

## AMASTRIDIDIUM, A NEGLECTED GENUS OF SNAKES.<sup>1</sup>

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I have recently had the pleasure of examining several specimens of a small snake from Central America, which is undoubtedly the species described by Cope as *Amastridium veliferum*.<sup>2</sup> In 1886 Cope mentioned the fact that this species possessed hypapophyses on the posterior vertebrae;<sup>3</sup> in 1892 he stated that the hemipenis had a divided sulcus;<sup>4</sup> in 1894 he further described this organ as undivided, with divided sulcus, with well developed spines, and "calyculate not capitate,"<sup>5</sup> and in 1900 he figured the hemipenis.<sup>6</sup> Boulenger<sup>7</sup> quoted the original description at the end of his account of the Colubridae, omitting the genus from his key to the family as of "doubtful position." In 1898 Boettger<sup>8</sup> redescribed it as *Fleischmannia obscura*. Günther does not mention this snake in the *Biologia Centrali-Americana*. Two specimens collected by Robert I. Matthews at Greytown, Nicaragua, are in the United States National Museum, and a specimen from Cariblanco, Costa Rica, is in the Museum of Comparative Zoölogy.

I have also seen a single specimen in the U. S. National Museum from Chicharro, Chiapas, Mexico, which agrees in detail with the species described by Werner<sup>9</sup> as *Mimometopon sapperi*.

These two species are unquestionably congeneric and should stand as *Amastridium veliferum* Cope and *Amastridium sapperi* (Werner).

They differ as follows:

*Veliferum*: Loreal absent, ventrals 121-135, maxillary teeth 12-2, no groove visible under magnification of 80 diameters.

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<sup>1</sup> Contributions from the Department of Zoology, Smith College, No. 110.

<sup>2</sup> Proc. Acad. Nat. Sci. Philadelphia, 1860, p. 370, "Cocuyas de Veraguas," Panama.

<sup>3</sup> Proc. Amer. Philos. Soc., vol. 23, 1886, p. 495.

<sup>4</sup> Amer. Nat., vol. 26, 1892, p. 481.

<sup>5</sup> Idem, vol. 28, 1894, p. 840.

<sup>6</sup> Report U. S. Nat. Mus., 1898, pl. 24, fig. 13.

<sup>7</sup> Cat. Snakes Brit. Mus., ser. 2, vol. 2, 1894, p. 352.

<sup>8</sup> Kat. Mus. Senckenberg., Rept., vol. 2, p. 69, San José, Costa Rica.

<sup>9</sup> Abh. Bayer. Akad. Wiss., 1903, vol. 22, pt. 2, p. 349, Guatemala.

*Sapperi*: Loreal present, ventrals 153-158, maxillary teeth 14, 16-2, a groove visible under magnification of 80 diameters.

The hemipenis, hypapophyses, coloration, and habit of the two species are identical. Both have 17 rows of smooth, pitless, scales. Both have oculars 1-2, temporals 1-2; a divided anal, a single nasal, and the third and fourth upper labials entering the eye. The following list will indicate the further scalation and the provenance of the specimens:

Source.	Sex.	Ventrals.	Caudals.	Labials.	Locality.
Cope, 1866.....	Male.....	127	85	7/9	Cocuyas, Panama.
Boettger, 1898.....	?.....	123	79	7/	San José, Costa Rica.
Mus. Comp. Zool., 15319.....	Female.....	135	+48	7/9	Cariblanco, Costa Rica.
U. S. Nat. Mus., 29216.....	Male.....	121	73	7/8-9	Greytown, Nicaragua.
U. S. Nat. Mus., 29217.....	do.....	123	78	7/8	Do.
Werner, 1903.....	?.....	158	86	7/	Guatemala.
U. S. Nat. Mus., 46509.....	Male.....	153	+86	7/9	Chicharras, Mexico.

In the Museum of Comparative Zoology No. 15319 the parietal meets the fifth labial on each side. Cope (1866) described his specimen (a male) as with keeled scales in the anal region. This is the case in the two large males I have seen in the United States National Museum (Cat. No. 29216 and Cat. No. 46509), but not in a very small male (Cat. No. 29217) nor in either of the females. Boettger and Werner do not mention this peculiarity.

The color is black, with a white dot on about every fourth scale of row 5. The upper surface of the head is light.

The hemipenis has two very large hooks which occupy the basal third, then increasingly smaller and more numerous hooks passing gradually into calyces which occupy the distal fifth. The sulcus is divided for the distal third.

The relationships of this genus are somewhat to seek. Perhaps examination of various characters in order will set forth more clearly the diverse genera allied.

Hemipenis: Among the snakes whose hemipenes are known *Thamnodynastes* possesses male organs almost exactly like those of *Amastridium*. *Tretanorhinus* and *Hydrocalamus* each have four large basal hooks instead of two, and in each the calyculate area has a free proximal edge—that is, is “capitate.” *Diadophis* has numerous basal hooks.

Dentition: The dentition of *Thamnodynastes*, of *Paraoxyrhopus* and of *Hydrocalamus* is the same as that of *Amastridium*. That of *Diadophis* differs in the absence of a gap in the tooth row anterior to the two enlarged teeth. Many other forms have closely similar dentition.

Vertebrae: *Tretanorhinus* and *Paraoxyrhopus* have hypapophyses on the posterior dorsal vertebrae, and are the only two genera having them which are possible allies of *Amastridium*.

Scalation: *Paraoxyrhopus*, *Tretanorhinus*, and *Hydrocalamus* lack scale pits; *Thamnodynastes* and *Diadophis* have them. My friend, Dr. Frank N. Blanchard, tells me that males of *Diadophis* have the scales of the anal region keeled.

Eye: *Thamnodynastes* has a vertical pupil. The other genera have a round pupil.

To sum up: *Paraoxyrhopus* agrees very closely with *Amastridium* in all its known characters. The hemipenis, however, is unknown.

*Thamnodynastes*, suggested as a related genus by Werner (1903), differs in having a vertical pupil, in having scale pits, and in lacking hypapophyses.

*Hydrocalamus* has a different hemipenis, and no hypapophyses.

*Tretanorhinus* has a different hemipenis, a very different dentition, and different physiognomy.

*Diadophis* has a different hemipenis, different dentition, scale pits, and different physiognomy.

The combination of characters seen in this genus and in its apparent allies serves to show (a) the uselessness of the groove on the posterior maxillary teeth as a character of importance; (b) the presence of hypapophyses in American "Opisthoglyph" snakes; (c) the presence of hypapophyses in snakes with forked sulcus spermaticus. A modification of the present scheme is evidently necessary. I suggest the following as a working basis for determining the relationships of American Colubrid snakes:

- a*<sup>1</sup>. Sulcus spermaticus divided.....*Dromicinae*.  
*a*<sup>2</sup>. Sulcus spermaticus single.  
*b*<sup>1</sup>. Calyces present. Hypapophyses present...*Sibynophis* ("*Polyodontophis*").  
*b*<sup>2</sup>. Calyces present. No hypapophyses.....*Colubrinae*.  
*b*<sup>3</sup>. No calyces. Hypapophyses present.....*Natricinae*.