THE GENUS PHRYGANEA (TRICHOPTERA) IN THE FLORISSANT SHALES.

By T. D. A. Cockerell.
The University of Colorado.

If it receives anything like the treatment it deserves, Ulmer’s magnificent work, *Die Trichoptera des Baltischen Bernsteins*, will create much new interest, not only in the Trichoptera of amber, but in the general history and classification of the group. Among other things, it shows that as far back as the oligocene in Europe the genus *Phryganea* was very well represented, no less than seven species having been discovered in amber. When we consider that only 20 or 21 recent species are known in the world, it appears probable that in mid-tertiary times it was considerably richer in forms than at present; but the modern *Neuronia*, with quite numerous species, may be taken to represent an offshoot from the *Phryganea* of the tertiaries, some of the fossil species possessing more or less evident *Neuronia*-like characters.

In the Miocene shales of Florissant Colorado, *Phryganea* is represented, so far as at present known, by two species. One of these was long ago described by Scudder; the other is new. In addition, Scudder described a *Neuronia evanescens*, but its reference to *Neuronia* is doubtful. No definite idea of its venation can be gained from Scudder’s figure, but his description is more explicit. Vein R₃ leaves the discoidal cell “close to the base,” a condition approached by the amber species *Phryganea longirostris* Hagen. On the other hand the discoidal cell is comparatively short, as is usual in *Neuronia*, while the R–M cross vein is “widely separated” from the end of the discoidal cell, that is, considerably beyond it; an approach to the latter condition is shown by the amber species *P. egregia* Ulmer and *P. picea* Pictet. An exact drawing of the venation of *N. evanescens*, based on Scudder’s type, is much to be desired.

*Phryganea labefacta* Scudder.

I have before me a very well preserved anterior wing, collected by my wife at Station 17. It is 19¾ mm. long, and a little over 7½ broad; the discoidal cell is 6½ mm. long; end of discoidal cell
to apex of wing 7 mm.; length of cellula thyridii 7 mm. In some ways, this species is suggestive of Neuronia. Scudder’s figure shows a distinct mottling, suggestive of *N. pardalis* Walker, but the apex of the wing is much blunter than in *pardalis*. In shape, the wing is more like that of *N. ruficrus*, but the apical part of the costa is not so rounded as in that insect, and the anal angle is rather more distinct. The wing-form of *P. labefacta* is not unlike that of the amber *P. longirostris* Hagen, but our insect has the costa much straighter, the anal angle more distinct, and the wing hardly so broad in proportion to its length. The comparatively distinct anal angle is as in the amber *P. singularis* Ulmer.

*Phryganea miocenica* sp. nov.

A very fine species, collected by one of the University of Colorado expeditions, but the collector and station are not recorded. It is represented by an upper wing, very well preserved except for the loss of a considerable part of the region of the anal angle. It appears to represent a female, and is a quite typical *Phryganea*, with relatively long wings.

Upper wing about 24 mm. long, 9 wide, as preserved red-brown, the costal region broadly darkened, the anal region dusky, the veins dark on a lighter ground. Owing to the dark costal cell, the oblique cross-vein between the costa and subcosta cannot be clearly demonstrated, but a kink in the subcosta indicates its point of origin. The discoidal cell is about 7½ mm. long; cellula thyridii 9 mm.; apex of wing to base of discoidal cell slightly over 16 mm.

Compared with the female of the amber *P. latissima* Ulmer, there is close agreement in venation, though our insect is much longer-winged than *latissima*, yet not so long (narrow) winged as *P. dubia*. Compared with *P. latissima*, the second anal cell of *P. miocenica* is longer and narrower, its lower side more convex; the cellula thyridii is longer and narrower; the apical angle of the discoidal cell is much more acute. The lower branch of the media forks is in ♀ *latissima*; owing to the loss of part of the wing, only the extreme base of the fork is visible.

This is the largest of the Florissant Trichoptera, and is considerably larger than any of the amber species of *Phryganea*. 
Recogniztion of the importance of native pollinating insects has grown with our understanding of their role in diverse ecosystems, many of which are imperiled. In addition, advances in our understanding of honey bee foraging biology have spurred general interest in other social insect pollinators in the bees and social wasps. This research has enhanced our understanding of the evolution of social insect foraging. It has also revealed how much there is to learn about the foraging biology of non-Apis social and communal pollinators such as vespid wasps, bumble bees, stingless bees, and, particularly, the halictine bees, andrenid bees, and social thrips.

We invite authors to submit original research articles as well as review articles that will contribute to our understanding of these relatively neglected social pollinators and stimulate discussion about how and why their different forms of social foraging have evolved. We are particularly interested in papers that will stretch the boundaries of the field by contributing to our understanding of foraging in nonmodel species.

