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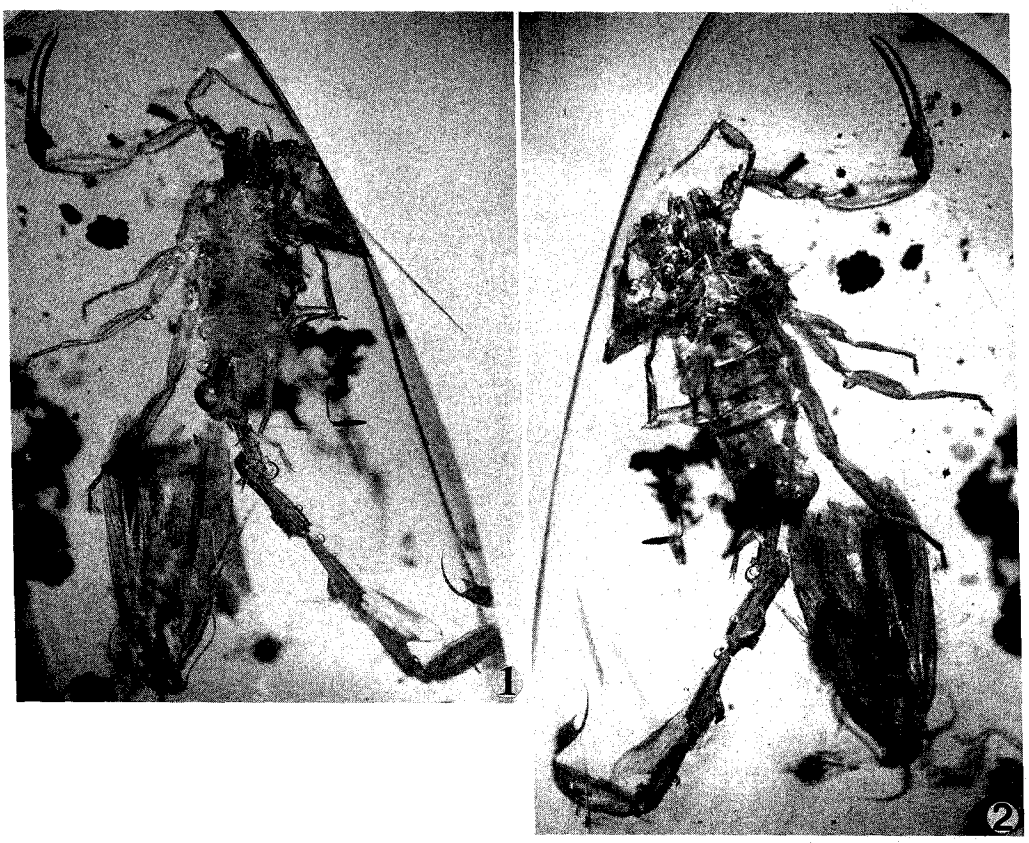
RESEARCH NOTES

