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A CHECK LIST OF THE SNAKES OF THE GENUS
LEPTOPHIS, WITH DESCRIPTIONS
OF NEW FORMS

BY JAMES A. OLIVER

IN the summer of 1941 I submitted the results of a revisionary study of the genus *Leptophis* as a doctoral dissertation at the University of Michigan. This study was begun in the fall of 1937 and was carried on at the Museum of Zoology during the tenure of a University fellowship in 1938-39, 1939-40, and an Edwin C. Hinsdale scholarship in 1940-41. Since the publication of this work may be delayed for some time, it seems advisable to describe the novelties and to present a brief preliminary check list of the forms recognized.

Nineteen forms, comprising eleven species, are recognized in this work. Seven of these have not previously been named.

Leptophis ahaetulla ahaetulla (Linnaeus)

1758 *Coluber ahaetulla* Linnaeus, *Systema Nat.*, 10th ed.; 1: 225 (type locality, "Asia, America").

RANGE.—British Guiana south along the coastal region to approximately the southern boundary of the state of Bahia, Brazil.

Leptophis ahaetulla bolivianus, new subspecies

HOLOTYPE.—U.M.M.Z.¹ No. 67973; male; Buenavista, De-

¹ Abbreviations used in this paper are: U.M.M.Z., Museum of Zoology, University of Michigan; M.C.Z., Museum of Comparative Zoology, Har-

partment of Santa Cruz, Bolivia; collected by José Steinbach; Nov. 1926.

PARATYPES.—U.M.M.Z. Nos. 67974–77, 60701–2, 60709; M.C.Z. No. 27553; F.M.N.H. Nos. 35614–21; and C.M. No. 2702, all topotypes. C.M. No. 23 from Las Yuntas, Bolivia; and A.N.S. No. 11335 from the Upper Beni River, Bolivia.

RANGE.—Known at present only from central Bolivia.

DESCRIPTION.—Similar to other members of the species *ahaetulla* in most details of head scutellation. Upper labials, 8; lower labials, 10.

Keels present on dorsal scale rows II–XIV, distinct keel on vertebral row; row VI keeled above anus; short distinct keels on dorsal scales of tail, at least anteriorly, and frequently for most of tail length.

Ventrals in males, 156–169, average, 161.42; in females, 162–173, average, 167.60. A single male has a complete tail with 147 subcaudals and a tail-body ratio of .60; 2 females have complete tails with 152 and 154 subcaudals, giving tail-body ratios of .59 and .61, respectively.

The largest male specimen examined has a head-body length of 757 mm., and tail length of 376 + mm.; the largest female has a head-body length of 625 mm., and a tail length of 361 + mm.

Maxillary teeth, 20–24, average (9 counts), 22.44, last 3 enlarged.

Hemipenis, 6 caudals long, no enlarged basal spines, 5–6 transverse rows of small spines opposite caudals 2 and 3; 7 spines of proximal row largest; spines decrease in length distally, passing, opposite posterior end of caudal 3, into calyces with long fringing papillae which obscure the structure of the calyces; papillae decrease in length distally and become more fleshy, leaving the distal portion typically calyculate, opposite the posterior half of caudal 4, and all of caudals 5 and 6.

COLORATION (in alcohol).—Top of head greenish blue, head

vard University; C.M., Carnegie Museum; A.M.N.H., American Museum of Natural History; A.N.S., Academy of Natural Sciences, Philadelphia; U.S.N.M., United States National Museum; F.M.N.H., Field Museum of Natural History.

scales narrowly but distinctly margined with black, usually a poorly defined, diffuse black spot on each parietal and a distinct, elongate black spot on each supraocular plate. The greenish blue of the head passes posteriorly onto the body and tail, occupying all of the scales of rows I–XV on the body. The dorsal body scales are not, or are but slightly, margined with black; keels of these scales are narrowly, but distinctly marked with black. Anteriorly, the dorsal coloration is present on the outer edges of the ventrals; the ventrals are not margined anteriorly with dark greenish blue or blue and are dirty white between the outer edges.

Posteriorly, the lateral coloration spreads out on the median portion of the ventral plates so that a short distance anterior to the anus the ventral coloration is uniformly pale green. This coloration continues posteriorly onto the tail, becoming somewhat darker toward the tip. The upper labials are pale green to dirty white; the chin and gular region are white.

VARIATION.—All of the 14 specimens examined have 8 upper labials on both sides of the head; 5 have 10 lower labials, 4 have 10/11, 2 have 11, 1 has 11/12, and 1 has 9/10.

