J. R.**—Standardized descriptions. **19**, xvi, 60-1. **Vogt, O.**—Ergebnisse der analyse gewisser merkmale einiger insektengattungen. **118**, xviii, 350-3. **Wells, B. W.**—New United States zooecidia. **5**, xxviii, 35-45.

**ANATOMY, PHYSIOLOGY, ETC.** **Cappe de Baillon, P.**—Contribution anatomique et physiologique a l'etude de la reproduction chez les Locustiens et les Grilloniens.—I. La ponte et l'eclosion chez les Locustiens. (La Cellule, xxxi, 1-245.) **Crampton, G. C.**—The phylogenetic origin of the mandibles of insects and their arthropodan relatives. **6**, xxix, 63-100. Preliminary note on the interpretations of insectan and myriopoden structures through a comparison with the structures of Crustacea. **36**, 1920, 340-6. **Deegener, P.**—Soziologische studien an raupen und bemerkungen uber licht- und statischen sinn. **111**, 1920, A 10, 91-154. **Enslin, E.**—Die irrtumer der these einer wiederkehrenden terziarzeitahnlichen tierlebensperiode. **116**, xxxv, 5-6 cont. **Evans, A. M.**—On the structure and occurrence of maxillulae in the order of insects. **101**, xxxiv, 429-56. **Galant, S.**—Reflex und instinkt bei tieren. **103**, xli, 193-210. **Goldschmidt, R.**—Untersuchungen uber intersexualitat. Erblchkeitsstudien an schmetterlingen III. Der melanismus der nonne, *Lymantria monacha*. (Zeit. Indukt. Abstam. u. Vererbungslehre, xxiii, 1-199; xxv, 89-163.) **Haecker, V.**—Weitere phanogenetische untersuchungen an farbenrassen. (Zeit. Indukt. Abstam. u. Vererbungslehre, xxv, 177-84.) **Holmgren, N.**—Zur ontogenie der stomodealbrücke bei den spinnentieren. Vergleichendes uber den kopfbau der crustaceen und hexapoden. **87**, xiii, No. 1; No. 5. **Jordan, K.**—On the replacement of a lost vein in connection with a stridulating organ in a . . . moth from Madagascar. . . **71**, xxviii, 68-74. **Klatt, B.**—Keimdrusentransplantationen beim schwammspinner. (Zeit. Indukt. Abstam. u. Vererbungslehre, xxii, 1-50.) **Lyssy, R.**—Recherches experimentales sur le venin des abeilles. (Archiv. Intern. Physiol., xvi, 272-87.) **Minnich, D. E.**—An experimental study of the tarsal chemoreceptors of two nymphalid butterflies. (Jour. Exper. Zool., xxxiii, 173-203.) **Oguma, K.**—The idiochromosomes of the mantis. (Jour. Col. Agric. Sapporo, Japan, x, 1-27.) **Paillot, A.**—Influence de la temperature sur le mecanisme de l'immunité humorale chez les insectes. **77**, lxxxiv, 737-9. **Quast, M.**—Beitrage zur kenntnis der samenubertragung bei *Ephestia kuehkniella*. **111**, 1920, A 10, 70-90. **Reinking, O. A.**—The synchronal flashing of fireflies. **68**, liii, 485-6.

**ARACHNIDA, &c.** **Vitzthum, H.**—Acarologische beobachtungen. **111**, 1920, A 10, 1-69.

**NEUROPTERA.** Howe, R. H.—The distribution of New England Odonata. (Proc. Boston Soc. Nat. Hist., xxxvi, 105-33).

Klapalek, F.—Plecopteres nouveaux. 32, 1921, 146-50.

**HEMIPTERA.** Baker, A. C.—On the family name for the plant lice. 10, xxiii, 101-3. Brethes, J.—Description d'un Ceroplastes de la Republique Argentine, et de son parasite. 20, 1921, 79-81. Hickman, D. J.—Illustrations of the male hooks in Nabis. 19, xvi, 58-9. Malloch, J. R.—Systematic notes on Hemiptera Heteroptera. 19, xvi, 54-6. Olsen, C. E.—Another European leafhopper in N. America. 19, xvi, 33-7. de la Torre Bueno, J. R.—New records of Florida bugs. 19, xvi, 61.

Barber, H. G.—Revision of the genus *Ligyrocoris*. 6, xxix, 100-14.

**LEPIDOPTERA.** Cleare, L. D.—Butterfly migrations in British Guiana. 36, 1920, 331-39. Joicey, J. J.—New forms of Sphingidae. 9, liv, 105-9. Mousley, H.—Further notes on the Rhopalocera or butterflies of Hatley, Stanstead Co., Quebec. (Canadian Nat., xxxiv, 173-4). Strand, E.—Systematisch-faunistische beitrage zur kenntniss exotischer heterocera und Grypocera. . . . 111, 1920, A, 7, 113-72.

Fox, C. L.—A new aberrant form of *Vanessa virginienensis*. 5, xxviii, 45-6.

**DIPTERA.** Alexander, C. P.—The crane-flies collected by the Swedish expedition to southern Chile and Tierra del Fuego. A new genus and sp. of net-winged midge Blepharoceridate and an undescribed sp. of Tanyderidae. 87, xiii, No. 6; No. 7. Collin, J. E.—A contribution towards the knowledge of the Anthomyiid genera *Hamatomyia* and *Hylephila*. 36, 1920, 305-26. Dyar, H. G.—The mosquitoes of Canada. (Trans. R. Canadian Inst., xiii, 71-120). Greene, C. T.—Further notes on *Ambopogon hyperboreus*. 10, xxiii, 107-9. Malloch, J. R.—Exotic Muscaridae—II. 11, vii, 420-31. Notman, H.—A compound larva. 19, xvi, 57. Phibbs, G. B.—Variations in the segmental spines of the fourth-stage larva of *Hypoderma bovis*. (Irish Nat., xxx, 53-7).

Felt, E. P.—New sps. of reared gall midges. 6, xxix, 115-18. Johnson, C. W.—New diptera from Texas and Mexico. 5, xxviii, 56-9. McAtee, W. L.—District of Columbia diptera: Scatopsidae. 10, xxiii, 120-4. Malloch, J. R.—A new genus of Anthomyiidae. 19, xvi, 53.

**COLEOPTERA.** Aurivillius, C.—Neue oder wenig bekannte coleoptera longicornia. 87, xiii, No. 9. Bernhauer, M.—Neue Aleocharini aus Sudamerika. Zur Staphylinidenfauna Sudamerikas, insbesondere Argentinens. 111, 1920, A 8, 141-70; 170-84. Bowditch, F. C.—

Notes on the S. American Laticas. **5**, xxviii, 47-50. **Brethes, J.**—Description d'un nouveau Colydiidae de Buenos-Aires. **20**, 1921, 70-1. **Hayes, W. P.**—A malformation in *Lachnosterna*: **19**, xvi, 38-40. **Horn, W.**—Wissenschaftliche ergebnisse der schwedischen entomologischen reise . . . in Amazonas. Cicindelidae. **87**, xiii, No. 10. **Kasergode, R. S.**—On some of the bionomics of Bruchidae. **122**, iii, 928-31. **Kleine, R.**—Die deckenzeichnungen der Brentidae. **111**, 1920, A 8, 1-83.

**Fall, H. C.**—A new *Lixus* from New Jersey. **19**, xvi, 40-1.

**HYMENOPTERA.** **Brethes, J.**—(See under Hemiptera.) **Parker, J. B.**—Notes on the nesting habits of *Tachytes*. **10**, xxiii, 103-7. **Roman, A.**—Wissenschaftliche ergebnisse der schwedischen entomologischen reise . . . in Amazonas. Chrysididae & Chalcididae. **87**, xii, No. 19. **Wheeler, W. M.**—Observations on army ants in British Guiana. (*Proc. Amer. Acad. Arts & Sci.*, lvi, 291-328).

**Cushman, R. A.**—The males of the ichneumon genera *Myersia* and *Thaumatotyphidea*, with description of n. sps. **10**, xxiii, 109-12. **Gahan, A. B.**—Remarks on the genus *Pleurotropis* with description of a parasite of *Trachelus tabidus*. **10**, xxiii, 113-20. **MacGillivray, A. D.**—New species of Emphytinae and Selandriinae. **5**, xxviii, 31-5.

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INSECT PESTS OF FARM, GARDEN AND ORCHARD. By E. DWIGHT SANDERSON. Second Edition Revised and Enlarged by LEONARD MARION PEAIRS. New York: John Wiley and Sons, Inc., London: Chapman & Hall, Limited. 1921. 12mo, pp. vi, 707; 602 figures in the text.—A number of recent American texts on the insect enemies of cultivated plants are now available. If a small volume, in which the insects are considered from the standpoint of their own taxonomic groups, is desired, there is Prof. Herbert Osborn's *Agricultural Entomology* (1916). Prof. Wm. Lochhead's *Class Book of Economic Entomology* (1919) is more extended and deals first with insects injurious to each crop or plant, with cross references to Part III on the taxonomic insectan groups. Prof. Washburn's *Injurious Insects and Useful Birds* (1918) and Prof. O'Kane's *Injurious Insects, How to Recognize and Control Them* (1912) are still larger books in which the treatment is by the objects damaged. Much more detailed, but of narrower scope, are Slingerland and Crosby's *Manual of Fruit Insects* (1914) and Prof. G. W. Herrick's *Insects Injurious to the Household and Annoying to Man* (1914), in both of which the sequence of topics is that of the things injured. The last two works presuppose, or at least do not present, a general sketch of insect structure and development. In the other four such a general account is included and this explains the relative number of pages devoted to insects in general and to general



methods of control in the six volumes respectively: 35, 112, 67, 104, 26 and 20.

The present volume by Profs. Sanderson and Peairs is larger than any of those mentioned and more extended in its treatment of the topics common to it and to the first four named, but covers less ground in those parts corresponding to the subject matter of the last two. Thus it devotes 210 pages to insect enemies of orchards and small fruits, with which almost the whole (or 465 pages) of Slingerland and Crosby's book is concerned, the corresponding figures for Lochhead being 40-50, for Washburn 105, and O'Kane 125.

The first edition, by Prof. Sanderson alone, appeared in 1912.\* Prof. Peairs has now made a thorough revision of the original text, added several new articles and three new chapters dealing with insects injurious to citrus fruits (Chap. XXVII), to man and in the household (XXVIII) and to domestic animals and poultry (XXIX). The first chapter gives some figures showing the tremendous damage done in the United States to various crops by insects, aggregating  $2\frac{1}{4}$  billions of dollars annually. Beneficial insects, structure and development of insects, farm methods for their control, insecticides and spraying and dusting apparatus each receive one chapter. Chapters VII to XXVI consider the insects injurious to farm, garden and orchard from the standpoint of the plants damaged, and the methods for checking them. The book is clearly written, fully illustrated and should be very useful to those desiring a treatment of the subject matter, of medium length, as indicated by the comparisons given above.—PHILIP P. CALVERT.

REPORT OF THE PROCEEDINGS OF THE THIRD ENTOMOLOGICAL MEETING.

Held at PISA on the 3rd to 15th February, 1919. In three volumes. Edited by T. BAINBRIDGE FLETCHER, R.N., F.L.S., F.E.S., F.Z.S., Imperial Entomologist. Calcutta, Supt. Govt. Printing, India, 1920. 8vo. Pp. xii, 417, pls. 1-69; pp. vi, 418-835, pls. 70-129; pp. vi, 836-1137, pls. 130-182. 17 rupees, 8 annas. The Preface in Vol. I states: "The following report contains an account of the Proceedings of the Third Entomological Meeting . . . . As in the case of the Report of the Proceedings of the Second Entomological Meeting, every endeavor has been made to provide as full and complete a record as possible. A mere abstract is of very little use to those workers who require to refer to the record for references on particular points. The cordial reception accorded to the preceding Report has indicated clearly the general appreciation of a detailed record of the Proceedings of a Meeting of this kind . . . . This Report contains a record of ninety-two original papers read at the Meeting, exhibitions and discussions, covering various aspects of Indian Entomology. It will, I hope, be found useful by all

\* See Ent. News, xxiii, p. 188. Most of the other books mentioned above were noticed in the News of the years of their respective appearance, or of the year immediately following.

interested in Entomology, both in and outside of India . . . no Report was published of the First Entomological Meeting held in 1915. The Report of the Second Meeting, held in 1917, is still available."

The fact that the Report of the Second Meeting\* occupied but a single volume of xii and 340 pages shows how much Indian entomology grew during the two years between the two meetings. The attendance at the Third Meeting was forty-six, while sixteen non-attendants contributed papers; among the latter we find the names of Prof. Brues, of Harvard; Mr. D. T. Fullaway, of Hawaii; Prof. E. B. Poulton, Dr. David Sharp and Messrs. E. Meyrick and J. H. Watson, of England.

As one might infer the greater part of these three volumes is occupied with the consideration of Indian insects of economic importance; indeed, pages 33-314 contain Mr. Fletcher's "Annotated List of Indian Crop Pests," with numerous brief remarks by those present at the meeting. Such articles, no doubt, will be helpful to economic entomologists in other lands in the case of widely distributed species. Of more present interest are perhaps two papers on the Pink Bollworm in Egypt by Dr. L. H. Gough and Mr. F. C. Willcocks respectively, and on the "Control of the Melon Fly in Hawaii, by a Parasite [*Opius fletcheri*] introduced from India," by D. T. Fullaway. The technique of insect breeding, collecting and preserving forms the subject of five papers. Entomological publication and education are considered and in the third volume are several articles of general entomological bearing, such as the insect prey of birds, spiders as checks on Lepidopterous larvae, the importance of insects to fisheries, the preparation and reproduction of scientific illustrations, the decimal method of subject-indexing entomological literature, etc. Altogether we congratulate our Indian colleagues on their activity and interest as shown by these three volumes.—P. P. CALVERT.

HUMAN PARASITOLOGY with Notes on Bacteriology, Mycology, Laboratory Diagnosis, Hematology and Serology. By DAMASO RIVAS, Asst. Prof. of Parasitology, etc. [Medical School], University of Pennsylvania. Philadelphia and London: W. B. Saunders Co. 1920. 8vo. 715 pp., 16 pls., 422 text figs.

PARASITES AND PARASITOSIS OF THE DOMESTIC ANIMALS. By B. M. UNDERHILL, V.M.D., Prof. of Parasitology, School of Veterinary Medicine, University of Pennsylvania. New York: The Macmillan Co. 1920. 8vo, pp. xix, 379, 8 pls., 172 text figs.

These two text-books, emanating from two schools of the University of Pennsylvania, naturally include the parasitic arthropods. Dr. Rivas devotes to them 113 pages (464-475 Arthropods in general, 476-496 Arachnida, 497-576 Insecta); Dr. Underhill gives them 142 pages (13-22 Arthropods and Insects in general, 23-93 Insects, 94-154 Arachnids). In the first book, Part I is general and introductory (pp. 17-48), Parts

\* See Ent. News, xxix, p. 277.

II and III deal with animal parasites, Part IV with vegetable parasites, Part V with technique; the arrangement of Parts II-IV is by taxonomic groups. Dr. Underhill divides his subject matter into Part I, The External Parasites (pp. 1-154, including two general chapters); Part II, The Internal Parasites (pp. 155-310), and Part III, The Pathogenic Protozoa (pp. 311-352); within each part the sequence of topics is that of the systematist. To each of his chapters Dr. Rivas has added a list of selected references to the appropriate literature. Each teacher of parasitology has his own preferences as to the method of treatment of the subject and no doubt these two additions to the growing list of books on medical and veterinary entomology will prove to be desirable to many who are not altogether satisfied with previous texts.—P. P. CALVERT.

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## Doings of Societies.

### Entomological Section of The Academy of Natural Sciences of Philadelphia.

Meeting of December 13, 1920, Director Philip Laurent presiding. The annual reports were read; the condition of the ENTOMOLOGICAL NEWS for the past year and the prospects for the future were discussed. A method for advertising the purposes and activities of the Section was discussed and the matter put in the hands of the Publication Committee for further development. The following dates were selected for holding the meetings during 1921: January 27, March 24, May 26, September 22, November 17, and December 12.\* The following officers and committee were elected to serve during 1921: Director, Philip Laurent; Vice-Director, R. C. Williams, Jr.; Secretary, J. A. G. Rehn; Recorder, E. T. Cresson, Jr.; Treasurer, E. T. Cresson; Conservator, Henry Skinner; Publication Committee, E. T. Cresson, P. P. Calvert, E. T. Cresson, Jr.

Meeting of January 27, 1921, Director Laurent in the chair. Fourteen persons present.

The chair reported the death of Mr. James S. Johnson, of Philadelphia, on December 14, 1920. He was a well-known collector of Lepidoptera, and his collection contained all or nearly all the species of *Catocala* found around Philadelphia.†

Mr. Kisliuk spoke about some of the pests he recently encountered, among which were the pink cotton boll worm infesting burlap covering on goods from Holland: *Emphytus cinctus* on rose stock, and a species of *Bruchus* on *Cassia abbreviata* from Northern Rhodesia.

\*Alternating with meetings of the American Entomological Society in the other months, except July and August.

†Obituary notice in this volume of the NEWS, page 63.

HEMIPTERA.—Dr. Skinner exhibited specimens of Coccidae, *Lecaniodiaspis tessellata*, on the Tulip Poplar from Fairmount Park, Philadelphia.

LEPIDOPTERA.—Mr. Laurent exhibited specimens of all the species of butterflies formerly belonging to the genus *Pamphila*, now divided into 22 genera, that have been recorded from Pennsylvania and New Jersey. In his remarks he stated that he had captured 21 of the 30 species either in New Jersey or Pennsylvania, and had studied the early stages of 16.

Dr. Skinner called attention to a pair of specimens exhibited by Mr. Laurent as belonging to a species he recently described from Haiti, *Choranthus haitensis* (Ent. News, xxxi, 187). These specimens were captured in April at Guntown, Levy County, Florida.

ORTHOPTERA.—Mr. Rehn made a few remarks on the African cockroaches of the sub-family Perisphaerinae, illustrating his remarks with representatives of both sexes of eight genera. The speaker discussed the sexual dimorphism shown and also explained the peculiar pronotal modifications found in these genera. He spoke about the recent discovery of a species of the orthopterous genus *Atlanticus* in China. The genus was previously known only from North America.

Meeting of March 24, 1921; eight persons present. In the absence of the Director and Vice-Director, Dr. Skinner presided.

The Publication Committee submitted a draft of a circular of general information which they were ordered to compile. This was approved by the Society and referred by them to the Section for further action. The circular was ordered to be printed from the draft as submitted.

Correspondence from Jacques Lefevre was read, stating that he was to collect in Brazil and would like to hear from any one desiring Coleoptera or Lepidoptera from that locality.

Messrs. John C. Hollinger, Max Kisliuk, Jr., and Richard C. Norris, Jr., were elected contributors.

DIPTEA.—Mr. Cresson exhibited some chrysanthemum leaves which were infested with galls, from which had been reared a species of Cecidomyiidae, shown in balsam mounts. The species is not determined as yet.

LEPIDOPTERA.—Dr. Skinner exhibited some twigs of the wild cherry to which were attached very small cocoons, which he supposed to be those of a species of microlepidoptera of the genus *Coptodisca*. He also exhibited some lepidopterous larvae which had been preserved in listerine. They have been immersed now for over a year and have not changed color.

ORTHOPTERA.—Mr. Rehn spoke about some Orthoptera received for determination from Mr. E. R. Buckell, collected in the northern part of British Columbia, between the Chilcotin and Fraser Rivers, many species of which were found to be injurious to the range. The speaker said that the collection has enabled him to extend northwards the distribution of a few of the known species.—F. T. CRESSON, JR., Recorder.

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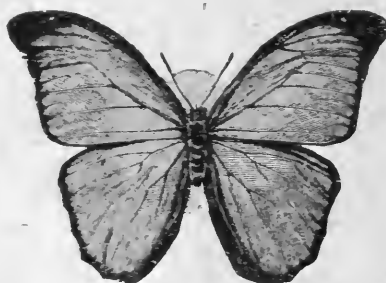
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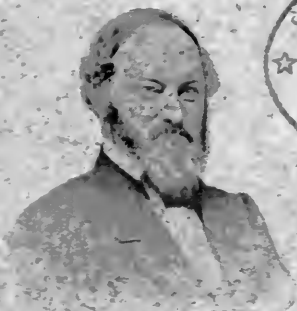
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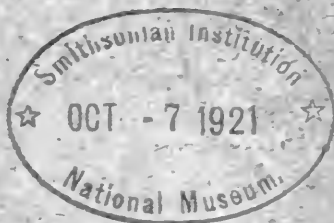
# ENTOMOLOGICAL NEWS

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No. 8



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1807-1865



PHILIP R. CALVERT, Ph. D., Editor.

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# ENTOMOLOGICAL NEWS



AND  
 PROCEEDINGS OF THE ENTOMOLOGICAL SECTION  
 OF THE ACADEMY OF NATURAL SCIENCES, PHILADELPHIA

VOL. XXXII

OCTOBER, 1921

No. 8

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## Miscellaneous Studies in the Family Aphididae (Hem. Hom.).

By ALBERT F. SWAIN, Fresno, California

(Continued from page 213.)

13. *Dilachnus piceae* (Walker). Buckton; six slides (2 alate and several immature viviparous ♀♀, 1 apterous oviparous ♀, eggs, portions of head and thorax of 2 apterous viviparous ♀♀); "*Lachnus piceae* Walker." Walker records this species from *Abies picea* and *A. excelsa* in June in Loudon (alate ♀♀) and Buckton from *A. excelsa* from Hampshire in October where he found oviparous ♀♀ and in December when eggs were present as well. Theobald records it from Kent. Buckton places it as a synonym of *Lachnus grossus* Kalt., but according to Kaltenbach's<sup>8</sup> description the third antennal segment of the apterous female is equal in length to the following three, while in Buckton's specimens it is considerably shorter. Following are the measurements of the five antennae found:

III	0.770	0.742	0.728	0.742	0.785
IV	0.280	0.280	0.308	0.290	0.312
V	0.420	0.378	0.420	.....	0.460
VI	0.196	0.238	0.196	.....	0.196

<sup>8</sup>Stettin Ento. Zeit., pp. 174-175, 1846.

In the alate females IV is about one-third as long as III, V equal to or slightly shorter than IV, and VI subequal to or slightly shorter than V. Walker states that IV is a little more than one-third the length of III, V slightly longer than IV, and VI not half the length of V.

This appears to be the same species the writer described from spruce at Berkeley, California, under the name of *Lachnus vanduzeei* n. sp.<sup>9</sup>

There are two slides in the Buckton collection (2 alate and 1 apterous females) labeled *Lachnus longipes* Dufour, which are most certainly not that species nor are they *Pterochlorus roboris* (Linn.). An examination of the specimens shows that the apterous female is identical with that of *D. piccae* (Walker). In the apterous the rostrum is distinctly lanceolate, while in the alate it is more blunt, resembling in shape the rostrum of *D. tujafilinus* (Del Guercio). It is very similar to the one figured by Del Guercio<sup>10</sup> as a form transitional between his *Lachnus* and *Lachniella* on one side and his *Dryaphis* and *Eulachnus* on the other. The general body shape and size, the sensoriation, length and shape of rostrum are practically identical with specimens of *D. piccae* (Walker). Buckton noted this similarity but stated that these specimens were larger than specimens of the other species. As they now appear, such is not the case, however.

The following are measurements of the two alate females:

Body length		3.890		3.710
Width between eyes		1.700		.....
Width thorax		1.900		.....
Antennae				
total	1.820	1.954	.....	.....
III	.840	.840	.700	.700
IV	.280	.322	.280	.260
V	.280	.310	.255	.260
VI	.210	.260	.210	.....
Hind tarsi	.140	.140	.090	.....
Wing length	.420	.420	.350	
width	8.07	8.38	6.78	7.10
expansion	2.91	3.10	2.40	2.45
		18.00		.....

<sup>9</sup>Swain, A. F. A Synopsis of the *Aphididae* of California. Univ. Calif. Publ. Tech. Bull. Ent., vol. 2, no. 1, pp. 50-51, 1919.

<sup>10</sup>Redia, vol. v, p. 193, fig. 7, 1908.

III has from 13 to 20 large circular sensoria scattered the full length of the segment, IV has 2 to 4 secondary sensoria, V 1 to 2 secondary sensoria and the usual primary sensorium, VI has the usual primary and accessory sensoria.

From all structural characteristics this is *Dilachnus piccae* (Walker), but the host plant which Buckton records causes a question. Practically all species of *Dilachnus* occur on conifers, *piccae* being recorded from spruce. Whether Buckton was mistaken in his host plant record, whether there is an actual migration in this species between oak and spruce, or whether it is a distinct but very closely related species is the question. The only other species the writer calls to mind that migrates from a conifer to a deciduous tree is *Prociphilus venafuscus* (Patch) found on ash and Douglass fir in the Pacific Coast sections of America. From all available evidence the writer feels that *Lachnus longipes* Dufour of Buckton is in reality *Dilachnus piccae* (Walker).

14. *Dilachnus pinihabitans* (Mordw.) Walker: two slides (2 alate, 1 apterous, several immature ♀♀); "*pinicola* Kalt.: Scotch fir; Southgate; June 4-47" and "*pinicola* Kalt.: Spruce, Southgate; June 5-47." Buckton, one slide (2 alate ♂♂, 2 apterous oviparous ♀♀, 3 apterous viviparous ♀♀); "*pinicola* Kalt."

These specimens do not agree very well with Kaltenbach's description nor with Del Guercio's description of *Eulachnus pinicolus* (Kalt.). The relative measurements of antennal segments in *E. pinicolus* (Kalt.) Del Guer. are 7, 7, 43, 22, 24, 18, while in these specimens they are 11, 11, 64, 27, 29, 15; the main discrepancy being in the last antennal segment, which is approximately one-half the length of the fifth rather than three-fourths. The actual measurements of two alate females are:

III	.644	.658	.644	.630 average	.6365
IV	.266	.266	.266	.308	.2765
V	.280	.294	.294	.308	.2940
VI	.154	.154	.168	.154	.1575

Del Guercio states that the first joint of the hind tarsus is half as long as the second, thus falling into his genus *Eulachnus*, while in these specimens it is but slightly more than one-third (11-28). These specimens do agree, however, with both Mordwilko's<sup>11</sup> and Cholodkovsky's<sup>12</sup> descriptions of *pinihabitans*

<sup>11</sup>Zool. Anzeiger, v. 18, p. 98, 1895.

<sup>12</sup>Horae Soc. Ent. Ross., v. 31, pp. 638-640, 1898.

Mordw. and the writer considers them as identical. Consequently the *Lachnus pinicola* Kalt. of both Walker and Buckton is really *Dilachnus pinihabitans* (Mordw.). Theobald records *pinicolus* Kalt. from Kent and Morley from Suffolk and the Isle of Wight. Jackson records *pinicola* Kalt. from spruce fir in Evanton and Kent and lists it as a synonym of *abietis* Walker. As pointed out above (see No. 10), a specimen of *abietis* Walker in the Buckton collection is really *hyalinus* Koch, so perhaps Miss Jackson refers to this species. She also records *pinihabitans* Mordw. from Scotch fir in Moreyshire.

15. *Dilachnus taeniatus* (Koch). Walker: three slides (1 alate, 8 apterous ♀♀); "*pini* L.; Scotch pine; Southgate; June 25-47." Buckton: four slides (numerous immature ♀♀); "*pini* L.; *Pinus sylvestris*; Meadfield; June." The following brief description is drawn from Walker's specimens:

Alate viviparous female. Head about twice as broad between the eyes as deep; antennae reaching to the middle of the thorax, dark except base of III, which is lighter; a few stout hairs on I, II, and III. Secondary sensoria on III extend from near the tip to about two-thirds the way to the base; small, circular, uneven, numbering 6-7. IV with one secondary sensorium about the middle. III about as long as IV, V, and VI combined, IV and V equal, VI slightly shorter. III 0.644, IV 0.252, V 0.210, VI 0.196, total 1.526 mm. Body length 5.17 mm., width of thorax 2.26 mm., wing length 5.30 mm., width 1.75 mm., expansion 12.20 mm. Cornicles small and inconspicuous, being but little more than pores, about 0.085-0.110 mm. in diameter. Cauda large and prominent, half-moon-shaped. Hind tarsi long, first joint 0.28 mm., second 0.50 mm. Rostrum reaches to near the base of the abdomen or to the posterior edge of the second abdominal segment. Body robust and covered with many short stiff hairs. Wings long, clear, and with twice-branched media.

Apterous viviparous female. Similar to alate, the body hairs being stiffer and more pointed. Antennae reach to the base of the abdomen and are without secondary sensoria. III 0.630, IV 0.308, V 0.350, VI 0.224, total 1.722 mm. Body length 4.52 mm., width of thorax 1.35 mm., hind tarsi, first joint 0.252, second 0.476 mm. Rostrum reaches to base of the second abdominal segment.

A study of these specimens shows that they are very similar to *Eulachnus taeniatus* (Koch), although in many respects close to *Eulachnus nudus* (De Geer). In *taeniatus* (Koch) of Del Guercio the third antennal segment is longer in comparison

with the following segments than in these specimens. In this respect and in sensoriation it fits *nudus* (De Geer) of both Del Guercio and Choldkovsky, except that IV certainly is not "much" longer than VI. Furthermore the rostrum does not reach to the end of the abdomen, in reality scarcely to the middle. The cornicles are considerably smaller than those figured by Del Guercio for *nudus* De Geer. For these reasons the writer considers that *Lachnus pini* (Linn.) of Walker and Buckton is *Dilachnus taeniatus* (Mordw.), and so places it as a synonym.

---

### The Genus *Diamesa* Meigen (Diptera, Chironomidae).

By O. A. JOHANNSEN, Cornell University, Ithaca, New York.

Among the Chironomidae, taken in a tent trap which was set over a riffle near Fall Creek, Ithaca, N. Y., were specimens of a species of *Diamesa* with yellow thorax. As this form appears to be new, it is described herewith. There are several European species which resemble it, *D. gaedii* Meigen approaching it most closely. This European species differs, however, in having a brownish border at the anterior end of the median, and at the posterior end of the lateral thoracic stripes; a median yellow stripe on the metanotum, and a relatively longer fore basitarsus.

#### *Diamesa fulva* n. sp.

♀. Length 2.2 mm. Head yellow, a diffuse brownish spot on each side of the median suture on the vertex; front broad, over half the width of the head, including eyes, in frontal view. Eyes black, somewhat emarginate, glabrous, facets large. Antennae with eight visible segments, yellow basally, apical segment fuscous, with dusky hairs; the basal segment large, disc-like, the second, third and fourth segments slightly longer than broad, second and third not sharply separated from each other, fifth, sixth and seventh about twice as long as broad, eighth fusiform, not quite as long as the preceding three taken together, total length of antenna 0.25 mm. Epistome subtriangular, subfuscous, dorsal surface with rather long bristly hairs, transverse suture very distinct; palpi four-segmented, first and second segments subequal, third slightly longer, fourth about twice as long as the second; total length of palpus about 0.5 mm.

Thorax yellow, whitish pruinose, subshining, dorsum with three broad, more or less distinct ferruginous vittae, laterals anteriorly, mid-

dle one posteriorly abbreviated; collar incised, angles rounded; scutellum yellow, large, tumid, with very few yellowish hairs; pleura pale yellow, pectus deeper yellow; metanotum blackish brown.

Abdomen elongate oval, compressed, hairs pale; tergum blackish brown, posterior margins of the segments paler; venter dull green, posterior margins of the segments paler green; valves of the ovipositor about as broad as long, racket-shaped, yellow.

