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## TERTIARY FLIES FROM COLORADO AND THE BALTIC AMBER<sup>1</sup>

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I wish to thank Dr. Frank M. Carpenter of Harvard University for the opportunity to study the following two species of most interesting fossil flies. The asilid from the Miocene shales of Colorado is particularly interesting because of the information that it affords as to the narrow extent of change in Recent related flies. The syrphid in Baltic amber represents the third species belonging to its genus and is unusually well preserved. Both are from the collections of the Museum of Comparative Zoology.

*Senoprosopis romeri*, new species

Plate 2

A slender asilid with elongate, attenuate abdomen, extending considerably beyond the wing, and belonging to the subfamily Asilinae. All of the femora are moderately stout without being swollen. Bristles on the legs prominent, short and stout. Length 25 mm.

*Head*: The head is well preserved, except for the antenna. Face quite short, more prominent below due to the recession of the eye. The whole face is very gently convex. Occiput prominent, no details of pile or bristles are present on the head. *Thorax*: The mesonotum is moderately high and arched, equally convex in front and behind. There are clear indications of scanty, scattered, moderately long, appressed, bristly setae which appear on the notopleuron area and with equally short elements on

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the dorsocentral area behind the suture. Lateral elements are not clearly discerned. The whole thorax is relatively short and high, the height at least equal to the length. *Legs*: The femora are clearly preserved and are stout without being swollen. Posterior femur longer than the anterior pair and slightly narrowed at the base. Both the femora and tibia are densely covered with rather long, coarse, finely pointed, flat appressed setae on the dorsal, lateral and anterior surfaces. The tibiae similarly covered. Bristles are short but stout. The hind femur has 3 lateral bristles distributed along the middle. The apex is not preserved. The middle femur shows 2 or 3 anterior bristles, the hind femur bears 1 stout bristle medially near the base. Middle femur also with 3 prominent, ventral bristles distributed along the middle. Hind tibia stout and slightly wider toward the apex and of nearly the same length as the hind femur. It is comparatively well preserved with at least 2 prominent, dorsal bristles, 1 near the basal third, 1 near the apical fourth and the latter bristle with a matching ventrolateral bristle. Hind basitarsus stout. The middle tibia densely pilose but without bristles showing. The anterior femur shows no bristles but the corresponding tibia has 1 very stout, posterior, apical bristle, another quite long, arising from near the middle, besides, also 2 long, slender, bristly hairs on the basal third. Tarsal bristles stout but short. Claws sharp, bent chiefly at the apex, black with the base lighter colored. Pulvilli well developed. *Wings*: The wings are hyaline with the apical fourth darker, apparently due to villi. Marginal cell closed with a moderately long stalk; the second submarginal cell is comparatively narrow, developed almost entirely in front of the third vein and at the apex it is only moderately flared. The anterior branch of the third vein ends quite at the

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#### EXPLANATION OF PLATE 2

Photograph of *Senoprosopis romeri* n. sp. (Holotype, Florissant shales, Colorado, no. 5125, Museum of Comparative Zoology). Length of specimen 25 mm.



