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Notes on the Mexican Snakes of the Genus Leptodeira, with a Proposal of a New Snake Genus, Pseudoleptodeira

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ABSTRACT: The work is based on specimens of *Leptodeira* in the collections made in Mexico by Dr. Hobart Muir Smith and the author. The following Mexican species are recognized as belonging to the genus: *Leptodeira punctata* (Peters), *L. splendida* Günther, *L. mystacina* Cope, *L. dunckeri* Werner, *L. septentrionalis* (Kennicott), *L. frenata* (Cope), *L. maculata* (Hallowell), *L. yucatanensis yucatanensis* Cope, *L. yucantanensis malleisi* Dunn and Stuart; *L. bressoni* sp. nov. (type locality, El Sabino, Uruapan, Michoacán), *L. smithi* sp. nov. (type locality, El Sabino, Uruapan, Michoacán).

L. latifasciata (Günther) and *L. discolor* (Günther) are placed in a new genus *Pseudoleptodeira,* while the genus *Hypsiglena* Cope *sensu strictu* (including the species *torquata, ochrorhynchus and affinis*) is not regarded as being a synonym of the genus *Leptodeira.*

AN interpretation of the species of the genus *Leptodeira* Fitzinger, acceptable to herpetologists in general, appears to be difficult to formulate; at least previous studies by numerous authors have failed to bring about anything approaching a unanimity of opinion. That workers have differed in their treatment of the genus may be due, in some cases, to inadequate material available for study; in other cases, to a different concept of genera and species, or to the individual's technique of study. It is significant that, with practically the same specimens before them, such experienced workers as Günther and Boulenger should have arrived at such diverse results when dealing with this genus. While a complete review of the literature is impractical here, it is pertinent that a few, more important contributions be briefly reviewed.

Günther (1858) studied the American specimens of this genus in the British Museum (64 specimens) and placed all in a single spe-

cies, *Leptodeira annulata* (Linné). These specimens were Mexican, Central American, and South American. Later Günther (1895) and Boulenger (1896) recognized four species in this same lot of material.

Günther (1895) reviewed the Mexican and Central American forms in the British Museum in the Biologia Centrali-Americana, May, 1895, pp. 168-174, pls. LIII, fig. B, LIV, figs. A, B, and C, LV, figs. A, B. Eight known species were recognized as follows: *Leptodeira nigrofasciata* Günther (1868); L. *pacifica* Cope (1869); *L. mystacina* Cope (1869); *L. annulatus* (Linné) (1754); *L. yucatanensis* Cope (1887); *L. personata* Cope (1869); *L. frenata* (Cope) (1887); *L. rhombifera* Günther (1872). Four new species were described, and three were figured in this same work: *L. affinis, L. splendida, L. polysticta,* and *L. ocellata.*

Kennicott's species, *Dipsas septentrionalis,* was placed in the synonymy of *L. annulata* (Linné); and Peters' *Crotaphopeltis punctata* was not recognized as a Mexican form. Cope's *Sibon septentrionale rubricatum,* Lacépède's *Coluber albofusca,* and Hallowell's *Megalops maculatus* were not allocated.

It has been impossible to determine exactly the number of specimens available to Günther, but the year following the publication of his work there were 79 specimens from Mexico and Central America, and 26 from South America in the British Museum, as listed by Boulenger.

Boulenger, in 1896, reviewed the entire genus, having at hand the same and probably no more specimens than were available to Günther. His conclusions were strikingly different. He recognized in the Mexican-Central American region only seven species, as follows: (1) *Leptodeira punctata* (Peters), which included *L. pacifica* Cope; (2) *L. nigrofasciata* Günther, including *L. mystacina* Cope; (3) *L. frenata* (Cope); (4) *L. septentrionalis* (Kennicott); (5) *L. personata* Cope, in which were included *L. rhombifera* Günther and *L. splendida* Günther; (6) *L. ocellata* Günther, in which was placed *Sibon septentrionale rubricatum* Cope (with a question); (7) *L. albofusca* (Lacépède), with which were synonymized *L. yucatanensis* Cope, *L. polysticta* Günther and *L. affinis* Günther. *L. annulata* (Linné) was restricted to South America.