Two specimens have a loreal plate on both sides of the head, and 1 specimen has this plate present on 1 side of the head only.

REMARKS.—This form is most closely related to and has been referred in the past to *nigromarginatus* (Günther). The new race, *bolivianus*, is distinguished from *nigromarginatus* by the following characters:

	<i>nigromarginatus</i>	<i>bolivianus</i>
Maxillary teeth	25–27, aver. 26	20–24, aver. 22
Ventrals, males	148–156, aver. 152	156–169, aver. 161
Ventrals, females	152–165, aver. 158	162–173, aver. 168
Dorsal coloration	Dorsal scales with heavy prominent black margins; no black on keels of dorsal scales.	Dorsal scales without or with only a narrow black margin; a distinct narrow black line along keel of each dorsal scale.
Hemipenis	5–6 spines in proximal row, 2 adjacent to sulcus enlarged.	7 spines in proximal row, none enlarged.

Leptophis ahaetulla nigromarginatus (Günther)

1866 *Ahaetulla nigromarginatus* Günther, *Ann. and Mag. Nat. Hist.*, Ser. III, 18: 28 (type locality, "Upper Amazons").

RANGE.—Upper Amazonian region of eastern Ecuador and Peru, northern Bolivia, and (?) western Brazil.

Leptophis ahaetulla ortoni Cope

1876 *Leptophis ortoni* Cope, *Journ. Acad. Nat. Sci. Phila.*, Art. VI: 177-78 (type locality, "Solmoens (=Solimões) or middle Amazon").

RANGE.—The Amazon Valley from Santarem, Brazil, westward to northern Bolivia and eastern Colombia. In Colombia found outside the Amazon Valley in the vicinity of Villavencio.

Leptophis coeruleodorsus, new species

HOLOTYPE.—A.M.N.H. No. 9022; male; Trinidad, British West Indies.

PARATYPES.—U.S.N.M. Nos. 59931-33, 5587, 60598, 15235, and 17746; M.C.Z. No. 6740; A.M.N.H. Nos. 9022-24; C.M. Nos. 6490, 6540; all from Trinidad, British West Indies. M.C.Z. Nos. 11994-95, 12026-27; Milford Bay, Tobago Island, British West Indies. U.S.N.M. No. 27821; Macute, Venezuela. U.S.N.M. No. 27831; Río Chico, Venezuela. A.N.S. No. 5182; Venezuela. A.N.S. No. 18288; Cariquito, Venezuela. C.M. No. 7433; Santa Lucía, Estado Miranda, Venezuela.

RANGE.—Northeastern coastal region of Venezuela, Trinidad, and Tobago Islands.

DESCRIPTION.—Eye moderate, diameter less than the distance from anterior border of orbit to nostril; preocular on upper surface of head, not contacting frontal; lower postocular less than one-half the size of the upper; parietal much longer than broad; frontal large, its length greater than length of interparietal suture, width of frontal equal to two-thirds its length. Upper labials, 8 or 9; lower labials, usually 10, occasionally 11.

Keels on scale rows II-XIV, those on rows VI-X strongest; row VI may or may not be keeled directly above anus; if not, it is keeled a short distance anterior to this point; keels usually absent on tail.

Ventrals in males, 158-164, average, 160.00; in females, 158-172, average, 166.66. Two females possess complete tails with 167 subcaudals each; two males give complete counts of 159 and 170. The two females have tail-body ratios of .65 and .68; the two males have ratios of .62 and .71, respectively.

The largest male examined has a head-body length of 860 mm., and a tail length of 534+ mm.; the largest female has a head-body length of 963 mm., and a tail length of 588+ mm.

Maxillary teeth, 21-23, average, 22.22 for 5 specimens; last 3 teeth enlarged.

Hemipenis, 7 caudals long, with 6-8 small basal spines attached opposite the suture between caudals 2 and 3; longest is adjacent to and on inner side of sulcus; 5-7 transverse rows of small, stout spines, opposite caudals 3 and 4, decreasing in size distally and grading into calyces with spinous fringing papillae which obscure the structure of the calyces. These papillae decrease in length and number distally, becoming more fleshy and exposing the structure of the calyces. The distal end of the organ, opposite posterior one-half of the sixth and all of the seventh caudal, typically calyculate.