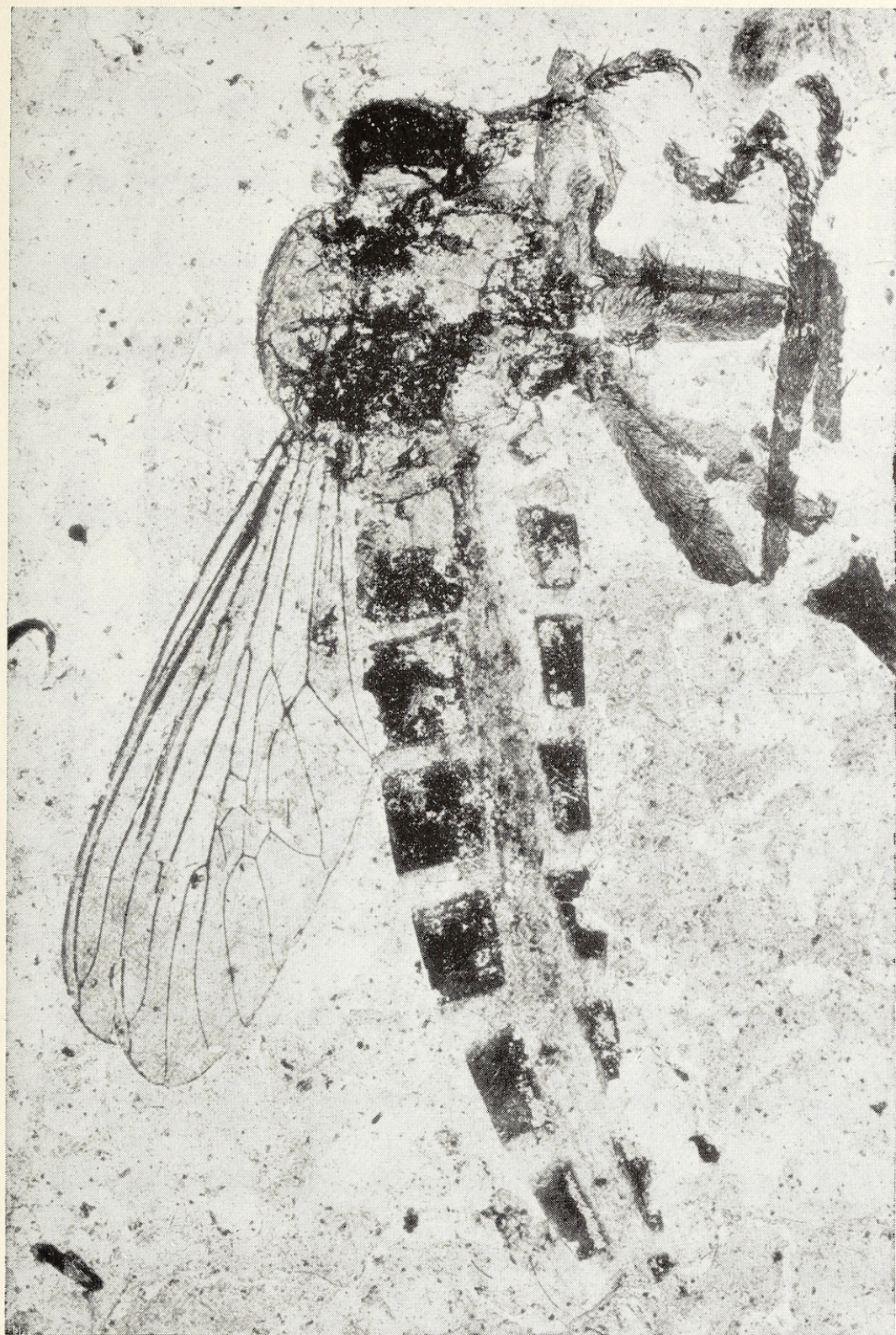


PLATE 2. HULL — SENOPROSOPIS ROMERI



apex of the wing, the posterior branch ends well behind the apex by a distance double the middle width of the second submarginal cell. The first, second and third posterior cells open maximally. Fourth closed with a moderately long stalk and the end vein of the fourth posterior cell outwardly convex. Also the upper vein of this cell also strongly convex, tending to occlude the discal cell. Anterior cross vein oblique, entering the discal cell a little beyond the middle. Posterior crossvein absent, upper anterior intercalary vein twice as long as the medial crossvein. Anal vein closed and stalked. *Abdomen*: The abdomen is elongate, considerably longer than the wing. It is well preserved and shows 7 tergites and 8 sternites. Apparently a female, the third to seventh tergites are of nearly equal length and while there is clear preservation of slender, postmarginal fringes of long, bristly hairs, rather widely separated, there is no evidence of distinct bristles. The sternites show clearly and are well preserved and their pile appears to have been extremely delicate. At only one point is there an indication of a sternal hair and certainly bristles were absent.

Type. Female; Miocene, Florissant, Colorado, no. 5125 in the Museum of Comparative Zoology. Named in honor of Director A. S. Romer.

This species is very close to the species *Senoprosopis antiquus* James, the wing of which was figured by James, 1939. It differs from it in the more extensive narrowing in the middle of the first posterior cell, which in *S. romeri* is clearly narrowed to less than half its maximal width, and also in the more straightened apical portion of the third vein.

I have examined the types of all Recent New World species placed in *Senoprosopis* Macquart; all differ to some extent from the clear profile drawing of the head shown by Macquart, of his type of genus, *Senoprosopis diardii*

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#### EXPLANATION OF PLATE 3

Photograph of *Pseudosphegina carpenteri* n. sp. (Holotype, Baltic amber, no. 5124, Museum of Comparative Zoology). Length of specimen 5.6 mm.