Cope (1900) published a key to the genus, in which he listed seven species. This was virtually a reprint of a key published earlier (1891), in which the same forms were recognized. He synonymized his *L. mystacina* with *L. nigrofasciata* and lists *L. pacifica, L. frenata, L. personata, L. yucatanensis, L. septentrionalis* and *L.*

annulata. It seems likely that he had not considered either Günther (1895) or Boulenger (1896) in fabricating the key published in 1900.

Mocquard (1908) treated of Mexican and Central American species in the Paris Museum. He accepted the disposition of species and their synonymies made by Boulenger, and adds another species, *Leptodeira guilleni*, described by Boulenger in 1905.

Werner (1913), in a key to species of *Leptodeira*, recognizes *L. dunckeri, L. punctata, L. nigrofasciata, L. frenata, L. septentrionalis, L. personata, L. guilleni, L. annulata, L. ocellata*, and *L. albofusca*.

Perhaps the most extraordinary treatment is that of Amaral (1929). He places all species of New World *Leptodeira* in a single species, *L. annulata*, and recognizes four subspecies, *L. a. septentrionalis, L. a. punctata* (with *nigrofasciata* in synonymy!), *L. a. personata* (with *L. frenata* and *L. guilleni* as synonyms!); *L. a. annulata* (includes *maculatus, albofusca, dunckeri, weiseri* as synonyms).

Dunn (1936) published some notes on North American *Leptodeira* proposing certain changes in the concept of the genus. He had available 957 specimens, of which 606 were referred to *L. rhombifera*. Of the total 400 consisted solely of heads.

Of *Leptodeira* (*sensu strictu*), Dunn recognized the following forms: (1) *Leptodeira annulata annulata* (including *affinis* Günther); (2) *L. annulata polysticta;* (3) *L. rhombifera* Günther (including *rubricatum* Cope, *splendida* Günther, and *ocellata* Günther); (4) *L. pacifica* Cope (placing *Crotaphopeltis punctata* Peters as a questioned synonym); (5) *L. yucatanensis yucatanesis* (Cope); (6) *L. yucatanensis malleisi* Dunn and Stuart; (7) *L. frenata* Cope; (8) *L. septentrionalis septentrionalis* (Kennicott); (9) *L. septentrionalis maculata* (Hallowell) (including *personata* Cope); (10) *L. mystacina* Cope; (11) *L. nigrofasciata* Günther.

Aside from these forms the following are included in the genus: *Hypsiglena torquata*, as *Leptodeira torquata torquata* Günther; *Hypsiglena ochrorhynchus* Cope as *Leptodeira torquata ochrorhynchus;* and *Hypsiglena venusta* (Mocquard) as *Leptodeira torquata venusta; Hypsiglena discolor* Günther as *Leptodeira discolor* and *Hypsiglena latifasciata* Günther as *Leptodeira latifasciata*, including as a synonym *Leptodeira guilleni* Boulenger.

Comments on these various proposals are discussed under the heading of the genus or individual species.

Since 1932 Dr. Hobart M. Smith and I have been segregating a

collection of Mexican amphibians and reptiles, among which are some 70 specimens belonging to the genera *Leptodeira* and *Hypsiglena.*

Due to the courtesy of Dr. Leonhard Stejneger and Dr. Doris Cochran I have recently examined, in some detail, Mexican specimens of *Leptodeira* in the United States National Museum and a number of Central American specimens as well. Doctor Hobart M. Smith obtained data and photographs of certain Mexican specimens in the Museum of Comparative Zoölogy at Harvard; Mrs. Helen T. Gaige has furnished information on a specimen in the Michigan collection. Dr. Emmet R. Dunn has placed certain data in my hands and has offered valued criticism. I offer my gratitude to these persons.

Genus *Leptodeira* Fitzinger

1826. *Sibon* (*part.*) Fitzinger, N. Class. Rept., pp. 29, 31; Cope, Proc. Ac. Phila., 1860, 266 (*septentrionalis*).