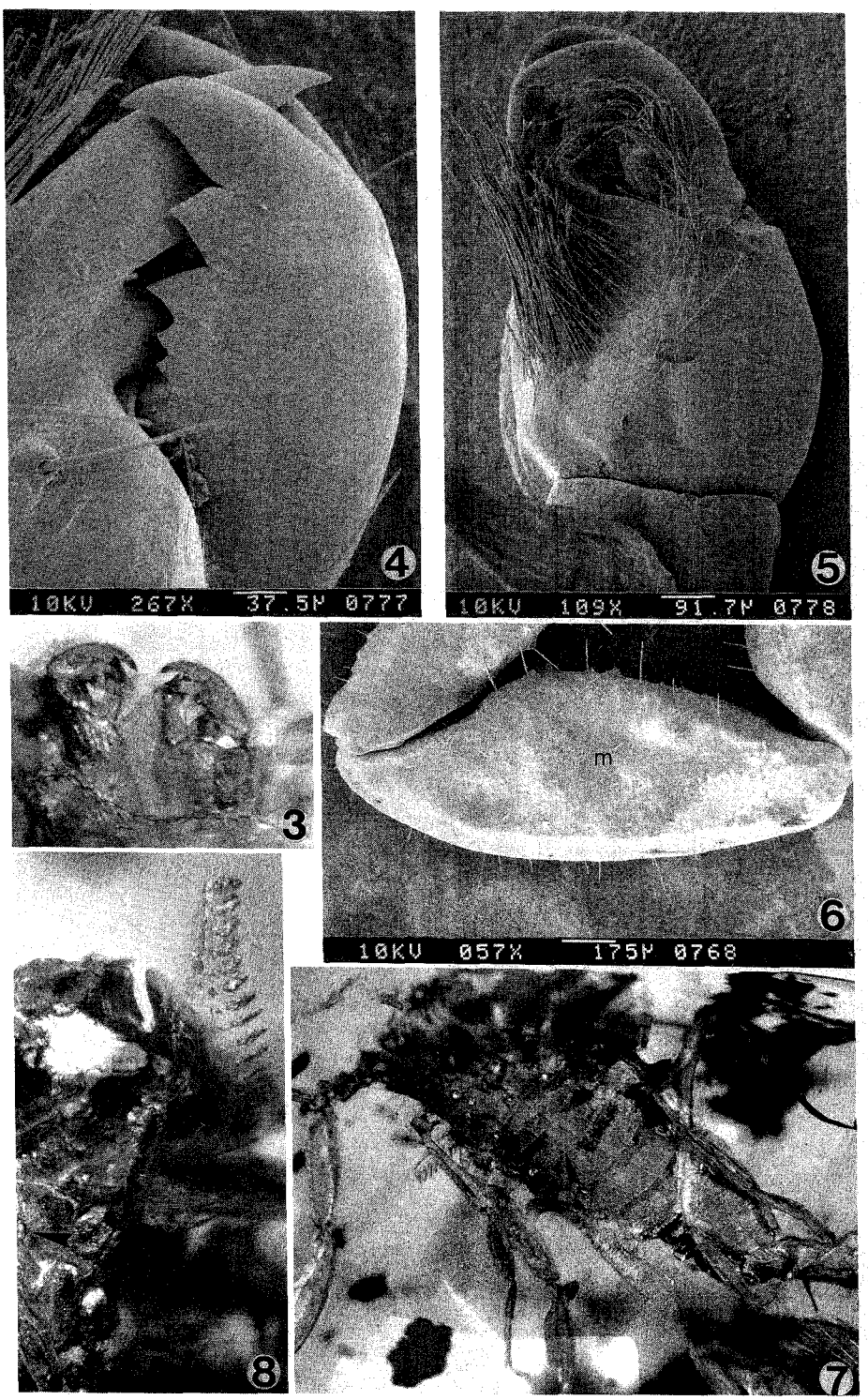
FIRST SCORPION (BUTHIDAE: *CENTRUROIDES*) FROM MEXICAN AMBER (LOWER MIOCENE TO UPPER OLIGOCENE)

A juvenile scorpion, moderately well-preserved in Chiapas (México) amber collected in February 1992 came to our attention (Figs. 1, 2). The relatively elongated metasomal segments suggest that the specimen is a male, probably a *Centruroides* (Marx 1890) (Buthidae). The specimen, which lacks most of its right pedipalp, is the first scorpion reported from Chiapas amber. *Centruroides beynai* Schawaller 1979 (see also Schlee 1980), *Microtityus ambarensis* (Schawaller 1982) (see also Santiago-Blay, Schawaller & Poinar 1990; Schawaller 1984), and *Tityus geratus* (Santiago-Blay & Poinar 1988) are known from Dominican amber.

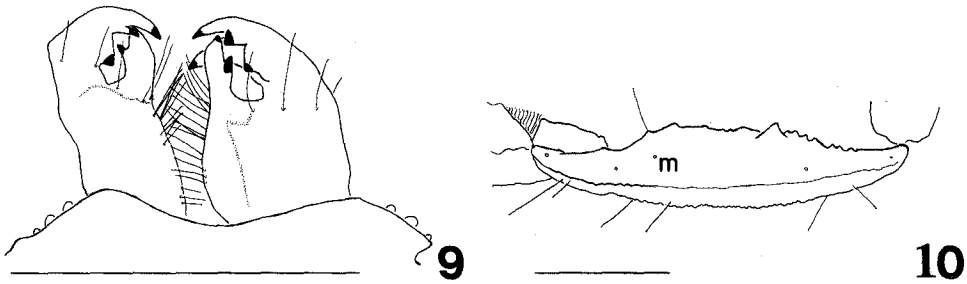
The piece containing the fossil is believed to have originated from mines near the village of Simojovel (State of Chiapas). The amber in the Simojovel mines is located in a sequence of primarily marine calcareous sandstones and silt with beds of lignite. The amber-bearing strata extend from the Balumtun Sandstone of the lower Miocene to the La Quinta formation of the upper Oligocene. These deposits have been assigned to the planktonic foraminiferal zones N3 and N4



Figures 1, 2.—*Centruroides*? sp. from Chiapas (México) amber: 1. dorsal, overall; 2. ventral, overall.