COLORATION (in alcohol).—Top of head dark blue; a distinct rather broad black postocular stripe occupying all of lower postocular, occasionally the lower one-fourth of the upper postocular, the lower half of the anterior temporal, lower one-half to two-thirds of lower posterior temporal, the upper edges of the last 3 upper labials, extending on neck a distance of 2-8 scales posterior to last labial; anterior to orbit the stripe is indicated by a black upper margin on all labials except the first; upper labials white except for the upper margin of those included in ocular stripe; anterior lower margin of nasal and lower one-half to two-thirds of rostral white.

Blue coloration of head extending onto body, where it is limited to the 5 median dorsal scale rows, 5 lower dorsal rows on either side dirty white on anterior one-half of body; all dorsal scales with narrow blue margins, at least on posterior one-half of scale, many with a blue posterior tip; median 5 rows with irregular scattered light spots on blue scales; pos-

teriorly the light spots on median scales increase in size so that the blue dorsal color is restricted to the median 3 rows at mid-body; posterior to this point the blue stripe may be further reduced to only the vertebral row of scales or it may remain on 3 median rows. This stripe is never lost completely on the posterior one-half of the body, and in all specimens examined it continues on the tail for most of the tail length, as a diffuse, poorly defined middorsal stripe.

Color below the blue median stripe grading from light metallic bronze dorsally to dirty white on ventrals; keels of dorsal scales dark brown on middle and posterior one-third of body. When *stratum corneum* is present the posterior two-thirds of the body is light brown with fine longitudinal dark brown stripes formed by the color of the keels.

VARIATION.—The upper labials are 8 (9 specimens), 9 (6 specimens), 7/9 (1 specimen), and 9/10 (1 specimen); the lower labials are 10 (7 specimens), 10/11 (6 specimens), 11 (2 specimens), and 9/10 (2 specimens).

As stated above there is some variation in the width of the median dorsal blue coloration and the amount of lighter coloring on the median dorsal scales. Though very much reduced in two specimens, the blue coloration is not completely lacking in any specimen examined. In three specimens the lateral light area is light green with an iridescent sheen. Two of the specimens from Tobago Island are nearly black from preservation, and the median dorsal blue band is not discernible. An iridescent dark green coloring is apparent on the lower lateral scales. The postocular stripe is present in all specimens examined, though it may be reduced in distribution and distinctness from the condition described above.

The Tobago Island specimens, four females, have a higher number of ventral scales than do the Trinidad or Venezuelan females. In the Trinidad females the ventral counts are 161–167, average, 164; two Venezuelan females have 158–162 ventrals; the four Tobago females have 167–172, average, 170.

REMARKS.—The labial formulae, the dorsal coloration, the number of ventral scales, and the other morphological features

of this species suggest the probable origin from an ancestor exhibiting intermediate characters between *occidentalis* and *ahaetulla*. This species may well represent a connecting form between the Central American, and northwestern South American *occidentalis* and the eastern *ahaetulla*.

This new species differs from both *occidentalis* and *ahaetulla* in hemipeneal structure and color pattern, as well as in other minor morphological characters.

Leptophis copei, new species

HOLOTYPE.—U.S.N.M. No. 83564; male; Salto do Huá, Brazil-Venezuela boundary; collected by E. G. Holt.

PARATYPES.—U.S.N.M. No. 83570; same data as holotype. U.S.N.M. No. 83617; San Antonio, Upper Orinoco River, Venezuela. A.M.N.H. No. 38097, São Izabel, northwestern Brazil. A.M.N.H. Nos. 4463-64; Alto Rio Vaupes, Caruru, Colombia-Brazil boundary.

RANGE.—Known at present only from the region of the divide between the Orinoco and the Negro rivers.

DESCRIPTION.—Eye moderate to large, diameter equal to or slightly less than the distance from its anterior border to the nostril; preocular, on upper surface of head, may or may not be in contact with frontal; parietal much longer than broad, not contacting lower postocular, usually notched by upper posterior temporal; frontal large, its length slightly greater than that of interparietal suture. Upper labials, 9; lower labials, 11.

Keels usually present on rows II-XIV, those on rows VI, VII, IX, and X strongest; row VI normally not keeled above anus; no keels on tail posterior to point of reduction from 6 to 4 rows of dorsals.

Ventrals in males, 173-179, average, 176.60; in the single female, 176. Two males have complete tails, with 178 and 182 subcaudals. The male with 178 subcaudals has a tail-body ratio of .68. The single female has an injured tail.

The largest male examined has a head-body length of 1008 mm., and a tail length of 622 + mm. The female has a head-body length of 762 mm., and a tail length of 490 + mm.

Maxillary teeth, 26–28, average (4 counts), 27.25, last three enlarged.