1837. *Coronella* (*part.*) Schlegel, Phys. Serp., II, 1837, p. 50 (*rufescens*).

1834. *Leptodeira* Fitzinger, Systema Reptilium, p. 27. Type, "*Dipsas annulata* Schlegel" [= *Leptodeira rhombifera* and *Leptodeira annulata* since this species of Schlegel is a composite of *Leptodeira rhombifera* Günther and *Leptodeira annulata* (Linné).

1861. *Megalops* Hallowell (non Lacépède), Proc. Acad. Nat. Sci. Phila., 12, 1861, p. 488. Type, *Megalops maculata.*

1866. *Leptodira* Cope, Proc. Acad. Nat. Sci. Phila., p. 127 (emendation).

I have hesitated to accept Dunn's proposal to unite, with this genus, Cope's *Hypsiglena* (type, *ochrorhyncha*). In his preliminary paper he gives but little data for such a change. There are present smaller series of teeth in the jaws; the fangs lack grooves; the elongation of the snout anterior to the mouth is much greater than obtains in typical *Leptodeira;* the tail is proportionally shorter, and the scales differ in having only a single apical pit instead of paired pits. Moreover, this genus has a distribution north of the Isthmus of Panama, nearly coextensive with *Leptodeira.* I believe this genus is a natural group worthy of generic recognition.

On the other hand *Hypsiglena latifasciata* Günther (which includes *Leptodeira guilleni* Boulenger* as an absolute synonym) and *Hypsiglena discolor* Günther have paired apical pits, shorter snouts, with fewer teeth that approach those of typical *Leptodeira* save that the large back fangs are lacking in grooves. These forms are extremely rare, *H. discolor* being known only from the two cotypes, and *H. latifasciata* from only five specimens.

I regard these two forms as members of neither *Hypsiglena* nor *Leptodeira.* I therefore propose for them a new generic designation.

* This form lacks grooved teeth, according to H. W. Parker, who at my request examined the types and furnished data on all three mentioned forms. He concurs with Dunn's suggestion that *H. latifasciata* and *L. guilleni* are synonyms.

Leptodeira punctata (Peters)

(Plate XXX, fig. 1)

1866. *Crotaphopeltis punctatus* Peters, Mon. Ber. Akad. Wiss. Berlin, 1866, p. 93 (type description; type locality, "South Africa" [probably Western Mexico]).

1869. *Leptodeira pacifica* Cope, Proc. Acad. Nat. Sci. Phila., 1868 (1869), p. 310 (type description; type locality, Mazatlán, Bishoff, Coll.); Günther, Biologia Centrali-Americana, Reptilia and Batrachia, 1895, p. 169; Boulenger, Cat. Snakes Brit. Mus., III, 1896, p. 19 (Presidio, near Mazatlán); Dunn, Proc. Nat. Acad. Sci., 22, 1936, pp. 691-694.

1887. *Sibon pacificum* Cope, Bull. U. S. Nat. Mus., No. 32, 1887, p. 67; and Proc. U. S. Nat. Mus., XIV, 1892, p. 678.

1887. *Leptodeira punctata* Boulenger, The Zoöl., 1887, p. 178 (Africa).

1939. *Leptodeira annulata punctata*, Amaral, Mem. Inst. Butantan, IV, p. 929, p. 204 (places *Leptodeira nigrofasciata* as a synonym).

1937. *Leptodeira punctata* Taylor, Univ. Kansas Sci. Bull. XXIV, 1936 (1937), pp. 526-527.

A single male specimen of this rare snake was captured late at night near a small railway bridge about a mile east of Mazatlán, Sinaloa. The specimen was crawling along the bank of a small rivulet which held water from a rain of the previous night.

It presents the following characters: Portion of rostral visible above very narrow; frontal longer than its distance from the end of the snout, shorter than the parietals; nostril very large, pierced chiefly in the anterior part of the divided nasal; loreal small, as high as wide; two preoculars, the upper very high, the lower minute; two postoculars, both in contact with the single large anterior temporal; posterior temporals two; diameter of eye equal to its distance from the middle of the nostril. Upper labials 7-7, the sixth extremely large, the third and fourth entering the eye; anterior chinshields slightly wider, but no longer than the posterior; latter scales separated from the first widened ventral by two pairs of small scales and two single enlarged scales; lower labials 9-9, the first four touching the chinshields. Ventrals, 149; anal divided (preceded by a very small median scale); subcaudals, 70. Length, 516 mm.; tail, 130 mm.; head width, 13 mm.; head length to angle of jaw, 19 mm.

