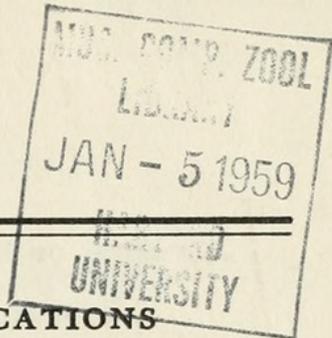


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*Leptodeira discolor* Günther

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UNIVERSITY OF KANSAS

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# Systematic Status of the Colubrid Snake, *Leptodeira discolor* Günther

BY

WILLIAM E. DUELLMAN

At the time of completing my study of the genus *Leptodeira* (1958) I had seen no specimens of *Leptodeira discolor*, a species described by Günther in 1860 and subsequently referred to the genus *Hypsiglena* by Cope (1887), Boulenger (1894), and Mocquard (1908), and to the genus *Pseudoleptodeira* by Taylor (1938). Günther's description was based on two syntypes (British Museum of Natural History numbers 1946.1.23.67 and 68) collected in Oaxaca, México, by Auguste Sallé. Information concerning the scutellation and coloration of the syntypes was provided by J. C. Battersby; in my revisionary study (*op. cit.*) this information was included in a short discussion of the species, which was referred to *incerta sedis* until specimens could be examined and the relationships of the species determined.

Through the courtesy of John M. Legler of the Museum of Natural History, University of Kansas, I have been able to study a specimen of *Leptodeira discolor* obtained six miles southeast of Tamazulápam, Oaxaca, México, by J. R. Alcorn on June 22, 1955. Superficial examination of the external characters of this snake shows a striking resemblance to *Leptodeira*. The specimen has a vertical pupil, divided anal, 21 scale rows, and two apical pits. The enlarged posterior maxillary teeth are without a trace of a groove. Examination of the hemipenis revealed that the organ was bifurcate and had a forked sulcus; these penial characteristics are diagnostic of the subfamily Xenodontinae and not the subfamily Colubrinae that includes the genera *Hypsiglena* and *Leptodeira*.

Examination of all available xenodontine genera indicates that this snake belongs to a heretofore unnamed genus. In recognition of the mental torment customarily suffered by workers attempting to ascertain the relationships of the many genera of colubrid snakes, I propose the generic name

## **Tantalophis**, new genus

*Leptodeira* (in part), Günther, Proc. Zool. Soc. London, pp. 317-318, 1860; Garman, Bull. Essex Inst., vol. 16, p. 23, January 9, 1884; Dunn, Proc. Nat. Acad. Sci., vol. 22, pp. 697-698, December, 1936; Duellman, Bull. Amer. Mus. Nat. Hist., vol. 114 (1), pp. 95-96, February 24, 1958.

*Hypsiglena* (in part), Cope, Bull. U. S. Nat. Mus., no. 32, p. 78, 1887; Günther, Biologia Centrali-Americana, Reptilia, pp. 137-138, pl. 49, fig. A,

October, 1894; Boulenger, Catalogue Snakes British Museum, vol. 2, p. 211, September 23, 1894; Mocquard, in Duméril and Bocourt, Mission Scientifique Mexique l'Amérique Centrale, vol. 3, p. 871, 1908; Amaral, Mem. Inst. Butantan, vol. 4, p. 183, May, 1930.

*Pseudoleptodeira* (in part) Taylor, Univ. Kansas Sci. Bull., vol. 25, no. 15, p. 343, June 1, 1938.

*Type Species.*—*Leptodeira discolor* Günther, Proc. Zool. Soc. London, pp. 317-318, 1860.

*Diagnosis.*—A xenodontine colubrid snake having a bifurcate hemipenis with a forked sulcus spermaticus, many longitudinal folds on basal portion, and small spines and calyces on distal part; 12 or 13 maxillary teeth followed by short diastema and two somewhat enlarged maxillary teeth lacking grooves; small parotid gland; normal colubrid skull; no hypapophyses on posterior vertebrae; elliptical pupils; two apical pits; smooth scales; normal colubrid head shields; divided anal; paired caudals.