Wings hyaline, with distinct milky tinge, anterior veins heavy, yellowish, with few setae; posterior veins almost colorless; posterior branch of radius arched, ending slightly proximad of the tip of the media, costa produced over one-fourth the distance beyond the tip of the radius towards the tip of the media; wing surface finely and irregularly roughened as in *D. waltlii*, without true punctations; anal lobe strongly produced, hind margin with a fringe of pale hairs. Halteres white.

Fore legs subfuscous, except coxae and extreme bases of femora which are yellow, first tarsal segment over 0.8 as long as the tibia; middle and hind legs, including coxae, yellow; knees, extreme tips of tibiae and basal tarsal segments, and the whole of the last four tarsal segments fuscous; tibial spurs distinct, posterior pairs longest; fourth tarsal segments on all the legs broadened and emarginate apically, and but little over half as long as the fifth segment; tarsal claws simple, empodium shorter than the claws.

Ithaca, New York, May 30, 1914.

The above description was largely drawn from a pinned specimen which was later mounted on a slide. The *type* will be placed in the Cornell University collection. The single pinned paratype, from the same locality, does not differ from the above.

Though Kieffer mentions "hairy eyes" among the generic characters of *Diamesa* sens. str., I am not inclined to erect a new genus for the species on this character alone, especially as the male is still unknown. Our three species of *Diamesa* as now restricted may be distinguished as follows:

- a. Smaller species, female less than 2.5 mm. long; thorax yellow; eyes glabrous. . . . . *D. fulva* n. sp.
- aa. Larger species, over 4 mm. long, thorax black or cinereous.
  - b. Terminal antennal segment of male twice the length of the others combined; keel of the last tergite produced caudad about as far as the apex of the basal segment of the clasper and beyond the tip of the inner process of this segment (fig. 5, Muttkowski, 1915) . . . . . *D. mendotac.*
  - bb. Terminal antennal segment of male not over 1.6 times as

long as the others combined including the large basal segment, or twice the length of segments 2 to 7 combined; dorsal keel not produced as far as the tip of the inner process of the basal segment of the clasper; eyes densely short haired, all claws of the male somewhat broadened at the tip, flat and brush like; fore basitarsus nearly 0.7 as long as the corresponding tibia.  
*waltlii*.

Mr. Muttkowski (p. 118, 1915) calls attention to the noticeable difference in the form of the larval labium of *D. mendotae* and *D. waltlii* and ventures the opinion that I may have confused my material of *D. waltlii* and *Cardiocladius (Thalassomyia) obscura* when writing my papers (1903, 1905).

There is however no error in my rearing records of these species. In the first place, the arrangement of the teeth in the labium is subject to considerable variation within a genus as may be seen in *Chironomus*, and there seems to be no reason why this should not also be so in *Diamesa*. Secondly, I find in my notes the following: "Six reared specimens of *Diamesa* and their six cast larval and pupal skins. Reared Nov. 24. Material collected from swift water, Cascadilla Creek, Nov. 14." The figures in my 1905 paper were based in part on this material. The figures in 1903 paper were made from specimens taken at an earlier date.

In the third place, the larva of *Thalassomyia obscura* is not full grown until spring, the adults appearing from May to September, while the larva of *Diamesa waltlii* in this locality is full grown only in the fall and winter, the adults appearing from November to April. Specimens collected in late fall and early winter therefore cannot be confused.

Concerning the early stages of *D. fulva* all that can be said is that the larvae must live in flowing water, since the adults were captured under a tent trap placed over a riffle. The larvae of the other two species found in this country and that of *T. (Cardiocladius) obscura* may be distinguished as follows:

1. Middle tooth of labium at least as wide as three lateral teeth, broadly truncate and with convex margin.....*T. obscura*
2. Middle tooth of labium broad, margin concave.....*D. mendotae*
3. Middle tooth of labium narrow, not twice as wide as the first lateral tooth. ....*D. waltlii*

In my balsam mounts of the pupal exuviae of *D. waltlii* I failed to see the respiratory filament. In a pupa of *Diamesa*, which I believe to be *D. waltlii*, recently collected in Cascadilla Creek on the rocks near the falls, the filaments are visible as delicate colorless tubes as described by Muttkowski for *D. mendotae*. In other particulars, including the arrangement of the marginal setae on the lateral carina, Muttkowski's description of *D. mendotae* applies equally well to *D. waltlii*.

#### REFERENCES.

1903. JOHANNSEN. Aquatic Nematoceros Diptera. N. Y. State Museum, Bul. 68: 328-441.  
1905. JOHANNSEN. Aquatic Nematoceros Diptera II. N. Y. State Museum, Bul. 86: 70-330.  
1915. MUTTKOWSKI. New Insect Life Histories. Bul. Wis. Nat. Hist. Soc. XIII: 109-122.

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### A State Insect Survey Project.

By FRANKLIN SHERMAN and C. S. BRIMLEY, Division Entomology, State Dept. Agr., Raleigh, North Carolina.

In former years the writers, jointly and separately, published a number of papers in ENTOMOLOGICAL NEWS bearing on the insect fauna of North Carolina,—giving lists of species in certain groups, distribution and seasonal notes, as indicated by our records. We were avowedly accumulating data on the insect life of the State as a whole. We believed that this was desirable, as no such study had been undertaken in any neighboring state, and we considered that the variety of conditions presented in North Carolina, render it a "Key" state to the general insect fauna of the southeastern group of states. Florida is an exception for obvious reasons.

From time to time we have received inquiries regarding this work, the methods and progress.

The collections and records have steadily increased in volume, in interest and we believe in scientific value. They are a source of continual reference and study. And after twenty years we are making better progress than at any time in the past.

In 1915 "A Study of the Insect Fauna of the State, etc." was formally listed as one of the permanent projects of work



of the Division of Entomology, N. C. State Dept. Agriculture. In December, 1919, the junior author was engaged primarily for this project, since which time the work has gone forward with increased rapidity.

Each species (or recognized variety) of insect known to exist in the state is listed on a 5x8 inch card.—One side of the card is closely lined, on the other side is an outline map of the state. On the lined side is written (at top) the name of the species,—its number, page or other designation in some recognized check list, (if such), and a brief indication of its general distribution in the United States and elsewhere. On the lines below are listed the localities in the state at which adults have been taken, dates of capture, etc., all in condensed form. Very brief notes on food-plants and transformations may be included. On the map (on back) we place a plainly-visible dot at each locality where the species is taken in the state. We do not number the list of localities and number the dots to correspond,—postal-guide makes this unnecessary.

The front of the card will hold entries for from 15 to 20 localities. By the time the card is filled the entries will give a general idea of the distribution (both geographical and seasonal) of the species, and by the time a second card is filled one can outline with fair positiveness the status of the species.

In this work one soon learns that every species of insect does not occur everywhere and at all times. While there are many common species which our records show to occur throughout our state (equally common everywhere—?), yet there are very many other species which have been taken only in well-defined areas, and (adults) often only in a very limited portion of the year. And many species, even some of the larger and more conspicuous ones, have been taken in only one or two localities.

One soon grasps the idea of life-zones—(1) that there are such zones, and that a balanced conception of them is helpful and enlightening to the mind; (2) that their boundaries are (usually) not sharply defined and that there are many instances of a species belonging typically to one zone intruding itself into the territory of an adjoining zone. This has its application in our economic work in outlining the areas in which certain economic insects are, or may be, abundant.

We find that many species occur commonly in spring, less commonly in late summer and fall, and sparingly if at all in midsummer,—thus our seasonal record of a species may be fairly complete for April or May and for September, long before we are able to show its presence throughout July and August. This also has its economic significance, as it gives a strong hint of the general life-history.

We have intended that these records shall adequately answer three simple questions (others incidentally):—(1) What is it? (2) Where does it occur in the state? (3) When is it to be found?

The undertaking involves the handling of numerous specimens and much routine work in arranging and recording. It involves much work in classification, in which we enlist the help of specialists as far as possible. Always admitting the possibility of error, we consider that on the whole our collections and records are reliable. Specialists working in any group may call on us for our records, and in many groups we would be glad to submit unnamed material for determination. One of our difficulties has been to secure determinations in the various groups. More than once it has occurred that pretentious papers have recorded the distribution of a species in such a way as to indicate that it does not occur in the southeast, when we have named specimens of the species in our state insect survey collections—presumably correctly named.

We believe that an entomologist should have some conception of the variety and distribution of his insect fauna, and if this be co-ordinated with a similar knowledge of birds, reptiles, etc. (as has been done to a large degree in this state) so much the better.

At the end of 1914 we counted the species listed in our card-catalogue, and this has been repeated each year since, at the same time making occasional eliminations and changes to correspond with latest nomenclature as best we can. While some of our records are from literature and represent species not in our collections, yet in the main our records are substantiated by our specimens, or by ones "retained" by specialists—would that we had more specialists in public employ and elsewhere!

The following table shows the progress of this work from the end of 1914 to date: In this showing we count most of the smaller groups in the Neuroptera.

*North Carolina Insect Survey,—Progress, 1914,—to May 31, 1921.*

	Number Species Recorded for State at End of							
	1914	1915	1916	1917	1918	1919	1920	May 31 1921
Orthoptera ...	179	179	185	185	185	187	189	189
Hemiptera ...	399	562	591	611	665	688	773	776
Neuroptera, etc.	248	255	266	267	268	272	286	290
Lepidoptera ..	764	765	767	772	773	788	863	869
Diptera .....	646	682	703	723	743	804	951	1,045
Coleoptera ...	1,867	1,926	1,987	2,011	2,016	2,041	2,090	2,257
Hymenoptera .	327	328	359	371	394	465	643	747
Totals .....	4,430	4,697	4,858	4,940	5,044	5,245	5,795	6,170

*Comments on Table:*—We had the Orthoptera fairly well worked up before 1914 hence few additions since. The increases in Hemiptera have been largely in Homoptera, and there is yet plenty of room for additions in Capsids, Aphids, Coccids, etc. While some groups under Neuroptera have been fairly well exploited we lack much in smaller water-breeding forms. The larger moths of Raleigh and the butterflies of the state as a whole were fairly well worked before 1914, and intensive collecting of the smaller moths has not yet been attempted. The progress in Diptera has been fairly constant and well distributed through the order, still lacking much in the smaller species of course. Coleoptera were well along at beginning of the period,—a number of new records were added from the distributional notes in Leng's Check-list,—of course we have unidentified material, especially of smaller species. In Hymenoptera much of the progress has been very recent, with numerous small forms yet unaccounted for.

As a whole, the list shows an average gain of 165 species per year for the period 1915-1919 inclusive, but the growth has been more rapid since the assignment of a worker mainly to this project. Many assistants and co-workers have contributed generously, though careful amateur collectors are scarce in this section.

We hope to keep it up.

## Two New Species of Hesperidae (Lepid., Rhop.).

By HENRY SKINNER

*Pseudosarbia flavofasciata* n. sp.

♂.—Head, palpi, pectus, patagia, undersides of femora and abdomen crimson.

*Upperside.* Primaries chestnut brown with a quadrate spot of yellow at the end of the discoidal cell and a postmedial yellow band crosses the wing from the costa to the lower median nervure. The first part of the fascia is made up of five spots, the next spot is quadrate and the third is triangular and the fourth quadrate with an upward projection or tooth.

Secondaries chestnut brown with a postmedial yellow fascia, extending from the costa toward the inner margin for 11 mm. Fringe yellow.

*Underside.* Primaries with inner two-thirds of the wing darker than above and the outer third purplish vinaceous. Yellow fascia as above, edged with black and connecting along the costa with the spot at the end of the cell. Base of the wing also yellow.

Secondaries purplish vinaceous with the yellow fascia repeated and edged with black; at its lower end it connects with a yellow band running to the base of the wing, which is also yellow and on this yellow basal area are two black dots. Expanse (one wing) 27 mm.

Described from two specimens taken by H. H. Smith in Chapada, Brazil. *Type* and paratype in the collection of The Academy of Natural Sciences of Philadelphia.

I sent a drawing of this insect to Captain N. D. Riley to see if it was represented in the British Museum collection. He reported that they had one specimen in the Godman and Salvin collection from Chapada, Matto Grosso, Brazil (H. H. Smith, January.) It is related to *Pseudosarbia phoenicola* Berg. Captain Riley says, "I have looked up the description of *phoenicola* and find we have some specimens of it. It is rather larger and darker and has the ground color the same above and below and the yellow bands of upperside broader and much more regular than the other species. This yellow band too, on the forewing of *phoenicola* is virtually parallel with the outer margin; in the new species from vein four to the costa is practically at right angles to the costa."

*Pyrrhopyge sangaris* n. sp.

♂.—Palpi crimson with tips black. Abdomen and legs dark green black.

*Upperside.* Primaries shining green-black. Secondaries shining green-

black, somewhat darker than the primaries, with a blood-red spot near the anal angle. This spot is quadrate, 4 mm. wide and is 3.5 mm. from the inner margin and about the same distance from the outer margin.

*Underside.* Primaries as above but lighter in color with the crimson spot repeated but somewhat smaller and rounder. Expanse (one wing) 23 mm. Inner margin of hind wing 21 mm.

*Type* one male in the collection of The Academy of Natural Sciences of Philadelphia, taken at Hacienda Cincinnati, Sierra San Lorenzo, Magdalena, Colombia, July 23rd, 1920, Academy Colombia Expedition, Rehn and Hebard.

This handsome species has a superficial resemblance to *creon* Druce but has the shape of *phidias* Linn.

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## Homopterological Gleanings, No. 1.

By Z. P. METCALF, North Carolina State College and  
Experiment Station, West Raleigh, N. C.

### INTRODUCTION.

In this series of papers it is proposed to bring together odds and ends that have accumulated in the course of our studies of the Homoptera. It is our hope that these stray bits of information may be as useful to others as they have been to us in the past.

#### DATES OF BURMEISTER'S "GENERA INSECTORUM."

I have had in my possession for some years a copy of Burmeister's *Genera Insectorum*, Hefts 1 to 5 in the original covers, and believe that the following notes should be added to what Kirkaldy has already written<sup>1</sup> in regard to the dates of publication. The dates given in each case are the dates on the original covers and only the homopterous genera are included.

Heft 1, 1838, *Lystra*, *Acocephalus*, *Bythoscopus*, *Eurymela*.

Heft 2, 1838, *Selenocephalus*, *Coelidia*, *Eupelix*, *Jassus*.

Heft 3, 1839,<sup>2</sup> *Ulopa*, *Dorydium*, *Cephalclus*, *Ledra*.

Heft 4, 1839,<sup>2</sup> *Gypsona*, *Xerophloca*.

Heft 5, 1840, *Paropia*.

Until further evidence is produced it would seem that it would be better to accept the dates of publication for these parts as given in the parts themselves. I do not think that such acceptance would affect the nomenclature as it now stands, my interest being simply to present the

<sup>1</sup> The Entomologist, xxxviii, 307 and 308, and The Entomologist, xli, 13.

<sup>2</sup> Kirkaldy gives 1838.

facts, a thing I should have done years ago, but the matter was not called to my attention forcibly until recently in going over the manuscript of the forthcoming Bibliography of the Homoptera of the World.

Dictyophara versus Dictyophora.

Van Duzee in his recent catalog of the Hemiptera, 1917, gives *Dictyophora* (*sic*) and cites Germar, Silb. Revue Ent. I, 175, 1833, as authority. This, however, is wrong, as I have recently determined from an examination of Germar's paper, where the name is spelled *Dictyophara*. I have reasons for believing that the paper in my possession is an original copy, as it has bound with it an autographic letter by G. Silbermann to M. Audouin, dated "Strasbourg 16 Mars 1833." I presume that this matter has been confused because Fieber states in a footnote after the genus *Dictyophara* in his *Les Cicadines d'Europe*, 209, that "Dr. Stål rectifie d'après  $\delta\acute{\iota}\chi\tau\upsilon\upsilon\upsilon\upsilon$ , rete—et  $\phi\alpha\rho\sigma$  pallium, tegmen, dans Hem. Afric. IV, 1866, p. 154." Stål is, however, apparently only giving the derivation of the name as he states in a footnote, Hem. Afric. IV, 154, "a  $\delta\acute{\iota}\chi\tau\upsilon\upsilon\upsilon\upsilon$  = rete et  $\phi\alpha\rho\sigma$  = pallium, tegmen." The facts in the case as far as I have been able to trace them are Germar wrote originally *Dictyophara*, but Spinola 1839 started the trouble by writing *Dyctiophora* Germar. In this he was followed by Duponchel who examined Spinola's paper apparently before it was published. See below. Stål corrects this in his *Hem. Afric.*, 1866, to the original spelling, but two years later Kirschbaum writes *Dictyophora*. Stål was followed apparently by all subsequent writers until Melichar in his *Monographie der Dictyophorinen* revives the name as spelled by Kirschbaum. Van Duzee follows Germar and Stål in his *Check List of Hemiptera*, but changes to the Kirschbaum-Melichar spelling in his *Catalogue of Hemiptera*. The genus should stand, therefore, *Dictyophara* as originally spelled by Germar and should have as synonyms *Dictiophora* (Germar), Spinola and *Dictyophora* (Germar) Kirschbaum. This matter would not be of so much importance if it were not for the fact that modern classification bases a subfamily upon this genus and in the minds of many this subfamily is entitled to family rank.

THE DATE OF DUPONCHEL'S REVIEW OF SPINOLA'S "ESSAI SUR LES FULGORELLES."

Van Duzee gives Duponchel's review of Spinola's *Essai sur les Fulgorelles*, Revue Zoologique, II, 199-206, precedence over Spinola's paper in Ann. Soc. Ent. France, VIII, 133-337, 339-454. This I believe is in error. Duponchel dates his paper "Paris, 9 juillet 1830," and states in the introduction that he is publishing this preliminary review because Spinola is offering a new classification. The *Revue Zoologique* was not published, however, until 1840, according to the title page of the publication, and in the meantime Spinola's paper was published in 1839 in the *Annales*. Therefore Spinola's names take precedence over Duponchel's names throughout.

## A Second Nearctic Species of Protura, *Acerentulus barberi*, New Species.

By H. E. EWING, Bureau of Entomology, U. S. Department of Agriculture, Washington, D. C.

Since the discovery in 1907 of the very interesting primitive insects, the Protura, by the Italian zoologist and entomologist, F. Silvestri, only a single species has been reported, as far as can be learned, from the Nearctic Region. This species was described in 1909 by Silvestri, from New York, as *Eosentomon zhecleri*. Aside from this single record by Silvestri, the presence of Proturans in the Nearctic Region has been only a matter of conjecture until quite recently, when their occurrence in the vicinity of Washington became established.

Some years ago Dr. A. C. Baker, of the Bureau of Entomology, collected three minute arthropods at East Falls Church, Virginia, which he determined as being Proturans. The matter was not given any special attention at the time, and a specific determination was not made. Also no record was published of this discovery. Since then, apparently these primitive insects have been overlooked in the vicinity of Washington until the winter of 1920-21. Their occurrence here was made definitely known by the finding by H. S. Barber of a single living specimen in humus that had been brought to the National Museum from Plummer's Island, Maryland, by R. C. Shannon some weeks previously. Soon after the discovery of the first specimen two more were found under stones near the mouth of Dead Run, Virginia (opposite Plummer's Island) by H. S. Barber and W. M. Mann, and since then specimens have been taken in some numbers in decaying leaves, by the writer, at Takoma Park, Maryland.

This important discovery of representatives of the order Protura in this vicinity has been reported to the Entomological Society of Washington in the form of a note by Mr. Barber at the March 3rd meeting, and Mr. Barber has suggested that the writer make a specific determination of the Proturan. This has been done, the species proving to be new. It is here named *Acerentulus barberi*, new species, in honor of Mr. Barber.

An examination of the specimens of this species shows it to be quite different from *Eosentomon wheeleri* Silvestri. Silvestri's species belongs to the family Eosentomidae, which family is characterized by the presence of a tracheal system and by having all the vestigial appendages of the abdomen two-segmented. The species here described belongs to the family Acerentomidae, which family is characterized by having no tracheal system and by having the second and third pairs of vestigial appendages of the abdomen much more reduced than the first pair and only one-segmented. The formal description of the species follows:

**Acerentulus barberi**, new species.

♀.—Color in life a uniform yellow, which gives strong reflections when in the direct sunlight. Head long, broadest slightly in front of the posterior margin; labrum not produced into a process; pseudoculi inconspicuous.

Prothorax very short, about twice as broad as long, and slightly broader than the head, provided above with a transverse row of four setae, the outer being slightly the shortest. Mesothorax broader than long and about twice as long as prothorax, sides convex, its longest lateral seta equal to about one-half its width; metathorax longer and broader than prothorax and broader than long, sides slightly convex and somewhat divergent, longest lateral seta equal to one-half the width of thoracic segment itself.

Abdomen of medium length, segments increasing in width from I to III, then decreasing gradually to VIII; VII twice as broad as long and with sides almost parallel, but seen to converge slightly toward the rear; VIII similar to VII in shape, but much smaller, with a band near its anterior margin marked with microscopic longitudinal striations; segments IX, X and XI very short and ring-like; XII longer and broadly rounded on its free margin. During life the last four segments of the abdomen are held much of the time almost completely telescoped into VIII. Tergal apodemes present on first eight abdominal segments, when viewed from above, seen to be only very slightly curved and laterally branched. Dorsal setae of abdomen moderate, the longest ones on segments II and III being scarcely equal to one-half the widths of these segments. Vestigial appendages of first abdominal segment conspicuous, about as broad as tibia III, first segment fully twice as long as broad and cylindrical, last segment a truncated cone, about as long as broad at the base; vestigial appendages II and III subequal, being minute and cone-shaped.

Legs moderate; first pair almost twice as long as the subequal last two pairs. Claw of leg I very long, being about half as long as the tarsus, straight for most of its length, but hooked toward the end.

Length with abdomen about normal, 1.05 mm.; width at the region of the third abdominal segment, 0.22 mm.

*Type locality*.—Takoma Park, Maryland. *Type*.—Cat. No. 24,162, U. S. N. M.



Described from the type specimen only, which is a female, collected by the writer, Feb. 14, 1921, at Takoma Park, Maryland, in decaying leaves. This female was taken from a small pocket on the side of a hill only a few rods from my home. The specimen is mounted in balsam with the legs extended and is in fine condition. Because of the present lack of the proper analysis of specific characters in the Protura, it appears desirable to have included in this description only a single individual. After a more complete study has been made auto-types can be designated.

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**The Curious Mating Habit of *Megarhyssa atrata* (Fab.) Hymen.:  
Ichneumonoidea).**

The discovery of the curious mating habit of *Megarhyssa atrata* throws some light on the reason for the previous emergence of the males. Very little seems to have been recorded concerning the mating habits of the Ichneumonoids. It is the rule among these insects that the males emerge before the females, especially those parasitic on wood-boring species. In this respect *Megarhyssa* is a striking example.

During the early season before the females of *Megarhyssa* have appeared in numbers, groups of males may be observed congregating at a certain point on a dead tree that is also a host for *Tremex columba* (Linnaeus).

On May 9, 1921, at Harrisburg, Pa., the writer visited a dead standing beech, which had been the host for *Tremex columba* for several years, and in which two and possibly three species of *Megarhyssa* were found ovipositing during preceding summers. On this date several groups of from six to ten males of *Megarhyssa* were found. A closer examination showed that in each group one male had the whole of his abdomen inserted into the tree, through a hole either chewed through the surface by the emerging female, or from the outside by the male. This hole was only large enough to admit the abdomen of the male, although the other males present were attempting to insert their abdomens.

The tree was then cut into at this point, and the female of *Megarhyssa atrata* was found mating with this male. The blow from the axe disturbed the pair and separated them before definite observations on the process could be made; but it was apparent that the females of *Megarhyssa* are fertilized before they emerge. The males probably are attracted by scent, and congregate at the point from which she will emerge.

S. A. Rohwer states\* that *Megarhyssa atrata* (Fab.) had not been definitely associated with its host. It was found in this tree as a parasite of *Tremex columba* (L.), as are all but one of the species of *Megarhyssa*.—A. B. CHAMPLAIN, Pennsylvania Bureau of Plant Industry, Harrisburg, Pa.

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\* Proc. U. S. Nat. Museum, Vol. 57, No. 2317, p. 429. 1920.

# ENTOMOLOGICAL NEWS

PHILADELPHIA, PA., OCTOBER, 1921.

## That He Who Runs May Read—

We write our scientific papers, presumably, for others to read and use. Often those papers do not receive that attention to which, we think, they are entitled. Many papers are published and so a competition, as it were, is set up between them as to which shall be read and which neglected. The more easily a paper can be read and understood, the more likely it is to be read. Obviously, to make a paper easily comprehensible should be an author's first care, but it is equally obvious that we do not exert that care as far as we might.

One source of annoyance to the reader of illustrated papers arises from having to compare figures relating to different forms on a plate and to hunt for the names of the species in an "Explanation of Plates," or even in a list at the bottom of the plate. Why would it not save time and irritation and prevent neglect if we put the specific name (or an abbreviation of the name) alongside each figure, or group of figures, on the plate itself? This might detract from the artistic appearance of the plate (although not necessarily so), but, after all, our plates are for scientific, not artistic, ends. We invite all authors to consider this suggestion, especially those who expect to contribute plates to the NEWS.

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## Manual of the Hemiptera of Eastern North America in Preparation.

The special studies of the undersigned have now reached the point where it seems possible to produce an extensive and approximately complete work on the Hemiptera (Heteroptera) of the eastern portion of the Continent, and rapid progress is now being made on it. It is intended that the work will not only provide the means for the identification of the species, but also include full treatment of the biology and literature of the group. The authors will be glad to receive collections for study and identification.—H. G. BARBER, H. H. KNIGHT, H. M. PARSHLEY, J. R. DE LA TORRE BUENO.

## Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF  
THE GLOBE

### Changes of Address.

Dr. C. L. Metcalf, for the past seven years Professor of Entomology in Ohio State University, has resigned to accept the position of Professor of Entomology and Head of the Department of Entomology in the University of Illinois. He should be addressed in care of the University at Urbana, Illinois, after September first.

On and after Aug. 1st, 1921, my residence address will be 3006 Chestnut Street, Milwaukee, Wisconsin, instead of 2120 Grand Avenue, after which I should be addressed to me there.—GEORGE P. BARTH, M.D.

R. Tompkins de Garnett has returned from a year's visit to France and will now be permanently located at 583 Merrimac Street, Oakland, California. While at Paris he made extensive notes in the National Museum there on certain groups of Coleoptera.

### Crane-Flies of New York.

Cornell University has just issued Part II of "The Crane-Flies of New York," by Charles Paul Alexander. This part, which is published as Memoir 38 of the University Agricultural Experiment Station, deals with the biology and phylogeny of the crane-flies and gives representative crane-fly life histories, external and internal morphology, and concludes with keys and descriptions. The monograph contains about 450 pages.

To persons interested in research in the field covered by the Memoir, copies will be sent as long as the supply lasts. Ask for M-38, and address requests to Office of Publication, College of Agriculture, Ithaca, New York.

### On the Destructive Method of Dismembering Types for Preservation in Riker Mounts.

In the editorial entitled "Depositories of Type Material" by J. A. G. Rehn, in the June number of ENTOMOLOGICAL NEWS, that portion touching on the above subject obviously refers to the policy adopted by the present writer of placing certain fragile Orthoptera in cotton mounts. But the adjective "destructive," as applied to this method of preservation is certainly not justified, nor is "dismembering" a method of preparation to be necessarily decried. In certain instances intentional dismembering was indeed done, as in occasional cases of Blattidae, where the legs, usually from one side of the body only, were removed to facilitate the examination of armature, &c., or the abdomen removed to better show its characters. However, when one remembers that much of the type material of Orthoptera in the National Museum came from the collections of early authors, the absence of parts and frequent partial dismemberment should not invariably be attributed to wilful vandalism on

the part of the present custodian. And that the types of such deciduous-limbed creatures, as many of the Orthoptera, would be better preserved if placed in Riker mounts, or other protective devices, is obvious when one notes the condition of most types of the older authors. For every such type specimen, in even a tolerably fair state of preservation, there are many so far gone to wreck and ruin as to be of little practical value. Realization of such conditions influenced the writer to incase certain material in Riker mounts, and the main reason for abandoning this system, even in part, is that the claws and other armature of specimens are prone to cling to the cotton when removed for examination, thus often causing the breakage of legs, &c. But even in such instances the detached appendages are not lost, as they so often are if knocked off in a pinned series, and it is thus seriously questionable if it is not after all a mistake to discontinue this method of preserving the types of fragile insects. However, this system has been for the most part superseded in this collection by that of segregating types and representative sets in individual trays, a system now in general use in the National Museum, except in the Macrolepidoptera.

The matter of type deposition in privately endowed institutions as compared with those publicly or nationally financed is one subject to discussion, and may be better left to others.—A. N. CAUDELL.

#### Honorary Degrees Conferred on Entomologists.

The University of Indiana conferred the degree of LL.D. on W. S. Blatchley on Wednesday, June 8, 1921. It is customary for the recipient of the degree to be introduced by a member of the faculty, with a short statement, giving the reasons for conferring it. Dr. David Motier, of the department of botany, did this for Mr. Blatchley in the following complimentary terms:

"Willis Stanley Blatchley—Native of Connecticut; educated in the schools of Indiana; successful teacher; leader in expeditions of scientific exploration; sixteen years an efficient officer of the State in the capacity of State Geologist; a life-long student of natural history; author of literary and scientific books; a nation-wide authority on beetles, weevils and locusts; one of the foremost naturalists of America; interpreter of nature's beauty in woodland and meadow, by wayside and stream, in stones and in flowers.

"Mr. President, this distinguished alumnus has been recommended by the faculty for the degree of doctor of laws."—*Indianapolis Star*, June 11, 1921.

We have the pleasure of congratulating also Mr. William Schaus, the well-known Lepidopterist, of the Department of Insects, United States National Museum, on the conferring of the degree of M.A. upon him by the University of Wisconsin, last June.

### The Mulford Biological Exploration.

The scientific expedition, known as the Mulford Biological Exploration of the Amazon Basin, made its departure from New York on June 1st. Membership in the party includes Dr. H. H. Rusby, Dean of the College of Pharmacy, of Columbia University, as director: his secretary, personal assistant and taxidermist, George S. McCarty, of Woodbury, New Jersey; Dr. Wm. M. Mann, Entomologist, of the Bureau of Entomology, U. S. Department of Agriculture, and Honorary Custodian in the Division of Insects, U. S. National Museum; E. N. Pearson, Ichthyologist, representing Dr. C. H. Eigenmann, of the University of Indiana, and Dr. A. G. Rutaven, of the University of Michigan; Dr. Orland E. White, of the Brooklyn Botanic Garden, who goes as representative of the Brooklyn Botanic Garden and of the Bussey Institution of Harvard University, and Dr. F. L. Hoffman, Vice-President and Chief Statistician of the Prudential Life Insurance Co., of Newark, New Jersey, especially interested in the health, longevity and sanitary progress in the regions visited, particularly as regards American residents, temporarily or permanently settled under conditions of tropical life.

The voyage from New York to Mollendo, Peru, was delayed somewhat by engine difficulties, but was otherwise uneventful and made under most favorable weather conditions. The party passed through the Panama Canal on the 9th of June and reached Callao on the 15th, and while in port there the party visited Lima, the capital city of Peru, on invitation from the Peruvian Government. Here they were received by distinguished officials and elaborately entertained.

The railroad journey from Mollendo to La Paz was made in easy stages, a stop being made at Arequipa, and other points on the way up, and every precaution was taken to protect against the effects of the rapid elevation and change of altitude.