Color in life. Above slightly reddish-brown with a series of black spots extending to the tail on either side of the median line; and on the side, one or two indefinite rows of irregular black flecks tending to form angular reticulations. Head brown; four small dark spots on the posterior head scales; a small median black spot borders the parietals and on either side of the nape are two large black spots narrowly separated by a yellowish area; no black bar behind eye; labials very light tan; ventral surface cream.

Dunn's use of *L. pacifica* Cope for this form rather than *L. punctatus* Peters is prompted by no new evidence.

Leptodeira splendida Günther

(Plate XXX, fig. 2; Text fig. 1)

1895. *Leptodeira splendida* Günther, Biologia Centrali-Americana, Reptilia and Batrachia, May, 1895, pp. 168, 170, pl. LIII, fig. B (type description; type locality, Izúcar, Puebla, México).

1896. *Leptodira personata* (*part.*) Boulenger. Cat. Snakes British Mus., III, 1896, p. 93 (types of *splendida*); Mocquard (*part.*), Mission Scientifique au Mexique, livr. 16, 1908, pp. 903-904.

1936. *Leptodeira rhombifera* (*part.*) Dunn, Proc. Nat. Acad. Sci., vol. 22, 1936, pp. 691-693.

Four specimens of this species are in the collection. Nos. 5177-5179, from a point 12 miles south of Puente de Ixtla, Morelos (E. H. Taylor, collector), and No. 5478, from Cuernavaca, Morelos (H. M. Smith, collector).