PLATE 3. HULL — PSEUDOSPHEGINA CARPENTERI



Macquart, which was from India, and which I have not seen. I therefore leave the New World species provisionally in *Senoprosopis*; all of these New World species have a distinct, rather long petiole at the base of the fourth posterior cell, in contrast to the two Florissant species and for this reason I propose the subgeneric name *Eosenoprosopis* for these two species with *S. romeri* as type of subgenus. As far as the second submarginal cell is concerned, the two fossil species agree better with *Opopotes* Hull, a Recent Costa Rican species, in which the anterior branch of the third vein ends clearly at the apex, and not a short distance above the apex as in the South American species of *Senoprosopis*. *Opopotes* is further characterized by the remarkably attenuate third antennal segment, 2 segmented, rather short styles; this may be the genus represented by the figure labelled *Senoprosopis* sp., in Curran's *The Families and Genera of North American Diptera*, 1934.

These two Florissant species give a very nice indication of the slight degree of change, at least as far as the wing is concerned, between Miocene and Recent species.

***Pseudosphegina carpenteri*, new species**

Plates 3<sup>2</sup> and 4

Length 5.6 mm.

Male. *Head*: Eyes almost touching above the front, the ocelli form an isosceles triangle. Face with a well developed tubercle situated a little below the middle of the face. Antenna set a little above the middle of the head in profile, the first 2 segments quite short, each with

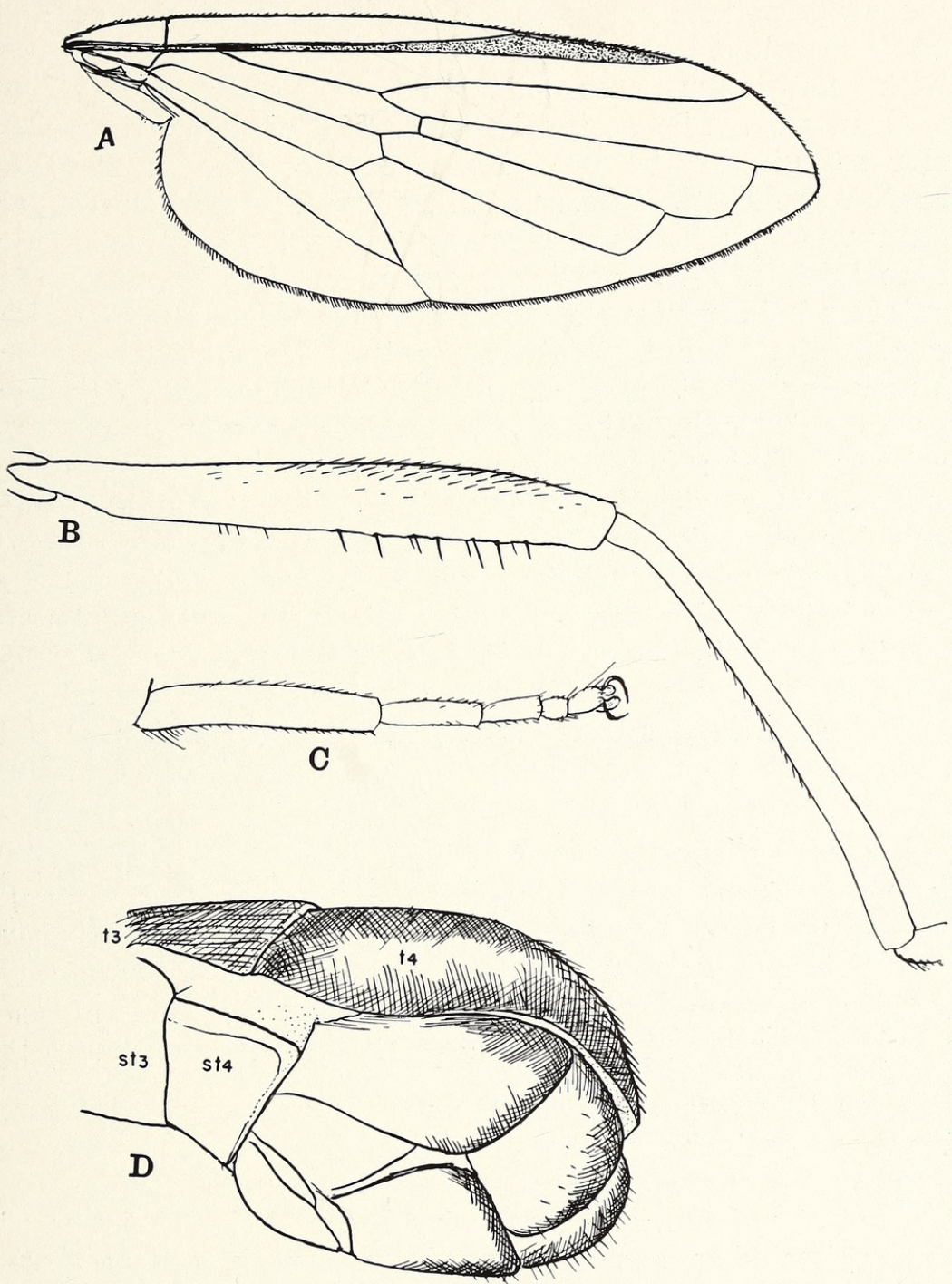
<sup>2</sup> For a colored photograph of this specimen, see cover of *Scientific American*, November, 1951.