Departure from La Paz, Bolivia, was made about July 9th, whence they proceeded by rail to Eucalyptus, the terminus of the railroad. From Eucalyptus to Pongo they traveled by auto truck over the new auto road recently completed by the Guggenheim interests in Bolivia. From Pongo a three days' journey by mule brought them to Canamina. After two or three weeks in making collections in the vicinity of Canamina and Espia, at the head of navigation on the Bopi River, the party proceeded by rafts down the river.

Important scientific work has already been accomplished. Taking advantage of every moment that could be spared from the details of arranging for their trip into the interior and the transportation of their equipment, collections have been made in and around Mollendo, Arica, Arequipa, Tiavaya and La Paz. A large quantity of these materials, shipped just before the party left La Paz, has been received in Philadelphia.

The next objective will be Lake Rocagua, in which region they expect to spend a month or more exploring and collecting. Other important collections will be made in the Valleys of the Rio Beni and the Mamore. The Mamore River will be visited with the special object of exploring the region which yields Brazilian Ipecac. Temporary headquarters will next be established at Villa Bella, the western terminus of the Madeira-Mamore Railroad. The party will so arrange their work and time their journey as to reach Manaus about November of this year. Here they will receive large shipments of supplies for the second half of the journey and send home the collections already made.

According to present plans the party will then start out from Manaus early in 1922, ascending the Rio Negro and Rio Uaupes, for the purpose of exploring and collecting among the upper waters of the latter river and in some of the valleys and ravines along the eastern side of the Andes south of Bogota, Colombia. After crossing the mountains to Bogota, they will finally emerge at the coast at Barranquilla for their return journey.

Perhaps no other expedition that has gone into South America has ever entered the tropics so well protected medically against possibilities of fevers, skin diseases and the numerous tropical affections. These include great quantities of Antidysenteric Serum, for the prompt treatment of cases of dysentery, should any of the members of the party contract that disease,—a rather unlikely event, if all the members make the proper use of the means provided for the sterilization of the drinking water. Antipneumococccic Serum and Antitetanus Serum are also included among the supplies. Most important, however, is a quantity of Anti-snake-venom, which the Mulford Company took special pains to prepare for Dr. Rusby's party, and which they are supplying to them in small, sterile, hypodermic syringes, ready for instant use when occasion requires.

Members of the party have further protected themselves against disease by taking certain preventive measures. These include the well-known measures of vaccination against smallpox and the prophylactic inoculations against Typhoid Fever, the effectiveness of which no longer remains a matter of doubt. In view of the prevalence and dangers of pneumonia to which they are exposed, especially in the highlands of Bolivia, the members of the party have been provided with an Antipneumonia Vaccine, which should give them considerable protection, for some time at least. If it gives them a moderate protection against pneumonia for even six or eight weeks, this will carry them over the most dangerous period, i. e., until they have crossed the Andes and have descended from the highlands of Bolivia to the great plains. They are also supplied with various insecticides and repellents, which they will use to obtain relief from the annoyance of incessant attacks of hordes of insects.

Through Dr. Rusby's wide experience and foresight, all the possible needs of the party while in the field have been provided for in great detail. Among the supplies are large quantities of food-stuffs, such as canned meats, bacon, etc., purchased from surplus Army stores, and also a quantity of evaporated vegetables and soup powders. Their supplies and equipment, weighing nearly three tons, are packed in a large number of boxes of the proper size for transportation by mule or human porters.

The scientific work of the expedition is well provided for in the form of all kinds of scientific apparatus, collecting equipment and containers with abundant supplies of formaldehyde and other preservatives. A full supply of printed labels and note-books are among the details provided, so that collections may be sent back properly identified and ready for study.

The officials of the H. K. Mulford Company, which house is acting as sponsor and financial backer of this enterprise, have been especially gratified at the generous attitude which institutions of learning and Government Bureaus have taken toward this expedition.

The hope has been expressed in many quarters that the successful outcome of this enterprise will convince scientists and the public generally that complete and hearty co-operation between large industrial and scientific institutions can be obtained to their mutual benefit and on a thoroughly professional and altruistic basis.—R. H. HUTCHISON, Secretary, Philadelphia, Pa.

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## Entomological Literature

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

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), 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.

The records of papers containing new genera or species occurring north of Mexico are all grouped at the end of each Order of which they treat.

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.

**The titles occurring in the Entomological News are not listed.**

**2**—Transactions of The American Entomological Society, Philadelphia. **4**—Canadian Entomologist, London, Canada. **5**—Psyche, Cambridge, Mass. **7**—Annals of The Entomological Society of America, Columbus, Ohio. **8**—The Entomologist's Monthly Magazine, London. **9**—The Entomologist, London. **10**—Proceedings of the Entomological Society of Washington, D. C. **11**—Annals and

Magazine of Natural History, London. 13—Journal of Entomology and Zoology, Claremont, Cal. 14—Proceedings of the Zoological Society of London. 20—Bulletin de la Societe Entomologique de France, Paris. 22—Bulletin of Entomological Research, London. 24—Annales de la Societe Entomologique de France, Paris. 31—Proceedings of the Entomological Society of Nova Scotia, Truro. 33—Annales de la Societe Entomologique de Belgique, Brussels. 34—Bulletin de la Societe Entomologique de Belgique, Brussels. 35—Proceedings of the South London Entomological and Natural History Society, London. 36—Transactions of the Entomological Society of London. 45—Zeitschrift fur wissenschaftliche Insektenbiologie, Berlin. 48—Wiener Entomologische Zeitung. 50—Proceedings of the United States National Museum, Washington. 52—Zoologischer Anzeiger, Leipsic. 54—Proceedings of the Biological Society of Washington, D. C. 64—Parasitology, London. 67—Le Naturaliste Canadien, Quebec. 68—Science, Lancaster, Pa. 69—Comptes Rendus, des Seances de l'Academie des Sciences, Paris. 70—Journal of Morphology, Philadelphia. 75—The Anatomical Record, Philadelphia. 76—Nature, London. 77—Comptes Rendus des Seances de la Societe de Biologie, Paris. 91—The Scientific Monthly, Lancaster, Pa. 100—Biological Bulletin of the Marine Biological Laboratory, Woods Hole, Mass. 103—Biologisches Centralblatt, Leipzig. 111—Archiv fur Naturgeschichte, Berlin. 114—Entomologische Rundschau, Stuttgart. 116—Entomologische Zeitschrift, Frankfurt, a. M. 118—Die Naturwissenschaften, Berlin.

**GENERAL.** Bonansea, S. J.—Importancia y necesidad de la entomologia aplicada a las artes, industrias y ciencias agrarias. (Mem. Soc. Alzante, Mexico, xxxvii, 363-80). Calmbach, V.—Die preparation der mikrolepidopteren, unter besonderer berucksichtigung der kleinsten arten unter den kleinen. 116, xxxv, 35-6. Cockerell, T. D. A.—Some eocene insects from Colorado and Wyoming. 50, lix, 29-39. Deletang, L. F.—Contribucion al estudio de la zoogeografia Argentina. (An. Soc. Cien. Argentina, xc, 227-77). Dixey, F. A.—The geographical factor in mimicry. 36, 1920, 208-11. Drz, A.—Les symbiotes des insectes. (Rev. Scientifique, lix, 305-6). Dustan, A. G.—Entomogenous fungi. 31, vi, 36-45. Felt, E. P.—Adaptations among insects of field and forest. 91, xiii, 165-70. Lamb, C. G.—Insect oases. (Pro. Camb. Phil. Soc., xx, 347-9). Longstaff, G. B.—Obituary. 76, cvii, 401. McAtee, W. L.—The selection of family names in zoology. (Jour. Wash. Acad. Sci., xi, 230-35.) MacGregor, M. E.—A new type of entomological killing-bottle. 22, xi, 283-5. Metcalf, Z. P.—Some laboratory notes. 75, xxi, 331-8. Parker, R. N.—Insects living in the snow at 14,000 feet. (Jour. Bombay Nat. Hist. Soc., xxvii, 639-40.) Paul, G. P.—Les insectes homicides. 67, xlvi, 265-72. Pearl, R.—The biology



of death. Experimental studies on the duration of life. **91**, xiii, 144-64. **Pierce, W. D.**—Lectures in applied entomology. Ser. 1. Part 1, No. 2. Office equipment. **Popenoe, P.**—Biological control of destructive insects. **68**, liv, 113-4. **Pratt, J. S.**—Mr. Fred Enock's method of mounting heads of insects without pressure. (Jour. R. Micro. Soc., 1921, 141-6.) **Williams, C. B.**—Records of insect migrations in tropical America. **36**, 1920, 146-65.

**ANATOMY, PHYSIOLOGY, ETC.** **van Bemmelen, J. F.**—Das farbenmuster der mimetischen schmetterlinge. **52**, lii, 269-77. **Bordas, L.**—Etude anatomique et histologique de l'appareil digestif des lepidopteres adultes. (An. Sci. Nat., Paris, Zoo., iii, 175-250.) Sobre la estructura y funcionamiento de los estigmas en el ortoptero *Blatta orientalis*. (R. Soc. Espan. Hist. Nat., 1921, 24-11.) **Brecher, L.**—Die puppenfarbungen des kohlweisslings, *Pieris brassicae*. (Archiv f. Entwickl. d. Organ., xlviii, 1-138.) **Breitenbecher, J. K.**—The genetic evidence of a multiple (triple) allomorph system in *Bruchus* and its relation to sex-limited inheritance. (Genetics, vi, 65-90). **Bugnion, E.**—Les parties buccales de la blatte et les muscles qui servent a les mouvoir. (An. Sci. Nat. Paris, Zool., iii, 41-108.) **Busck & Heinrich**—On the male genitalia of the microlepidoptera and their systematic importance. **10**, xxiii, 145-52. **Buxton, P. A.**—The external anatomy of the Sarcoptes of the horse. On the Sarcoptes of man. **64**, xiii, 114-45; 146-51. **Carothers, E. E.**—Genetical behavior of heteromorphic homologous chromosomes of *Circotettix*. **70**, xxxv, 457-83. **Ceballos, G.**—Nota sobre un himenoptero ginandromorfo. (R. Soc. Espan. Hist. Nat., 1921, 79-81.) **Charlton, H. H.**—The spermatogenesis of *Lepisma domestica*. **70**, xxxv, 381-423. **Crampton, G. C.**—A further comparison of the wings of Zoraptera, psocids, and aphids, from the standpoint of phylogeny. **4**, liii, 110-17. The origin and homologies of the so-called "superlinguae" or "paraglossae" (Paragnaths) of insects and related arthropods. **5**, xxviii, 84-92. The sclerites of the head, and the mouth parts of certain immature and adult insects. **7**, xiv, 65-110. The terminal abdominal structures of the primitive Australian termite, *Mastotermes darwinensis*. **36**, 1920, 137-45. **Dahl, F.**—Die abstammung der skorpione und das erste auftreten echter atmungsorgane. **52**, lii, 304-10. **Dehorne, A.**—Le mecanisme de la metaphase et de l'anaphase somatiques et ses consequences chez *Corethra plumi-cornis*. **69**, clxxii, 1684-7. **Dixey, F. A.**—Sexual dimorphism. **35**, 1920-21, 12-23. **Federeley, H.**—Die bedeutung der polymeren faktoren fur die zeichnung der lepidopteren. (Hereditas, Lund, i, 221-69.) **Garman, H.**—Some neglected setae of lepidopterous larvae. **7**, xiv, 145-49. **Giffard, W. M.**—The systematic value of the male genitalia of Delphacidae (Homoptera). **7**, xiv, 135-40. **Hasebrock, K.**—Die

Dopaoydase, ein neues melanisierendes ferment im schmetterlingsorganismus. **103**, xli, 367-73. **Heikertinger, F.**—Ueber die angebliche giftwirkung des Coccinellidenblutes. **48**, xxxviii, 109-13. **Honda, H.**—Spermatogenesis of aphids; the fate of the smaller secondary spermatocyte. **100**, xl, 349-68. **Jameson & Atkins**—On the physiology of the silkworm. (Biochem. Jour., xv, 209-12.) **Kleine, F. R.**—Haben die Hylobius-arten einen stridulations-apparat. **45**, xvi, 137-42 (cont.). **Lamb, C. G.**—Venational abnormalities in the Diptera. (Proc. Camb. Phil. Soc., xx, 393-7.) **Lowe, H. J.**—Bees and scarlet-runner beans. **76**, cvii, 747. **Middleton, W.**—Some notes on the terminal abdominal structures of saw-flies. **10**, xxiii, 139-44. **Muttowski, R. A.**—Studies on the respiration of insects. I. The gases and respiratory proteins of insect blood. **7**, xiv, 150-56. **d'Orchymont, A.**—La nervation alaire des coleopteres. **24**, lxxxix, 1-50. Apercu de la nervation alaire des coleopteres. **33**, lxi, 156-78. **Picard, F.**—Le determinisme de la ponte chez un hymenoptere terebrant le Pimpla instigator. **69**, clxxii, 1617-19. **Sanchez, D.**—Sobre la evolucion de las neuronas retiniana nas en los lepidopteros. (R. Soc. Espan. Hist. Nat., 1921, 129-50.) **Sturtevant, A. H.**—Genetic studies on Drosophila simulans. II. Sex-linked group of genes. III. Autosomal genes (Genetics, vi, 43-64; 179-207.) **Uichanco, L. B.**—Musculature and mechanism of movement of the tarsi in aphids. **5**, xxviii, 63-7. **Vogel, R.**—Zur kenntnis der geruchsorgane der wespen und bienen. **52**, liii, 20-8. Bericht uber ein gehororgan bei singzikaden. **118**, 1921, 427-31. **Wesenberg-Lund, C.**—Sur les causes du changement intervenu dans le mode de nourriture de l'Anopheles maculipennis. **77**, lxxxv, 383-6.

**MEDICAL.** **Versluys, J.**—Die verbreitung von seuchen durch insekten und andere gliederfussler im kriege. (Ber. Oberhes. hes. Ges. f. Natur- u. Heilk. Giessen, vi, 170-219.)

**ARACHNIDA, &c.** **Chamberlin, R. V.**—The Julidae and Osoibatidae in North America. **54**, xxxiv, 81-4. **Gunthorp, H.**—Cragin's collection of Kansas Myriapoda. **4**, liii, 87-91. **Moles, Cox & Nesbet**—A list of California Arachnida. **13**, xiii, 11-15. **Verhoeff, K. W.**—Chilognathen-studien (91. Diplopoden-anfsatz). **111**, 1920, A. 12, 23-80.

**NEUROPTERA.** **Fahrenholz, H.**—Lause verschiedener menschenrassen. (Zeit. Morph. u. Anthr., xvii, 591-602.) **Lacroix, J. L.**—Notes sur quelques neuropteres. (An. Soc. Linn. Lyon, lxxvii, 45-59.) **Navas, R. P. L.**—Insectos Sudamericanos. (An. Soc. Cien. Argentina, xc, 52-72.) **Schwalbe, G.**—Uber die bedeutung der ausseren parasiten fur die phylogenie der saugetierte und des menschen. (Zeit. Morph. u. Anthr., xvii, 585-90.) **Williams, C. B.**—A blood sucking thrips. **9**, liv, 163-4.

**McDunnough, J.**—Two new Canadian may flies (Ephemeridae). **4**, liii, 117-20.

**ORTHOPTERA.** **Hebard, M.**—Studies in the Dermaptera and Orthoptera of Colombia. II. Dermaptera and orthopterous families Blattidae, Mantidae, and Phasmidae. **2**, xlvii, 107-169. **Uvarov, B. P.**—On the native country of the common house cricket (*Gryllus domestica*), with a description of a new var. **8**, lvii, 138-40.

**HEMIPTERA.** **Bergroth, E.**—Notes on some Cyminae. **33**, lxi, 165-8. **Brittain, W. H.**—The biology and stages of *Gypona octolineata*. **31**, vi, 12-22. **McAtee, W. L.**—Membracidae of the vicinity of Washington, D. C. **54**, xxxiv, 123-33.

**Sanders & DeLong**—Four papers on homopterous insects. (Penn. Dept. Agric., Gen. Bull. 346.)

**LEPIDOPTERA.** **Frohawke, F. W.**—On the appearance of *Anosia plexippus* in Britain. **9**, liv., 145-6. **Jones, E. D.**—Descriptions of new moths from southeast Brazil. **14**, 1921, 323-56. **Krueger, E.**—Eine neue *Pieris*-art Kolumbiens? Die kolumbische *Pieris caesia*. **114**, xxxviii, 26-7; 30. **Oberthur, C.**—Etudes de Lepidopterologie comparee, xviii, Pt. 1. **Prout, A. E.**—Notes on some Noctuidae in the Joicey collection, with descriptions of n. sps. **11**, viii, 1-33. **Schaus, W.**—New sps. of L. in the U. S. National Museum. **50**, lix, 349-96. **Seitz, A.**—Die grossschmetterlinge der erde. Faun. Amer., 721-28. **Seitz & Draudt**—Die grossschmetterlinge der erde. Fauna Amer. Lief., 124, 125. **Whitehouse, F. C.**—Notes on the preparatory stages of *Gnophaela vermiculata*. **4**, liii, 101-3.

**Bird, H.**—New sps. and life histories in *Papaipema*. **4**, liii, 79-81. **McDunnough, J.**—A new *Anisota* species from Manitoba. **4**, liii, 75. Notes on a collection of Labrador L. **4**, liii, 81-7.

**DIPTERA.** **Alexander, C. P.**—The crane flies of New York. Part II. Biology and phylogeny. (Cornell Univ. Mem., 38.) **Austen, E. E.**—The prey of the yellow dung-fly, *Scatophaga stercoraria*. **11**, viii, 118-23. **Carter, H. F.**—A revision of the genus *Leptoconops*. **22**, xii, 1-28. **Johannsen, O. A.**—*Oxycera tenuicornis* or *Euparyphus tenuicornis*? **8**, lvii, 140-1. **Keilin, D.**—Supplementary account of the dipterous larvae feeding upon molluscs. **64**, xiii, 180-3. **Morley, C.**—Does *Scenopinus fenestralis* hibernate? **8**, lvii, 155. **Thompson & Thompson**—Studies of *Zenillia roseanae*, a parasite of the European corn borer. **10**, xxiii, 127-39.

**Greene, C. T.**—Two new sps. of diptera. **10**, xxiii, 125-27. **Malicch, J. R.**—Synopsis of some N. American Anthomyiinae. **4**, liii, 76-9. Synopsis of the N. American species of the genus *Helina*. **4**, liii, 103-9.

**COLEOPTERA.** Achard, J.—Revision du genre *Doryphora* (*Megistomela*). 33, lxi, 195-201. Arrow, G. J.—A contribution to the classification of the coleopterous family Endomychidae. 36, 1920, 1-83. Bernhauer, M.—Neue Staphyliniden aus Sudamerika, besonders aus Argentinien. 48, xxxviii, 101-8 (cont.). Cros, A.—Notes sur les larves primaires des Meloidae avec indication de larves nouvelles. 24, lxxxviii, 261-97. Fleutiaux, E.—Etudes sur les Melasidae. 33, lxi, 169-92; 223-42. Jacques, H. E.—A longlived woodborer. 68, liv, 114. Mequignon, A.—Diagnoses provisoires de *Chelonarium* nouveaux et note synonymique. 20, 1921, 161-2. d'Orchymont, A.—Palpicornia de l'Amerique du Sud. 33, lxi, 244-55. Wellhouse, W. H.—The hawthorn blossom weevil (*Anthonomus nebulosus*). 7, xiv, 141-44.

Schaeffer, C.—New sps. of N. American Clerid beetles of the genus *Aulicus*. 50, lix, 151-59. Wolcott, A. B.—North American predaceous beetles of the tribe Tillini in the U. S. Nat. Mus. 50, lix, 269-90.

**HYMENOPTERA.** Brethes, J.—Vespidés, Eumenides et Sphegides Sudaméricains de la collection Jules de Gaulle. 24, lxxxviii, 391-410. Cockerell, T. D. A.—The earliest bees, wasps and ants. 68, liv, 154-5. Dustin, A. G.—Some notes on the habits of *Campoplex pilosulus*, a primary parasite of the fall webworm. 31, vi, 81-8. Frison, T. H.—*Psithyrus laboriosus* in the nest of bumblebees. 4, liii, 100-1. Gorham, R. P.—Some notes on *Apanteles hyphantria*. 31, vi, 46-50. Rohwer, S. A.—Notes and descriptions of neotropical sawflies of the subfamily Perreyiinae. 50, lix, 161-67. Santschi, F.—Formicides Africains et Américains nouveaux. 24, lxxxviii, 361-90. Stumper, R.—Etudes sur les fourmis. II. Observations sur le genese d'une piste du *Lasius fuliginosus*. 34, iii, 84-8. III. Recherches sur l'ethologie du *Formicoxenus nitidulus*. 34, iii, 90-7. Viereck, H. L.—First supplement to "Type species of the genera of ichneumonflies." 50, lix, 129-50. Waterson, J.—Notes on fig insects, including descriptions of three new sps. and a new blastophagine genus. 36, 1920, 128-36.

Rohwer, S. A.—Some notes on wasps of the subfamily Nyssoninae, with descriptions of n. sps. 50, lix, 403-13. Viereck, H. L.—Descriptions of new Ichneumonidae in the collection of the Mus. Comp. Zoology, Cambridge, Mass. 5, xxviii, 70-83. Weld, L. H.—American gallflies of the family Cynipidae producing subterranean galls on oak. 50, lix, 187-246.

OBERTHÜR'S "ÉTUDES," Vol. XVII. An Appreciation and Some Notes.—It has been our pleasure recently to receive from M. Charles Oberthür, of Rennes, France, a copy of Volume XVII of his magnificent "Études de Lépidoptérologie Comparée."

At the request of Dr. Barnes, M. Oberthür has again favored American lepidopterists with figures of a considerable number of the types, now in his possession, of obscure species of Boisduval and Guenée. We scarcely need mention the beauty of these figures. Anyone who is familiar with the incomparable work of M. Culot in former volumes of the "Études" will realize the excellent quality of the present figures. It is greatly to be regretted that in our own country the economic tendencies make it impossible to produce such works, but this only enhances our appreciation of M. Oberthür's publication. When we consider the remarkable quality of these illustrations, we do not wonder that our learned contemporary repeatedly insists: "*pas de bonne figure, pas de nom valable.*" As it is, we should hesitate to apply the principle to some works with which we are familiar.

We feel that only a small number of North American Lepidopterists have access to the "Études," hence we have carefully examined the figures published for our benefit, and append a few notes on some of them. If the figure merely verifies our present treatment of a species we do not mention it.

Pl. DIV, ff. 4202, 4203. *Bombyx pseudoncustria* Bdv., ♂ and ♀. Neither of these figures agrees well with the series which stands as *californica* Pack. (= *pseudoncustria*) in coll. Barnes, but the superficial appearance of most *Malacosoma* species is so poor a basis for identification that this can be taken only as an indication that Boisduval's species may possibly take the place of one of those described more recently from California.

Pl. DV, ff. 4211, 4212. *Lycæna pseudargiolus* Bdv. The ♀, fig. 4212, corresponds very well to what we have been calling *pseudargiolus* from Pennsylvania, but our males are as heavily marked below as the females. The ♂, figure 4211, very closely resembles our series of the form *argentina* Fletcher, described from Manitoba and Assiniboia. This resemblance suggests that our knowledge of the forms of this variable species is by no means stable yet. It will be interesting to see specimens from the southeast, whence Boisduval's types probably came.

Pl. DVI, f. 4227. *Macaria infimata* Guenée, described from Cayenne. This figure is not at all like the species which we have been calling *infimata*, nor does our series agree with Guenée's description. Apparently this name must be superseded by *gnophosaria* Gn., the type of which is figured on the same plate, fig. 4230. We have been unable to find any North American species which compares well with the figure of *infimata*.

Pl. DVI, f. 4231. *Tephрина sabularia* Gn. is unknown to us. It appears to be correctly placed in the "Check List."

Pl. DVI, ff. 4232, 4233. *Psamatodes nicetaria* Gn., described from Haiti, is likewise unknown to us.

Pl. DVII, ff. 4237, 4238. *Ypsipetes pluriata* Gn. This species stands in the "Check List" as a synonym of *Hydriomena coarulata* Fab. Our series compares very well with fig. 4238 but we are unable to find any specimens in the collection which match fig. 4237 well.

Pl. DVII, fig. 4240. *Coremia defensaria* Gn. This figure does not compare well with any specimens in our series of *Xanthorhoe conval-laria* form *defensaria*, but since the species is extremely variable and the figure is not conspicuously different, we prefer to retain the name for the present as it has recently been used.

In conclusion we wish to thank M. Oberthür sincerely for his continued generosity to North American Lepidopterists in publishing figures useful to them chiefly, if not exclusively. In this we feel that we do not speak for ourselves alone, but for all of our colleagues on this side of the Atlantic. Nor do we feel that our duty and privilege is satisfied merely by an appreciation of the scientific value of these works, for their aesthetic qualities and the high standard which they must set for future publications may not lightly be passed over—WM. BARNES, M.D., and A. W. LINDSEY, Ph.D., Decatur, Illinois.

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EIGHTEENTH REPORT, STATE ENTOMOLOGIST OF MINNESOTA to the GOVERNOR. By A. G. RUGGLES. Agricultural Experiment Station, University Farm, St. Paul, Minnesota. December 1, 1920. Mailed June 18, 1921. 210 pp., 43 text figs., 10 pls.—In his general report, entitled "Insect Notes for 1920," Mr. Ruggles mentions that "Some new insects, as the apple maggot, *Rhagoletes pomonella* Walsh, and the asparagus beetle, *Crioceris asparagi* Linn., have made their appearance in the state. These have already caused considerable damage." *R. pomonella* had, indeed, been found on *Crataegus* in Minnesota in 1898, but the first reports of its injuring cultivated fruit came in 1918. *C. asparagi* "was found for the first time in Minnesota in 1919." A wet June in 1920 and the use of much poison bait prevented much grasshopper damage; there was a notable absence of the common varieties of cutworms which work in fields and gardens in the spring; the army worm failed to form true marching armies, due apparently to the wetness of late June and early July "and many favorable places for egg laying could be found in any field. This accounted for the smallness of the armies and their quite uniform distribution over the section." An interesting account of the relation of squirrels and insects to defoliation is given. The red squirrel (*Sciurus hudsonius* Erx.), seeking the basal leaf galls of the cottonwoods, caused by the plant louse, *Pemphigus populicaulis* Fitch, and eating them as it would a nut, the "leaf portion became free and dropped. From thirty to forty seconds would suffice for one gall. He went from leaf to leaf with great rapidity. The feasting was kept up for an hour

or sometimes longer, until the hunger was satisfied. One squirrel could therefore do considerable damage. Since that time the operation has been seen many times."

"Observations on Mites Infesting Flour and Mill Feed" by R. N. Chapman, lead to the conclusion that to prevent a general outbreak of these pests, the place must be kept "perfectly clean, permitting no accumulations of flour and other material." S. A. Graham discusses the "Factors influencing the Subcortical Temperatures of Logs" with reference to the destruction of wood-boring insects. W. C. Cook gives us "Studies on the Flight of Nocturnal Lepidoptera," treated statistically and correlatively with meteorological factors. William Moore deals with "The Principles of Film-forming Sprays," while the greater part of the volume is occupied by two taxonomic papers: "Contribution to the Knowledge of the Group Aphidina, Family Aphididae," by O. W. Oestlund (pp. 63-75), with interesting remarks on the determination of relationships and phylogeny in general, and "Monograph of the North American Species of *Deracocoris* (Heteroptera, Miridae)," by Harry H. Knight (pp. 77-210), in which 54 species and 22 varieties are recognized from North America, 37 species and 20 varieties being described as new. The bugs of this genus sometimes feed upon the sap of plants, but, in some species at least, rather upon the aphids found on particular plants: where this latter habit prevails the immature forms are often "covered with a white, powdery, flocculent material, and are thus in the early instars, not readily distinguished from the aphids among which they live." A hitherto unnoticed structure in the Miridae has been detected in this genus—a comb of spine-like teeth at the distal end of the fore tibia, used for cleaning the rostrum and antennae. Keys applicable to both sexes are given and the male genital claspers of each species are figured.

The present report maintains the high rank which we are accustomed to associate with the Minnesota State Entomologists.—P. P. CALVERT.

## Doings of Societies.

### The American Entomological Society.

Meeting of June 7, 1920, in the hall of The Academy of Natural Sciences of Philadelphia. Nine persons present, the President, Dr. Skinner, in the chair. Mr. David E. Harrower and Mr. Frank R. Mason were elected to membership.

HYMENOPTERA.—Mr. Frost exhibited several insects in resin determined by Mr. Cresson as *Andricus seminator*, Family Cynipidae.

ORTHOPTERA.—A few remarkable Phasmids, or Walking-sticks, were exhibited by Mr. Hebard, among which were *Ectatosoma popa* and *Eurycarrtha horrida*. The genus *Timema* was discussed.

R. C. WILLIAMS, *Recording Secretary*.

Meeting of February 24, 1921, at The Academy of Natural Sciences of Philadelphia. Members present 6, Contributors 2, Visitors 5. Dr. Skinner presiding.

HYMENOPTERA.—Mr. Baylis displayed a specimen of a Hymenopterous insect which emerged from a pupa of *Catocala amatrix*.

LEPIDOPTERA.—Mr. Kisliuk, Jr., reported much of the nursery stock from Orleans, France, has contained the nests of the Brown-tail Moth. He attributes this to the lack of experience of the French inspectors employed following the war. Another moth, common in Europe, has been found on the stock but has failed to establish itself, possibly due to climatic influences.

Mr. Harrower exhibited specimens of the Satyridae belonging to the genera *Callitaera*, *Picrella*, *Haetera*, and *Antivrhaca* collected in Central America, and remarked upon their habits and the difficulty of capture. These butterflies haunt the darkest forests, and seldom are seen at a height of over two feet from the ground.

Dr. Skinner exhibited a specimen of *Papilio fletcheri*, an aberration of *P. turnus*, and described its capture at White River, Ontario.

GENERAL.—Dr. Skinner displayed portions of a collection of insects made by G. B. Fox on the upper Essequibo River, British Guiana; included were many large and showy Lepidoptera, Coleoptera, and Hymenoptera.—D. E. HARROWER, *Recording Secty.*

Meeting of April 28, 1921, in the same hall. Members present 8, Contributors 3, Visitors 3. Dr. Skinner presiding.

HYMENOPTERA.—Dr. L. O. Howard described the work of securing parasites upon destructive insects, with special reference to the Woolly Louse of Apple (*Schizoncra lanigera*). Parasitized examples of the above ground form were taken to France, New Zealand, Uruguay, and Africa, and in every case survived the changes in climate incident to transportation.