Hemipenis, 7 caudals long, proximal part bare, 5 enlarged basal spines opposite posterior one-half of caudal 2, 2 largest spines adjacent to sulcus; followed distally by 6–7 transverse rows of spines opposite caudal 3 and anterior one-third of caudal 4, passing into calyces with long fringing papillae which obscure the structure of the calyces; papillae decrease in length distally becoming more fleshy and leaving the distal part, opposite caudals 6 and 7, typically calyculate.

COLORATION (in alcohol).—Top of head dark greenish blue; a black postocular stripe on all or only upper two-thirds of lower postocular, and extending posteriorly along the common border of the posterior upper labials and the temporals, terminating on last upper labial. This stripe is not present anterior to the orbit or is only indicated by an irregular suffusion of black on upper edge of the upper labials.

The greenish blue of the top of the head extends posteriorly onto the anterior part of the body, where it is present on the scales of rows III–XIII. The scales of rows II–XIV are all tipped with black posteriorly, and many have an anterior tip of black as well as a narrow dorsal margin of black. The greenish blue is reduced in distribution by a light (white to light blue) antero-ventral spot on the scales. These light spots appear a short distance posterior to the head and increase in size posteriorly. The light areas on the scales of the vertebral row and the lower dorsal rows, III and IV, expand more rapidly than do those on rows V, VI, and VII, so that at mid-body a light vertebral stripe is present and the greenish blue lateral area is reduced to a narrow stripe occupying only rows VI and VII.

Posterior to mid-body the greenish blue may be completely obliterated save for irregular spots on the concealed portions of the scales. The dorsal is then light gray with the *stratum corneum* absent or light to dark metallic bronze with the *stratum corneum* present. If the greenish blue is not completely obliterated, it persists as a narrow diffuse dorsolateral stripe occupying the paravertebral scale rows.

Upper labials below the dark upper margins are white to light cream. The lower labials, chin shields, ventrals, and subcaudals are also white to light cream.

VARIATION.—Four specimens have 9 upper labials, 1 has 9/10, and 1 has 10; 3 have 11 lower labials, 1 has 10/11, and 2 have 11/12.

There is a good deal of variation in coloration. The specimen from San Antonio, Venezuela, has very little greenish blue remaining on the exposed part of the dorsal scales on the posterior five-sixths of the body. The *stratum corneum* is still present, and the predominant dorsal coloration is a dark metallic bronze. The light antero-ventral spots are very prominent.

One of the 2 specimens from Salto do Huá on the Brazil-Venezuela boundary has the dorsolateral greenish blue stripe continuous for the entire length of the body. In the other specimen from this locality the stripe is obscured at mid-body.

REMARKS.—Geographically, the closest related form is represented by the Colombian specimens of *ortoni*. Morphologically, *copei* appears to be more closely associated with *ahaetulla* than with *ortoni*. This form differs from *ortoni* in hemipeneal structure, coloration, a higher number of ventrals, and other minor details. From *ahaetulla* it differs in coloration and in a higher number of ventrals.

Leptophis depressirostris (Cope)

1860 *Philothamnus depressirostris* Cope, *Proc. Acad. Nat. Sci. Phila.*, p. 557 (type locality, Cocuyas de Veraguas, New Grenada).

RANGE.—From Nicaragua south in the Caribbean drainage basin to Panama, the Choco of Colombia, and northwestern Ecuador.

Leptophis diplotropis (Günther)

1872 *Ahaetulla diplotropis* Günther, *Ann. and Mag. Nat. Hist.*, ser. IV, 9: 25–26 (type locality, Tehuantepec).

RANGE.—Mexico, from southwestern Chihuahua south along the Pacific slope to southeastern Oaxaca. The Tres Marias Islands.

Leptophis liocercus (Wied)

1824 *Coluber liocercus* Wied, *Nat. Brasiliens*, p. 665 (type locality, Brazil).

RANGE.—Known only from the littoral zone of southeastern Brazil and (?) the state of Goyaz, Brazil.

Leptophis marginatus (Cope)

1862 *Thrasops marginatus* Cope, *Proc. Acad. Nat. Sci. Phila.*, p. 349 (type locality, "Paraguay").

RANGE.—Northern Argentina, Paraguay, eastern Bolivia, and the Mato Grosso region of Brazil.

Leptophis mexicanus mexicanus Duméril and Bibron

1854 *Leptophis mexicanus* Duméril and Bibron, *Hist. Rept.*, VII (1): 536 (type locality, Mexico).