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EXPLANATION OF PLATE 4

*Pseudosphegina carpenteri* n. sp. (Holotype, Baltic amber, no. 5124, Museum of Comparative Zoology). A. wing. B. Proximal segments of metathoracic leg. C. Distal segments of metathoracic leg. D. Posterior part of abdomen: t3, t4, 3rd and 4th tergites; st3, st4, 3rd and 4th sternites.





HULL — PSEUDOSPHEGINA CARPENTERI



a prominent, ventral bristle, the second segment with a dorsal seta and the third segment short, oval with rather blunt apex. The arista is slender, basally thickened and one and a half times as long as the third segment. Front with scanty, fine, erect pile which is rather short. Face without pile. The occiput concave and sunken, the posterior margin of the eye prominent for a short distance behind the head. *Thorax*: The thorax is a little longer than wide and rather strongly convex. It is relatively bare with a few, scattered, suberect, stiff hairs on the anterior half in front of the suture and similar, still more scanty pile behind. Scutellum rather large, convex with a few fine, erect hairs of the disc and 2 pairs of rather prominent, comparatively long, moderately stout, marginal bristles. *Legs*: The legs are slender, the hind femur quite slender with 4 ventral setae on the basal half and a double row of quite sharp, erect, spinous, non-tuberculate bristles placed ventrolaterally and ventromedially on the outer half of this femur. The outer row contains 4 elements of about the same length and 3 smaller ones interspersed. The medial row contains 3 which are stout, and like the larger elements on the lateral portion. Hind tibia as long as the femur, quite slender with minute, fine, appressed, quite inconspicuous pile. Tarsi also slender, the basitarsus as long as the remaining segments, the second segment a little longer than the next 2, the third segment nearly twice as long as the fourth segment. Tarsal pile similar to that of the tibia, the ventral fringe quite short and also fine, and the apices with scarcely longer hairs, except on the ultimate segment, where there are 2 stiff, dorsal hairs side by side, which are nearly as long as this segment. Claws extremely fine, curved from the base and sharp, the pulvilli well developed. Middle femur with a posterior fringe of pile in which, however, the individual hairs are not very long. Apical bristles of the middle tibia are quite small and weak, middle basitarsus slightly longer than the next 2 segments, the other segments also progressively reduced. Anterior legs with extremely short, inconspicuous, fine, scanty pile, their basitarsus about as long as the next 2 segments and the



whole tarsus shorter than the middle tarsus. *Wings*: The wings are pale brownish hyaline, a little darker in the costal cell. The stigma and whole subcostal cell much darker and light reddish brown. Marginal cell open by more than one and a half times the maximal width of this cell. Third vein perfectly straight. Anterior crossvein short, rectangular and situated quite close to the base of the discal cell. First posterior cell ends remotely from the wing apex by a distance equal to the subapical crossvein or end vein of first posterior cell. At the lower corner of the first posterior cell there is almost no trace of a spur vein and none whatever of the lower corner of the discal or second posterior cell. The fourth vein along the upper margin of the discal cell is almost entirely straight, barely curved apically. The apical petiole of the discal cell is fully as long as the subapical crossvein. Anal cell closed with quite a long stalk, whole wing villose, alula present but narrow. *Abdomen*: The abdomen is clavate, gradually and slightly narrowed towards the base, the hypopygium especially large. While well preserved, the abdomen is partly covered by wings. The first 3 sternites are light yellow, the fourth is dark reddish brown with lighter posterior margin, especially laterally; the first 3 sternites have a few, scattered, fine hairs; the fourth has numerous, stiff, subappressed hairs. Hypopygium apically with a few fine, erect, short hairs. Only the last tergite shows to advantage and it is much longer medially than laterally, tending to cover largely the long, bulbous, ventral hypopygium. It is dark, reddish brown in color with abundant, short, coarse, subappressed setae. Apparently the base of the third tergite is lighter in color.

Type. Male; Lower Oligocene, Baltic amber, no. 5124, in the Museum of Comparative Zoology. This interesting species is named in honor of Dr. Frank M. Carpenter.





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