GENERAL.—Mr. Hebard gave a very interesting illustrated account of a trip taken to Colombia, South America, last summer (1920) in company with Mr. Rehn. At Cartagena, Porto Colombia and Santa Marta they found the coast to be quite arid, the vegetation resembling that of our western deserts, and insect life scant. Upon penetrating inland from Santa Marta, they entered a mountainous country where vegetation became luxuriant and insect life correspondingly rich. Many interesting forms of Orthoptera, Coleoptera, and Lepidoptera were secured. Few insects came to the lights, but collecting with a hand-torch proved effective. Many rare Orthoptera were found in the curled-up, dry leaves of the Cecropias. The large Bromeliads also sheltered rare forms, not only insects, but even frogs and a salamander.—D. E. HARROWER, *Recording Secty.*



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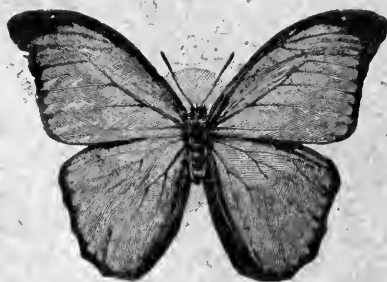
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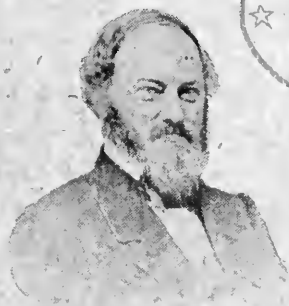
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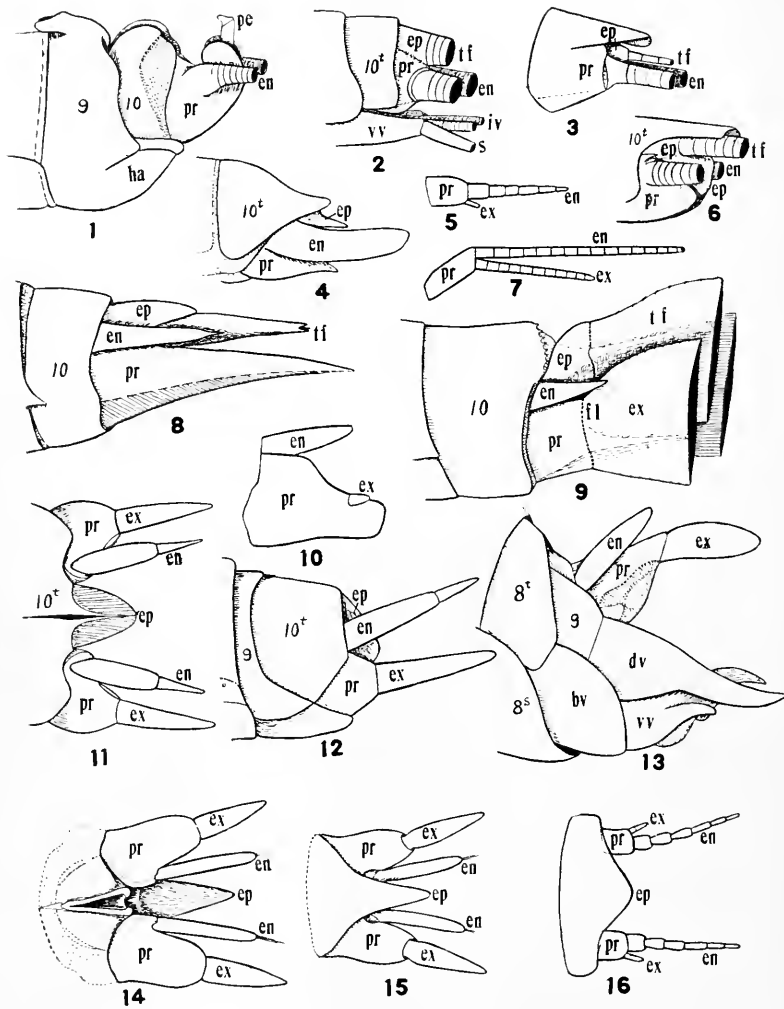
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TERMINAL ABDOMINAL STRUCTURES OF INSECTS AND CRUSTACEA.—CRAMPTON.

# ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

THE ACADEMY OF NATURAL SCIENCES, PHILADELPHIA

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## A Comparison of the Terminal Abdominal Structures of Insects and Crustacea.

By G. C. CRAMPTON, Ph.D., Massachusetts Agricultural College, Amherst, Mass.

(Plate V)

Other papers of this series, dealing with a comparison of the external structures of insects with those of related arthropods (from the standpoint of phylogeny), have been published in Vol. 28 of *Psyche*, in Vol. 29 of the *Journal of the N. Y. Ent. Society*, and in the *Transactions of the Ent. Society of London for 1921* (also a resumé in the *50th Rpt. Ent. Society of Ontario for 1919*). During the progress of these investigations, it has become increasingly apparent that a knowledge of the Crustacea is absolutely indispensable for determining the significance of the parts in insects, since in every case it has been the Crustacea, rather than the "Myriopoda" or other arthropods, which have furnished the key to the interpretation of the structures of insects; and it is indeed surprising that ento-

mologists apparently have but little knowledge of crustacean anatomy—which is at the very basis of the study of the first principles of insect morphology, and should be taught to every student beginning the study of entomology.

Carcinologists, or students of the group Crustacea, apply the term *protopodite* to the fusion product, *pr*, of the two basal segments (*i. e.*, the fused coxopodite and basipodite) of a biramous limb, such as that shown in Plate V, Figs. 5, 7, 14, 16, etc., and they term the inner branch, *en*, and the outer branch, *ex*, the *endopodite* and *exopodite*, respectively. The modified limbs on either side of the telson, or terminal segment, are called *uropods*; and the protopodites of the uropods, *pr*, are located on either side of the anal opening in some Crustacea—such as the one shown in Fig. 14. The protopodite, *pr*, may be slender, as in Fig. 7, or it may be broad and plate-like as in Figs. 14, 10, etc.; and the endopodite, *en*, and the exopodite, *ex*, may be many-jointed, as in Fig. 7, or they may each be reduced to a single segment as in Fig. 14, *en* and *ex*. There is a marked tendency for the exopodite, *ex*, to become atrophied (as in Figs. 5, 10, 16, etc.) in certain isopod Crustacea, and in some of them the exopodite is completely lost. When the exopodites of the uropods are lost in these Crustacea, the endopodites resemble the cerci of insects very strikingly, and the protopodites resemble the paraprocts or parapodial plates situated on either side of the anus, and bearing the cerci, in many insects. The foregoing facts led me to suggest (Canadian Entomologist, Vol. LII, 1920, p. 179) that the cerci of insects represent the endopodites of the uropods of Crustacea, while the paraprocts or parapodial plates of insects represent the protopodite of the uropods of Crustacea, and the processes of the parapodial plates (called “paraprocti” in the article in question) represent the exopodites of the uropods; and I would here present the evidence which to my mind very clearly demonstrates the correctness of this claim.

In the tridactylid Orthopteron shown in Fig. 12, the eleventh tergite, *cp*, is a plate situated above the anal opening, and on either side of it is a basal plate labeled *pr*, which bears the cercus, *en*, and a process labeled *ex*. When the parts are spread



out in one plane (Fig. 11) in the position assumed by the uropods of the crustacean shown in Figs. 14 and 15, the resemblance between the structures of the insect shown in Fig. 11 and the crustacean shown in Figs. 14 and 15 is very striking. Thus, on either side of the terminal tergite labeled *cp* in Fig. 11 (which apparently corresponds to the terminal tergite labeled *cp* in Figs. 14 and 15) is a basal plate, *pr*, which corresponds in every way to the basal plate labeled *pr* in Figs. 14 and 15; and the basal plate *pr* of Fig. 11 bears an inner appendage, *en*, which is evidently the homologue of the inner appendage *en* borne on the basal plate *pr* of Figs. 14 and 15, while the outer appendage, *ex*, of the plate *pr* of Fig. 11 is evidently the homologue of the outer appendage of the plate *pr* of Figs. 14 and 15. I would therefore maintain that the basal plate, *pr*, or paraproct, of the insect shown in Fig. 11, represents the protopodite of a crustacean's uropod (*i. e.*, *pr* of Figs. 14, 15, 16, etc.), while the cercus, *en*, of the insect shown in Fig. 11 represents the endopodite, *en*, of the crustacean's uropod (*i. e.*, *en* of Figs. 14 and 15), and the insect's paraprocessus, *ex*, (Fig. 11) represents the exopodite of a crustacean's uropod (*i. e.*, *ex* of Figs. 14 and 15), as should be evident to anyone who examines the forms in question.

Having determined the significance of the parts in an insect, we are now in position to apply the knowledge thus gained, to solving the question of the interpretation of the terminal structures of odonate naiads (immature stages) which was the subject of a long dispute between Handlirsch, 1903-4, and Heymons, 1904, and has not been correctly understood by the students of the Odonata. In Heymon's case, a lack of knowledge of comparative anatomy apparently prevented his interpreting the facts of development aright, while Handlirsch did not at first realize what adult structures were derived from the larval ones, and was later forced to the unnecessary and unwarranted assumption that there is a re-formation of the cerci in odonate development, unlike anything occurring in any other known insects. A comparison of the terminal structures of the odonate larva shown in Fig. 8, with those of the insect shown in Fig. 4, very clearly shows that the structure

labeled *en* in Fig. 8 is merely the cercus, *en*, of Fig. 4, while the plate labeled *pr* in Fig. 8 is merely the elongated basal plate, *pr*, of Fig. 4, etc., the exopodite, *ex*, of Figs. 14, 11, etc., being absent in Fig. 8. The cercus, *en*, of Fig. 8 is borne more laterally with respect to the basal plate *pr* than is the case with the cerci of certain other insects (*c. g.*, those shown in Figs. 1, 2, etc.), but the endopodite, *en*, with which the cercus is homologous, is frequently borne laterally to the basal plate *pr* in Crustacea also, as for example in the crustacean shown in Fig. 10, in which the structure labeled *en* corresponds to the cercus, *en*, of Fig. 8 (or to the endopodite, *en*, of the Crustacea shown in Figs. 5, 14, etc.), while the basal plate *pr* of Fig. 10 has become elongate, suggesting a tendency to assume the elongate condition of the basal plate *pr* of Fig. 8. The exopodite, *ex*, which is very small in Fig. 10, has completely disappeared from the basal plate *pr* in Fig. 8.

In comparing the immature dragonfly shown in Fig. 8, with the immature damselfly shown in Fig. 9, it is evident that the cercus or endopodite, *en*, of Fig. 8, corresponds to the cercus labeled *en* in Fig. 9. The elongate basal plate *pr* of Fig. 8 corresponds to the basal plate *pr* of Fig. 9, but the exopodite, *ex*, of Fig. 9 is not present in Fig. 8. The exopodite *ex* of Fig. 9, which forms one of the lateral caudal gills of the immature damselfly evidently corresponds to the exopodite, *ex*, borne on the basal plate *pr* of the crustacean shown in Fig. 14, although the exopodite, *ex*, of Fig. 9 is proportionately much larger, having been modified to serve as a respiratory (and locomotor) organ—a function performed by the exopodites in many Crustacea. In the adult damselfly, the endopodite, *en*, or cercus of the larva shown in Fig. 9, develops into one of the so-called “superior appendages,” or true cerci of the male insect, while the exopodites, *ex*, of the larva shown in Fig. 9 break off along the dotted line *fl*, leaving the basal segments *pr* to form the so-called “inferior appendages” (paired) of the adult male.

It will be noted in Fig. 14, that the basal plates, *pr*, of the uropods occupy a position somewhat lateral and ventral to the terminal tergite, *cp*. Similarly in insects, the corresponding basal plates *pr* of Figs. 9, 8, 4, etc., occupy a position somewhat

lateral and ventral to the eleventh tergite, *ep*, and consequently the basal plates *pr* develop embryologically in a position somewhat lateral and ventral to the eleventh tergite *ep*, thus causing Heymons to mistake these basal plates for the sternite of the eleventh abdominal segment in insects, despite the fact that they develop as *two distinct plates*, whereas a true sternite never develops as two distinct plates in any insects of which I have any knowledge. This suggests that Heymons is mistaken in thinking that the cerci are appendages of the eleventh segment (since he mistakes the basal plates bearing the cerci, for the eleventh sternite) and it is quite possible that the basal plates and cerci belong to the tenth segment instead of to the eleventh, their position below and beside the eleventh tergite, *ep*, being merely due to the fact that they are borne on the hinder margin of the tenth segment; and Heymons himself admits that the cerci, *cn*, of Fig. 9 are appendages of the tenth, rather than the eleventh segment from his study of the development of these structures in immature damselflies.

The median terminal gill *tf* of the immature damselfly shown in Fig. 9, apparently corresponds to the median terminal filament *tf* of Apterygota (Figs. 2, and 6), mayflies (Fig. 3), etc. When the immature damselfly becomes adult, this median terminal gill *tf* breaks off along the dotted line shown in Fig. 9, though traces of the eleventh tergite *ep* of Fig. 9 may be retained in adult damselflies, as may be seen by referring to Fig. 6, Plate 2, of an article on the terminal structures of insects, published in Vol. 13, of the *Bulletin of the Brooklyn Ent Society* for June 1918, where the structure in question bears the label *sa*. In the article in question, the cercus, *cn*, of Fig. 9 of this paper bears the label *c*, while the basal plate, *pr*, of Fig. 9 of this paper bears the label *pa*. The parts of the adult insect are figured and homologized in the article published in the *Bulletin*, so that it is not necessary to repeat the figures here, since anyone interested in the subject may readily refer to the publication in question for further information on the subject. When one compares the parts in a series of insects and Crustacea, it seems almost incredible that the true significance of the parts should have been so misunderstood, and this

is merely another instance of the many misinterpretations of the parts of insects current in entomological literature, which owe their origin to the fact that entomologists in general have not been willing to take the time to examine thoroughly a few of the commoner Crustacea, before attempting to determine the correct interpretation of the parts in insects.

Walker, 1919 (*Annals Ent. Soc. America*, Vol. 12, p. 287) maintains that I am mistaken in homologizing the exopodites or paraprocessi, *ex*, of Fig. 11 with the styli borne on the abdominal segments of Machilidae, etc., but the styli are clearly the homologues of the exopodites of crustacean appendages, and the structures labeled *ex* in Figs. 11 and 12 are also clearly homologous with the exopodites of crustacean appendages, so that Walker's objection is not valid in this instance, since things homologous with the same thing are homologous with each other, and the appendages *ex* of Fig. 11, being homologous with the exopodites of crustacean limbs, are also homologous with the styli of *Machilis*, etc., as Walker would have seen had he made a study of Crustacea as well as insects. We may carry the comparison of parts still further, and state that all representatives of the exopodites of a crustacean limb, such as the "paraprocessi" labeled *ex* in Figs. 11 and 12, or the styli (labeled *s* in Fig. 2) borne on the valves of the ovipositor of certain insects, or the gonopods (outer claspers) of certain male insects, or the styli borne on the abdominal segments of Thysanura, etc., are at least serially homologous (homodynamous), while all structures representing the endopodites of a crustacean limb, such as the cerci labeled *en* in Figs. 12, 11, etc., or the inner valves of the ovipositor, labeled *iv* in Fig. 2, or the penis valves of certain male insects, are likewise serially homologous, and the same is true of the basal plate labeled *pr* in Figs. 11, 12 etc., or the dorsal (and ventral) valves of the ovipositor labeled *rv* in Fig. 2, or the so-called "coxites" of the genitalia (gonopods) of male insects, all of which are apparently homologous with the protopodite, *pr*, of the crustacean shown in Fig. 14. This matter will be more fully discussed in a paper dealing with the genitalia of insects in general, however, and need not be further discussed here.

In brief, the principal points here brought out are as follows: The paraprocts, *pr*, or parapodial plates which bear the cerci in the insects shown in Plate V, Figs. 1, 2, 3, 4, 6, 8, 9, 11, 12 and 13 represent the protopodites, *pr*, or basal plates of the uropods of the Crustacea, shown in Figs. 16, 15, 14, 10, 7, and 5. The cerci (*cn* of Figs. 1, 2, 3, 4, 6, 8, 9, 11, 12 and 13) of insects represent the endopodites of the uropods of Crustacea (*i. e.*, *cn* of Figs. 16, 15, 14, 10, 7, and 5), and the "paraprocessi" of certain insects (*cr* of Figs. 11 and 12) or the lateral caudal gills of certain immature Odonata (*cr* of Fig. 9) represent the exopodites of crustacean uropods (*i. e.*, the structures labeled *cr* in Figs. 16, 15, 14, and 7). The eleventh tergite, *cp*, of Figs. 8, 9, 2, etc., may bear an appendage in the form of a median process (*tf* of Fig. 8), or a median gill (*tf* of Fig. 9), or a terminal filament such as the "telofilum" labeled *tf* in Figs. 2, 3, and 6. It is possible that this telofilum may correspond to the terminal spine of merostomes, etc., but I have not yet determined this point.

#### ABBREVIATIONS

The arabic numerals denote the number of the abdominal segments.

- bv*....Basal plate of ventral valvulae of ovipositor.  
*dv*....Dorsal valvulae of ovipositor.  
*cn*....Endopodite of crustacean uropods; cerci of insects.  
*cp*....Terminal tergite of Crustacea; epiproct, or eleventh tergite of insects.  
*ex*....Exopodite of crustacean uropods; paraprocessus of insects.  
*fl*....Fractilinea, or line of breakage.  
*ha*....Hypandrium, or sternite beneath male genitalia.  
*iv*....Inner valvulae of ovipositor.  
*pc*....Penis.  
*pr*....Protopodite of crustacean uropods; paraprocts of insects.  
*s*....Styli.  
*tf*....Telofilum, or terminal filament of Apterygota and Ephemera; telappendix or dorsal appendage of "larval" dragonfly; median caudal gill of "larval" damselfly.  
*vv*....Ventral valvulae of ovipositor. (Dorsal valve in Fig. 2.)

## EXPLANATION OF PLATE V

- Fig. 1—Lateral view of terminal structures of male Plecopteron.  
 Fig. 2—Lateral view of terminal structures of *Machilis* sp. (female).  
 Fig. 3—Same of ephemerid *Ephemera* sp.  
 Fig. 4—Same of phasmid *Tinania californica*.  
 Fig. 5—Uropod of isopodan crustacean *Leptocheilia savignyi* (after Richardson, N. A. Isopoda).  
 Fig. 6—Lateral view of terminal structures of *Lepisma* sp.  
 Fig. 7—Uropod of isopodan crustacean *Apsudes propinquus* (after Richardson).  
 Fig. 8—Lateral view of terminal structures of larval dragonfly, *Aeshna* sp., probably *Ae. verticalis* Hagen.  
 Fig. 9—Lateral view of larval damselfly, *Lestes uncatus* Kirby.  
 Fig. 10—Uropod of isopod crustacean *Cubaris murina* (after Richardson).  
 Fig. 11—Dorsal view of terminal structures of trydactylid Orthopteron *Ellipes* sp. with parts spread out in one plane.  
 Fig. 12—Lateral view of same.  
 Fig. 13—Lateral view of terminal structures of tridactylid *Rhipipteryx atra*.  
 Fig. 14—Ventral view of terminal structures of isopod *Oniscus* sp.  
 Fig. 15—Dorsal view of same.  
 Fig. 16—Dorsal view of terminal structures of isopod *Leptocheilia forresti* (after Richardson).

## Two Orthoptera New to New Jersey, with Comments on their Local Habitats.

By HENRY FOX, Mercer University, Macon, Georgia.

On page 110 of his recently published work on the Orthoptera of Northeastern America, Professor Blatchley, in referring to his unexpected discovery in Florida of a species of roach belonging to a genus supposed at the time to be exclusively western in distribution, remarks that in the case of "such mobile forms of life as insects it is not safe to conclude that any genus or even species is confined to a definite region, and that one may hunt over a well known area for years and yet not discover a form which may be brought to light by some future collector." The pertinence of these remarks was forcibly impressed upon the writer late in the summer of 1920 when, while engaged on field investigations in connection with the Japanese Beetle Project in New Jersey, it was his good fortune incidentally to

collect two species of Orthoptera not hitherto recorded from that State. When it is borne in mind that the local Orthoptera constitute a relatively small group and that New Jersey by virtue of its limited extent and close proximity to numerous centers of scientific activity has probably been more thoroughly explored entomologically than any other state in the Union, it seems remarkable that the occurrence in it of the two forms here recorded was so long overlooked.

The species herein recorded from New Jersey for the first time are *Orchelimum volantum* McNeill and *Conocephalus attenuatus* (Scudder). The former has hitherto been known only from the region of the Great Lakes and the upper Mississippi Basin, the easternmost records being Niagara River, Ontario and Cedar Point, Ohio.<sup>1</sup> I first encountered *O. volantum* in New Jersey on August 27, 1920, when I took a male in some heavy herbage bordering the tidal flats of Rancocas Creek, on its north side, about 1½ miles southeast of the village of Rancocas in Burlington County. It was associated at this place with numerous individuals of *O. agile* and *O. pulchellum*. On September 1, I took another male in a neglected tomato patch overgrown with pig-weed, *Amaranthus retroflexus*, on a low bluff bordering the Delaware River about one mile north of Delanco. It was found here while stridulating on a tall pig-weed, having attracted attention by its song which was decidedly weaker than that of either *O. vulgare* or *O. pulchellum*,<sup>2</sup> both of which occurred in considerable numbers in the same field.

Although search was made on several other occasions in what appeared to be favorable situations for additional material of *O. volantum*, the two males mentioned were the only specimens secured. As both were obtained in quite different surroundings, the evidence they afford as to the habitat of the species in New Jersey is somewhat puzzling. However, the evidence we have on its habitat-relations in other parts of its range shows that it is unquestionably a marsh-dwelling species.

<sup>1</sup>Rehn and Hebard, Trans. Amer. Ent. Soc., XLI, 1915, p. 72.

<sup>2</sup>The taxonomic terms employed in this paper are those standardized in recent years by Rehn and Hebard or Blatchley.

Thus, Blatchley (*loc. cit.*) states that in northern Indiana he found *volantum* "most abundantly . . . on the leaves and stems of a . . . knot-weed, *Polygonum amphibium* L., which grew luxuriantly in the shallow waters about the margins of the larger ponds and lakes" where it was noted as associated with *Orchelimum nigripes* and *Conocephalus attenuatus*. The nearest approximation to a habitat of this kind that the section of New Jersey in which *volantum* was found affords are the extensive marshes which are formed by the tidal mud-flats bordering the Delaware River and its tributaries. It was in this type of marsh, as previously mentioned, that my first specimen of *O. volantum* was taken, and it may be added that of the two "grasshoppers" mentioned by Blatchley as associated with *volantum* in Indiana, one, *Conocephalus attenuatus*, has never been taken in New Jersey in any other environment, while the other form, *O. nigripes*, although unknown east of the Appalachians, is represented in New Jersey by its nearest ally, *O. pulchellum*, which, according to my observations, also finds in these tidal marshes conditions most congenial to it, though, unlike *C. attenuatus*, it was found in smaller numbers in other stations. The plant, *Polygonum amphibium*, mentioned by Blatchley as the one on which *O. volantum* occurs most abundantly in Indiana, apparently does not occur in southern New Jersey as no mention of it is made by Stone,<sup>3</sup> although, according to the latter, a closely related species, *P. emersum* Michx. extends south in the Delaware Valley for some distance below Camden, but appears to be a rather scarce and unimportant constituent of the flora. A more distantly related form, *P. arifolium* L.<sup>4</sup> is, however, one of the most abundant and characteristic components of the flora in parts of the New Jersey tidal marshes.

The occurrence of my second specimen of *O. volantum* in a relatively dry situation can readily be accounted for by supposing that it had wandered there from one of the adjoining tidal marshes of the Delaware River. It is a not uncommon occurrence for adult individuals of species belonging to this genus, especially as regards the males, to wander away from their usual habitats and to take up their abode in stations of which



they are not ordinarily typical. This appears to be especially true in Burlington County of another species, *O. pulchellum*, which in that section typically occurs only in marshes, but which at the time it becomes sexually mature often spreads in considerable numbers over the surrounding higher lands.

If, as seems highly probable, the occurrence of *O. volantum* in a dry, weedy field is to be explained as just suggested, we may anticipate that the regular habitat of the species in southern New Jersey will be found to be the marshes formed by the tidal flats of the Delaware River and its tributaries. In Burlington County, as apparently everywhere else in New Jersey where these tidal flats are beyond the range of saline influence, they are for the vastly greater part occupied by a dense stand of Wild Rice, *Zizania palustris* L.<sup>5</sup> On the side facing the open water of the stream the Wild Rice is usually bordered by a fringe of spatterlocks, *Nymphaea advena* Soland, while on the landward side it intermingles with and is largely replaced by a mixed herbaceous growth in which, as noted for instance, on the Rancocas at the locality where my first specimen of *O. volantum* was taken, the more abundant or prominent plants included such forms as rose mallow, *Hibiscus moscheutos* L., cat-tail, *Typha latifolia* L., tear-thumb, *Polygonum arifolium* L., touch-me-not, *Impatiens biflora* Walt., and cardinal flower, *Lobelia cardinalis* L. It was just about at the point where the transition takes place between the part of the marsh where the wild rice is dominant and that in which it is replaced by the mixed growth mentioned that my specimen of *volantum* was taken at this locality. As no other specimens were secured here it is not possible to state what parts of the marsh are most favored by *O. volantum*. Any decision as to this matter was largely prevented by the soft, treacherous character of the ground occupied by the wild rice which made collecting in it impossible without special equipment.<sup>6</sup>

<sup>3</sup>Stone, Witmer, The Plants of Southern New Jersey, Report of the New Jersey State Museum, Trenton, 1911.

<sup>4</sup>*Tracaulon arifolium* (L) of Britton and Brown's illustrated Flora, 1913.

<sup>5</sup>*Z. aquatica* L. in Britton and Brown's Illustrated Flora.

<sup>6</sup>The writer is indebted to Mr. J. A. G. Rehn for examining his specimens and confirming his determination.

The other form, *Conocephalus attenuatus* (Scudder), herein recorded for the first time from New Jersey, is like *O. volantum*, best known as a characteristic species of the Great Lakes Region and upper Mississippi Basin. East of the Appalachians it is, according to Rehn and Hebard,<sup>7</sup> "very local and usually scarce everywhere." The easternmost locality from which the species has hitherto been recorded is Cornwells, Bucks County, Pennsylvania, where in 1906 and 1914 Rehn and Hebard found it "very scarce in high grasses (*Panicum virgatum*) and plants along the shore of the Delaware River, and in moderate numbers in a small marshy area, particularly in a restricted growth of low marsh grass (*Panicularia septentrionalis*)." As this locality is separated from New Jersey by only a river, which at this point is scarcely more than  $\frac{1}{4}$  mile wide, the occurrence of the species in the state would seem to be highly probable, but, so far as I am aware, this is the first time it has been definitely reported. My earliest attempt to find *attenuatus* in New Jersey was made in the late summer and early fall of 1919 when I searched for it in the marshy flats at the mouth of Pensauken Creek in Camden County, but at this place no trace of it was found. In the season of 1920 the territory assigned me in the Japanese beetle field survey was that section of Burlington County which lies north of Rancocas Creek. My first attempt to find *attenuatus* in this region was made in a marsh at Beverly on the Delaware River, directly opposite the place, Cornwells, where Rehn and Hebard had taken it, but I found none at this locality. The first place at which I finally located it was in a marsh at the mouth of a small stream emptying into the Delaware about midway between Burlington and Florence, where on August 9th I took a single male and quite a number of nymphs, the greater part of the latter being in the last instar. Two weeks later (August 23rd) I collected in the same place 12 males, 4 females and 2 nymphs. Other localities in which I also obtained the species include Burlington, where on September 7th I found adults locally rather frequent in a tidal marsh along Assiscunk Creek just below the bridge of the Mt. Holly branch of the Pennsylvania R. R., and in smaller

<sup>7</sup>Rehn and Hebard, Trans. Amer. Ent. Soc., XLI, 1915, p. 209.

numbers in the tangled herbage of the slopes adjoining the marsh; Delanco, August 26th, where I captured a single female along the margin of the tidal flats of Rancocas Creek about a mile above the railroad bridge; and Bougher, one mile south of the village of Rancocas, where on September 8th I found it unusually frequent along the edge of the tidal flats of Rancocas Creek, a few rods below the draw-bridge. At this latter point I took within less than an hour 8 males and 10 females.

While locally rather frequent, *attenuatus* impressed me as very erratic as regards numbers and distribution. The type of habitat in which it was invariably found is very wide-spread—in fact, almost the only type of marsh represented—in the district under consideration. Nevertheless, in many localities where conditions were in apparently every particular favorable, diligent search often failed to reveal any individuals of the species. On the day when I took the single female near Delanco I examined the borders of the Rancocas tidal flats for a distance of fully  $\frac{1}{8}$  mile without finding another individual. At Burlington, although it was rather frequent below the bridge previously mentioned, I was unable to find any above it, although in this portion conditions in the marsh were apparently identical with those below the bridge.

With the exception of a few individuals observed at Burlington in the fringe of tall grasses (*Panicum virgatum*) and tangled shrubbery which occupied the low slopes bordering the marsh, all examples of *attenuatus* observed by me in New Jersey were found exclusively in marshes formed by the tidal flats which in this section border all those streams whose flow is affected by the tide. As previously mentioned, the vastly greater part of these flats is covered with a high, dense stand of wild rice (*Zizania palustris* L.), which along their landward margins intermingles with and is partly replaced by a variety of marsh-dwelling plants, the more prominent of which have already been noted. Owing to the soft and treacherous nature of the ground in these marshes, observations were necessarily largely limited to the marginal portions where the mixed vegetation prevails, and it was therefore in this vegetation that the greater number of individuals of *attenuatus* were taken, but

others were observed in the wild rice as far out from *terra firma* as it was felt advisable to go.

From my experience with *attenuatus* I can heartily endorse Rehn and Hebard's characterization of it as the most alert and active of all the species of its genus. It was strenuous work collecting the specimens secured, about two out of every three of the individuals I attempted to capture escaping either, as in the case of the males, by leaping swiftly from plant to plant, or, in the case of the females, by leaping once and then, with little or no pause, dropping down into the deepest recesses of the vegetation where it was exceedingly difficult to find them.

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### Notes on Coleoptera in Pennsylvania, New York and Connecticut.

By ALFRED B. CHAMPLAIN and JOSEF N. KNULL, Bureau of  
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Persons interested in collecting and rearing insects usually accumulate a store of miscellaneous information which would be of the greatest value to others, if recorded, but which is seldom put forth on account of its fragmentary nature. The following collection of notes of this type includes facts or records and observations made by the authors or by others to whom due credit is given.

#### CURCULIONIDAE.

**Hormorus undulatus** Uhler.—The account of this species by Dr. W. E. Britton in his Fifth<sup>1</sup> Report was overlooked by Blatchley and Leng<sup>2</sup> who do not record a food habit. Britton states, "On May 15th, we noticed that the leaves of lily of the valley plants growing in the garden had been eaten in a peculiar manner. Notches had been eaten into the edges of the leaves. A number of Curculionid beetles were captured while at work on the leaves which were identified as *Hormorus undulatus*. A photograph of the injury is shown on Plate VI."

Since that record was published the authors have observed this work on Solomon's seal and false Solomon's seal. These plants are probably the native food plants. On May 18th at Rockville, Pennsylvania, injury to the leaves was observed and adults were

<sup>1</sup>Rept. Conn. Agr. Exp. Station, 1905, 259.

<sup>2</sup>Rhynchophora N. E. Am., 100.

taken feeding in the manner described by Britton. Also observed on these plants at various other localities in Pennsylvania and in Connecticut.

**Phytonomus meles** Fab.—This imported species has not yet been recorded from Pennsylvania. It is represented in the collection of the Bureau of Plant Industry from Cresco, Pa., VI-2-18, coll. by H. B. Kirk; Roxborough, Pa., VI-6-11, F. Haimbach, collector.

**Dorytomus indifferens** Casey, identified by Prof. H. C. Fall. This species was beaten from *Salix* spp. on June 26th at Harrisburg, Pa., and was exceptionally common.

**Dorytomus subsimilis** Blatchley. Identified by C. A. Frost as nearest this species. Poplar catkins collected by C. N. Greene were infested heavily by Curculionid larvae. The larvae left the catkins and entered the ground about April 10th. One adult reared.