RANGE.—Extreme southern Tamaulipas, Mexico, south through the Mexican states of Veracruz, Tabasco, eastern Oaxaca, and Chiapas into Guatemala, British Honduras, Honduras, Nicaragua, and Costa Rica. Known from the Pacific slope only in Chiapas and eastern Oaxaca.

Leptophis mexicanus yucatanensis, new subspecies

HOLOTYPE.—U.M.M.Z. No. 83940; male; Coba, Quintana Roo, Mexico; collected June–July, 1938, by C. L. Lundell.

PARATYPES.—U.M.M.Z. No. 83941, topotype. U.M.M.Z. No. 73035; M.C.Z. Nos. 22063–64, 15550; F.M.N.H. No. 26982; U.S.N.M. No. 46567; all from Chichen Itzá, Yucatán, Mexico. F.M.N.H. No. 34637; Mugeris Island, Yucatán. F.M.N.H. Nos. 36433 and 36437; Yokdzonot, Yucatán. F.M.N.H. No. 36434; Libre Union; F.M.N.H. No. 36435; Merida, Yucatán. F.M.N.H. No. 36436; Kantunil, Yucatán. U.S.N.M. Nos. 24884–85; Yucatán, Mexico.

RANGE.—Known only from the northern end of the Yucatán Peninsula.

DESCRIPTION.—Like *m. mexicanus* in all details of head scutellation and keeling. Ventrals in males, 166–172, average, 168.11; in females, 165–174, average, 168.50. Four males have uninjured tails with subcaudals 171–181, average, 176.25;

one female with a complete tail has 165 subcaudals. The males have tail-body ratios of .62–.70, average, .675; the single female with complete tail has a tail-body ratio of .60.

The largest male examined has a head-body length of 752 mm., and a tail length of 530 mm.; the largest female has a head-body length of 764 mm., and a tail length of 456 + mm.

Maxillary teeth, 20–21, average (5 counts), 20.80, last two enlarged.

Hemipenis like that of *m. mexicanus*, 8–9 caudals long.

COLORATION (in alcohol).—Top of head dark greenish blue; a narrow, diffuse black stripe across the upper third of the rostral, passing posteriorly across the lower half of the nasal, lower part of the loreal and preocular, involving the upper edges of the first four upper labials. Posterior to the orbit this stripe broadens out, covering all of lower postocular, lower edge of upper postocular, lower half of anterior temporal, all of lower posterior temporal, and lower edge of upper posterior temporal, forming a broad upper black margin on last three upper labials.

This stripe continues onto the body, anteriorly on scale rows II–VI, forming an anterior and posterior black tip, rarely a complete margin connecting these tips. The antero-ventral light spot of bluish white or light bluish green is small, bordered above and posteriorly by dark blue or dark greenish blue. The antero-ventral light spots and the black margins and tips decrease in size posteriorly, and the dark greenish blue or dark blue increases in area so that at mid-body there is a nearly uniform lateral band of dark blue approximately 3 scales wide.

Posterior to the point of scale reduction on the body, row II retains a prominent upper black margin; rows III and IV have only irregular, diffuse black tips. The lateral dark blue stripe occupies the upper edge of row II, all of row III, all or only the lower half of row IV, and occasionally the lower edge of row V. The lateral stripe continues on the tail, occupying the upper one-third of row I and the lower half of row II posterior to the point of reduction from 6 to 4 dorsal rows.

The dorsal coloration between the dark lateral stripes is light gray to light brown. The ventrals, tail, body, chin, and upper labials below the lateral stripe are pure white.

VARIATION.—There is little variation worthy of mention in the specimens at hand. All have the labial formulae of 8 upper labials and 10 lower labials except 1 specimen, which has a lower labial formula of 10/11.

There is some variation in coloration in respect to the black ocular stripe and the dark lateral areas. One specimen has the black of the ocular stripe anterior to the orbit reduced to only the upper edges of the first four labials. Two other specimens have this stripe reduced anteriorly to almost this same condition. Three have the dark blue lateral coloration on the entire scales of row VI on the anterior one-fourth of the body. The width of the dark lateral stripe on the posterior third of the body varies in the specimens examined from $1\frac{1}{2}$ to $2\frac{1}{2}$ scale rows wide.

REMARKS.—Aside from the higher ventral and subcaudal counts, the important expression of differentiation in the Yucatán form is in coloration. The main features of this pattern difference are the reduction in the amount and distribution of the black pigment, the broad posterior dark lateral stripe, and the lighter dorsal coloration.

Leptophis nebulosus, new species

HOLOTYPE.—M.C.Z. No. 15287; male; Cariblanca, Costa Rica.