The generic name comes from the Greek Τάνταλος, a mythological character symbolic of eternal torment, and from the Greek ὄφις for snake.

*Tantalophis discolor* (Günther) New comb.

The synonymy for the species is indicated in the account of the genus. The description below of the species is based on an adult male from 6 miles south-east of Tamazulápam, Oaxaca, México (University of Kansas Museum of Natural History No. 40143).

*Scutellation.*—Head shields normal; upper labials 7-7 (third and fourth entering orbit); lower labials 9-9 (1-4 in contact with anterior chin-shield, 4 and 5 in contact with posterior chin-shield); preoculars 1-1 and not in contact with frontal; postoculars 2-2; temporals 1-2-3, 1-2-3; nasals divided by a distinct groove below nostril and faint groove above; portion of rostral visible from above, one-third length of internasals; internasals pentagonal and one-half as long as prefrontals; parietal suture approximately as long as frontal; ventrals 178; anal divided; caudals 80. Scales in 21 rows at midbody and showing the following reduction:

$$21 \frac{2 + 3 (130)}{2 + 3 (130)} \quad 19 \frac{8 + 9 (162)}{8 + 9 (152)} \quad 17 (178)$$

*Coloration.*—Dorsal ground-color light brown and extending onto edges of ventrals; transverse body blotches numbering 50, each 1½ to 3 scales long and separated by light interspaces 1½ to 2 scales long; blotches brownish black and extending onto second scale row; lateral intercalary spots forming dark smudges on rows 1 and 2. Top of head black, flecked with tan; nape cream, followed by dark band six scales long; dark nape stripe from posterior edges of parietals to first dark body band. Venter cream-tan; throat and labials cream; posterior margins of all upper labials and of lower labials 1-3 black-edged (Figure 1).

*Size and Proportions.*—Head and body 312 mm. long; tail 118 mm., amounting to 37.8 per cent of length of head and body.

*Variation.*—Data on the syntypes of *Leptodeira discolor* furnished by J. C. Battersby give some indication of the variation in the species. Both are males, and they have 175 and 180 ventrals, 88 and 89 caudals, 1 preocular, 2 postoculars, 1-2-3 temporals, 7 and 8 upper labials, 9 lower labials. They have