**Otidoccephalus myrmex** Hbst. In Blatchley and Leng, Rhyn. N. E. Am., this species is recorded as abundant on hickory, grape, hazel, oak and other plants.

The sycamore trees in the vicinity of Harrisburg are attacked by the sycamore blight.

"This disease is common over the eastern range of the sycamore, and in some sections it kills back the young twigs so severely each spring that a pronounced zigzag branching habit results. The fungus, *Gnomonia veneta*, is a bark parasite, which is most active in the period between the beginning of spring warmth and the advent of cambial growth, which soon becomes sufficiently rapid to bar further progress down the twigs. Later on, in summer, there are produced in the bark of the twigs already killed the characteristic pimple-like pustules of the fungus, from which the creamy spore masses ooze in wet weather."

These dead or dying twigs are in turn attacked by *Otidoccephalus myrmex* and it is possible that they do their part in spreading the disease. It would be of interest to know if this condition exists in other localities where this blight occurs. Nearly every dead twig examined contained from one to four larvae of this beetle and occasionally the larva of *Leicopus alpha*. They all work in the slender blight-killed stem, completely hollowing it out. The adults of *Otidoccephalus* upon emerging in confinement, glass jars being used for cages, feed upon the fungus pustules on the bark, chewing off the top of the pustule, leaving a round scar. W. A. McCubbin, Plant Pathologist of the Bureau, to whom these specimens were submitted,

\*This account of sycamore blight by W. A. McCubbin, Bur. Pl. Industry.

verified the observation and noted that he had observed similar eating out of the pustules of *Valsa leucostoma* on peach twigs by an unidentified insect.

The *Leiopus* (*Leiopus alpha* Say, identified by Prof. H. C. Fall who states—"Is unquestionably like the specimen on the label *L. alpha* in the Leconte collection.") which emerge much later than the *Otidoccephalus* and in considerably less numbers is also mycophagous, eating the pustules in a similar manner to *Otidoccephalus*. This habit of *Leiopus* has been noted by Dr. F. C. Craighead and others in relation to chestnut blight and other fungi.

**Magdalis perforata** Horn. Reared from *Pinus*, Charter Oak, Pa., VI-22.

**Magdalis inconspicua** Horn. Reared from *Fraxinus*, New Cumberland, Pa., Kirk and Champlain.

**Baris interstitialis** Say. Harrisburg, Pa. "Taken as adults from the roots of *Xanthinum strumarium* all winter." V. A. E. Daecke.

**Baris scolopacea** Germ. Harrisburg, Pa. Reared from *Chenopodium* sp., lamb's quarters, larvae work in pith.

**Cylindrocopturus binotatus** Lec. Reared from *Rhus glabra*, Harrisburg, Pa.

**Conotrachelus juglandis** Lec. "Known as the 'walnut curculio,' occurring on walnut, butternut and hickory, the larvae breeding in the green fruit," Blatchley and Leng. We are of the impression that the record from hickory refers to another species.

The fine paper<sup>4</sup> by W. E. Britton and H. B. Kirk was overlooked by Blatchley and Leng. Here we find the species recorded as feeding and living in the stems as well as the fruit of six species or varieties of walnut. We wish to record the fact that we have observed the same thing in Pennsylvania, the leaf stems of walnut and butternut being attacked as well as the fruit.

**Conotrachelus elegans** Boheman.—W. D. Pierce writes<sup>5</sup> "Is a very important enemy of nuts. In Texas the first generation breeds in the petioles and new shoots of hickory. Later individuals are found in the leaf galls of *Phylloxera devastatrix* on pecan. Still later in the season the species is bred from the nuts of various species of *Hicoria*."

In Pennsylvania, Long Island and Connecticut it has but one generation as far as we have observed. The injury is confined to the new growth and leaf stems; we have not observed infested nuts.

<sup>4</sup>Rep. Conn. Agr. Exp. Sta., 1912—240.

<sup>5</sup>Proc. Ent. Soc. Wash. Vol. XVIII, 1916, p. 9.

The adults were first observed at Westbury, New York, May 25. Both sexes were observed upon the foliage and new growth, feeding, mating and egg laying. They were very abundant, five or six examples occurring on one stem. The adults damage the stems in feeding and in making egg punctures which are sometimes so plentiful as to cause the stem to wilt. The eggs hatch about ten days after being deposited. The larvae work in the shoots and leaf stems, making holes and mines that weaken them. When severe, the new growth dies and the leaves wilt or the weakened stems blow off or the conditions are attractive for other insect trouble or fungus disease. About the last of July the larvae are full grown and leave the stems and go into the ground.

*Cryptorhynchus fallax* Lec.—Reared from *Quercus alba* and *Cercis canadensis*. Hummelstown, Pa., VIII-3, VIII-22—Kirk and Knoll.

### New Records of Aquatic Hemiptera for the United States, with Description of New Species.

By J. R. DE LA TORRE-BUENO, White Plains, New York.

Prof. H. B. Hungerford, of the University of Kansas, sent me a number of odd water-bugs for examination. These present a number of new and noteworthy occurrences, some being recorded for the first time from the United States, to which special attention should be drawn through a separate note, rather than to lose them in a general paper on a group.

*Buenoa elegans* Fieb. Cherokee County, Kansas, Aug., 1920. (Hungerford and Beamer). First record for the State.

*Buenoa margaritacea* Bueno. Cherokee County, Kansas, Aug., 1920. (Hungerford and Beamer). Another first record.

*Ranatra kirkaldyi* Bueno. Cherokee County, Kansas. (Hungerford and Beamer). This likewise is new to Kansas.

It may not be amiss to comment here on the validity of this species, in advance of a future careful analysis of the genus. Prof. Montandon, without knowing the species in nature, proceeds to synonymize it (1910, Bull. Soc. Sci. Buc., xviii, 183) with *R. fusca* P. B., in which, naturally, Van Duzee follows him in his Catalog (1917, p. 462). However, there are specimens in the U. S. National Museum named *fusca* P. B. by Prof. Montandon, which are the same form I recognize as Palisot

de Beauvois' species. It also seems to be *R. nigra* H. S., according to the head structure. This species is separable from all the other United States forms known to me by having a profoundly *unisulcate* prosternum. This note complies with the requests of my correspondents to rectify the matter. The synonymy and distribution of *Ranatra fusca*, *R. kirkaldyi* and *R. nigra*, as given by Montandon and Van Duzee, are incorrect and will require careful study to straighten out finally.

**Gelastocoris oculus** Fabr. This species is another new Kansan record, and is likewise authentic. I can find no difference between the two specimens before me from Cherokee County, Kansas, Aug., 1920 (Hungerford and Beamer), and specimens of the typical form from Washington, D. C.

**Gerris (Aquarius) orba** Stal. Bluff, Utah. (R. C. Moore). A new record for the State.

**Gerris (Tenagogonus) hesione** Kirkaldy. Cherokee County, Kansas, Aug., 1920. (Hungerford and Beamer). This delicate little gerrid is a first record from Kansas, which is the farthest western point from which the species is known; the other two states in which it has been found are Florida and Ohio.

**Microvelia circumcincta** Champ. Ardmore, Okla. (R. C. Moore). This is a most interesting record. The species was described by Champion from Guatemala. I took it in Tamaulipas, in Northern Mexico, and have seen it from Texas. These are all new distributional records.

**Rhagovelia distincta** Champ. Yampa R., N. W. Colorado (R. C. Moore). This is another of Champion's Central American species, now positively recorded from the United States. Walker (*Catalogue*) records the species from "Ind.," so noted by Van Duzee (*Catalogue*).  
**Trepobatopsis trux** n. sp.

*Head*: Broader (including eyes), and longer than prothorax; tumid and as long as broad between the eyes. Eyes moderately large, quite oblique, shorter axis (breadth), four-fifths of the longer. Three large black shining setigerous loci in a line near each eye. Antennae slender (first two joints only present in type); basal joint curved at base; second joint one-fourth length of first, slightly enlarged at tip. Rostrum short, stout, 3 (?) visible joints covered with long silvery grey hairs.

*Thorax*: All three thoracic segments distinct dorsally. *Pronotum* about three times as wide as long, narrower than head with eyes, set in a deep emargination in mesonotum. *Prosternum* with deep acetabula under eyes for anterior coxae. *Mesonotum* twice as wide as long, divided medially by a deep longitudinal linear suture; anteriorly deeply roundedly emarginate to receive the pronotum; posteriorly sinuate. *Mesopleuræ* extended backward to level of posterior margin of meta-



notum, simple, without sutures. *Mesososternum* simple, a deep submarginal suture dividing off the pleurae for about one-half their length. *Metanotum* about one-half length of pronotum, sinuate posteriorly and divided in two by a sinuate cross suture; anterior part longer than posterior; lateral pieces (acetabula) for the coxae running back half way of the second abdominal segment. *Metasternum* concealed.

*Abdomen*: Slightly longer including genital segment, than wide ( $\delta$ ); not quite as long (including genital abdominal segment) as wide ( $\varphi$ ); connexivum wide, so reflexed as to be practically vertical; six abdominal segments visible dorsally and seven sternally, exclusive of the genital segment; 6th abdominal segment ( $\delta$ ) beneath emarginate trapezoidally posteriorly to receive 7th segment; 7th segment twice as long as any of the others, roundedly emarginate to receive cylindrical genital segment; all other segments short and ringlike and subequal in length. *Genital segment* ( $\delta$ ) cylindrical, rounded terminally, slightly longer than broad, as long as the four terminal abdominal segments taken together; beneath with a rounded operculum through which the genitalia show as two rounded protuberances, one in front of the other. Seventh abdominal segment ( $\varphi$ ) long and broad, beneath emarginate trapezoidally posteriorly to receive genital segment; all other segments short and ringlike and subequal in length. *Genital segment* ( $\varphi$ ) narrow, roundedly triangular with a keel-like longitudinal slit and a knoblike apex.

*Legs*: Anterior femora moderately stout, unarmed; tibiae one-quarter longer, more slender. Intermediate femora to tibiae as 7 to 9 in length, slightly stouter than tibiae, covered with short stout hairs, spine-like in middle leg, longer spinous bristles at ends of joints. Two stout spines at distal end of femur. Anterior femora only present in type; other joints of legs described from the type series specimens.

*Color*: Head somewhat flavous or darker with blackish pattern, covered with long silvery grey pubescence, the 6 setigerous loci shining black. Prothorax black, middle flavous and anterior margins broadly slate grey. Mesothorax black, a broad slate-grey stripe, and pleura and sterna all slate grey; a double line of black spots running down the tergum, rather linear on the posterior margin of the abdominal segments;  $\delta$  genital segment piceous; two round black spots on the  $\varphi$  genital segment, the extreme knob of which is piceous. Abdomen beneath the same colors, except that the black markings are more linear and placed on the posterior margin of each segment, widest on the 6th and disappearing on the first and second; the last (7th) segment is broadly roundedly black in  $\delta$  and subtriangularly black medially in  $\varphi$ . Edges of genital segment black in  $\varphi$ ; black in  $\delta$ .

The general ground color is black, body pubescence silvery grey and long particularly on the rostrum, or slaty grey and velvety.

*Dimensions*: Type—long, 4.4 mm.; lat., 2.2 mm. Allotype—long, 5 mm.; lat., 2.7 mm.

*Type*—Apterous ♂, Yampa River, N. W. Colorado, August 20, 1920; allotype, same data; paratypes, 2 males and 5 females, same data. R. C. Moore, collector. Type, allotype, 1 male and 4 female paratypes, in collection of University of Kansas; 1 male and 1 female paratype in my collection.

Described under binocular microscope, with 55 mm. objective and x10 eyepiece, and 24 mm. eyepiece for pubescence and finer details. Eyepiece micrometer ruled to .001 mm. used for proportions.

This species seems to belong in the monotypic genus *Trepobatopsis*, described by Champion from a single mutilated apterous male from Mexico (Sallé). The female and the winged of both sexes of *denticornis* Champ. are still to be described. The absence of the antennal joints and tarsi, however, forbids certainty as to the genus to which our species is to be attributed, but if it represents another genus, it is probably a new one, close akin to *Trepobatopsis*.

This species differs generically from *Trepobates* Uhler in the size and proportions of the head; proportion of first two antennal joints; pronotal proportions, and structure of abdomen. The color and the proportions of the leg segments and the absence of teeth on the anterior femora and the intermediate tibia at once separate it from *Trepobatopsis denticornis* Champ.

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### **Atrytone kumskaka Scudder (Lep., Rhop.).**

By HENRY SKINNER.

This Hesperid has been under discussion for a number of years and has not been positively identified. Specimens taken in Iowa were referred to *conspicua* Edwards by Dr. Scudder. Discovering his mistake in 1887, he named the species *kumskaka* and gave a full description of it and figured the abdominal appendages of the male. It was described from two males and three females from the "Western States." According to the description of *kumskaka* (*conspicua* nec Edwards) in the *Transactions of The Chicago Academy of Sciences*, two males and a female were taken by J. A. Allen, at Denison, Iowa, in July, on *Echinacea angustifolia* D. C., a plant growing on grassy knolls of the open prairie. Mr. Nathan Banks has very kindly

sent me information in regard to specimens in the Scudder collection at the Museum of Comparative Zoology, Cambridge, Massachusetts. A male and female, labeled *conspicua* are beyond doubt part of the type material of *kumskaka*, the presumption being that one male had been used to make the genitalic mount and it may still be in the Scudder collection. Dr. A. W. Lindsey examined most of the collections of Iowa butterflies when he prepared a State list, but did not record this species. He also states later that he never took anything in western Iowa which might have been this species. During the past summer Mr. R. A. Leussler made a special search for the species at the type locality, but failed to find it.

From all the evidence I came to the conclusion that we were probably dealing with a known species, one previously described. By elimination it was easy to narrow down the possibilities to a very few species and finally to the one that the description fitted best. This proved to be *Atrytone byssus* Edwards, described over forty years ago. The male genitalia of *byssus* are very distinct and not like any other species and agree with the figures of the genitalia of *kumskaka* as figured by Scudder. This resemblance has been also noted by Barnes and McDunnough, who state that the two must be nearly related. We know very little about the species. The type locality of *byssus* was the Indian River, Florida, the presumption being that they were taken by Dr. Wm. Wittfeld at Georgiana, in the fall. Mrs. A. T. Slosson took it on Biscayne Bay, Florida. The Edwards Catalog of 1884 also gives Texas. We have a specimen from the Indian River that bears a pin label with October on it, but all the others are without date of capture. Doubtless the species flies in the Gulf States and may be found in some of the States to the North, the Iowa specimens being rare visitors.

#### BIBLIOGRAPHY

- Pamphila byssus* Edw., Can. Ent., 1880, XII, 224.  
*Hesperia conspicua* Scud. (not Edw.) Trans. Chicago Acad. Sci., 1869, I, 336.  
*Atrytone kumskaka* Scud., Can. Ent., 1887, XIX, 45.  
Barnes and McDunnough, Contrib., 1918, IV, 80.  
Lindsey, Univ. Iowa Studies, 1921, IX, 106.

# ENTOMOLOGICAL NEWS

PHILADELPHIA, PA., NOVEMBER, 1921.

## The Abstracting of Scientific Papers

In the NEWS for October we called attention to an apparent improvement of scientific papers if the figures relating to different species on the same plate were briefly labeled to indicate the specific name. The time to be saved and the annoyance to be avoided by such a simple addition constitute advantages to the busy man of the same kind as, although far less important than, those which result from prefixing abstracts to articles. We are moved to this remark by an article in *Science* for September 30, 1921, entitled "Scientific Abstracting," by Gordon S. Fulcher, and we recommend its perusal to all who produce and use scientific literature. It poses the question: "Is it worth while for scientific journals to provide abstracts at the beginning of their articles?" Part of the answer is:

. . . suppose each abstract describes the contents of the article so completely and precisely that any reader can tell with assurance whether the article contains any results of interest to him, and suppose it summarizes the methods, conclusions and theories so as to give all the information any reader not a specialist in the narrow field involved needs; . . . would not such abstracts enable the reader to grasp the significant results in the articles not only more quickly but more completely and clearly than by skimming through the articles? Such abstracts would save much time for the scientist not only as a *reader* of current literature but also as an *investigator*.

The form of abstracts is considered in detail and many suggestions are made for which we cannot find space here. The editor of the NEWS is in sympathy with the preliminary abstract idea and has made a beginning in practice.\* The longer an article, the more desirable that it should have an abstract prefixed. Articles in this journal are by necessity short, but it may well be considered whether preliminary abstracts would not add to the usefulness of at least some of the contributions to the NEWS.

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\*Trans. Amer. Ent. Soc., xlvi, p. 323, 1920.

## Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF  
THE GLOBE

### A New Entomological Publication.

We take pleasure in announcing that the Entomological Society in Helsingfors, Finland, has inaugurated a new periodical, "Notulae Entomologicae," which will appear in four to five numbers per annum. The subscription price is, including postage, for the United States, one dollar (\$1.00); for England and other countries, eight (8) shillings. Subscriptions are to be sent to Mr. H. Rudolph, Alexandersg., 13, Helsingfors, Finland.

### Change of Address

Frank Hainbach, No. 111 West Maple Ave., Langhorne, Pennsylvania. (Mail address: Box 15, Langhorne, Pa.).

### The McPherson Scientific Expedition

The McPherson Scientific Expedition, consisting of H. H. Nininger, head of the Biology department of McPherson College, Foster Hoover, his assistant, and Warren Knaus, who represented the State Agricultural College, returned August 28, 1921, from an eight weeks collecting trip over the Southwest, that required more than 4000 miles of travel and reached the states of Colorado, Wyoming, Utah, Nevada and Southern California.

The trip was primarily for the collection of insects, [of which about 12,000 were obtained], but Professor Nininger and his assistant also collected and prepared about a hundred bird and small mammal skins.

The trip was without accidents or mishaps of any consequence and was made over the Union Pacific Railroad through Denver, Cheyenne, Salt Lake City and the Salt Lake road, recently purchased by the Union Pacific, through Las Vegas, Nev., to Los Angeles and the Santa Fe to San Diego, California. Returning the same route was followed to Salt Lake City, where the Denver & Rio Grande was taken to Denver. The only delay encountered on the trip was from Salt Lake City to Colorado Springs, due to excessive rains in the mountains of Utah and Colorado.

The results of the trip were highly successful in the number of specimens secured. Side trips were made at Medicine Bow, Wyoming, at Lund, Utah, to Cedar City and Parowan, to the top of the Parowan Mountains at an elevation of ten thousand feet, to Zion Canon and Hurricane, Southwest Utah. At San Bernardino, with a party of friends to Big Bear Lake in the San Bernardino Mountains, 50 miles east. At Crucero, California, up the Death Valley line to Death Valley Junction, thence by auto to Ash Meadow, Nevada. From Colorado Springs a trip was made to the petrified forest near Florissant, where fossil leaves and insects were sought.

Outside of a fairly large number of species apparently undescribed, the best species collected in beetles were two extremely rare tiger beetles, *Cicindela nevadica* at Ash Meadow, Nev., and *Cicindela parowana* near Parowan, Utah. Many large series were taken and much new material will be added to Mr. Knaus' collection, which will eventually go to the State Agricultural College. The material that goes to McPherson College will virtually be the beginning of their entomological collection.—*The Democrat-Opinion*, McPherson, Kansas, Sept. 2, 1921.

### The Thread Worm *Gongylonema hominis* Introduced into Man by Insects?

Prof. C. W. Stiles, of the Hygienic Laboratory of the U. S. Public Health Service, reports the discovery of a new case of *Gongylonema* infection in man.

The first known case was reported by Ward (1916) from Arkansas, where the thread-like nematode was taken from the lower lip. The second, also taken from the lip, was reported by Stiles (1917) from Florida. The present case was found by Stiles in the practice of Dr. H. L. Akridge, of Sale City, Ga.

The patient, a woman of 50, consulted Dr. Akridge for sore throat that had lasted about three weeks. He found an abrasion of the mucous membrane around the anterior pillar of the tonsil and another near the angle of the jaw. Both were very sensitive. He touched them with 10 per cent silver nitrate solution and gave the patient a mild antiseptic mouth wash and a purge of calomel. Three days later, examination showed another abrasion on the opposite side of the mouth about an inch anterior to the angle of the jaw. He again applied silver nitrate and gave the patient a mouth wash containing a strong solution of thymol. The next day she came back with the worm. She had felt it partly out in her mouth and had been able to pull it out with her fingers. It lived for several hours in water.

When Prof. Stiles saw the specimen it was badly macerated. However, a fragment of the cuticle showed two of the "bosses" that characterize the head end of *Gongylonema*; and the pharynx excluded the *Loa* worm from consideration. The worm was about 35 millimeters long.

The case emphasizes the fact that a parasitic infection of man, widely distributed (Florida, Georgia, Arkansas) but seldom recognized, exists in the United States. The infection doubtless occurs through swallowing insects, perhaps croton bugs. It causes irritation and nervousness but apparently no dangerous condition.

Similar infections are widespread among cattle, sheep, rats, etc.; and the form in man may be specifically identical with one of these. Until material is available to establish identity, Prof. Stiles suggests,

on purely practical grounds, that the worm described and figured by Ward as *Gongylonema* (?) *pulchrum* be referred to as *Gongylonema hominis* sp. dub., in order to keep the nomenclature distinct.—Health News Issued by the UNITED STATES PUBLIC HEALTH SERVICE.

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### The Mulford Biological Exploration of the Amazon Basin

EDITOR, ENT. NEWS:—This is to inform you of the progress of the Mulford Expedition, with which Dr. Mann is connected, and to give you a brief statement of the entomological work so far accomplished as it has been reported to us.

As you may have noted from the news bulletins which I have sent out [see the NEWS for October, page 245], the party left La Paz about July 9th, enroute for the Bopi River. They reached Espia, at which place the La Paz and Meguilla Rivers join to form the Bopi, remaining there about three weeks awaiting the arrival of balsas to take them down the river. They left Espia about the 15th of August, arriving at Huachi on the 22nd and proceeding from there down the river to Rurrenabaque. The letters just received were written from Espia just previous to the time they set out for their trip down the river to Rurrenabaque. Dr. Rusby reports that collection of specimens was impossible until after the party left La Paz. From La Paz to Eucalyptus the journey was made by train and from Eucalyptus to Pongo by automobile. There were thus no opportunities for collecting except at the stopping points.

The work in entomology which Dr. Mann has so far done includes the collection of a number of specimens taken on the Alto Plano at Eucalyptus, also at Pongo, the end of the automobile route. Several days' work netted a good series of several species of ground beetles and a few ants, and other characteristic Andean species. On the way from Pongo to Canamina and Espia a few good things were found along the trail, among them several undoubtedly new species of beetles, one belonging to a family not heretofore recorded from Bolivia.

Collection at Canamina was fairly profitable, for during two days' collection here many species were taken, the most important being a good series of parasitic wasps. In the vicinity of Espia also Dr. Mann collected an interesting if not a large series of forms.—R. H. HUTCHINSON, *Secretary*, Philadelphia.

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### *Gonepteryx clorinde* in Nebraska (Lep., Rhop.)

This is the time of year when I begin cutting up. Captured *Gonepteryx clorinde* Godt. September 20, 1921, at noon, in Omaha, in a neighbor's backyard on *Zinnia*. This is a new record for Nebraska, the distribution as previously known being Arizona, Texas, Mexico, Central and South America.—R. A. LEUSSLER.

## Entomological Literature

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

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), 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.

The records of papers containing new genera or species occurring north of Mexico are all grouped at the end of each Order of which they treat.

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.

The titles occurring in the **Entomological News** are not listed.

4—Canadian Entomologist, London, Canada. 5—Psyche, Cambridge, Mass. 11—Annals and Magazine of Natural History, London. 22—Bulletin of Entomological Research, London. 23—Bollettino del Laboratorio di Zoologia Generale e Agraria, Portici, Italy. 24—Annales de la Societe Entomologique de France, Paris. 33—Annales de la Societe Entomologique de Belgique, Brussels. 39—The Florida Entomologist, Gainesville, Fla. 45—Zeitschrift für wissenschaftliche Insektenbiologie, Berlin. 46—Contributions to the Natural History of the Lepidoptera of North America. Ed. by Wm. Barnes. 50—Proceedings of the United States National Museum. 59—Journal of Agricultural Research, Washington, D. C. 68—Science, Lancaster, Pa. 72—The Annals of Applied Biology, London. 86—The Quarterly Journal of Microscopical Science, London. 89—Zoologische Jahrbücher, Jena. 90—The American Naturalist, Lancaster, Pa. 100—Biological Bulletin of the Marine Biological Laboratory, Woods Hole, Mass. 111—Archiv für Naturgeschichte, Berlin. 119—Proceedings of the National Academy of Sciences of the U. S. A., Washington, D. C. 124—Bulletin de la Societe entomologique d'Egypte, Cairo.

**GENERAL.** Berland, L.—Notices sur les membres de la societe entomologique morts au champ d'honneur. 24, lxxxix, 417-36. Evermann & Clark.—Lake Maxinkuckee. A physical and biological survey. The insects. Vol. ii, pp. 9-40. (Dept. Conserv. State of Indiana. Pub. 7, 1920.) Schroder, C.—Handbuch der entomologie. Lief. vii. Jena. Surcouf, J.—Le pompile et l'araignee. (La Nature, xlix, 97-8.) Vandyke, E. C.—Insects of Yosemite national park. (Handb. of Yosemite Nat. Park. By A. F. Hall. G. P. Putnam's Sons, New York, 1921, pp. 203-18.) Wells, B. W.—Gall evolution: a new interpretation. 68, liv, 301.

**ANATOMY, PHYSIOLOGY, etc.** Bridges, C. B.—Tripliod intersexes in *Drosophila melanogaster*. 68, liv, 252-4. Current maps of the location of the mutant genes of *Drosophila melanogaster*. 119, vii, 127-32. Brocher, F.—Etude experimentale sur le fonctionnement du vaisseau dorsal et sur la circulation du sang chez les insectes. La *Vespa crabro*. 24, lxxxix, 209-32. Ferton, C.—Notes detachees sur l'instinct des hymenopteres melliferes et ravisseurs. 24, lxxxix, 329-75. Gericke, H.—Atmung der libellenlarven mit besonderer berucksichtigung der Zygopteren. 89, Abt. f. allg. Zool., xxxvi, 157-96. Haffer, O.—Bau und funktion der sternwarzen von *Saturnia pyri*, und die haarentwicklung der saturnidenraupen. 111, 1921, A, 2,



110-66. **Heikertinger, F.**—Die morphologisch-analytische methode in der kritik der mimikryhypothese, dargelegt an der wespenmimikry der boeckkaefer. **89**, xlv, Abt. f. Syst., 267-96. **Koch, A.**—Die atmung der culiciden-larven. (Mit. Zool. Inst. Westf. Wihl. Univ. Munster., iii, 31-41.) **Kreisel, C.**—Ueber den einfluss von sauerstoff, kohlen-sauer und neutralsalzen auf culicidenlarven und puppen. (Mit. Zool. Inst. Westf. Wihl. Univ. Munster., iii, 26-30.) **Kryz, F.**—Ein beitrag zur kenntnis der unterschiedsempfindlichkeit und forbewegungsgeschwindigkeit der Periplaneta und einiger coleopteren. **45**, xvi, 187-93. **Kuhl, W.**—Der feinere bau des zirkulationssystems von *Dytiscus marginalis*. (Senckenbergiana. Frankfurt a.M., iii, 10-19.) **Muir, F.**—On some recent remarks on the phylogeny of Homoptera. **5**, xxviii, 116-19. **Nicholson, A. J.**—The development of the ovary and ovarian egg of a mosquito, *Anopheles maculipennis*. **86**, lxx, 395-448. **Onslow, H.**—On a periodic structure in many insect scales and the cause of their iridescent colours. (Phil. Trans. R. Soc. London, B, cxxi, 1-74.) **Payne & Denny.**—The heredity of orange eye color in *Drosophila melanogaster*. **90**, lv, 377-81. **Pictet, A.**—Recherches sur le role des ccailes dans la coloration et la variation des papillons. (Bul. Inst. Nat. Genevois, xli, 321-30.) **Pintner, T.**—Das orientierungsproblem bei den ameisen. (Schr. Ver. Verbr. Naturw. Kennt. Wien., lvi, 113-46.) **Stadtman-Averfeld, H.**—Uebersicht ueber die morphologie der vier larvenstadien einiger culiciden. (Mit. Zool. Inst. Westf. Wihl. Univ. Munster., iii, 42-3.) **Stempell, W.**—Ueber sphaacritenzellen im fettkoper von blattwespenlarven. (Mit. Zool. Inst. Westf. Wihl. Univ. Munster., iii, 20-5.) **Uichanco, L. B.**—Reproduction in the Aphididae with a consideration of the modifying influence of environmental factors. **5**, xxviii, 95-109. **Verhoef, K. W.**—Ueber vergleichende morphologie der mundwerkzeuge der coleopteren-larven und -imagines... **89**, xlvi, Abt. f. Syst., 69-194. **Whiting, P. W.**—Studies on the parasitic wasp, *Hadrobracon brevicornis*. (Genetics). **100**, xli, 42-54.

**ARACHNIDA, &c.** **Barbour, T.**—Spiders feeding on small cryprinodonts. **5**, xxviii, 131-32. **Reese, A. M.**—Venomous spiders. **68**, liv, 382-5. **Savin, W. M.**—The much despised spider—harmless, beneficial, interesting. (Jour. Amer. Mus. Nat. Hist., xxi, 367-80.)

**NEUROPTERA.** **Klapalek, F.**—Plecopteres nouveaux. **33**, lxi, 320-27. **Navas, L.**—Neuropteres des Iles Juan Fernandez et de l'île de Paques. (Nat. Hist. Juan Fernandez & Easter Isl., iii, Zool., 125-28.) **Pintner, T.**—Einiges ueber die termiten. (Schr. Ver. z. Verbr. Naturw. Kennt. Wien, liv, 73-95.) **Schott, H.**—Collembola aus Juan Fernandez-Inseln und der Osterinsel. (Nat. Hist. Juan Fernandez & Easter Isl., iii, Zool., 33-40.)

**Macnamara, C.**—A new sps. of *Friesea* (Collembola.) **4**, liii, 126-29.

**ORTHOPTERA.** **Blackbourn, B.**—Some observations on mantids. With special reference to the reproduction of lost limbs. (*Victorian Nat.*, xxxviii, 30-3.) **Uvarov, B. P.**—A revision of the genus *Locusta* (= *Pachytylus*), with a new theory as to the periodicity and migrations of locusts. **22**, xii, 135-63.

**HEMIPTERA.** **Barber, G. W.**—*Cicadella gothica*—a correction. **5**, xxviii, 130. **Borden, A. D.**—A biological study of the red date-palm scale, *Phoenicoccus marlatti*. **59**, xxi, 659-68. **Ferris, G. F.**—Report upon a collection of Coccidae from Lower California. (*Standf. Univ. Publ., Biol. Ser.*, i, 61-132.) **Morrison, H.**—Red date-palm scale, *Phoenicoccus marlatti*: a technical description. **59**, xxi, 669-76. **Osborn, H.**—Homoptera of Florida. **39**, v, 1-19.

**Knight, H. H.**—Monograph of the North American species of *Deraeocoris*. (*Univ. Minnesota, Tech. Bull.*, i.)

**LEPIDOPTERA.** **Comstock, J. A.**—Studies in Pacific coast L. Early stages of *Euphydryx sierrae*. (*Bul. S. Cal. Ac. Sci.*, xx, 46-7.) **Draudt & Seitz.**—Die Grossschmetterlinge der Erde. *Fauna Amer.*, Lief. 122-123. **Haldy, B.**—Ueber Schutzfarbung bei *Arctia caja*, und einigen anderen bombyciden. (*Zool. Beobachter*, 1920, 137-43.) **Jones, F. M.**—Pitcher plants and their moths. (*Nat. Hist., Jour. Amer. Mus. Nat. Hist.*, xxi, 297-316.) **Meyrick, E.**—Exotic microlepidoptera. ii, 417-48.