PARATYPES.—U.S.N.M. No. 19568; Greytown, Nicaragua. U.S.N.M. No. 20683; Nicaragua. U.S.N.M. No. 20270; Patuca, Honduras. M.C.Z. No. 17094; Matagalpa, Nicaragua.

RANGE.—Patuca, Honduras, to Cariblanca, Costa Rica.

DESCRIPTION.—Eye moderate, diameter equal to the distance from its anterior border to nostril; preocular in contact with or barely missing contact with frontal; lower postocular much smaller than upper; parietal longer than broad, not in contact with lower postocular, not or but slightly notched by upper posterior temporal; frontal large, its length approximately

equal to that of interparietal suture. Upper labials, 8 or 9; lower labials, 10.

Keels usually present on dorsal scale rows II–XIV on the body; well-developed keels present on tail posterior to point of reduction from 6 to 4 rows of dorsals.

Ventrals in males, 150–160, average, 152.77; in the single female, 158. Two males have complete tails with 151 and 145 subcaudals, giving tail-body ratios of .70 and .62, respectively.

The largest male has a head-body length of 502 mm., and a tail length of 352 mm.; the single female has a head-body length of 433 mm.

Maxillary teeth, 27–28 (2 counts), last 3 enlarged.

Hemipenis, 7 caudals long, proximal portion opposite caudal 1 and anterior one-half of caudal 2, bare; followed distally by 7–8 transverse rows of spines opposite posterior one-half of caudal 2, all of caudal 3, and anterior one-half of caudal 4; no enlarged basal spines, those of proximal row largest; spines pass gradually into calyces with fringing papillae; posterior portion opposite posterior one-half of caudal 5, and all of caudals 6 and 7, is typically calyculate.

COLORATION (in alcohol).—Top of head bluish green; a narrow black stripe beginning on the upper posterior edge of the first or second upper labial and passing posteriorly along the upper edge of the upper labials and the extreme lower edge of the prefrontal and preocular; posterior to the orbit this stripe is on the lower edge of the upper postocular and the upper edge of the lower postocular, the lower edge of the anterior temporal and lower posterior temporal and the upper margin of the last 2 upper labials. The stripe continues onto the body for a distance not greater than the length of the head.

The dorsal coloration in the anterior one-half of the body is white to light cream on rows I and II; on rows III, IV, and occasionally row V, bright blue with *stratum corneum* absent or dusky greenish blue with *stratum corneum* present; rows VI, VII, and VIII light gray, when *stratum corneum* is absent, or light metallic bronze, when *stratum corneum* is present.

Posteriorly, the coloration is essentially the same except that the blue lateral stripe is reduced in distribution; a short distance anterior to the point of dorsal scale reduction the blue is present only on all of row IV and the upper edge of row III. Posterior to the point of scale reduction the blue is present only on row III.

The blue persists to the end of the tail, becoming reduced posteriorly.

The upper labials below the black upper margin, the lower edge of the small postocular and frequently the anterior lower edge of the anterior temporal, the lower labials, chin shields, ventrals, and caudals are all uniformly white to light cream.

VARIATION.—The 5 specimens examined vary little. The labial formula of 8 upper and 10 lower labials is present in all but 1 specimen. This specimen has 9 upper and 10/11 lower labials.

The width of the blue lateral stripe varies slightly with an occasional upper margin on the scales of row II or a blue lower margin on the scales of row VI.

REMARKS.—The individuals allocated to this species have been considered heretofore as specimens of *mexicanus* that lacked the loreal plate. It has been suggested, also, that these specimens are merely atypical *mexicanus* at one extreme of the range of that species, where they might be expected to exhibit certain differences, i.e., peripheral differentiation.

The amount and consistency of the divergence of the 5 specimens described here are such that this suggestion appears entirely erroneous. Specific recognition is certainly warranted on the basis of the nature of the maxillary teeth and the hemipeneal structure. All of these specimens are readily separable from *mexicanus* on the basis of coloration and absence of the loreal plate as well as the morphological characters mentioned above.

Leptophis occidentalis occidentalis (Günther)

1859 *Ahaetulla occidentalis* Günther, *Proc. Zool. Soc. London*, pp. 412-13
(type locality, Guayaquil and western Ecuador).

RANGE.—Both coasts of Central America from Nicaragua

on the Caribbean coast, Costa Rica on the Pacific, south to northern Colombia, thence eastward along the Caribbean coast to western Venezuela, southward into the interior valleys of Colombia and to western Ecuador. Not known from the Choco region of Colombia.