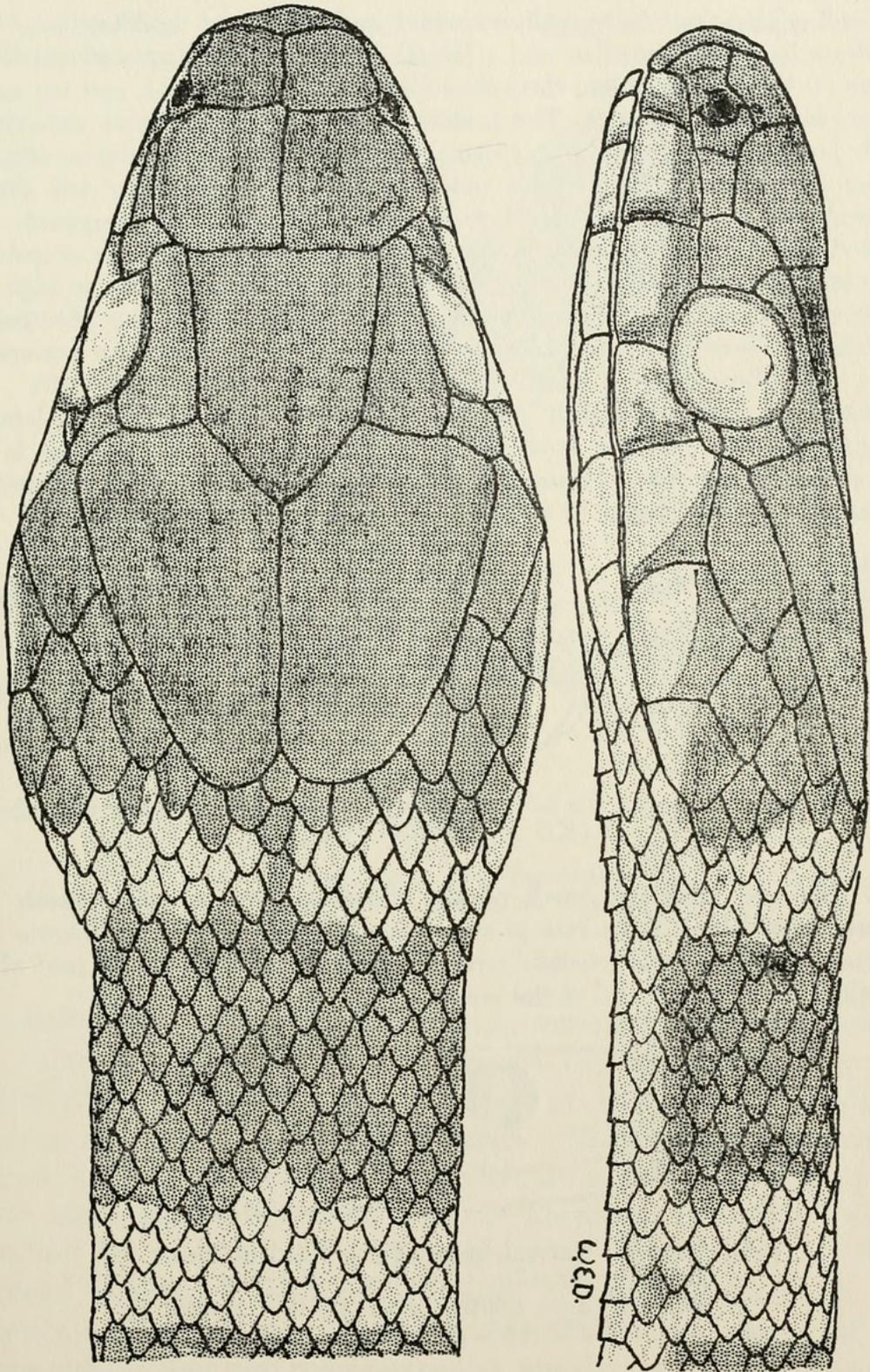


FIG. 1. Dorsal and lateral views of the head of *Tantalophis discolor* (Günther).  
(KU No. 40143).  $\times 7$ .

body lengths of 365 and 402 mm., total lengths of 509 and 555 mm., tail/body ratios of 38.0 and 39.4. They have 51 and 54 dark blotches on the body.

*Skull.*—The skull is typically colubrid and shows no modifications. The quadrate has both a median and a lateral depression, forming a strong lateral flange on the anterior edge; the columellar process is elliptical, and the supra-columellar crest is robust. The posteroinferior vomerine process extends directly posteriorly and then angles sharply posterodorsally, enclosing an elliptical vomerine fenestra. The lateral processes of the premaxillary are slightly pointed; the median spine is relatively thin and high. The pterygoids bear 23 and 21 teeth that decrease in size posteriorly; the transpalatine articulating process of the pterygoid is rounded, not robust; the lateral crest is high and moderately robust; the depression in the ventral surface of the pterygoid is moderate. There are 12 and 13 maxillary teeth that increase in size posteriorly; these are followed by a short diastema and two larger, solid teeth. The prediastemal teeth are slightly curved and slender. The maxillary is laterally compressed; the posterior knob is not robust; there is one foramen in the lateral face of the bone (Figure 2). The 10 palatine teeth are almost uniform in size; the dentary bears 19 teeth that decrease in size posteriorly.