**Barnes & Lindsey.**—The Pterophoridae of America, north of Mexico. **46**, iv, 281-478. **Bird & Jones.**—A new *Papaipema* from Delaware. **4**, liii, 137-39.

**DIPTERA.** **Alexander, C. P.**—The crane-flies of New York. Part II. Biology and phylogeny. (*Cornell Univ., Mem.* 38, pp. 695-1133.) Diptera-Tipulidae from Juan Fernandez. (*Nat. Hist. Juan Fernandez & Easter Isl.*, iii, *Zool.*, 25-27.) **Becker, Hermann, Riedel, & Sack.**—Dr. L. Zurcher's dipteren-ausbeute aus Paraguay: Dolichopodidae, Mydaeiden und Asiliden, Tipulidae, Syrphiden. **111**, 1921, A, 3, 114-49. **Bezzi, M.**—Il genere *Lasiopogon* Loew. **23**, xi, 250-81. **Bishopp & Laake.**—Dispersion of flies by flight. **59**, xxi, 729-66. **Cunliffe, N.**—Preliminary observations on the habits of *Oscinella frit*. **72**, viii, 105-134. **Duncan, F. M.**—On the presence of two spermathecae in the rare mole flea (*Hystrichopsylla talpae*) and the flea as distributor of a tyroglyphid. (*Jour. R. Microscop. Soc.*, 1921, 245-7.) **Frey, R.**—Mitteilungen ueber Sudamerikanische dipteren. (*Ofv. Finska Vet. Soc. Forh.*, lx, A, No. 14.) **Laake, E. W.**—Distinguishing characters of the larval stages of the ox-warbles, *Hypoderma bovis* and *H. lineatum*, with description of a new larval stage. **59**, xxi, 439-57. **Rothschild, N. C.**—Siphonaptera from Juan Fernan-

dez. (Nat. Hist. Juan Fernandez & Easter Isl., iii, Zool., 48.) **Skaife, S. H.**—On *Braula caeca*, a dipterous parasite of the honey bee. (Trans. R. Soc. S. Africa, x, 41-8.) **Surcouf, J.**—Genera insectorum. Fasc. 175. Tabanidae.

**Alexander, C. P.**—New Nearctic crane-flies. 4, liii, 132-37. **McDunnough, J.**—A revision of the Canadian species of the affinis group of the genus *Tabanus*. 4, liii, 139-44. **Van Duzee, M. C.**—Notes and descriptions of a few North American Dolichopodidae. 5, xxviii, 120-29.

**COLEOPTERA.** **Bernhauer, M.**—Coleoptera-Staphylinidae von den Juan Fernandez Inseln und der Osterinsel. (Nat. Hist. Juan Fernandez & Easter Isl., iii, Zool., 41-44.) **Fenyés, A.**—Genera insectorum, Fasc. 173b. Staphylinidae: Aleocharinae. **Gebien, H.**—Coleoptera-Tenebrionidae von Juan Fernandez. (Nat. Hist. Juan Fernandez & Easter Isl., iii, Zool., 29-30.) **Hayes, W. P.**—*Strigoderma arboricola*—its life-cycle. 4, liii, 121-25. **Knisch, A.**—Ueber die gattung *Hydrocylus*. (Hydrophilidae). 124, i, 99-107. **Zimmermann, A.**—Beiträge zur kenntnis der sudamerikanischen schwimmkaeferfauna nebst 41 neubeschreibungen. 111, 1921, A, 3, 179-206.

**Blackman, M. W.**—North American Ipidae of the subfamily Micraicinae, with descriptions of new gen. and sps. Descriptions of eight new bark beetles from Mississippi. (Miss. Agric. Exper. Sta., Tech. Bul., 9 & 10.) **Blaisdell, F. E.**—New species of Melyridae, Chrysomelidae and Tenebrionidae, from the Pacific coast, with notes on other species. (Stand. Univ. Pub. Biol. Sci., i, 137-231.) Miscellaneous studies in the Coleoptera. 4, liii, 129-32.

**HYMENOPTERA.** **Cockerell, T. D. A.**—Descriptions and records of bees.—XCI. 11, viii, 359-68. **Emery, C.**—Genera insectorum. Formicidae, Myrmicinae. Fasc. 174. **Santschi, F.**—Retouches aux sous-generes de *Camponotus*. 33, lxi, 310-12. **Weld, L. H.**—Notes on certain genera of parasitic Cynipidae proposed by Ashmead, with descriptions of genotypes. 50, lix, 433-51.

**APPLIED ENTOMOLOGY.** An Introductory Text-Book of Insects in their Relations to Man. By H. T. FERNALD, Ph.D., Professor of Entomology, Massachusetts Agricultural College, and Entomologist of the Massachusetts Agricultural Experiment Station, McGraw-Hill Book Company, Inc., New York. 1921, pp. xiv, 386, 388 text figs.—The present book is "offered as a classroom text for an introductory course in the subject." The first four chapters (pp. 1-31) consider the taxonomic position of insects, their structure and development. Chapter V (pp. 32-37) deals with the losses caused by insects and

nature's control methods. Artificial methods of control are treated in Chapter VI (pp. 38-42), insecticides and fumigation in Chapters VII-IX, (pp. 43-58). Chapter X is on the relationships of insects, while each one of the remaining twenty-four Chapters is devoted to a separate order of insects, that on the Lepidoptera being the longest (70 pages).

In the NEWS for July, 1921 (pages 220-1), we took occasion to compare briefly a number of recent American text books on economic entomology. Prof. Fernald's new book is, so far as its arrangement of subject matter is concerned, similar to those by Professors Osborn and Lochhead mentioned in the review quoted and probably (making allowances for differences in type form) larger than either of them and is more extensively illustrated. It has apparently been brought fully down to date, is not too technical for its purpose and here and there, in appropriate places (*e. g.*, pages 220, 296) contains interesting discussions of general problems introduced by the matter immediately preceding them. On the other hand the reviewer prefers the more exact characterizations of the minor groups and subdivisions of insects which are to be found in Lochhead's book, for example, and misses references to entomological literature other than those contained in the sources given for many illustrations. (*Advertisement*)—PHILIP P. CALVERT.

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ÉTUDES DE LEPIDOPTEROLOGIE COMPARÉE. By CHARLES OBERTHÜR. Volume XVIII, part 2. Rennes, France, July 1921. Despite of "la folie bolchevique" this great work has been continued and the present volume has more than usual interest for American students as it treats in part of species found in this part of the world. There are descriptions of four new species of Noctuelidae by Charles Oberthür. The remaining 252 pages are devoted to a monographic revision of the family Cymatophoridae by Professor C. Houlbert. There are 68 excellent half-tone figures and cuts in the text and nine plates with many illustrations, some of them being in color—H. SKINNER.

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INSECT LIFE. By C. A. EALAND. London. A. & C. Black, Ltd., 1921, pp. xii, 340, 74 full page illustrations, 24 of which are from photographs, and 50 in color. American agents, The Macmillan Co.—Even in these days of universally high prices, the twelve dollars charged for this book is an extremely high price to pay for a general work on entomology, and the prospective purchaser is most assuredly entitled to expect in return for this not inconsiderable sum, a thoroughly modern and painstakingly accurate product of entomological research. In these times of financial stringency one would also expect that only books of exceptional merit would be published, but in the opinion of the reviewer, Mr. Ealand's book falls far short of expectation in all of these matters.

If the statement on page 1 of "Insect Life" be correct, namely, that the "old time bug-hunter" who cared to collect insects merely as gaudily colored objects to be placed in a "pendant glass-topped case with specimens arranged in bizarre patterns" has become "as extinct as the Dodo," one naturally wonders why the great majority of insects figured in this book were apparently chosen for their gaudy colors rather than for their scientific interest. One likewise wonders why about 94 per cent of the insects figured are restricted to the orders Lepidoptera and Coleoptera, unless the often-made charge be true, that the English entomologists are interested only in Lepidoptera and Coleoptera—at any rate, practically the only insects which Mr. Ealand considers worthy of designating by their scientific names in his figures, are the Lepidoptera and Coleoptera, and this omission of the proper designation of the insects figured is very irritating when one wishes to know the name of some interesting form depicted, as is the case, for example, with the phasmid shown in Plate vi, which was apparently chosen as a typical representative of the group. The head of this phasmid, however, is certainly far from typical of the group, and one wonders what this interesting form may be—but the only information vouchsafed concerning it is that it is a "stick insect." If Mr. Ealand considered insects other than Lepidoptera and Coleoptera worth bothering with, he surely would have at least selected a specimen with a head on it, to illustrate the common damselfly shown in the upper right hand corner of Plate ii; and he would have taken the trouble to ascertain whether Plate xv represents "*Sialis* sp." or a typical male *Corydalid*!

On page 4 occurs the statement that "The text is arranged on strictly scientific lines and with the greatest attention to accuracy, for it is hoped that 'Insect Life' may appeal to teachers and students of entomology"; but it is hardly in keeping with the modern knowledge of the subject to place the Zoraptera (which are winged insects related to the Psocida) among the Apterygota, or to group the Onychophora with the Arthropoda. Furthermore, no one but Dr. Chapman considers that the micropterygid Lepidoptera constitute a distinct order, the "Zeugloptera," and every one who has studied the Apterygota knows that the Machilidae are too different from the Campodeidae to be grouped with them in the same order of insects, especially if we are to have so minute a division of related forms as to place the micropterygids in a distinct order separated from the rest of the Lepidoptera!

In introducing the term "Ephemeroptera" (which implies that the wings of the Ephemera are retained only for a day) Shipley was evidently actuated by a desire for a uniform ending in the termination "ptera" for all of the orders of winged insects; but Ealand has not this justification for using the designation "Ephemeroptera" in his list of orders, since he discards the properly-formed term Neuroptera in favor of "Planipennia," Hemiptera in favor of "Rhynchota," etc., al-

though it is not evident in what way his scheme of classification is bettered thereby.

Such statements as that made on page 57, where he states that "The Simuliidae are more than suspected of conveying pellagra," and his recommending the older book on medical entomology by Doane, rather than the more modern ones by Pierce, Herms, or Riley, in his bibliography, lead one to suspect that Mr. Ealand is not as familiar with recent progress in medical entomology as he might be; and unless one lives in England, the extremely local character of most of the works on entomology recommended in the bibliography will be somewhat disappointing to the student who wishes to become more familiar with the groups of insects discussed in the book.

There is much of interest and value in "Insect Life," and the foregoing criticism is possibly unduly severe; but when such a high price as twelve dollars (for which one may obtain a number of standard works dealing with the different phases of entomology infinitely more thoroughly) is charged for a single book, one naturally expects an adequate "quid pro quo" for his investment; and unless the agents are willing to send the book "on approval," it is greatly to be feared that those who purchase it without first seeing it (as was the case with the reviewer) will be much disappointed in the "value received."—G. C. CRAMPTON, Amherst, Massachusetts.

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## Doings of Societies.

### Entomological Section of the Academy of Natural Sciences of Philadelphia

Meeting of May 26, 1921. Twelve persons present. Dr. Henry Skinner presided. Mr. R. H. Hutchinson of Philadelphia was elected a Contributor.

COLEOPTERA.—Dr. Skinner spoke about the abundance of insect life in the countries of cold climates. He also exhibited a specimen of *Phengodes*, larva or adult female, captured at Hawks Park, Florida, and spoke of the peculiarities of these insects.

ORTHOPTERA.—Mr. Rehn made some remarks upon the cockroaches or Blattidae, exhibiting a box of specimens selected to illustrate habitat types, sexual dimorphism, color pattern, size range, etc. The speaker briefly reviewed the classifications which have been proposed and also the orthodox characters which have been used for the differentiation of the genera and species. Features brought out in recent studies were discussed and illustrated with charts.

HEMIPTERA.—Mr. Kisliuk exhibited specimens of the citrus black fly, showing the insects massed on a leaf. He also spoke of some interesting experiences encountered in the performances of his inspection duties.—E. T. CRESSON, JR., *Recorder*.

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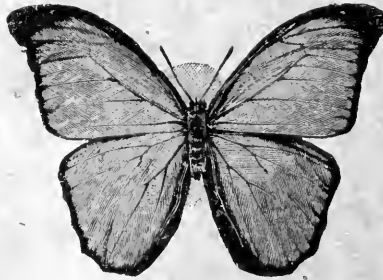
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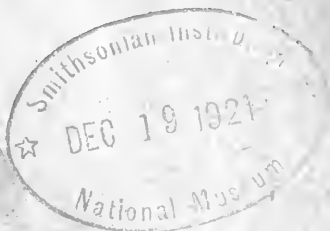
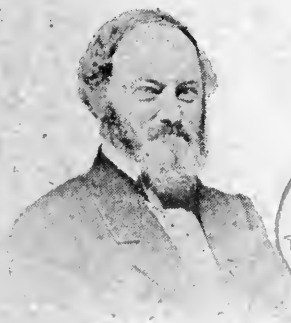


**DECEMBER, 1921**

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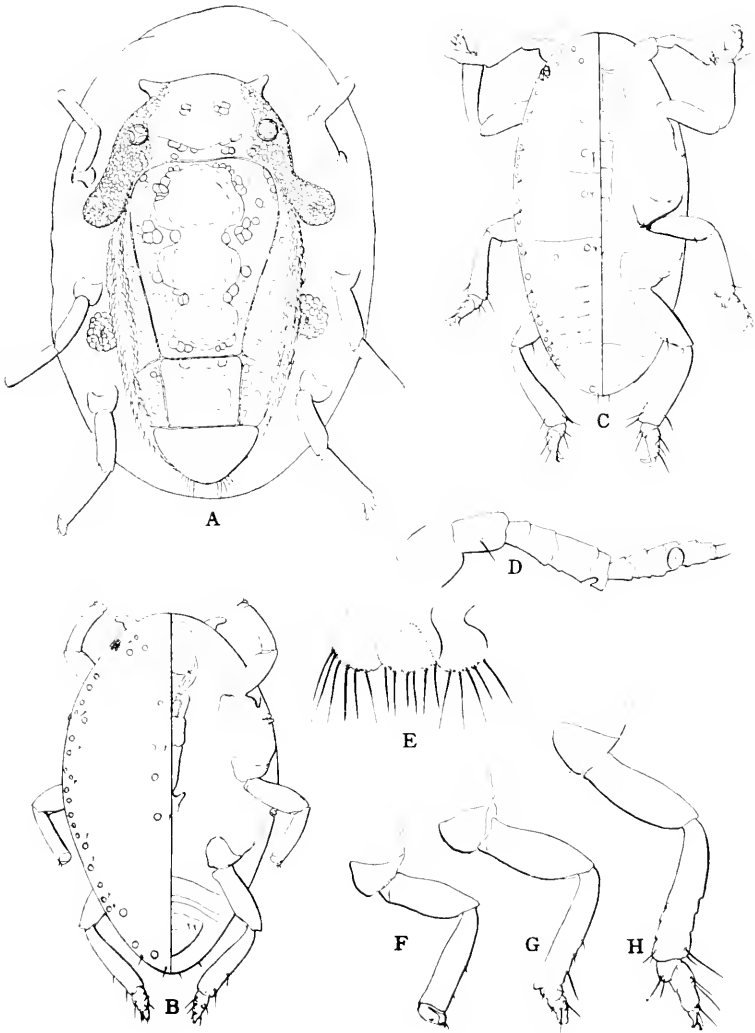
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HAMAMELISTES (?) AGRIFOLIAE.—FERRIS.

# ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

THE ACADEMY OF NATURAL SCIENCES, PHILADELPHIA

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## A New Species in the Hormaphidinae (Hemiptera, Aphididae).

By G. F. FERRIS, Stanford University, Calif.

(Plate VI)

The subfamily Hormaphidinae of the Aphididae includes among its few species some of the most specialized members of the family. The life histories of such species as *Hamamelistes spinosus* and *Hormaphis hamamelidis* are certainly among the most extraordinary that are known in any of the insect groups. As far as I am aware but three species belonging to this subfamily have been recorded from the United States, and of these one is introduced. It is therefore a decided pleasure to be able to record another American representative of the group. Credit for the discovery of the new species is due to Mr. Donald L. Currier, County Commissioner of Horticulture of San Benito County, California, who forwarded specimens to me for determination in the belief that the insects were Coccidae.

The available specimens represent but a single form, and it is consequently more or less unsafe to express any opinion as

to the generic position of the species. I am inclined to think that it really represents a new genus, but alate specimens will be necessary to determine this definitely, and I am referring it tentatively to *Hamamelistes*. The discovery of the remaining stages may not soon occur, and it seems best to present such information as is available.

**Hamamelistes (?) agrifoliae** n. sp. Coccidiform generation (Plate VI).

*Habit.* Occurring on the small twigs and under side of the leaves of the host and presenting the appearance of the first stage larva of some scale insect.

*First stage* (Fig. C). Length .35 mm. General color pale yellow, the eyes black and the appendages dusky. Margins of the body with a series of small, inconspicuous wax processes and the dorsum with a few similar processes.

Antennae (Fig. D) well developed, four-segmented, the third and fourth segments coarsely imbricated subequal and nearly as long as the first and second segments together. Legs (Fig. H) strongly developed, the tarsi two-segmented, without digitules. Lateral margins of the body with as many as twenty quite large pores and the dorsum with four median pairs of such pores in the thoracic region. Beak three-segmented. Cauda not developed. Cornicles lacking. Abdominal spiracles lacking.

*Second stage* (Fig. B). Length .42 mm. Color as in first stage. Antennae reduced to mere unsegmented tubercles. Legs (Figs. F, G) relatively and actually smaller than in the preceding stage, the first two pairs with the tarsi reduced to the merest vestiges, the third with the tarsus distinct but one-segmented, the claws lacking on all. Pores arranged as in the preceding stage but those of the marginal series more numerous. Beak three-segmented. Cauda not developed. Cornicles lacking. Abdominal spiracles lacking.

*Third stage* (Fig. A). Length .6 mm. At maturity quite heavily chitinized and with the venter greatly (and usually irregularly) swollen, the legs appearing as if rising from the dorsum and projecting uselessly above. Secretions lacking or at the most very scanty. Dorsal region composed chiefly of the head and thorax and marked off by very distinct sutures into definite areas. Head and pronotum marked off by a transverse suture which curves behind the anterior spiracles, the lateral areas from each antenna to the corresponding spiracle being strongly and finely reticulate. Mesonotum much elongate, divided by longitudinal sutures into three plates, the median plate being as broad as the other two together. Metanotum divided in similar fashion but scarcely more than one-third as long as the mesonotum. Behind the metanotum is a single undivided plate which conceals the cauda. The head and

thorax are beset with large, more or less symmetrically disposed, pore-like areas and the lateral margins of the meso- and metanota are cast into distinct ridges. Mesothoracic spiracles surrounded by a large, reticulated area. Cauda (Fig. E) distinctly knobbed and anal plate deeply bilobed, both the cauda and the anal plate with several rather long setae. Beak not discernible in the specimens examined. Legs as in the preceding stage. Cornicles lacking. Abdominal spiracles lacking.

*Type host and locality.* From *Quercus agrifolia* near Chittenden, Santa Cruz County, California, April 28, 1921. Holotype and paratypes and type material in the Stanford University collection.

*Notes.* The entire absence of cornicles will place this species in Baker's tribe Hormaphidini, which contains but two genera, *Hormaphis* and *Hamamelistes*. The present species agrees none too closely with either of these genera, but is perhaps nearer the latter.

A considerable quantity of material has been examined, but only the three stages described above have been found. Pergrande has described three nymphal stages for the corresponding forms of both *Hormaphis hamamelidis* and *Hamamelistes spinosus*. Living examples of all the stages were present. None of the adults appeared to contain young.

#### EXPLANATION OF PLATE VI.

*Hamamelistes* (?) *agrifoliae* n. sp.: A, adult; B, second stage; C, first stage; D, antenna of first stage; E, cauda and anal plate of adult; F, G, anterior (or middle) and posterior legs of second stage; H, leg of first stage.

#### The Mating Habits of *Megarhyssa* (Hym., Ichneumonidae).

In the October issue of the NEWS, A. B. Champlain reports "the discovery of the curious mating habit of *Megarhyssa atrata*," stating that "very little seems to have been recorded concerning the mating habits of the Ichneumonoids." Attention is called to the fact that the habit described by Champlain was described by Mr. George Gade, in 1884, in Vol. VII, p. 103, of the *Bulletin of the Brooklyn Entomological Society*, for a closely related species, called by him *Pimpla (Rhyssa) lunator*, as follows: "The males are often observed congregated upon an apparently sound part of a tree; scraping away bark sometimes to a depth of  $\frac{1}{4}$  inch the ♀ was found ready to emerge. Retiring, the males at once returned and one finally succeeded in copulating with the ♀ while yet she was in the cell or burrow. They remain but a short time *in copula* then the ♀ completes her exit from the larval habitation, and flies about, further unmolested by the ♂, in search of a suitable tree upon which to oviposit."—JOHN BARLOW, Rhode Island State College, Kingston, R. I.

## Undescribed Crane-Flies from Argentina (Tipulidae, Diptera.)—Part IV.

By CHARLES P. ALEXANDER, Urbana, Illinois.

The species described in the present installment all belong to the tribe Eriopterini, which includes a vast complex of small forms within the Neotropical fauna. The material was collected in the Province of Catamarca by Señor Weiser and sent to me for determination by Dr. Bruch. My sincere thanks are extended to both of these gentlemen for their kind co-operation now and in the past. The types are preserved in the collection of the writer with the exception of that of *Molophilus stylifer* which has been placed in the La Plata Museum together with paratypes of the other species described herewith.

### *Molophilus catamarcensis* sp. n.

General coloration dark brown; antennae of male elongated; wings strongly infuscated; male hypopygium with the apparent pleural appendage a straight chitinized bar that is produced into a beak-like spine on its inner face before the apex, the outer apical margin microscopically serrulate.

♂.—Length about 4-4.5 mm.; wing 5-5.5 mm. Rostrum and palpi dark brown. Antennae of the male elongate, if bent backward extending to beyond the base of the abdomen; antennal segments black, each with a ring of long black verticils. Head dark brown.

Pronotal scutellum yellowish white. Mesonotum dark brown with a brown pollen, the humeral region of the praescutum yellowish white. Pleura dark brown. Halteres light yellow. Legs with the coxae and trochanters testaceous yellow; femora obscure brownish yellow, passing into dark brown; tibiae brown, the tips and the tarsi brownish black. Wings with a strong brownish tinge, the dark brown veins clothed with conspicuous dark hairs.

Abdomen dark brown. Male hypopygium with the apparent pleural appendage appearing as a straight, chitinized bar, before the apex on the inner face, jutting out into a beak-like spine, the outer margin before the tip microscopically serrulate.

*Holotype*: ♂, Punta de Balasto, Catamarca, altitude 2,300 meters, November 22, 1920 (V. Weiser). *Paratopotype*: ♂.

### *Molophilus stylifer* sp. n.

General coloration brown; lateral margins of praescutum obscure yellow; antennae of male very elongate; wings grayish subhyaline, semi-atrophied; male hypopygium with each apparent pleural appendage appearing as a black, stylet-like, straight and slender spine.



♂.—Length about 2.5 mm.; wing 3.5 mm. Rostrum and palpi dark brown. Antennae of the male unusually elongate for a member of this genus; if bent backward extending practically to the end of the body; scapal segments brown; flagellum black, the segments with erect white hairs. Head dark gray.

Mesonotal praescutum brownish medially, the margin broadly obscure yellowish; remainder of the mesonotum brown. Pleura brownish testaceous. Halteres pale, the knobs brown. Legs with the coxae and trochanters pale testaceous; femora and tibiae obscure brownish yellow, the tips broadly dark brown; tarsi dark brown. Wings showing the first evidences of atrophy, narrowed, especially on the basal half; membrane grayish subhyaline, the veins brown with long dark hairs.

Abdomen dark brown, the hypopygium brighter. Male hypopygium with the apparent pleural appendage appearing as a stylet-like black spine, straight and slender, tapering to the acute tips, which are decussate across the genital chamber.

*Holotype*: ♂, Ampajango, Catamarca, altitude 2,300 meters, December 1, 1920 (V. Wiser).

**Rhabdomastix (Sacandaga) basalis** sp. n.

General coloration black; halteres yellow; wings blackish, the basal fourth yellowish; *Sc* not extending far beyond the origin of *Rs*; *r* present.

♂.—Length 2.8-3 mm.; wing 3 mm. ♀.—Length 3.2 mm.; wing 3.4 mm. Rostrum and palpi black. Antennae short in both sexes, the scapal segments black; flagellum brownish yellow to yellowish brown; verticils elongate. Head black.

Mesonotum dark brownish black, praescutum dusted with brown, the extreme lateral margins very narrowly and indistinctly yellowish. Halteres yellow. Legs with the coxae dark brown; trochanters obscure yellow; femora dark brown, more yellowish basally; tibiae and metatarsi obscure yellow, tipped with brown; remaining tarsal segments brown. Wings strongly infumated with blackish; about the basal one-fourth conspicuously yellowish, this coloration including practically all of the second anal cell; veins dark brown, yellowish in the basal portion of the wing. Venation: *Sc* rather short, *Sc1* ending a short distance beyond the origin of *Rs*, *Sc2* not far from the tip of *Sc1*; *Rs* long; *r* present, inserted on *R2+3* about half its length beyond the fork of *Rs*; cell *R2* large, vein *R2* straight; cell 1st *M2* closed, or, in rare instances, open by the atrophy of *m*; basal deflection of *Cu1* immediately beyond the fork of *M*. Anal angle of wing prominent.

Abdomen black, sparsely dusted with a brown pollen. Male hypopygium relatively large and with stout pleural appendages. In the female the antennae are darker; head and thorax more pruinose; mesono-

tum more reddish brown; ovipositor with the elongate valves horn-colored.

*Holotype*: ♂, Punta de Balasto, Catamarca, altitude 2,300 meters, November 10, 1920 (V. Weiser). *Allotopotype*: ♀, November 11, 1920. *Paratypes*: 1♂, 3♀'s, Santa Maria, Catamarca, October 30, 1920 (V. Weiser); 1♂, 1♀, Rio Diamante, southern Mendoza, January, 1921 (Dr. Carette); 60 ♂ ♀, Bañado, Valle de Santa Maria, Tucuman, April 2-11, 1921 (V. Weiser).

*Rhabdomastix basalis* is an exquisite little fly that is conspicuously different from all described members of the genus.

*Conomyia* (*Leipcneura*) *adunca* sp. n.

Antennal scape yellow; head yellow, the vertex with a large brown area; thoracic pleura striped longitudinally with silvery white and dark brown; wings yellowish gray, stigma inconspicuous; *Sc* short, *Sc*2 at tip of *Sc*1; *Rs* short, arcuated at origin; cell 1st *M*2 closed; abdominal tergites brown, paler caudally; sternites whitish with a conspicuous brown lateral line; male hypopygium with three pleural appendages, of which only one is chitinized, the apex curved, acute.

♂.—Length about 3.8 mm.; wing 3.6 mm.

Rostrum and palpi dark brown. Antennae with the scapal segments yellow, the flagellum dark brown. Head pale whitish yellow with a large, dark brown area on vertex.

Pronotum yellowish white, narrowly dark brown medially. Mesonotal praescutum dark brown, the humeral region brighter, the lateral margins to the wing-root narrowly but conspicuously whitened; scutum brownish yellow, the center of each lobe and the capillary median line darker brown; scutellum obscure brownish yellow, sparsely pruinose, darker brown medially; postnotum pale, gray pruinose, the posterior margin with two dark brown spots. Pleura dark brown with a broad and conspicuous silvery white stripe from the fore coxa to the base of the abdomen; a narrow brown line extending from the cervical sclerites to the postnotum, passing beneath the base of the halteres; posterior dorsal pleurites pale, anterior dorsal pleurites infuscated. Median area of mesosternum pale. Halteres pale yellow, the knobs dark brown. Legs with the coxae pale white or testaceous; trochanters yellow; femora light brown, the tips indistinctly darkened; tibiae brown, the tips narrowly darkened; tarsi brown. Wings with a faint yellowish gray tinge; stigma slightly darker, but still very pale; cord and outer end of cell 1st *M*2 indistinctly seamed with darker; veins brown. Venation: *Sc*1 short, ending far before the origin of *Rs*, *Sc*2 at the extreme tip of *Sc*1; *Rs* short, only a little longer than the deflection of *R*4+5, strongly arcu-

ated; cell 1st *M*2 closed; basal deflection of *Cu*1 about one-third its length before the fork of *M*.

Abdominal tergites brown, the caudal margins of the segments pale; sternites whitish with a conspicuous brown lateral line. Male hypopygium with three pleural appendages, the longest and most conspicuous appearing as a relatively short, blackened blade that terminates in an acute, slightly curved, blackened point; the second appendage is pale, about one-half the length of the first, the blunt tip narrowed; the third appendage is very squat in appearance, broader than long, with about a dozen setae on the surface, excluding two longer and more powerful bristles at the proximo-caudal angle. Penis-guard broad, fleshy, pale.

*Holotype*: ♂, Ampajango, Catamarca, altitude 2,300 meters, November 30, 1920 (V. Weiser). *Paratype*: ♂, Punta de Balasto, Catamarca, November 11, 1920 (V. Weiser).

### Notes and New Species (Lep., Arctiidae).

By W. M. BARNES, M.D., and A. W. LINDSEY, PH.D.,  
Decatur, Illinois.

SUBFAMILY NOLINAE.

*Roeselia varia* n. sp.

General color dark gray to brownish gray, with a variable hoary irroration due to the white tips of some scales. Thorax and head more definitely whitish. Collar with two transverse whitish lines, variably distinct. Palpi dark outside, pale within, exceeding front by about length of head. Under surface and abdomen silky pale gray. Legs similar inside, irrorate with gray outside. Tarsi darker with each joint pale tipped.

Basal area of primaries grayish, darker toward costa, with an inconspicuous tuft of raised scales in the cell. T. a. line single, dark, strongly out-curved over cubital stem and becoming straighter toward inner margin, sometimes slightly irregular. T. p. line geminate, outer line dark gray or blackish, sharply but not deeply dentate on veins, strongly outcurved from costa to vein *Cu*2, thence with a large outward angle on vein *A*; inner line rather remote from outer, even, paler and less sharp, following course of outer, sometimes very faint, and sometimes a little heavier on the veins. Median shade indicated by two costal dots, whence a brownish gray shade extends inward, including two scale tufts in cell, filling the median space behind the cell and becoming paler toward the inner margin. This shade is sometimes conspicuous and sometimes rather faint. S. T. space similar to basal with a pale, irregular, vaguely defined s. t. line about midway between t. p. and outer margin and following roughly the course of the t. p. veins here some-

times darker than ground color. Outer margin with a fine dark line and minute dashes on the veins. Fringes concolorous with a pale basal line. Secondaries pale powdery brownish gray, darkest at outer margin; fringes slightly paler.

*Under surface*: primaries pale gray, shining, powdered with dark tipped scales on costal and apical areas. Secondaries much paler, similarly powdered on costal area. Wing expanse 26 to 32 mm.

*Holotype* ♂, Sept., and *allotype*, Palmerlee, Arizona. One paratype ♂ and two paratypes ♀, same locality. One paratype ♂ and one paratype ♀, Chiricahua Mts., Cochise County, Arizona, Sept. and Aug., all in coll. Barnes, with other specimens from the same localities.