Leptophis occidentalis bocourti Boulenger

1898 *Leptophis bocourti* Boulenger, *Proc. Zool. Soc. London*, p. 116 (type locality, Paramba and Cachabé, Ecuador).

RANGE.—Known only from northwestern Ecuador and Gorgona Island, Colombia.

Leptophis occidentalis chocoensis, new subspecies

HOLOTYPE.—U.M.M.Z. No. 55528; male; El Río Condoté, Camp Peñalisa, Choco, Colombia; collected by C. H. Eigenmann.

PARATYPES.—A.M.N.H. No. 8062; M.C.Z. No. 13298; both from Choco, Colombia.

RANGE.—Known only from the Choco region of Colombia.

DESCRIPTION.—Eye large, diameter greater than distance from anterior border of orbit to nostril; preocular on upper surface of head, contacting frontal; lower postocular slightly smaller than upper; parietal slightly longer than broad, notched by upper posterior temporal, and not in contact with lower postocular; frontal very broad in front, its width equal to four-fifths its length. Upper labials, 9; lower labials, 11.

Keels present on scale rows II–XIV, strong at mid-body, and an occasional short keel present on rows I and XV in males. Keel of vertebral row not as strong as that of paravertebrals, disappearing usually a short distance anterior to anus. Low and distinct keels present on the tail.

Ventrals, 163–166 in the 2 males; 165 in the female. Subcaudals, 180–183 in the males; 175 in the female. Tail-body ratio, .54–.62 in the males; .66 in the female.

The largest specimen examined, a male, has a head-body length of 945 mm., and a tail length of 588 mm.

Maxillary teeth, 22–23, last 3 enlarged.

Hemipenis, 7 caudals long, 6 basal spines opposite suture between caudals 2 and 3, longest spine adjacent to and on inner side of sulcus; 6 transverse rows of smaller, stouter spines decreasing in size distally, opposite caudal 3 and anterior one-third of caudal 4; passing immediately into calyces with fringing papillae. These papillae decrease in number and length distally, becoming more fleshy; calyces increase in size distally; distal half of organ typically calyculate.

COLORATION (in alcohol).—Top of head light greenish brown with *stratum corneum* present; a broad black postocular stripe on the lower one-half of upper postocular, upper one-third of lower postocular, practically all of anterior temporal, all of the lower and lower one-third to two-thirds of upper posterior temporal, and the upper edges of labials 8 and 9; continuing 2 scales posterior to last labial. Upper labials light olive green.

Color of head extending on neck for distance of about one-half of head length. Color of median dorsal region, upper half of rows V and XI, all of rows VI–X, greenish blue with faint metallic copper reflections, dorsal scales below this median coloration are bluish. The median coloration is much reduced on the tail, which is mostly bluish.

Ventral surface of head, body, and tail is pale blue or light bluish green, somewhat lighter on throat and chin. Keels of all dorsal scales broadly and distinctly marked with black; those of rows VI, VII, IX, and X broadest, forming 2 longitudinal black lines on each side.

REMARKS.—The 3 specimens studied are quite constant in morphological and color characters. These specimens have the highest number of subcaudals in relation to the number of ventrals of any specimens of the genus.

This race is distinguished from the other forms of *occidentalis* primarily on the basis of coloration, but also in general proportions and minor details of scutellation.

Leptophis occidentalis praestans (Cope)

1868 *Thrasops praestans* Cope, *Proc. Acad. Nat. Sci., Phila.*, pp. 309–10
(type locality, Petén, Guatemala).

RANGE.—Central Veracruz, Mexico, east to Yucatán, southward through British Honduras, central and eastern Guatemala, to and including Honduras.

Leptophis riveti Despax

1910 *Leptophis riveti* Despax, *Rep. et batr. l'équateur*, pp. 26–28 (type locality, Gualaquiza, Ecuador).

RANGE.—From the Panama Canal Zone south through western Colombia to southwestern Ecuador.

INCERTAE SEDIS

Sufficient material is not available at this time to determine satisfactorily the status of *Ahaetulla modesta* Günther (1872: 26). This name was apparently based on a uniformly green specimen of *mexicanus*. Several such specimens have been examined during the course of this study. These individuals, where data have been available, came from rather widely scattered localities in Mexico, from Chiapas to Tamaulipas. The limited locality data available suggest the possibility that these specimens represent a distinct race of *mexicanus* which replaces the typical race at higher elevations and at the northernmost edge of the range.