Since its creation in 1874, *Psyche* has a distinguished history as the journal of the Cambridge Entomological Society and has a tradition of publishing on social pollinators. We believe that there is a body of high-quality international work that could benefit by appearing in a special *Psyche* issue devoted to neglected social pollinators.

Potential topics include, but not limited to:

- Foraging communication
- Agricultural role
- Importance in conservation
- Physiology of foraging
- Sensory biology of foraging
- Social regulation of foraging
- Organization and division of labor in foraging
- Learning and memory of foraging
- Phylogeny and evolution of foraging species

Before submission authors should carefully read over the journal’s Author Guidelines, which are located at http://www.hindawi.com/journals/psyche/guidelines.html. Prospective authors should submit an electronic copy of their complete manuscript through the journal Manuscript Tracking System at http://mts.hindawi.com/, according to the following timetable:

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Special Issue on
Endless Forms: The Frontiers of Biodiversity Discovery

Call for Papers

One of the greatest endeavors of entomologists has been and continues to be the discovery and description of the millions of undescribed life forms. This year marks the 200th year since the birth of Charles Darwin on February 12, 1809. Origin of Species concludes with the following passage: “There is grandeur in this view of life, with its several powers, having been originally breathed into a few forms or into one; and that, whilst this planet has gone cycling on according to the fixed law of gravity, from so simple a beginning endless forms most beautiful and most wonderful have been, and are being, evolved.” No fewer than two literary works have taken portions of this sentence as their titles (This View of Life by Stephen J. Gould, and From So Simple A Beginning, a collection of Darwin’s four great works). So, in honor of the 200th anniversary of Darwin’s birth, we call for papers that represent the frontiers of research in the discovery of biodiversity, including, but not limited to:

- Newly explored habitats (e.g., extreme arboreal and entirely aerial)
- Novel collecting techniques (e.g., canopy traps)
- New investigative techniques (e.g., sibling or cryptic species discovered due to host differences, male-female signaling, genomic differences)
- The “creation” of new species due to introduced plants (e.g., Rhagoletis)
- Regions of the world that have recently become available for field work (e.g., Cambodia, Mozambique, Rwanda)
- Cybertaxonomy and digital methods for rapid species description

We invite authors to present original research articles as well as papers that sum such discoveries. We encourage papers in which new taxa are described and systematic revisions as long as they are pertinent to the “frontiers” concept.

Before submission authors should carefully read over the journal’s Author Guidelines, which are located at http://www.hindawi.com/journals/psyche/guidelines.html. Prospective authors should submit an electronic copy of their complete manuscript through the journal Manuscript Tracking System at http://mts.hindawi.com/ according to the following timetable:

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Special Issue on
Orphaned Topics of Pesticide Resistance and Resistance Management in Insect Systems

Call for Papers

Research on “resistance” in the entomological community has primarily focused on pesticide resistance associated with target-site insensitivity and a few constitutively overexpressed “usual suspect” resistance-associated genes. This has led to some overly simplistic explanations regarding the basis of xenobiotic resistance in certain insect species. However, resistance or tolerance to xenobiotics is often polygenic, involving a complex set of interactions between genotype, phenotype, and changing environmental parameters. Some of the genes and proteins differentially transcribed and translated in pesticide-resistant insects are not part of what are classically considered “resistance genes.” Documenting the expression and ultimately elucidating the role of these “other” genes and proteins in resistant insects remain to be determined. Additionally, xenobiotic resistance levels vary greatly between insect strains; the molecular differences between these strains, and their respective roles in resistance are not well understood. There is also a need to bring together issues of resistance management models and our current knowledge regarding the “omics” of resistance in order for us to gain a better understanding of how insects evolve resistance to xenobiotics.

These aforementioned topics represent but a few of the many important issues regarding resistance and “omic” responses to pesticides, in insects, that have not been sufficiently explored in the literature. Other topics of interest include, but are not limited to:

- Transcripts and proteins induced by treatment with xenobiotics including insecticides
- Changes in the genomes of resistant insects that influence their responses to other environmental challenges
- Evolutionary conservation of responses of different insect species to common xenobiotic challenges
- Negative cross-resistance
- “Achilles’ heel” resistance traits
- The pesticide treadmill concept (evolutionary “steps” associated with increasing levels of resistance to pesticides in insect populations)
- Resistance management and modeling for pests of crops in developing nations

For this Special Issue, we invite authors to submit original research articles as well as review articles on the above (or other) aspects of xenobiotic and pesticide resistance that have been classically underrepresented in the literature. Before submission, authors should carefully read over the journal’s Author Guidelines, which are located at http://www.hindawi.com/journals/psyche/guidelines.html. Prospective authors should submit an electronic copy of their complete manuscripts through the journal Manuscript Tracking System at http://mts.hindawi.com/, according to the following timetable:

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