We place *fuscula* Grt. between *minor* Dyar and *dentata* Dyar. *Varia* is related to the last named and to *conspicua* Dyar, which is a good species, and may be placed between the two. From the former it differs in the more even and more constantly geminate t. p. line and from the latter in its relatively short palpi. In *conspicua* the palpi exceed the front by well over the length of the head.

#### SUBFAMILY LITHOSIINÆ.

A recent examination of the type of *Ctenucha modulata* Hy. Edw. by Dr. Barnes disclosed the fact that our series under this name was incorrectly placed. The four specimens which we regarded as *modulata* appear to belong to an undescribed species. In Hampson's key to the genera of this subfamily (Cat. Lep. Phal. B. M. II, 81 *et seq.*) the insect runs to the genus *Lyscia* Wilk. or the second section of *Pasteosia* Hamps., but we feel that this entirely misrepresents its relations. From *Gnamptonychia* Hamps. it differs only in the apparent anastomosis of *Sc* and *R1* of the primaries toward the greatly weakened apex of *Sc*, and in the staking of *M2* and *M3* of the primaries. The species appears to be closely related to *flavicornis* Druce, orthotype of *Gnamptonychia*, so we associate it for the present with that species. According to our idea of genera, some phylogenetic differences may be present within the unit, as well as within the family. Nature is relative; certainly Man cannot make her absolute.

**Gnamptonychia ventralis** n. sp.

Head, first joint of antennae, palpi, collar, coxae, femora, hind tibiae and ventral surface of abdomen and thorax bright orange-yellow. Claspers of male and terminal part of body in female also orange-yellow. All femora tipped with black, hind tibiae with black spurs and tip. Fore and mid tibiae and all tarsi black.

Primaries greenish drab in our one female, greenish black in males. Secondaries dull brownish black. Thorax and abdomen above concolorous with primaries and secondaries, respectively. Wing expanse 38 to 45 mm.

*Holotype* ♂ and two paratypes ♀, White Mts., Arizona. *Allotype* Huachuca Mts., Arizona, July 14. All in coll. Barnes. All four types are in rather poor condition.

**Cisthene** Walker. Logotype **C. subjecta** Wlk.

The earliest valid type fixation for this genus which we are able to find is that of Grote (Bull. Buff. Soc. Nat. Sci. II, 151, 1874). This was corroborated by Kirby in his Cat. Lep. Het. I, 288, 1892. The name thus replaces *Illice* Walker as used at present.

**Cisthene faustinula** Bdv.

The type of this species has recently been illustrated in Oberthür's *Études*. We have two Colorado specimens which compare very well with this figure, but find that most of our Californian examples are referable to the form *fusca* Stretch. It would be interesting to hear from some of the Californian students what conditions may govern the appearance of the two forms.

## SUBFAMILY ARCTIINAE.

**Arachnis midas** n. sp.

A single male *Arachnis* taken by Mr. Tom Spalding at Eureka, Utah, August 24, 1920, proves to be an undescribed species.

This specimen is distinguished at once from most of our species by its yellow secondaries, and from *zuni* Neum. by the more broken, macular appearance of the dark markings of the primaries. These wings are pure white, the markings almost identical with some specimens of *A. picta maia* Ottol. The secondaries are yellow of a more ochreous shade than the secondaries of *zuni*, and the area between *M*1 and *M*1 is semi-transparent yellow, not white as in *zuni* ♂. Only the fringes are whitish. There are three black dots on the outer margin,

one, geminate, at *R*, a very small one at *M*<sub>3</sub>, and one toward anal angle. There are three large gray costal spots, bordered with black, which reach to the radius. The middle one is continued slenderly across the end of the cell, and the basal spot forms a vague, broken band to *A*<sub>1</sub>. The under surface of the primaries is also similar to *A. picta maia*, but the yellow of the costa becomes paler toward the inner margin, which is pale yellow instead of pink. The secondaries are white, somewhat tinged with yellow, and are broadly ochreous along the inner margin. Maculation as above but more definite.

The abdomen is concolorous with the secondaries. It is marked with macular black lateral lines and a slender dorsal line broadened on the last segment. The entire body is white below. Expanse 66 mm.

*Holotype* ♂ in coll. Barnes.

#### **Pygarctia elegans** Stretch.

We have a specimen from Kingman, Arizona, which agrees so accurately with Stretch's description as to leave no reasonable doubt of its identity. This specimen convinces us that the present placing of *roseicapitis* N. & D. and *flavidorsalis* B. & McD. as forms of *elegans* is incorrect. The distinguishing features of *elegans*, as exemplified by this one male, are the pinker shade of the abdomen, the presence here of lateral black spots and the fact that the dorsal spots are distinctly bordered with white, the restriction of the pinkish area on the head to a very slender line, broadened behind the eyes, and the white shaft of the antennae. *Flavidorsalis* may stand as a form of *roseicapitis*.

#### **News of Another Russian Entomologist**

[Apropos of the article in the NEWS for July, 1921, page 199, we are glad to print the following from a private letter.—ED.]

My friend and compatriot, the Russian Odonatologist, Prof. A. N. Bartenev, asked me to help him get all the literature on Odonata published since 1914, as he is, of course, severely handicapped in his work by the lack of literature of recent years. These may be sent either directly to Prof. Bartenev, his address being Prof. A. N. Bartenev, University, Rostov-Don, Russia, or, if there is any difficulty in sending registered book packets (it is not safe to send non-registered to Russia) from America, they may be sent to me and I will forward them to him—B. UVAROV, Assistant Entomologist, British Museum (Natural History), Cromwell Road, London, S. W. 7.

## Description of Two New Species of the *Angustipennis* Group of the Dipterous Genus *Tipula* Linnaeus, with Table of Species.

By W. M. G. DIETZ, M.D., Hazleton, Pennsylvania.

The species of this group are characterized by pale gray to brownish, or reddish-brown wings, mottled, with predominantly pale spots and a few dark, fuscous spots. The latter are confined to the origin of *Rs* (absent in *beaulieui*), end of *Sc* and the stigma and its proximity. A pale spot always present at two-thirds or three-fourths of cell *M*, another spot, generally large but often absent, just before the middle of cells *Cu* and *A1*; this spot frequently extends into cell *M*. Pale spots before and behind the stigma, generally present and conspicuous, the latter frequently extends as a fascia into cell 1st *M2*, or even *M4*. No fuscous spots at base of cells *R* or *M* and no pale spots along the posterior wing-margin.

### Key to the species.

1. Eighth sternite of male, with one or more appendages..... 2  
Eighth sternite of male simple..... 4
2. With median and lateral appendages..... 3  
With median appendage only..... *serta* Loew
3. Yellow; ninth tergite of male short, scarcely emarginate in the middle ..... *senega* Alex.  
Darker, yellowish-gray. Ninth tergite of male longer, with a deep, broadly V-shaped emargination..... *neptun* sp. n.
4. Antennae unicolorous, fuscous..... 5  
Not as in the alternative..... 8
5. Abdomen reddish ..... 6  
Abdomen not reddish ..... 7
6. Abdomen without longitudinal stripes, wings reddish-brown, *shasta* Alex.  
Abdomen trivittate, wings grayish-fuscous..... *angustipennis* Loew
7. Thoracic stripes margined..... *tristis* Doane  
Thoracic stripes not margined..... *marina* Doane
8. Flagellar joints unicolorous..... 6  
Flagellar joints, except the first, distinctly bicolored..... 15
9. Dark, blackish, thoracic stripes not margined; antennae dark brown, second joint yellowish..... *nigrocorporis* Doane  
Not as in the alternative..... 10

10. Black; abdomen not vittate.....*helvocincta* Doane  
 Not as in the alternative.....11
11. Thoracic stripes not margined.....*subtenuicornis* Doane  
 Thoracic stripes margined.....12
12. The median thoracic stripe divided by a longitudinal line.....13  
 Not as in the alternative.....*ignota* Alex.
13. Cell *R*4+5 white in its basal portion.....*centralis* Loew  
 Not as in the alternative.....14
14. Ninth tergite of male with deep, U-shaped emargination,  
*carolina* Alex.  
 Ninth tergite short and broad, posterior margin broadly concave .....*canadensis* Loew
15. Flagellar joints yellow, basal enlargement dark fuscous,  
*balioptera* Loew  
 Flagellar joints fuscous, basal enlargement yellow.....*beaulieu* sp. n.

**Tipula neptun** spec. n.

General coloration yellowish-gray; allied to *senega* Alex., *pallida* Loew.—Wings gray, pale, markings distinct. Ninth tergite of male with deep, broad V-shaped emargination. Eighth sternite with median and lateral appendages.

♂—Length, 16 mm.; wing, 15 mm. Head dusky, yellowish-gray. Rostrum of moderate length, concolorous; frontal prolongation with ill-defined median darker line; nasus depressed. Palpi brown, fourth joint shorter than the preceding joints together. Antennae of moderate thickness; extended they reach to about the end of the scutel; scapal joints dull yellow, first flagellar joint light brown, the following joints fuscous, the basal enlargement dark fuscous, distinctly emarginate beneath; setae not or but little longer than the respective joints; pubescence very short, white.

Thoracic dorsum gray; stripes brown, the median prescutal stripe divided by a fusiform line of the ground color, the exterior margin of the stripe with a row of whitish hairs. Scutum gray with a dark, fuscous patch each side. Scutel yellowish-fuscous, with a slight sheen. Postnotum gray, with fuscous median stripe, wider anteriorly. Pleuro-dorsal membrane dark yellow. Pleura gray, grayish white pruinose. Halteres pale, club fuscous. Legs yellowish-fuscous. Pilosity very short, black, appressed. Coxae grayish-yellow; femora sordid yellow basally, darker toward the apex; tibiae light fuscous; tarsi dark fuscous, the metatarsi much shorter than the tibiae. Wings gray, darker in apical portion, the pale markings distinct, spots in 1st *r* and 2nd *r*, *r*2 and *r*3, *r*4+5, basal part of cell 1st *M*2, base of cell *M*4, a large spot at three-fourths of cell *M* and a large spot at one half of cell *Cu* and *A*1; this spot extends indistinctly into cell *M*.

Abdomen yellow, light brown posteriorly, a fuscous dorsal stripe



interrupted at the incisures, a lateral stripe also interrupted at the incisures and becoming obsolete on tergites seven and eight; lateral margins of tergites whitish. Venter obscure yellow, brownish posteriorly. Hypopygium not large, light brown. The eighth sternite slightly emarginate, with a rather long, median appendage, bifid at the apex and a rather long, digitiform appendage at each lateral angle, bearing a hair pencil at its apex. Ninth tergite broad, with a deep, broad V-shaped emargination, each lateral lobe with a sharp point at its apex; ninth sternite with deep V-shaped emargination, containing two pale, hairy appendages. Pleural suture complete; the pleurite somewhat prolonged distad, subacuminate. The upper external appendage long, slender, directed dorsad and bearing a pencil of hair at its apex; the inner appendage consists of a perpendicular plate, the anterior end of which abuts beneath the emargination of the ninth tergite, posteriorly this plate expands into a horizontal lamina, broadly emarginate along the posterior margin, the distal end of the perpendicular plate turns outwardly.

♀—Length, 20.5 mm.; wing, 17.5 mm. Antennae short, scapal joints brownish yellow. The dorsal, abdominal stripe more widely interrupted beyond the second incisure, the lateral stripes broader and more conspicuous, the lateral tergal margin more yellowish. Ovipositor brown, valves rather long, gradually narrowed posteriorly, obtusely pointed, the ventral pair fully three-fourths the length of the dorsal valves.

*Holotype*—♂, Bullion Peak, Park County, Colorado, 11,000 feet, May 20, 1914. (E. J. Osler.) *Allotype*, ♀, topotypic, 11,500 feet, August 20, 1914. *Paratypes*, topotypic, 9 males, 3 females. Types in author's collection.

Agrees with *T. senega* in the construction of the eighth sternite of the male, but differs from this species in the gray thorax and the longer and deeply emarginate ninth tergite of the male. In its hypopygeal construction this species shows considerable similarity to *impudica* and its allies, the ninth sternite, however, is much less prolonged.

***Tipula beaulieui* spec. n.**

Thoracic stripes margined. Eighth sternite of male abdomen simple, acutely produced in the middle. Flagellar joints distinctly bicolored, brown, basal enlargement yellow.

♂—Length, 15 mm.; wing, 14 mm. Head gray; rostrum rather short, sordid yellow; frontal prolongation gray, nasus short, obtuse. Palpi light brown, fourth joint fuscous, shorter than the three preceding joints together. Antennae not elongate; scapal joints dull yellow; first flagellar joint yellow, infusate apically, following joints fuscous,

basal enlargement dark yellow, cylindroidal, scarcely emarginate above the basal enlargement; setae shorter than the respective joints; pubescence very fine, white. Occiput grayish-fuscous, with an indistinct, darker, median line, orbital margins pale.

Thoracic dorsum brownish-yellow. Pronotum with dark fuscous, median line. Prescutal stripes brown, distinctly margined, especially the lateral ones, the median stripe divided by a narrow line of the ground color, which is a little wider behind the middle; fuscous spots of scutum margined. Scutel and postnotum gray, the former with a fine, fuscous, median line, the latter with broad, lateral, fuscous stripes and an abbreviated median line. Pleuro-dorsal membrane sordid yellow. Pleura gray, mesosternum and mesepimeron darker. Halteres pale yellow, club infuscate. Legs sordid yellow, pilosity black, very short. Coxae yellowish-gray, whitish pruinose; femora and tibiae darker at the apex; tarsi fuscous, outer joints darker; metatarsi shorter than the tibiae. Wings gray, more yellowish in basal part and along cell *Sc*, darker in apical portion: no fuscous spot over origin of *Rs*, stigma brown; the broad post-stigmal spot extends through cell *R2+3*, narrows in cell *R4+5* and ends very conspicuously in cell *1st M2*; the outer spot in cell *M* large and conspicuous; a rather broad streak in cell *A1* close to vein *A1*, no pale spot in cell *Cu*.

Abdomen orange yellow, first tergite grayish-yellow; three longitudinal, fuscous stripes, the dorsal stripe conspicuous, entire, extends from base to end of seventh tergite; lateral stripes ill defined, and consisting of irregular patches on the segments; lateral margin of tergites whitish. Eighth sternite simple, acutely produced in the middle. Hypopygium yellowish-gray, rather small; ninth tergite moderately large, channeled along the middle, the posterior margin with V-shaped emargination; ninth sternite with V-shaped emargination. Pleural suture complete; pleurite truncate posteriorly, hind angle acuminate; outer apical appendage small, lanceolate, curved dorsocephalad; the inner appendage large, perpendicular, bladelike; the lower appendage consists of a horizontal lamina, ending posteriorly in an upturned, curved club, emarginate at its tip and turned outward.

*Holotype*— $\delta$ , Ottawa, Canada, January 9, 1912. (Germain Beaulieu.) In author's collection.

Named in honor of Mr. Germain Beaulieu, to whom I am indebted for many favors.

Readily distinguished from all the other known members of the group, in the distinctly bicolored flagellar segments, brown with yellow, basal enlargement. In hypopygeal construction this species greatly resembles *T. angustipennis*.

### Observations on Certain Siphonaptera.\*

*Ctenocephalus canis* Curtis; *Ctenocephalus felis* Bouche and *Ceratophyllus fasciatus* Bosc.

By E. M. CRAIGHEAD, Bureau of Plant Industry, Harrisburg, Penna.

In January, 1917, experiments were started for the purpose of confirming the theory that the flea may be a possible carrier of Infantile Paralysis, as outlined by Dr. Mark W. Richardson (1 and 2).

Daily visits were made to an animal hospital and hundreds of flea eggs were collected from mats where the dogs and cats were confined. After several days' examination the author's attention was called to the fact that not a single living larva could be found; though many of the eggs had hatched. The larvae died shortly after they emerged from the eggs. The temperature of the room was 70 degrees F. or more, without any moisture, for doors and windows were always closed. This very condition pointed out the fact that proper moisture must be present for the survival of the larvae, and as a result much time was saved in the laboratory experiments. This same room, during the months of June and July, was without heat; windows and doors were open constantly and many larvae completed their life history under these conditions. The former conditions exist in many of our homes during the winter, thus there is a decided decrease in the number of fleas.

Eggs when laid upon a blanket were very easily removed, but when laid in a test tube or any earthen ware they adhere to the container and require great care in removal. They were placed in a small petri dish, the bottom of which was covered with blotting paper, and each day was slightly moistened with water. The blotter retained sufficient moisture for the cage and enabled the larvae to free themselves from the egg shells.

Temperature and moisture have some effect on the time of hatching of the eggs and the following table shows results

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\*The observations and records that appear in this article are the results of Research Work carried on at Harvard Medical School, and the Massachusetts General Hospital, Boston, Massachusetts, during the years 1917 and 1919.

obtained without moisture and regulated temperature other than that present in the laboratory and eggs were unprotected from direct light.

Cage Number	Number eggs in cage	Number hatched
Jan. 18-1	6	6
" 22-3A	131	90
" 23-3B	100	55
" 24-3C	60	26
" 25-3D	100	54
" 26-3E	100	69
" 29-3F	100	11
" 29-3G	100	67
" 30-3H	100	52
" 30 3I	100	20

The following table shows rate of hatch when blotting paper and moisture were used; temperature kept at 70 degrees F., and eggs protected from direct light.

Cage Number	Number eggs in cage	Number hatched
Feb. 2-5A	65	37
" 2-3L	100	79
" 6-3M	100	89
" 7-3N	100	85
" 7-3O	100	65
" 9-3P	100	92
" 9-3R	100	80
" 14-6	25	16
" 17-6A	200	171
" 22-6B	200	175
" 23-6C	100	72

The removing of the larvae from egg cages to larval cages was done by means of a moistened camel's hair brush, and a slight tap on the edge of the cage would set larvae free.

#### CAGES FOR LARVAE.

Petri dishes fitted with circular pieces of blotting paper, extending  $\frac{1}{8}$  to  $\frac{1}{4}$  of an inch up the sides, proved to be very satisfactory. If blotting paper did not extend up the side of the cage, the larvae would work their way under it, and if not removed every day they would die.

Sand and sawdust were placed in the cage so that they reached half way up the side, and then the cage was removed

out of the direct light. If too much water was placed in the cage, the sand, sawdust and blotting paper would all help to absorb it, and the next day the cage would not be moistened.

The cage used for pupae was the same used by Mr. Lyon, (No. 3) in his experiments with the cat flea, namely: A glass funnel with wire pan within; the cage containing pupae was placed on the pan, leaving a clear space around the sides, and the funnel was covered to prevent hatched fleas from escaping. The neck of the funnel was inserted in a test tube and the entire apparatus attached to a ring stand. The fleas when emerging would jump about and fall into the test tube below, where they could very easily be removed.

#### PREPARATION OF FOOD.

Blood was secured in large quantities, centrifuged, and after the serum was removed, the red corpuscles were placed in an incubator and allowed to dry. The crystals were placed in a mortar and ground to a fine powder, and this formed the food for most of the larvae. Rat feces were ground by the same process and gave fairly good results, but far better results were secured from the dry blood. Only one objection could be found when dry blood was used, and this could easily be overcome if one took care in distributing the food throughout the cage, namely: When too much moisture was present in the cage and the blood was not evenly distributed, the moisture would turn the dried particles into a drop of blood, and upon drying again would hold the larvae prisoners, thereby killing many. Two conditions were found unfavorable when rat feces were used: One, when too much moisture was present mould would start to grow and soon the cage would be in an unhealthy condition for larvae; second, when feces became too damp a certain amount of ammonia was given off, and this would kill the larvae if the top of cage was not removed. Cages could not be left uncovered, for in the dark larvae become quite active and could easily escape, due to the shallowness of the petri dishes. Mutton cloth saturated with blood was also tried but gave very poor results, so this and rat feces were abandoned shortly after the original experiments. When

dry blood instead of other foods was fed to larvae the life cycle was considerably shortened.

While collecting eggs from the mats of dogs and cats on several occasions, adult flea feces were observed in rather large amounts, and as these are the source of food for most of the larvae in nature, enough material was gathered to conduct an experiment. The larvae, in cages, fed entirely upon this, produced adults in 15 and 16 days respectively. No such results were obtained when they were fed upon other food. The blood used in other experiments was from a human source, and the larvae seem to obtain certain ingredients from the flea feces that were not present in the human blood, for the life cycle in the former case was considerably shorter.

#### LIFE HISTORY—22 DAYS.

A very close record was kept of 5,997 eggs from the time they were laid until adults emerged, and the following shows the results:

Number of eggs: 5997. Average number of days to hatch: 4. Per cent hatched: 75. Average number of days from egg hatching to pupa: 14. Average number of days for pupa: 4.

If adults were fed daily they could be kept alive for a period of thirty to forty days.

#### FLEAS ON RATS.

Twenty-five rats were captured alive in several open lots in Boston and not a single rat flea was secured. In Wayland, Massachusetts, twelve rats were caught and from these 57 adult rat fleas were removed. In Brighton, Massachusetts, a total of over 100 rats was captured and from these six rat fleas were removed. The large number of rats in Brighton and the scarcity of fleas led to further investigations. The boards were removed from one of the stable floors and under here many rat nests were found, and in every nest eggs, larvae and adult fleas were present in large numbers. As high as 60 adults were removed from one nest and there was not one nest that did not give a small number of adults, many of which contained fresh mammalian blood. Why the fleas did not remain upon the rats can be partially explained by the

poor physical condition of the latter. Many had no hair on their backs; a few had, but it was not sufficient to afford a hiding place.

This certainly proves that these fleas at one time fed upon their natural host and then went into hiding as soon as they had secured sufficient food. Rats slept in large numbers in the nests under the floor of the stable, so the fleas could undoubtedly obtain food whenever they desired it. In such places the rats gather for winter quarters, and in just such a place as this the life cycle of fleas continues throughout the year. If the beds of household animals are kept dry and cleaned every few days there is little chance of the larvae ever reaching the adult stage. In a wet season, if animals are out of doors, we have another proposition to deal with, for there is plenty of moisture present for the larvae to complete the life cycle.

#### THE FEEDING OF ADULTS.

Fleas were removed from the breeding cage, placed in a test tube, and over the end of a tube a fine grade of silk bolting cloth was fastened by an elastic band. A portion of the abdomen of a host animal was shaved and the tube was then placed upon this region. This method proved very satisfactory, for from twenty to twenty-five fleas were placed in each tube and from two to three tubes could be held in the hand at one time. The fleas were fed once or twice every day. It never required more than five minutes for them to feed.

After feeding the test tube was placed with the silk-covered end down upon a piece of moistened blotting paper, that was cut to fit a small bell jar, the bottom of which contained moistened sand and sawdust.

#### FEEDING FLEAS ON UNNATURAL HOSTS.

When fleas were removed from their natural host and placed upon a monkey, rabbit, or guinea pig, there was very little likelihood of their feeding, and nine-tenths of them would die in about five days, while on the other hand reared specimens when placed upon an unnatural host would feed in a very short time and could be kept alive from thirty to forty days. It seemed that after they once fed in the tubes little trouble was found

in transferring them to other animals, and even to human beings. When the tube is first placed upon the animal the fleas are quite excited, but they gradually settle down, and if not disturbed, will take a full meal at one feeding. Adults have been kept alive for fifty days, but this is quite unusual and undoubtedly they live longer under natural conditions.

## REFERENCES.

1. Richardson, Mark W., M.D. The Rat and Infantile Paralysis—A Theory. The Boston Medical and Surgical Journal—1916.
2. Richardson, Mark W., M.D. The Rat and Infantile Paralysis—A Theory. American Journal of Public Health. Vol. VIII, No. 8, Aug., 1918.
3. Lyon, H. Notes on the Cat Flea—1915. Psyche, XXII, pp. 124-132. No. 4, Aug., 1915.

### On the Species of the Genus *Basileus* Sauss. and Pict. (Orth., Copiphorinae).

By B. P. UVAROV.

(With one figure in Text.)

The genus *Basileus* (Orthoptera, Copiphorinae) was established in 1899 by Saussure and Pictet, with one species only—*B. diadematus* Sauss. & Pict. W. Kirby, in the course of compiling his catalogue, rightly included in the same genus *Locusta repanda* Walker, but he was quite wrong in regarding *repanda* as identical specifically with *diadematus*, since Walker's species differs very much even from the description of *diadematus*. He, nevertheless, synonymized *diadematus* with *repanda*, the latter name being adopted by him according to its priority. This synonymy has been accepted also by H. Karny in his latest revision of *Copiphorinae*.

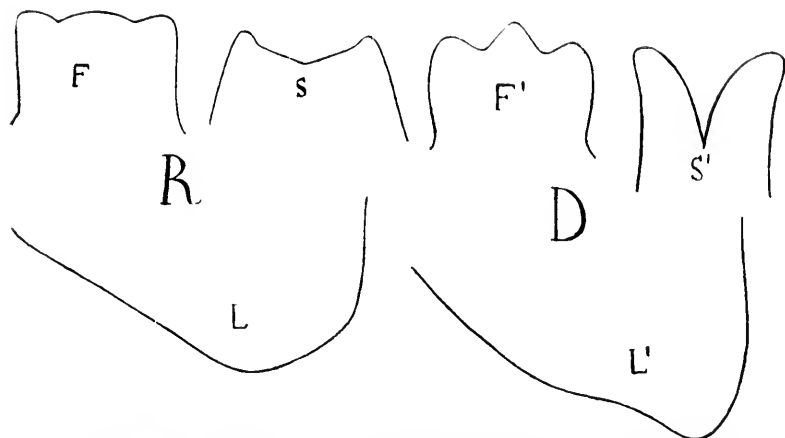
As I had the opportunity of studying Walker's actual type of *repanda*, as well as another female specimen of the same species, and compared them with one female undoubtedly belonging to *diadematus*, I feel myself justified in giving the following key for separating these two, and the only known, species of *Basileus*.

- 1 (2). Fastigium of the vertex with all three lobes rounded, the middle one being considerably broader than the side ones, but not prominent. Face, clypeus and mandibles rufous. Hind lobe of pronotum broad and short; lateral lobes with hind angles widely rounded.



- Subgenital plate of female short, flat; its apex with a broad triangular emargination; hind lobes very short. Ovipositor moderately curved, about twice as long as pronotum.....*B. repandus* (Walk.)
- 2 (1). Fastigium of the vertex with middle lobe subacute, distinctly prominent and scarcely broader than the side lobes. Lower part of the face, clypeus and mandibles black. Hind lobe of pronotum narrower and longer; lateral lobes with hind angles subacuminate. Female subgenital plate elongate, tectiform, deeply and narrowly triangularly emarginate at the apex, with hind lobes rather long and slightly impressed. Ovipositor strongly recurved, one and one-half times as long as pronotum.....*B. diadematus* Sauss. & Pict.
- The dimensions of both species are as follows:

	<i>repandus</i>	<i>diadematus</i>
Length of body .....	36 mm.	30 mm.
Length of pronotum .....	10	9.5
Width of the hind lobe of pronotum....	7.5	6.5
Length of tegmen .....	57	49
Length of hind femur .....	17	16
Length of hind tibia .....	16	15
Length of ovipositor .....	19	15



R.—*Basileus repandus* (Walk.) D.—*B. diadematus* Sauss. & Pict. F, F', fastigium of vertex from above. S, S', subgenital plate of female. L, L', lateral lobes of pronotum.

The geographical distribution of both species is, so far, very poorly known. *B. diadematus* was originally described from Cayenne and the only specimen before me was taken by A. A. Abraham at Takama, on the Berbice River, British Guiana, in February, 1919. I do not know of any other records of this species. As for *B. repandus*, its type is from an unknown

locality, but another specimen in the British Museum is from Pernambuco. There are, of course, no other records on the occurrence of this species, since it was confounded by Kirby with *diadematus*. The synonymy of both species is as follows:

1899. *Basileus diadematus*. Sauss. & Pict., Biol. Centr. Americana, Orth., I, p. 385, No. 1, pl. 19, fig. 11, 12.  
*Basileus repandus* (Walk.).  
 1869. *Locusta repanda*, Walker, Cat. Derm. Salt. Brit. Mus., II, p. 284, No. 16.  
 1910. *B[asileus] repandus*, Kirby, Syn. Cat. Orth., II, p. 233, No. 1 (*except synonyms!*)  
 1912. *B[asileus] repandus*, Karny, Gen. Insect., Orth., 139 fasc., Copiphorinae, p. 29, No. 1 (*except synonyms!*)

## A New Species and A New Variety of *Cicindela* (Col.).

By ADOLPH MAKES, Chicago, Illinois.

Two apparently undescribed forms belonging to the genus *Cicindela* have been in my collection for a number of years. Having been urged by many of those who have viewed them, to make them known, I have decided to yield to their wishes. The following descriptions, though brief, will, it is believed, suffice to enable their recognition.

### *Cicindela illinoensis* sp. nov.

This form is similar in size and markings to *sexguttata* Fab., from which it differs by being entirely black and the upper surface opaque. The sides of the prothorax at basal third are more strongly compressed and parallel to base.

I took this *type* myself at Riverside, Illinois, and it is a unique in my collection. I had regarded this as a variety of *sexguttata*, but the differently formed thorax in combination with other characters leave no doubt as to its distinctness from that species, black forms of which are said to occur in the eastern states, New Jersey and Pennsylvania, mixed with the green as dimorphic forms. This is a male of the species—length 14 mm., width 6 mm.

### *Cicindela repanda* var. *hoosieri* nov.

Differs from the typical form by the general color being a rather brilliant green instead of the usual dark brown. The elytral markings which are of the *repanda* type and complete are also broader than in typical *repanda*.

*Type* from Cedar Lake, Lake County, Indiana, taken by myself. This is a female of the species—length 12 mm., width 5 mm.

This form seems certainly deserving of a varietal name, if only for the purpose of expediting exchanges.

## Some Notes on Drosophilidae (Diptera).

By J. R. MALLOCH.

Several years ago while working on the immature stages of Diptera I undertook to arrange and extend the materials in the family Drosophilidae belonging to the collection of the State Natural History Survey of Illinois, and part of that work consisted of making keys to the genera. Shortly after I started the work I was informed of the more extensive work which Dr. Sturtevant had undertaken and dropped mine, at least insofar as it was intended for publication. Recently I received from Dr. Sturtevant a copy of his paper on Drosophilidae\* and present the following notes on some of the genera as an addition to our knowledge of the family.

### STEGANA Meigen.

Sturtevant has united this genus with *Phortica* Schiner in his paper. Though the characters usually cited for their separation are, as he says, unreliable, there are other characters present that, in my opinion, warrant the retention of *Phortica* as a separate genus.

In *Stegana* the frontal lunule is transverse above, the suture extending in a straight line almost from eye to eye above bases of antennae, while in at least the American species of *Phortica* it is arcuate above and indistinct except centrally; the mid tibia has some very noticeable setulae on posterodorsal surface which are not developed in *Phortica*; the scutellum is slightly flattened above, not regularly rounded, and elongate, while in *Phortica* it is convex, short and evenly rounded; and the second wing-vein is curved forward rather abruptly to costa at its apex, whereas in *Phortica* it is straight to apex, gradually approaching costa.

I took a single female of the genotype, *colcoptрата* Scopoli, on a tree-trunk at Urbana, Illinois, July 23, 1920.

### PHORTICA Schiner.

Sturtevant unites Loew's two species in his paper, stating that an extensive series "shows graded color variations completely connecting these two extremes," and that he can find no

\*Publication 301, Carnegie Institution, Washington, 1921.

other characters upon which to separate them. In my material, which is all from Illinois and all collected by myself since 1915, I find three species, two of which I assume to be those described by Loew. Several of the specimens taken were attracted evidently by perspiration and were very persistent in their efforts to settle on my hands and face.