The possibility that these individuals are merely aberrant specimens occurring along the altitudinal and latitudinal periphery of the range is not to be overlooked. Additional material with precise locality and ecological data is needed before the status of these specimens can be determined. In addition to the differences in coloration, the ventral counts recorded for these specimens are either slightly above or within the upper limits of the number recorded for *mexicanus*.

That Günther's name was based on one of these variants is indicated by the data given in his description. Only one other member of the genus is known to occur in Guatemala, *occidentalis praestans*. The possibility that Günther's new form was based on a specimen of *praestans* with the loreal plate atypically present seems extremely doubtful. The number of ventrals given for *modesta* is below the minimum count

recorded for Guatemalan specimens of *praestans*; and *modesta* has a distinct black postocular stripe, not possessed by the specimens of *praestans* examined in this study.

Dr. Joseph R. Bailey has sent me data on a number of specimens of this genus in South American museums. Two specimens examined from Mato Grosso have been referred by him under the name *ahaetulla* as restricted in this study. Bailey states in correspondence that the locality data on these specimens seem perfectly accurate, and he sees no reason to doubt the records. The specimens cannot be referred to *marginatus*, the only member of the genus known to occur in Mato Grosso, and no specimens of *ahaetulla* examined by me have come from anywhere near this region. I cannot determine with certainty the status of these specimens. The range of *ahaetulla* may extend westward and south into Mato Grosso, the specimens may represent an isolated population of *ahaetulla*, or they may represent another race of this species.

I cannot satisfactorily allocate 2 forms described from Brazil: *Leptophis flagellum* Andersson (1901: 13-14; type locality, Brazil); and *Leptophis vertebralis* Werner (1909: 221-22; type locality, Petropolis, Brazil). Andersson's *flagellum* is probably referable to *liocercus*, though this cannot be determined with certainty. Werner's name is a pure homonym of *Leptophis vertebralis* Duméril and Bibron (1854, 1: 543-44). The specimen upon which his name is based may be an aberrant juvenile *Leptophis*, but I am inclined to believe that it is not of that genus.

LITERATURE CITED

ANDERSSON, LARS G.

- 1901 Some New Species of Snakes from Cameroon and South America, belonging to the Collections of the Royal Museum in Stockholm. Bih. Till K. Sven. Vet.-Akad. Handl., 24, Afd. 4, No. 6: 1-35.

BOULENGER, GEORGE A.

- 1898 An Account of the Reptiles and Batrachians Collected by Mr. W. F. H. Rosenberg in Western Ecuador. Proc. Zool. Soc. London, pp. 107-26.

COPE, EDWARD D.

- 1860 Catalogue of the Colubridae in the Museum of the Academy of Natural Sciences of Philadelphia. III. Proc. Acad. Nat. Sci. Phila., pp. 552-66.
- 1862 Catalogue of the Reptiles Obtained During the Exploration of the Parana, Paraguay, Vermejo, and Uruguay Rivers by Capt. Thos. J. Page, U. S. N. *Ibid.*, pp. 346-59.
- 1868 Sixth Contribution to the Herpetology of Tropical America. *Ibid.*, pp. 305-13.
- 1876 Report on the Reptiles Brought by Prof. James Orton from the Middle and Upper Amazon, and Western Peru. Journ. Acad. Nat. Sci. Phila., Art. VI: 159-83.

DESPAX, M.

- 1910 Reptiles et batrachiens de l'équateur recueillis par M. Le Dr. Rivet. Arc méridien équatorial 9, No. 2: 17-44.

DUMÉRIL, A. M. and G. BIBRON

- 1854 Erpétologie générale. Histoire des reptiles. Paris; Roret. 7, Pt. 1: 1-780.

GÜNTHER, ALBERT

- 1859 Second List of Cold-Blooded Vertebrata Collected by Mr. Fraser in the Andes of Western Ecuador. Proc. Zool. Soc. London, pp. 402-27.
- 1866 Fifth Account of New Species of Snakes in the Collection of the British Museum. Ann. and Mag. Nat. Hist., ser. 3, 18: 24-31.
- 1872 Seventh Account of New Species of Snakes in the Collection of the British Museum. *Ibid.*, ser. 4, 9: 13-37.

LINNÆUS, CAROLUS

- 1758 Systema Naturae. 10th ed.; Holmiae: Salvii. I: 225.

WERNER, FRANZ

- 1909 Über neue oder seltene Reptilien des naturhistorischen Museums in Hamburg. I. Schlangen. Mitt. Nat. Hist. Mus. Hamburg, 26: 205-47.

VON WIED-NEUWIED, MAXIMILIAN

- 1824 Naturgeschichte Brasiliens. Weimar.

