ART. L.—*Three New Fossil Insects from Florissant, Colorado;** by S. A. ROHWER, Boulder, Col.

Raphidia mortua n. sp.

Sex doubtful: length of the anterior wing, 10mm; width of the anterior wing, 3mm; length of the meso- and metathorax and abdomen about 8mm. Color brown, the thorax darker, legs except one tibia, which is pale, wanting; the head and prothorax are wanting. The venation is pale brown. Costal area large, with six cross-veins. Subcosta straight, joining the costa at about the length of the stigma from the stigma. The area between the subcosta and the radius crossed by at least one distinct cross-vein; this cross-vein is not interstitial with any of the cross-veins of the costal area, and would form an obtuse angle with them. Stigma at the base perpendicular, about equal in width throughout, crossed by an oblique vein; the vein at the apex is curved basally so that the end of the stigma is concave. The first cell below the stigma extends beyond the cross-vein of the stigma, but does not extend beyond the apex of the stigma. The cell below this is as in *Raphidia oblita*. The terminal veinlets form six V-shaped cells. The hind wings are about the same length as the fore wings. Besides the usual differences the stigma is broader where the cross-vein joins it, and there are only three V-shaped marginal cells. The following measurements of the fore-wings are in micromillimeters:

Distance of the cross-vein from the apex of the stigma on the costa	935
Distance of the cross-vein from the base of the stigma on the costa	850
Distance of the cross-vein from the apex of the stigma on the radius	765
Distance of the cross-vein from the base of the stigma on the radius	425
Distance of the apex of the stigma from the apex of the cell below it	306
Distance from the base of the stigma to the subcosta	850
Length of the cross-vein of the cell between the subcosta and the radius	277

The venation of this species is very different from that of *Raphidia notata* (fig. 2, Pl. 5, Lief. I, Fossilen Insekten), which has the subcosta joining the costa at the base of the stigma.

If compared with the venation of *Raphidia oblita* as figured by J. F. McClendon in the Ent. News, xvii, April, 1906, p. 117,

*Thanks are due to Prof. T. D. A. Cockerell for the pleasure of studying these interesting fossils, and for going over my manuscript.

the following differences will be noted: The subcosta is at a greater distance from the stigma. The apex of the stigma is concave. There are fewer cross-veins in the costal area. The cross-vein between the subcosta and the radius is not interstitial with a cross-vein of the costal area. The cells below the stigma are shorter. The cell bounded above and below by R_1 and R_s (= RS) is pentagonal not hexagonal.

Of all the fossil species it seems nearest to *Inocellia tumulata* Scudder, but it differs from that species in having a cross-vein in the stigma; the cell below the stigma reaches beyond the middle of the stigma; the space between the subcosta and the costa is transversed by a number of cross-veins.

Habitat: The Tertiary shales of Florissant, Colorado, collected in 1908 by George N. Rohwer at Station 14. Type in the collection of the University of Colorado.

The following table of the fore wings of certain species, both fossil and recent (the recent ones are starred), is interesting in that it shows the relation of the fossil and recent faunæ; and useful in that it separates the species of fossil *Raphidia* found at Florissant. As Dr. Scudder has given a table of the species of *Inocellia* they are not included.

Subcosta joining the costa at the base of the stigma		*notata**
Subcosta joining the costa remote from the stigma ...		1
1. Stigma without a cross-vein		*Inocellia*
Stigma with at least one cross-vein		2
2. R_1 with but one branch beyond the stigma		3
R_1 with two branches beyond the stigma		6
3. The costal area very small and apparently without cross-veins; the subcosta forming most of the margin of the wing; stigma "small, semi-oval"	*R.* (?)	*tranquilla*
The costal area not small and with distinct cross-veins		4
4. The first cell below the stigma not extending beyond the stigma		*R. mortua*
The first cell below the stigma extending beyond it		5
5. The cell bounded by R_1 and R_s (= RS) pentagonal		*R. rhodopica**
The above mentioned cell hexagonal		*R. oblita**
6. R_3 not forked; length of the anterior wing 12^{mm}		*R. exhumata*
R_3 forked; the anterior wing 14^{mm} ..		*Megaraphidia elegans* †

Chrysis miocenica n. sp.

Female: length of the thorax, 6^{mm}; length of the head, 2^{mm}; length of the abdomen, 8^{mm}; length of the anterior wing, $7{\cdot}5^{mm}$,

† For further differences between *R. exhumata* and *M. elegans* see Bull. Am. Mus. Nat. Hist., 1909, p. 73. In the figure of *M. elegans* (Bull. Am. Mus. Nat. Hist., 1907, p. 607) the artist has omitted the costal area, and has drawn R_1 incorrectly, with one instead of two branches beyond the pterostigma. The cross-vein below the stigma is too far from the end of the latter.—T. D. A. C.