*Key to Species.*

1. Male with some very long yellow bristles on basal half of postero-ventral surface of hind femur, the longest of which are longer than the diameter of femur; color of both sexes usually deep black; humeral and pleural spots milk-white and conspicuous; bristles of thorax yellowish, in male conspicuously so; frons in male usually slightly silvery and more or less whitish anteriorly. . . . *humeralis* Loew  
 Male without bristles as above; species brownish or yellowish, with or without conspicuous white humeral and pleural spots; frons not silvery . . . . . 2
2. Face, humeri, and pleurae with milk-white spots. . . . *leucostoma* Loew  
 Face, humeri, and pleurae without milk-white spots, but little paler than the surrounding areas . . . . . *minor* sp. n.  
*Phortica minor* sp. n.

♂. Yellowish brown, slightly shining, legs slightly paler. Humeri and the pleural area occupied by the white spot in other species paler than the surrounding areas but inconspicuously so.

Structurally similar to *leucostoma*, differing in being 2 mm. in length, whereas *leucostoma* is 3 mm.

*Type*, Dubois, Illinois, June 5, 1920. Two paratypes, same locality, August 12, 1920, and June 3, 1919. Types in the collection of the State Natural History Survey, Urbana, Illinois.

**MICRODROSOPHILA** gen. n.

Generic characters: Similar to *Drosophila* in structure. Differs from that genus in having each orbit with two strong bristles, the outer one directed forward and placed a little anterior to the inner, which is backwardly directed; the mesonotum with two pairs of dorso-centrals, one pair a little proximal of the middle and the other near posterior margin; only one humeral bristle; basal pair of scutellars much weaker than apical pair, the latter not cruciate; costal setulae continued almost or quite to apex of third vein.

*Genotype*, *Drosophila quadrata* Sturtevant.

Sturtevant records this species from Alabama, Georgia, and Indiana. I took two specimens on windows in the Natural History Building of the University of Illinois, June 13 and August 4, 1915.

# ENTOMOLOGICAL NEWS

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PHILADELPHIA, PA., DECEMBER, 1921.

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## The Insects in the United States National Museum

The discussion in this and preceding numbers of the NEWS on the deposition of types of insects adds interest to the data given on the Insects of the National Museum in the lately published *Annual Report of the Smithsonian Institution for 1919*. In it Prof. J. M. Aldrich, Associate Curator, traces the origin of the insect collection to Dr. C. V. Riley in 1878, and briefly follows its growth from 115,000 specimens in 1886, to 2,125,189 (partly estimated) in June, 1919. The named species represented by this latter figure number 98,925, also estimated in part. One of the most recent statements as to the total number of known species of insects is that of Prof. H. S. Pratt, in 1912, who gave the figures 360,000. On this basis the National Museum possesses more than one-fourth of this number and claims to have types of about one-sixteenth, or 22,969 species.

Although it is generally assumed that the Coleoptera are the most extensively studied of the insectan orders, and although the National Museum estimates its beetles at 738,000, its named species thereof are but 32,500, not greatly exceeding its 30,653 species of Lepidoptera, with 275,920 specimens. Next follow its 17,638 named species (493,757 specimens) of Hymenoptera, and its 10,253 named species (210,880 specimens) of Diptera.

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## Annual Meetings at Toronto, Canada.

The Entomological Society of America will meet Tuesday and Wednesday, December 27 and 28; The American Association of Economic Entomologists on Thursday to Saturday, December 29 to 31; The Ecological Society of America, December 27 to 30; the American Society of Zoologists, December 28 to 30; the American Society of Naturalists, December 29; all in affiliation with The American Association for the Advancement of Science.

## Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF  
THE GLOBE

### Flower Visits of *Xylota chalybea* Wd. (Diptera, Syrphidae).

In the "Handbook of Flower Pollination," 1: 375, citation 40, Davis states, evidently on authority of Graenicher, that some Syrphids do not visit flowers, and mentions *Xylota chalybea* as an example. In Knuth's "Handbuch der Blütenbiologie," III, 2: 390, of which Davis' work is a translation, this fly is mentioned as a visitor of *Hydrophyllum appendiculatum* and *Viburnum pubescens*. I have also taken it on flowers of *Rosa humilis* and *R. setigera*.—CHARLES ROBERTSON, Carlinville, Illinois.

### On the Deposition of Type Material.

In the editorial on the deposition of type material by J. A. G. R. in the June, 1921, number of ENTOMOLOGICAL NEWS, certain features, criticising one of the suggestions in the last report of the Committees on the U. S. National Museum of the two national entomological societies, calls for a statement, especially since certain statements are overdrawn and might convey an incorrect impression.

Our committees were appointed to assist in developing the U. S. National Museum as a truly National Institution for the advancement of entomology in general and to this end should have the unhampered support of the entire entomological fraternity. The National Museum is the museum which should and does logically represent the United States and, in co-operation with the federal Bureau of Entomology, undertakes to identify insects, both native and exotic, for all the people of the United States. Aside from this service which is not attempted by any other similar institution, the National Museum, because of its location and associations, has a larger staff of workers, collaborators, and visiting students than is likely to be assembled by an endowed institution. The scope of the work of the Museum is national and the committees have maintained that the entomologists of the United States should consider it as such and insist on making it such by depositing types and cotypes there rather than in private and small institutional collections. It was not expected, nor intended, by the committee that a few of the larger institutions be deprived of types but it is of the opinion that the type depositories should be reduced to as few as possible. It was believed that private collections and the majority of state institutions are not the best places to deposit types and that the types in these collections, particularly in the state institutions which have been so bountifully helped by the National Museum, should be deposited in the National Museum for safe keeping.

The plan proposed by the National Museum of building up collections as outlined in the committee report under discussion is in itself a valuable feature which we believe no other institution has adopted.

The point to be brought out is that the type material should not be considered as personal property for, in reality, types are the property of the Science and not of the institution or individual in whose custody they may happen to be. Types are the evidence and basis of all systematic work and should be made as readily accessible to all responsible workers as is consistent with a safe policy for their preservation. Type depositories should be limited to a few of the larger institutions, and since the National Museum is the institution of all the people, is broader in its scope than any other institution and is in a better position to aid far-away students by furnishing comparisons made by specialists, it is the one institution which stands out pre-eminent as a type depository. Furthermore, it is the institution which, with the co-operation of the Federal Bureau of Entomology, renders most aid to State institutions and these, therefore, should be willing to assist by depositing their types with the institution to which they frequently appeal for assistance. But that this should not interfere with the deposition of types in other institutions is manifest; however, other type depositories should be few in number and should include only those institutions which are now custodians of large numbers of types and those whose policy for type preservation is permanent and not subject to the whims of a changing administration.

It has at no time been our intention to minimize the importance and value of the various museums in our country. The committee was appointed to assist the National Museum in every way because this museum above all others has been of great practical value to entomologists throughout the whole United States, because service of inestimable intrinsic worth has been and is being rendered the great mass of economic entomologists in America. Special stress has been given the value of the Division of Insects of the U. S. National Museum because it is a museum of all the people, it is broader in scope and is richer in type material than any other American museum; it is bound to have a much larger staff of workers than will probably ever be employed by any endowed institution, and it has agreed to assist in building up the collections of any institution which makes the museum its type depository.

As the editorial in question brought out, it is "virtually impossible" to get Congress to set aside a permanent appropriation for the Museum, yet this does not remove the guarantee, for it certainly is a recognized fact that no government department or independent establishment as firmly developed as the National Museum will ever be completely abolished or cut off. On the other hand, we have heard of endowed institutions going under because of faulty investments, and of their work being curtailed because the endowment, while sufficient at the time established, was not elastic and did not provide for the increased

cost of maintenance which always confronts large institutions. Is not the difference in securing funds for a government institution merely a difference in the method? And, in the government institution is there not the additional guarantee that the Museum will be maintained because of the economic necessity of having insects identified?

—JOHN J. DAVIS.

#### **Mulford Biological Exploration of the Amazon Basin**

The latest message received from Dr. Rusby, the Director of the Mulford Exploration, was dated August 30th and was written from Huachi on the Bopi River in Bolivia. Dr. Rusby arrived at Huachi on August 23rd and he and his party spent some time making collections and excursions into surrounding territory. During their stay there four members of the party made a trip up the Cochabamba River and reported finding many things of great scientific and economic interest.

Dr. Rusby states that the journey from Espia, at the head of navigation on the Bopi River, down to Huachi was very interesting and accomplished successfully except for the loss of five boxes of provisions, including most of their precious ammunition. The loss of their ammunition leaves the party in a rather precarious condition as they were depending on it for obtaining not only museum specimens of rare birds and small mammals but also to supply the camp with fresh meat. They will also doubtless have need for this ammunition when they pass through certain sections inhabited by more or less hostile Indian tribes.

Photographs were made of what Dr. Rusby considers the largest true cactus in the world, which rises to the height of a good-sized tree and with a limb-spread of 40 feet or more.

Many very interesting forms of insect life have been collected. With these, as in the case of plant life, specimens collected in one of these deep Andean valleys may differ entirely from those of a similar valley very closely adjacent.

The swiftness of the Andean mountain streams and of the Bopi river, on which the party lost some of their boxes of supplies, is indicated by the fact that very few species of fish are encountered there.

The waters of these rivers are also charged with dissolved mineral matter and suspended particles washed down from the mountains. It is therefore practically unfit for drinking purposes until the suspended particles have settled out and the water sterilized. Dr. Rusby reports purchasing whole mule-loads of oranges wherever possible, in order to obtain orange-juice for drinking purposes, so as to avoid using the water of the streams.

The members of the party were all reported to be in good health and enjoying their hard work and novel experiences. According to the plans outlined in letters just received the party expected to arrive at Rurrenabaque, Bolivia, about October 1st.

—R. H. HUTCHISON, Sec'y., Philadelphia.



## Entomological Literature

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

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), 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.

The records of papers containing new genera or species occurring north of Mexico are all grouped at the end of each Order of which they treat.

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.

The titles occurring in the **Entomological News** are not listed.

1—Proceedings of the Academy of Natural Sciences of Philadelphia. 4—Canadian Entomologist, London, Canada. 7—Annals of the Entomological Society of America, Columbus, Ohio. 10—Proceedings of the Entomological Society of Washington, D. C. 11—Annals and Magazine of Natural History, London. 12—Journal of Entomology and Zoology, Claremont, Cal. 15—Insector Inscitiae Menstruus, Washington, D. C. 20—Bulletin de la Societe Entomologique de France, Paris. 50—Proceedings of the United States National Museum. 56—Proceedings of the Indiana Academy of Sciences, Indianapolis. 59—Journal of Agricultural Research, Washington, D. C. 61—Proceedings of the California Academy of Sciences, San Francisco. 79—Bulletin of the Museum of Comparative Zoology at Harvard College, Cambridge, Mass. 89—Zoologische Jahrbucher, Jena. 108—Journal of Genetics, Cambridge, England. 109—Annales Historico-Naturales Musei Nationalis Hungarici, Budapest. 110—Naturwissenschaftliche Wochenschrift, Jena. 111—Archiv fur Naturgeschichte, Berlin. 115—Societas Entomologica, Stuttgart. 119—Proceedings of the National Academy of Sciences of the U. S. A., Washington, D. C. 127—Archiv fur Entwicklungsmechanik der Organismen, Berlin.

**GENERAL.** Aldrich, J. M.—The division of insects in the U. S. National Museum. (Rep. Smiths. Inst., 1919, 367-80.) Barber, G. W.—Collecting about Walden Pond, Concord, Mass. 4, liii, 145-6. Gorham, R. P.—A method of making photographic prints of insect wings. 4, liii, 161-62. Gotz, W.—Zur bionomie der insekten. IV. Vom geruchsinn der bienen. 115, xxxix, 37-9. Howard, L. O.—Entomology and the war. (Rep. Smiths. Inst., 1919, 411-19.) McColloch, J. W.—A method for studying the hessian fly and other insects. 7, xiv, 227-30. Weiss, West & Felt—Notes on the insects of the spreading dogbane, with a description of a new dogbane midge. 4, liii, 146-52.

**ANATOMY, PHYSIOLOGY, ETC.** **Armbruster, L.**—Zur phylogenie der geschlechtsbestimmungsweise bei bienen. **89**, xl, Abt. f. Syst., 323-88. **Brecher, L.**—Die puppenfaerbungen des kohlwesslings, *Pieris brassicae*. **127**, xlv, 273-322. **Buddenbrock, W. v.**—Die vermutliche losung der halterenfrage. (Pflugers Archiv f. Physiol., clxxv, 125-64.) **Detle, E.**—Ueber die metamorphose von *Trichosticha flavescens*. **89**, xxxix, Abt. f. Syst., 417-42. **Dolley, W. L.**—The relative stimulating efficiency of continuous and intermittent light in *Vanessa antiopa*. (Psychobiology, ii, 137-176.) **Ewing, H. E.**—Selection, regression and parent progeny correlation in *Aphis avenae*. (Trans. Illinois Ac. Sc., x, 303-22, 1917.) **Hass, W.**—Ueber die structure des chitins bei arthropoden. (Arcv. Anat. u. Phys., Leipzig, 1916, 295-338.) **Heikertinger, F.**—Tauschende ahnlichkeit mit wespen und bienen (Sphekoide). **110**, xx, 589-92. **Hess, W. N.**—Notes on the biology of the fireflies. **56**, 1919, 229-31. **Hyde, R. R.**—Segregation and recombination of the genes for tinged, blood, buff, and coral, in *Drosophila melanogaster*. **56**, 1920, 291-313. **Kielich, J.**—Beitrag zur kenntnis der insectenmuskeln. **89**, xl, Abt. f. Anat., 516-36. **Kremer, J.**—Beitrag zur histologie der coleopteren . . . **89**, xl, Abt. f. Anat., 105-54. **Metcalf, C. L.**—The genitalia of male Syrphidae: Their morphology, with especial reference to its taxonomic significance. **7**, xiv, 169-226. **Minnich, D. E.**—The relation of phototropism to swarming in the honey bee. (Psychobiology, ii, 175, 177-80.) **Muttkowski, R. A.**—Copper: its occurrence and role in insects and other animals. (Trans. Am. Micros. Soc., xl, 144-57.) **Onslow, H.**—The inheritance of wing color in lepidoptera. **108**, xi, 123-39. **Przibram, H.**—Fangbeine als regenerate. Fussglieder an kaeferfuhlern. Regeneration beim hautflugler *Cimbex axillaris*. **127**, xlv, 39-51; 52-68; 69-82.

**MEDICAL.** **Riley, W. A.**—Some little emphasized guide-posts to medical entomology. **7**, xiv, 159-68.

**ARACHNIDA, ETC.** **Herrera, M.**—Los escorpiones de Mexico. (Mem. Soc. Sc. "Antonio Alzate," xxx, 137-59.) **Myers, Cox, Jahraus & Moore**—A list of California Arachnida. **13**, xiii, 19-37.

**Chamberlain, J. C.**—Notes on the genus *Garypus* in N. A. **4**, liii, 186-91. **Ewing, H. E.**—New nearctic spider mites of the family Tetranychidae. **50**, lix, 659-66.

**NEUROPTERA.** **Dietz, H. F.**—Notes on the termites of Indiana. **56**, 1920, 87-96. **Garman, P.**—Variation in the gills of Zygoptera. (Trans. Illinois Ac. Sc., ix, 235, 1916.) **Kennedy, C. H.**—Some interesting dragon-fly naiads from Texas. **50**, lix, 595-98. **Kohl, E. J.**—Mallophaga of our native birds. **56**, 1920, 119-33. **Krausse, A.**—Zur systematik um und naturgeschichte der Psylliden und speziell von *Psyllopsis fraxini*. (Centralb. Balt. Parasitenk. u.

Infektionsk., xlvi, 80-96.) **Longinos, N., R. P.**—Dos nuevas tribus de mirmeleonidos. (Mem. R. Ac. Cien. y Artes, Barcelona, xvi, 379-84.) **Williamson, E. B.**—Notes on Indiana dragonflies. **56**, 1920, 99-104. **Zacher, F.**—Die literatur ueber die blattflohe . . . und nachtragen zum "Psyllidarum catalogus." (Centralb. Bakter. Parasitenk. u. Infekt., xlvi, 97-111.)

**ORTHOPTERA.** **Blatchley, W. S.**—The Orthoptera of northwestern America. **56**, 1919, 233-38. **Uvarov, B. P.**—Records and descriptions of South American grasshoppers of the groups Arcypterae and Scyllinae. **11**, viii, 369-92.

**HEMIPTERA.** **Bishopp, F. C.**—Solenopotes capillatus, a sucking louse of cattle not heretofore known in the U. S. **59**, xxi, 797-801. **Cockerell & Sandhouse**—Some eocene insects of the family Fulgoridae. **50**, lix, 455-57. **Snodgrass, R. E.**—The seventeen-year locust. (Rep. Smiths. Inst., 1919, 381-409.)

**LEPIDOPTERA.** **Blackmore, E. H.**—Cosymbia lumenaria, a correction. **4**, liii, 168. **Braun, A. F.**—Two weeks collecting in Glacier national park. **1**, 1921, 1-23. **von Dalla Torre, K. W.**—Lepidopterorum catalogus. Pars 25: Cymatophoridae. **Seitz, A.**—Die Grossschmetterlinge der erde. Faun. Am., 337-44.

**Dyar, H. G.**—New American L. and records. **15**, ix, 137-45. **McDunnough, J.**—Two new Canadian crambid moths. Note on the generic position of two Canadian arctiids with description of new species. The Canadian species of the genus Anomogyna. *Samia euryalus*, the correct name for the California silk worm moth. **4**, liii, 160-61; 167-68; 176-81; 191-92.

**DIPTERA.** **Alexander, C. P.**—New or little known crane flies from the Amazonian region. **1**, 1921, 39-103. Undescribed eriop-terine crane-flies from Argentina. **4**, liii, 162-66. **Alexander & Malloch**—Notes on the life-history of a crane-fly of the genus Geranomyia. (Trans. Illinois Ac. Sc., xiii, 310-19.) **Kieffer, K.**—Beitrag zur kenntnis der Platygasterinae und ihrer lebensweise. (Centralb. Bakter. Paras. u. Infekt., xlvi, 547-92.) **King, J. L.**—The egg laying habits of a parasitic dipteron, Pterodontia. (Trans. Illinois Ac. Sci., ix, 233-4, 1916.) **Malloch, J. R.**—Exotic Muscaridae.—IV. **11**, viii, 414-25. Economic importance of D. (Trans. Illinois Ac. Sci., ix, 230-32, 1916.) **Townsend, C. H. T.**—Some new muscoid genera, ancient and recent. **15**, ix, 132-34.

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**COLEOPTERA.** **Benderitter, E.**—Un Rutelide nouveau du Perou. **20**, 1921, 187-8. **Bruch, C.**—Algunos interesantes cerambicidos. (Rev. Mus. La Plata, xxv, 345-56.) **Lucas, R.**—Bericht u. die wissenschaftlichen leistungen im gebiete der entomologie. Coleoptera f. 1915. **111**, 1916, B, heft 5, 317 pp. **Mann, W. M.**—Three new myrmecophilous beetles. **50**, lix, 547-52.

**Fenyés, A.**—New genera and species of Alcecharinae with a polytonic synopsis of the tribe. **79**, lxxv, 17-36. **Liljebblad, E.**—Notes on the Mordellidae of the U. S., with descriptions of new species. **4**, liii, 181-86.

**HYMENOPTERA.** **Cushman & Gahan**—The Thomas Say species of Ichneumonidae. **10**, xxiii, 153-71.

**Crawford, J. C.**—A new species of the chalcidid genus *Zatropis*. **10**, xxiii, 171-2.

AN ABSTRACT OF THE LEGISLATION IN FORCE IN THE BRITISH EMPIRE DEALING WITH PLANT PESTS AND DISEASES up to the year 1920. Compiled by E. MARGUERITE RALFS, B. A., London. The Imperial Bureau of Entomology, 41 Queen's Gate, S. W. 7, 1921.—The contents of this pamphlet of 65 octavo pages are well set forth in the title, especially when one learns from page 3 that in this outline the word "pest" or "disease" includes parasitic insects, fungi or plants. The orders, proclamations and acts of the various parts of the Empire bearing on the presence of diseased plants and on the importation of plants and their possible pests are summarized for England and Wales ("it is understood that similar Orders will be issued by the Scottish and Irish Boards"), Australian Commonwealth and its several States, Canada and its provinces, Newfoundland, Ceylon, Cyprus, Egypt, Federated Malay States, Fiji, Gilbert and Ellice Islands, Gold Coast, India, Malta, Mauritius, New Zealand, Southern Nigeria, Nigeria, Nyasaland, Papua, Southern Rhodesia, Northern Rhodesia, Samoa, Seychelles, Sierra Leone, South Africa, Straits Settlements, Sudan, Tonga, Uganda, Antigua, Bahama Islands, Barbados, Bermuda, British Guiana, British Honduras, Grenada, Jamaica, Montserrat, St. Kitts-Nevis, St. Lucia, St. Vincent, Trinidad and Tobago and Zanzibar, truly a formidable list. Some of the ordinances are very drastic, as in the case of British Honduras: "Any plant imported is deemed to have come from a prohibited country unless the importer satisfactorily proves otherwise." We hope that where the B.-Hondurans dwell neither moth nor rust corrupt under the protecting shield of Ordinance No. 3 of 1912. This Abstract is provided with an index of nine pages. (*Advertisement*). —P. P. CALVERT.

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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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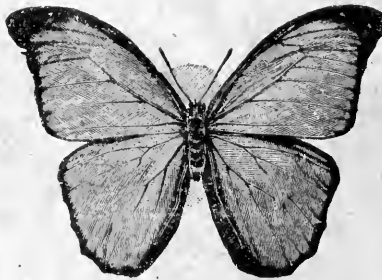
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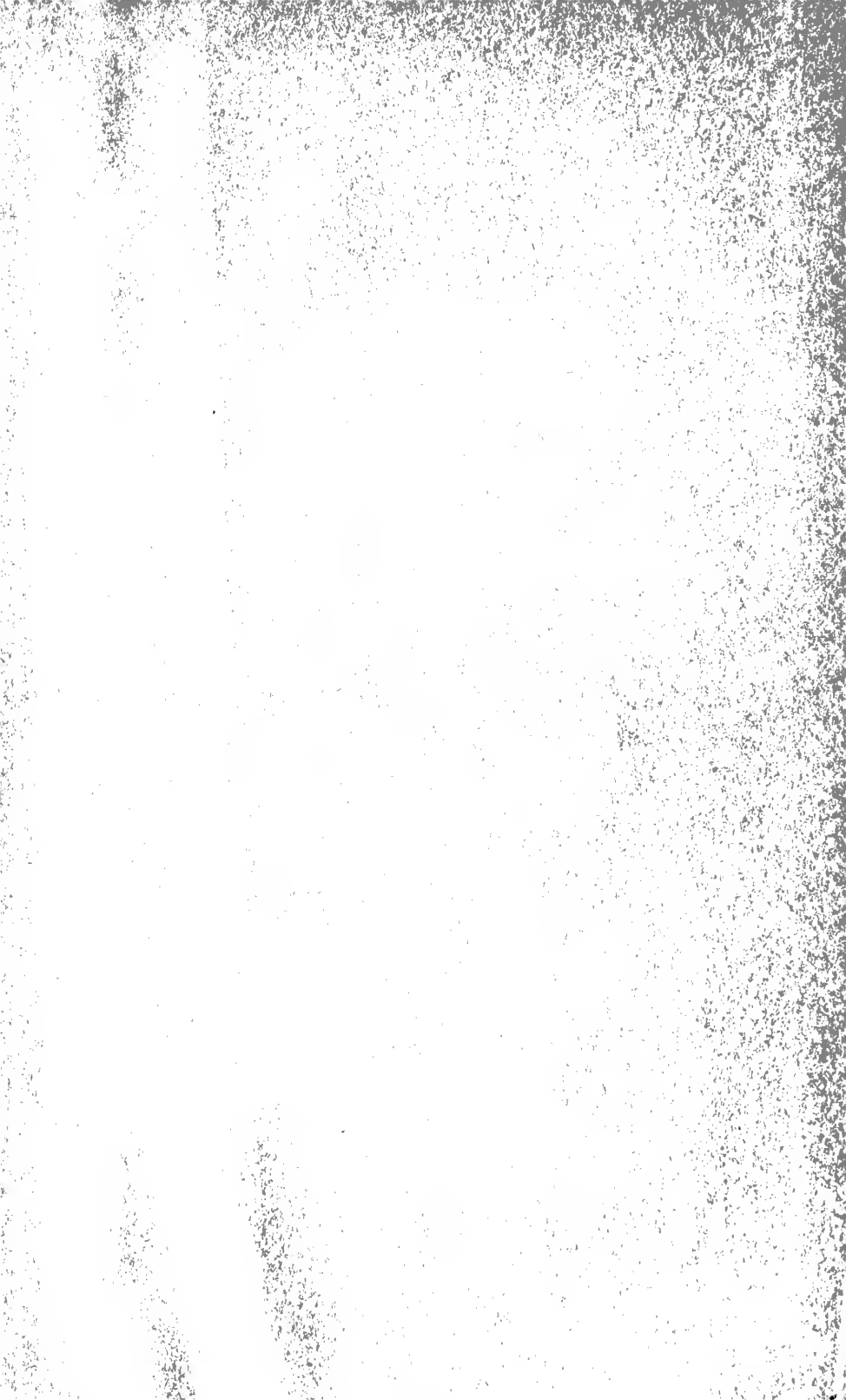
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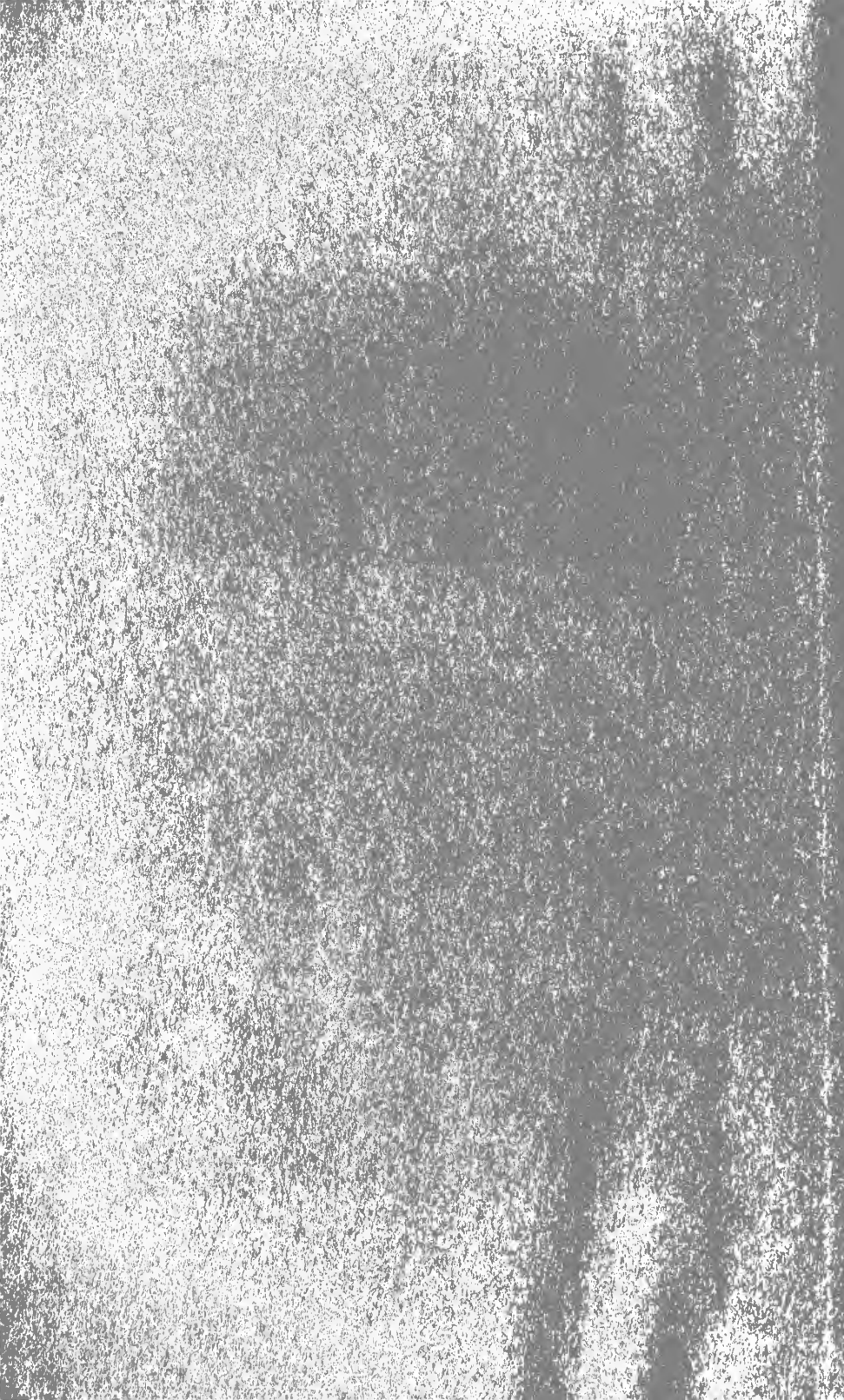
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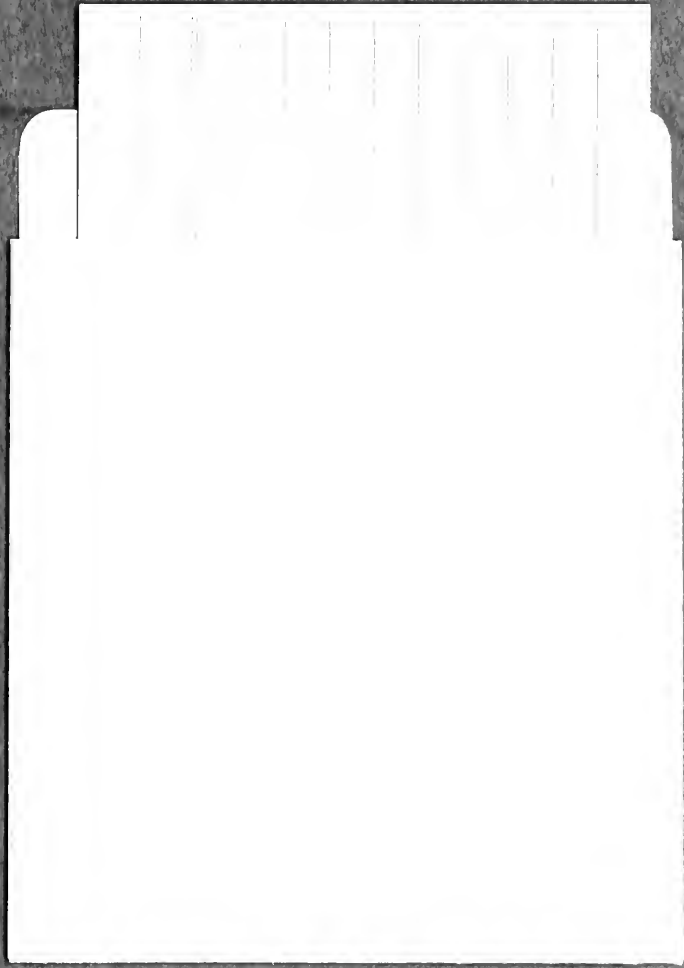












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