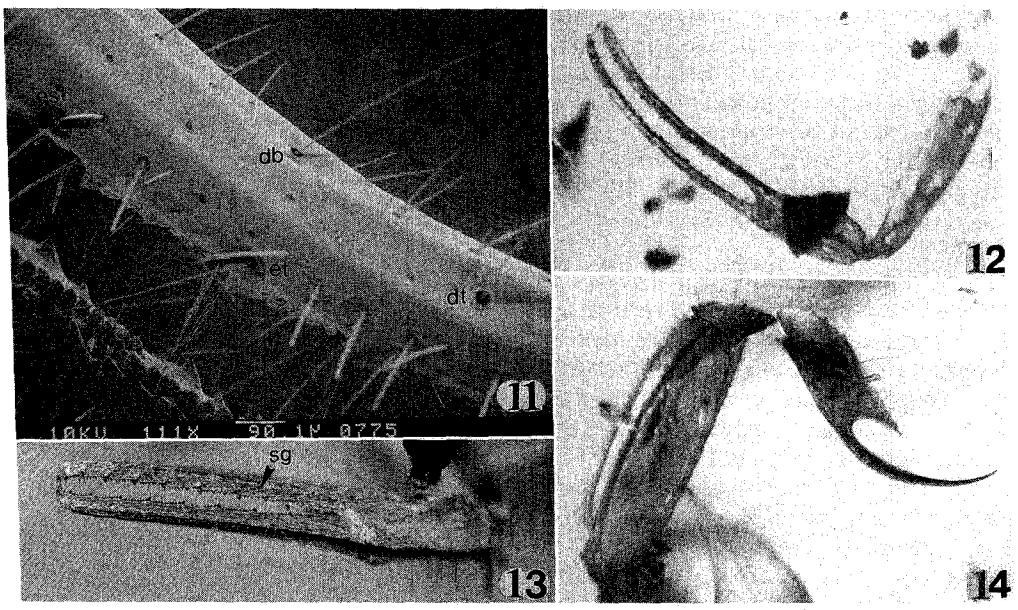
Figures 3–8.—*Centruroides*? from Chiapas (México) amber: 3, chelicera (see also Fig. 9), dorsal; 4, chelicera of *C. gracilis* nymph, right, dorsal; 5, chelicera of *C. gracilis* nymph, left, ventral; 6, left pedipalp patella of *C. nitidus* nymph, ventral. Note microsetae (m); 7, *Centruroides*? sp. from Chiapas (México) amber. Mesosomal



Figures 9, 10.—*Centruroides*? sp. from Chiapas (México) amber. 9, chelicera; 10, pedipalp patella venter, dots indicate possible microsetal (m) insertions. Scale lines = 1 mm.

in the Cenozoic Planktonic Foraminiferal Zonal Sequence and radiometrically dated from 22.5–26 million years (Berggren & Van Couvering 1974). It should be noted that the amber deposits are secondary; thus, the above dates provide a minimum age.

Owing to the scarcity of published data on the systematics and ontogeny of extant, juvenile *Centruroides* and to the problems of interpreting several important structures, which are confounded by imperfect preservation of this specimen, the authors prefer to document the find



Figures 11–14.—11, distal end of fixed pedipalp finger of *Rhopalurus princeps* (Karsch 1879) nymph. (The distal most fixed finger trichobothria are dt, db, et, and est). Note rows of denticles on movable finger and suggestion of supernumerary granules, sg); 12, *Centruroides*? sp. from Chiapas (México) amber, left pedipalp chela, dorsal; 13, *Centruroides*? sp. from Chiapas (México) amber, retrolateral; 14, *Centruroides*? sp. from Chiapas (México) amber, fifth metasomal segment and telson.