The head is not longer than the thorax. The malar space is distinct; the eyes oval. The flagellum is about two and a half times as long as the scape; the first joint of the flagellum is distinctly longer than the second and the second is a little longer than the third. The legs are rather more robust than usual. The venation is rather weak, and normal, differing from *C.* (Gonochrysis) *densa* Cresson only in that the radius rises nearer the middle of the small stigma. The abdomen is as long as the head and thorax combined. The apical teeth cannot be seen, but from the general appearance the insect suggests *Gonochrysis*. The ovipositor is exserted, and is rather more robust than usual, length 2·75^{mm}. In the specimen the sculpture cannot be seen, but it is undoubtedly punctured as in the recent species of to-day.

Habitat: The Tertiary shales of Florissant, Colorado, at Station 14. The collector is unknown. The type is in the University of Colorado.

The only other fossil *Chrysis* from Florissant is *C. rohweri* Ckll., which differs from the present species in its much smaller size, and the abdomen is shorter than the head and thorax. *Chrysis mortua* is in general appearance like the recent species *densa* Cress. found at Florissant to-day. It is however much larger than any specimen of *densa* known to me.

Philanthus saxigenus n. sp.

Sex doubtful; length of the head and thorax and first two abdominal segments, 9·5^{mm}; length of the anterior wing, 8·75^{mm}. Head about the same width as the thorax; ocelli in a low triangle; the lateral ocellus about 204μ in diameter. Thorax subquadrate, 4·5^{mm} long, and at the wings 4·5^{mm} wide. The head and thorax finely sculptured; the mesonotum with two slightly converging grooves near the center; these grooves extend posteriorly to about the hind wings; a little above the tegulæ are two shorter grooves; the tegulæ are rather large. The hind tibiæ are short yet not shorter than in some of the recent members of the genus: they are not serrate or spinose in the fossil; the spurs are shorter than the hind basitarsus; the four anterior legs are not present in the fossil. The radial cell is normal (attaining the costa without an appendiculation); the stigma is of medium size; third transverse cubitus is strongly bent basally about the middle; the second recurrent nervure is interstitial with the second transverse cubitus; the second transverse cubitus is slightly oblique; the first recurrent nervure joining the second cubital cell about the middle; the transverse median received by the discoidal cell distinctly beyond the median. Abdomen sessile; the first segment widening toward the apex; abdomen beyond the second

segment wanting. Color perhaps rufous, no black markings evident in the specimen. Wings hyaline, the venation pale brown. The following measurements are in micromillimeters:—

Length of the stigma	850
Length of the second tran. cubitus	476
Breadth of the stigma	170
Length of the third cubital cell on the radius	1820
Length of the second cubital cell on the radius	935
Length of the first cubital cell on the radius	255
Length of the second cubital cell on the cubitus	1105
Length of the first cubital cell on the cubitus	1530
Distance the tran. median is beyond the basal	289
The first recurrent nervure beyond first tran. cubitus	325

Habitat:—Tertiary shales of Florissant, Colorado. One specimen collected by Prof. T. D. A. Cockerell at Station 9 (a hill facing north about three-fourths of a mile southwest of the town). The type in the University of Colorado. Many thanks are due to Prof. Cockerell for assistance in the study of this interesting fossil. This species is very distinct from *Prophilanthus destructus* Ckll., the only other fossil Philanthid known from Florissant, being readily distinguished by its smaller size and the radial cell reaching the costa. In the position of the second recurrent nervure *P. saxigenus* departs from all other species of the genus *Philanthus* known to me, but this is a matter of small importance. The grooves of the mesonotum are very similar to those of *Aphilanthops fridigus* (Cress.), but it cannot be an *Aphilanthops* on account of the shape of the radial cell. *Philanthus pulcher* D. T. (*pulchellus* Cress.), which has been taken at Florissant, is much like *P. saxigenus*, but it is smaller and the venation is different. *Philonthus sanborni* Cress. (Mass.) is very similar in general habitus to *saxigenus*, and the specimen before me has the second recurrent nearer to the second transverse cubitus than in any other species I have seen. The relative length of the second and third cubital cells is not reliable, and I do not think the genus *Epiphilanthus* is a valid one. It might be used as a group; if so *P. saxigenus* should be placed in the group so formed.