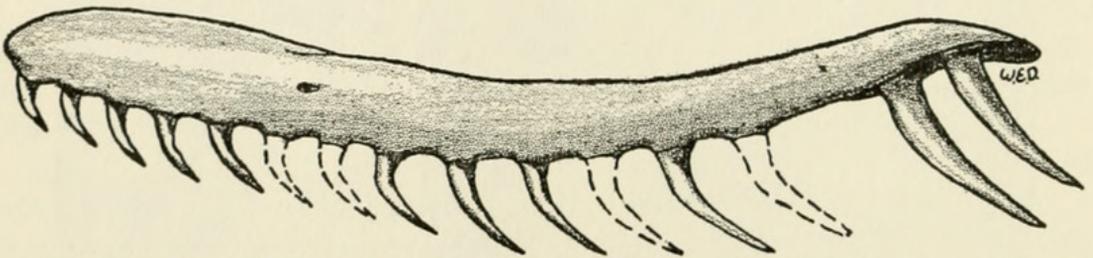


FIG. 2. Lateral view of the left maxillary of *Tantalophis discolor* (Günther). (KU No. 40143).  $\times 17$ .

A thin and otherwise small parotid gland or "venom sac" extends posteriorly from beneath the eye to about the angle of the jaw; a minute duct connects with the anteromedian surface and extends to the fleshy part of the mouth at the posterior end of the maxillary (Figure 3).

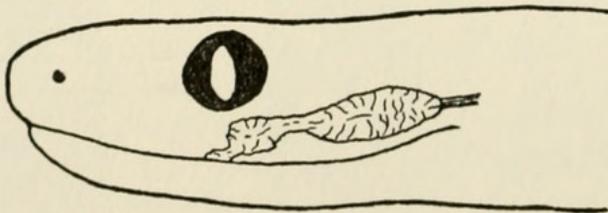


FIG. 3. Lateral view of the head of *Tantalophis discolor* (Günther), showing the position and relative size of the parotid gland. (KU No. 40143).  $\times 3$ .

*Hemipenis.*—*In situ* the hemipenis extends to the posterior edge of the thirteenth caudal. The unforked part of the organ is bedecked with numerous heavy longitudinal folds alternating with thinner folds. The basal parts of the two heads are covered with moderate sized spines, those closest to the base and the sulcus being the smallest. The distal parts of the heads are covered

with calyces. The sulcus bifurcates on the unforked part of the organ at a point about two-thirds of the distance from the base to the division of the organ. The sulcus is a deep groove between heavy folds proximally and is a shallower furrow distally (Figure 4).

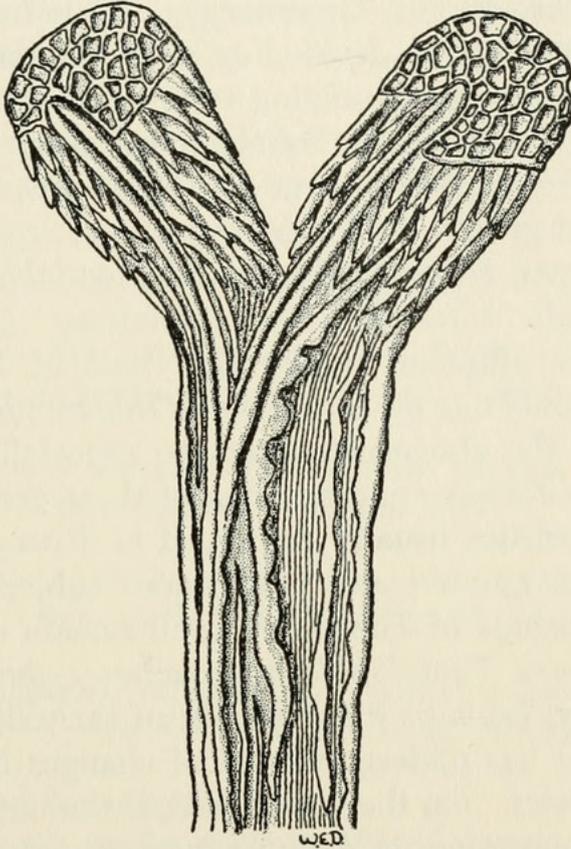


FIG. 4. Hemipenis of *Tantalophis discolor* (Günther). The organ was cut on the ventral surface and opened. (KU No. 40143).  $\times 4$ .