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keel-like structures (arrow head), dorsal; 8, *Centruroides*? sp. from Chiapas (México) amber. Sternopectinal area. Note apodeme-like structure (arrow head) of problematic interpretation—an artifact?

rather than describing this scorpion as a new taxon, pending acquisition of additional specimens from Chiapas.

Centruroides? sp.
(Figs. 1–3, 7–10, 12–14)

Possibly a fourth instar juvenile male, 17.1 mm long, pale-yellowish brown, with pedipalp chela and V metasomal segment dark brown, suggestion of two longitudinal bands on mesosomal tergites 2–3; possibly 8 primary rows of denticles on pedipalp fingers, supernumerary granules obsolete (Figs. 12, 13); pectines with 18–19 teeth (Fig. 8); metasomal segments I–V with 10, 8, 8, 8, and 5 complete, crenulated keels; very well-developed subaculear tooth (Fig. 14). Measurements as in Table 1.

The chelicerae (Fig. 3), typical of the Buthidae, are also depicted on Fig. 9. They resemble those of similar-sized nymphs of the widespread Neotropical scorpion, *C. gracilis* (Gervais 1841) (Figs. 4, 5). The pedipalp patella venter shows several pits that are interpreted as sites of microsetae (Figs. 6, 10). Examination of these two structures definitely eliminated the possibility that the scorpion was a vaejovid. *Centruroides beynai* has similar pits on the pedipalp patella dorsum whose interpretation has varied (Armas 1982; Armas & Marcano Fondeur 1987; Schawaller 1979; Santiago-Blay 1990).

However, the presence of what appears to be submedial mesosomal keels (Fig. 7) and an apodeme-like structure on the prosomal sternum (Fig. 8) is puzzling. Some buthids mature at relatively earlier instars, therefore the possibility that this specimen is a small adult, although unlikely, cannot be disregarded (Williams 1987).

This *Centruroides* from Chiapas can be distinguished from *C. beynai* by the pectine teeth number and metasomal ventral keel sculpturation: the latter has 21–24 pectine teeth and smooth ventral keels on metasomal segments II–IV. *Rhopalurus,* another common Neotropical buthid genus with supernumerary pedipalp finger granules, has a different arrangement of trichobothria db and et (Fig. 11), relatively longer metasomal segments, and lacks a definite Λ-shaped (= inverted V) sulcus flanking a slightly raised portion of mesosomal sternite III. The current knowledge of the *Centruroides* fauna of the region precludes us from distinguishing this specimen from many of its extant congenerics.

Since 1987, the authors have been accumulating morphometric data on fossil scorpions preserved in amber and hope to create a data base that will ease identifications, particularly when only parts of specimens have been preserved. The present specimen is maintained in the private collection of Dr. Rodolfo Molina.

Table 1.—Measurements of fossil *Centruroides*? sp. from Chiapas (México) amber. All measurements in mm. Some measurements could not be obtained because of positioning of the specimen in the piece.

Character	Measurements (mm)
Prosoma	
Carapace	
Anterior, median, posterior widths	1.0, 1.5, 2.3
Diad width	0.4
Median, diad-front margin length	2.0, 0.8
Chelicera	
Basal piece width, fixed finger lengths	1.4, 0.2
Pedipalp	
Femur length, width	1.9, 0.5
Patella length, width	2.5, 0.6
Palm length, width	1.1, 0.5, 2.3
Palm underhand, movable finger lengths	0.9, 2.2
Sternum	
Length, anterior, posterior widths	0.6, 0.2, 0.5
Mesosoma	
Terga	
I length, width	0.3, 2.0
II length, width	0.4, 1.9
III length, width	0.5, 2.2
IV length, width	0.6, 2.4
V length, width	0.7, 2.3
VI length, width	0.6, 2.0
VII length, anterior, posterior widths	1.0, 2.1, 1.0
Overall length	3.7
Metasoma	
Segments	
I length, width	1.5, 1.0
II length, width	1.8, 1.0
III length, width	1.9, 1.0
IV length, width	2.3, 1.0
V length, width, depth	1.9, 0.7, 0.8
Telson	
Vesicle length, depth	0.9, 0.4
Aculeus length	0.1
Total length	17.1

Author GOP can be contacted for further information on the piece.

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