

INSECTWING FROM ROAD GAP

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In the course of collecting fossil plants within the lower part of the Whitesburg coal zone at Road Gap, Kentucky, a fossil insect wing was found. Insect wings are quite rare and few are known from the Lower Pennsylvanian. This is the first Pennsylvanian insect wing reported from Kentucky.

The lower part of the Whitesburg coal zone (Breathitt Formation, Morrowan, Westphalian B) at this stop is composed of several thin coal beds within a series of channel-fill shales, siltstones, and sandstones (see Plate 4; in pocket). The two lowermost coals were cut-out by subsequent channel erosion at the eastern end of the roadcut. A third coal occurs within the channel-fill sediments and dips down into the channel. A coarsening-upward (in part) sequence overlying the third coal consists of silty shale and siltstone, grading (in part) into sandstone. There are minor scour features within this interval. Overlying the interval are several similar intervals ending, finally, with an overlying thick sandstone sequence. The insect wing was found in medium-gray, argillaceous siltstone overlying the third coal. The strata above all three coals contain plant fossils, though they are best collected above the third at the eastern end of the roadcut. Each of these intervals contain roughly the same forms of plant fossils (see floral list in Stop 3 Description)

Insect bodies decompose rather quickly, but the cuticle of the wings contains very little body fluid and is somewhat more resistant to decomposition. This is the reason that most ancient insects are known only from wings. The insect and plant fossils were probably carried into the channel-fill area by gentle currents.

The venation of this wing (Figures 2 and 3 of Plate 18) indicates that it belonged to the family Spilapteridae of the extinct order Palaeodictyoptera.¹ Insects of this order are probably ancestral to all the modern winged

insects and had two pairs of wings which could not be folded back across the abdomen when resting.

Some of the generically diagnostic features are not discernible on our specimen, but the venation that is preserved is different from any of the three species of the family described from North America (Carpenter and Richardson, 1971). These species are *Homaloneura dabasinskasi*, *Mcluckiepteron luciae*, and *Spilaptera americana*, all from the Francis Creek Shale (Middle Pennsylvanian) in Illinois. This specimen is thus the oldest known representative of the family in North America and may belong to an undescribed genus (a more detailed report is planned).

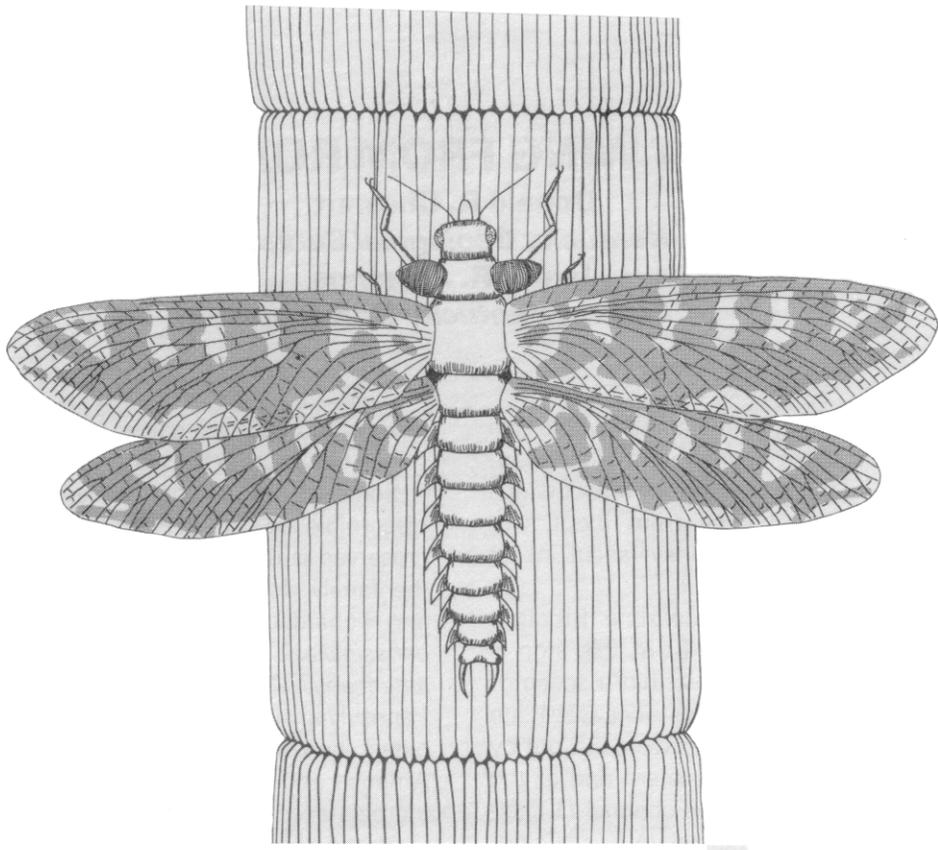
Of the three described species of the family, Carpenter and Richardson 1971 report only one, *Homaloneura dabasinskasi*, which has preserved mouth parts. This species had a beak, which was probably used for sucking as shown on the reconstruction (Figure 1 of Plate 18).

REFERENCES CITED

- Carpenter, F. M., 1964, Studies on North American Carboniferous insects: 3, a Spilapterid from the vicinity of Mazon Creek, Illinois (Palaeodictyoptera): *Psyche*, v. 71, no.3, p. 117-124.
- Carpenter, F. M., and Richardson, E. S., Jr., 1971, Additional insects in Pennsylvanian concretions from Illinois: *Psyche*, v. 78, no. 4, p. 267-295.

¹We wish to thank Dr. Paul H. Freytag of the Entomology Department at the University of Kentucky and Dr. Frank M. Carpenter, Museum of Comparative Zoology, Harvard University, for their confirmation of the identification of the wing.

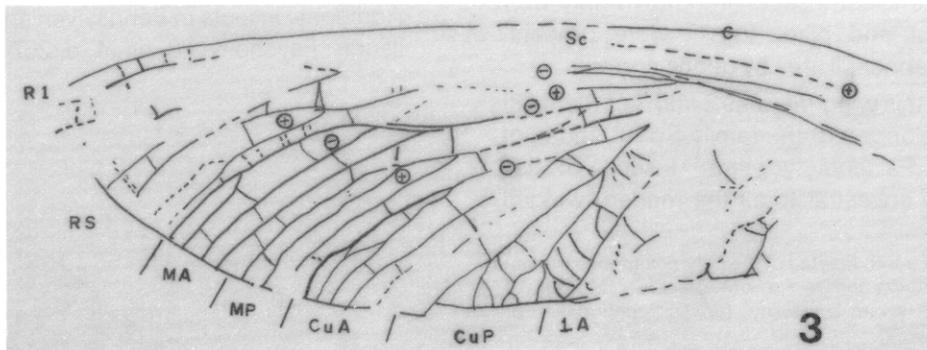
PLATE 18



1



2



3

Plate 18. Extinct insect of the family Spilapteridae, order Palaeodictyoptera.

Figure 1. Artistic conjecture of generalized spilapterid insect on *Calamites* stem. Wing coloration is that of the spilapterid, *Homaloneura dabasinskasi* (Carpenter, 1964). X1

Figure 2. New genus and species. Ventral surface of right forewing. X2

Figure 3. Wing venation pattern of same specimen as Figure 2. C=costa; Sc=subcosta; Rl= radius; Rs= radial sector; MA= anterior media; MP= posterior media; CuA= anterior cubitus; CuP= posterior cubitus; IA=first anal; i=convex vein on this surface; - = concave vein on this surface.