*Relationships.*—Using Dunn's (1928) arrangement of the American colubrid snakes as a guide permits the taxonomist to group *Tantalophis* with several genera, some of which occur in South America and others in the West Indies. Although the significance of such generic characters as scale pits and nature of the hemipenis is not clear, these characters must, of necessity, be utilized in attempting to ascertain the relationships of *Tantalophis* to other colubrid snakes. Assuming that the primary divisions of the American colubrids into subfamilies based on the nature of the sulcus spermaticus and the presence or absence of hypapophyses on the posterior vertebrae have some reality, *Tantalophis* must be placed in the subfamily Xenodontinae comprising genera chiefly South American in their distribution, but with several genera in Middle America and a few in North America and the West Indies.

In order to limit the number of genera to be compared with *Tantalophis*, only those xenodontines having apical pits and bifurcate hemipenis are considered. These include *Cyclagras*, *Drepanoides*, *Hypsirhynchus*, *Ialtris*, *Leimadophis*, *Pseudablables*, *Siphlophis*, *Tachymenis*, *Tomodon*, and *Trypanurgos*. Aside from differences in scutellation, *Leimadophis*, *Siphlophis*, and *Trypanurgos* have the heads of the hemipenes terminating in a disc, and *Ialtris* has a plicate hemipenis. *Tomodon* has basal spines on the hemipenis. The hemipenes of the other genera have proximal folds, distal spines, and distal calyces, not greatly unlike the condition found in *Tantalophis*. Of these, *Cyclagras*, *Hypsirhynchus*, and *Pseudablables* have round pupils and certain differences in scutellation. *Drepanoides* and *Tachymenis* have elliptical pupils like those of *Tantalophis*, but *Tachymenis* has only one apical pit, and *Drepanoides* has one apical pit or none. In the above characters no especially close relationship between *Tantalophis* and any one of these genera is apparent.

If the characteristics usually employed in distinguishing and relating genera are ignored and other more subjective criteria are used, the relationships of *Tantalophis* still remain obscure. Of the xenodontine genera *Tantalophis* approaches *Leimadophis* in general physiognomy; perhaps it represents an early divergent stock of *Leimadophis* that has undergone radical changes in the hemipenis and other characters. On the other hand, if the nature of the hemipenis is of no importance in defining supergeneric groups of colubrid snakes, *Tantalophis* may have its relationships with *Leptodeira* and *Hypsiglena*. Although herpetologists have been working intensively on American colubrids for many decades, the relationships of the majority of the groups are not well understood. Until the hemipenes and skulls of all of the forms have been studied and compared, and the evolutionary significance has been determined for the characters of the hemipenes, dentition, and apical pits, our knowledge of the relationships of these snakes will be incomplete.

*Remarks.*—The individual on which this paper is based is the only specimen of the species with definite locality data. It is from a locality six miles southeast of Tamazulápam in northwestern Oaxaca. This town lies at an elevation of about 6500 feet in the upper reaches of the Balsas Basin, an arid interior valley that expands in its upper end to form a broad basin of rolling and dissected terrain ranging from about 4000 to 6800 feet in elevation. The countryside around Tamazulápam is arid and supports plants of the genera *Prosopis*, *Acacia*, *Ipomoea*, and *Cassia*, and also columnar cacti. Oaks and pines grow on the limestone hills rising above the

rolling valley. *Tantalophis* may be endemic to the Balsas Basin, as are many other species of reptiles. However, if the snake has its relatives to the south in lower Central America and South America, such a distribution seems unlikely, even for an apparent relict.

*Acknowledgments.*—For permission to study and report on this specimen I am indebted to Dr. E. Raymond Hall and Mr. John M. Legler. I am grateful to Dr. Laurence C. Stuart for many helpful suggestions and to Dr. Norman E. Hartweg for placing at my disposal the facilities of the Museum of Zoology at the University of Michigan.

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