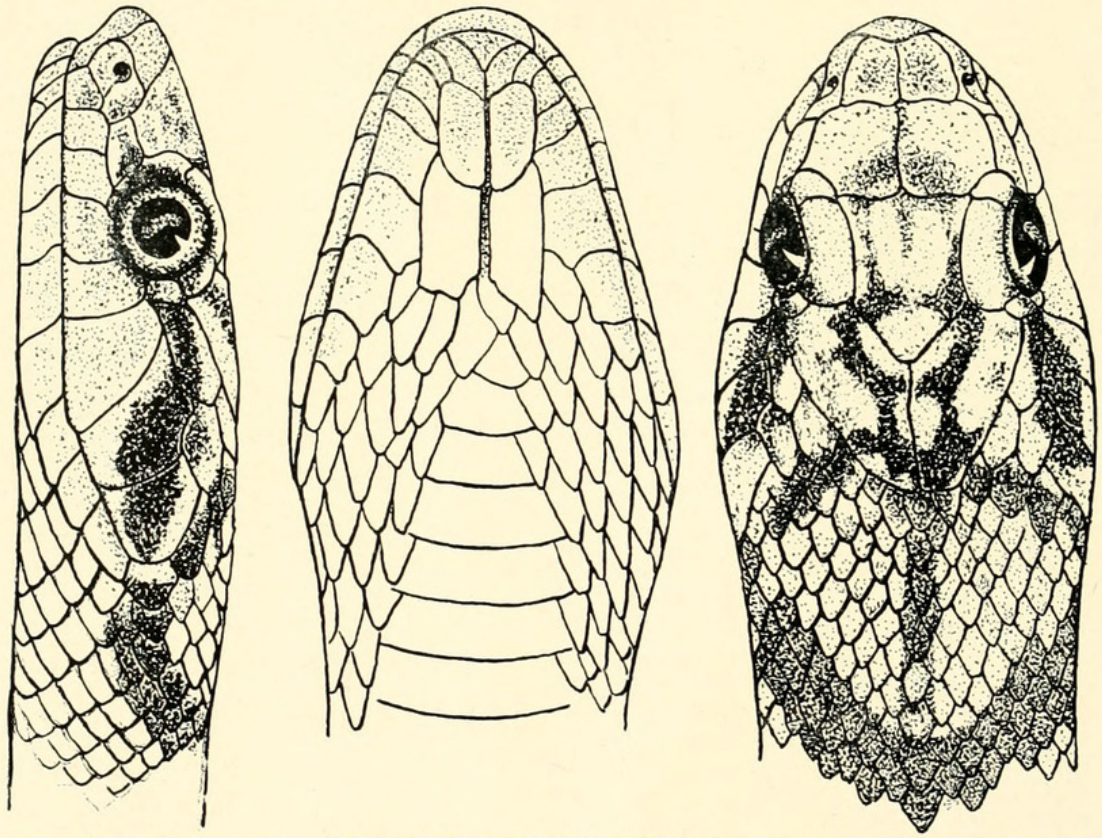

FIG. 1. *Leptodeira splendida* Günther, EHT-HMS. No. 5179, twelve miles south of Puente de Ixtla, Morelos, México (enlarged).

This species has been confused with both *personata* and *rhombifera*. It occurs in Morelos, and Puebla. It may be characterized by the presence of a stripe or bar on the nape; the peculiar head pattern; the presence of three preoculars (likewise typical of *septentrionalis, frenata* and *polysticta*); a reduced number of small dorsal spots, 19-25; 21 scales about middle of the body; ventrals, 165-168; subcaudals, 76-80. The posterior fangs are deeply grooved. The spots reach on the sides to the third or fourth scale rows, often tending to break medially or to become confluent. The following table shows the variation obtaining in this form.

Table of data and measurements in mm. of *Leptodeira splendida* Günther

Number	5178	5179	5478	5177	Type
Sex	♂	♂	♀	♂	♀ ?
Ventrals	168	167	167	166	165–66
Subcaudals	80	79	76	79	76
Preoculars	3–3	3–3	3–3	3–3	3–3
Postoculars	2–2	2–2	2–2	2–2	2–2
Temporals	1+2+3	1+2+3	1+2+3	1+2+3	1+2+3
Scale formula	21–21–17	19–21–16	21–21–17	21–21–16	—21—
Length, total	490	473	362	273	650
Length, tail	129	122	89	70	162
Spots, body	25	23	19	23	20
Spots, tail	20+	20+	15+	14++	.....

Günther's type specimen is a relatively large one and the pattern on the dorsal surface of the head has more or less disappeared. (It is less distinct in my No. 5178.) One of the most striking differences between this form and *rhombifera* is the presence in males of keels on the scales along the posterior fourth or fifth of the body and on the base of the tail. In females the keels are barely discernible, which probably accounts for the fact that they are not recorded in the type. The constancy of three preoculars is likewise a pertinent character. The grayish or grayish-brown spotting is likewise in contrast to the brown or blackish-brown coloration of typical *rhombifera*.

The intercalated lateral spots are present but small, often somewhat elongate. The body is not compressed; the chinshields are of about equal length. The preocular touches the frontal in two cases; they are separated in two cases.

I believe this form to be more closely related to *Leptodeira bressoni*, described herein, than to *rhombifera*.

Leptodeira bressoni sp. nov.

(Plate XXXI, fig. 4; Text fig. 2; Plate XXXIII, fig. 4)

Type. EHT-HMS, No. 5172, collected at Hda. El Sabino, about 20 miles south of Uruapan, Michoacán. Don Julio Raymond Bresson, collector.

Paratypes. Nos. 4617, El Sabino, Michoacán, July 21-28, 1935, H. M. Smith, collector; 4619, near Queseria, Colima, June 18, 1935,

H. M. Smith, collector; 5173, Hda. El Sabino, 1935, Don Julio Raymond Bresson, collector.

Diagnosis. Related to *L. splendida*, but differing from it in color and scale characters. Scales in 19-21 rows; a dark nape stripe; the lines behind the eyes tending to join the first nuchal dark mark and usually separated by only a very short distance.

Ventrals, 168 to 182; subcaudals, 81 to 90; upper labials, 8-8; lower labials, 10-10; temporals, 1 + 2 + 3; dorsal scales keeled on pos-

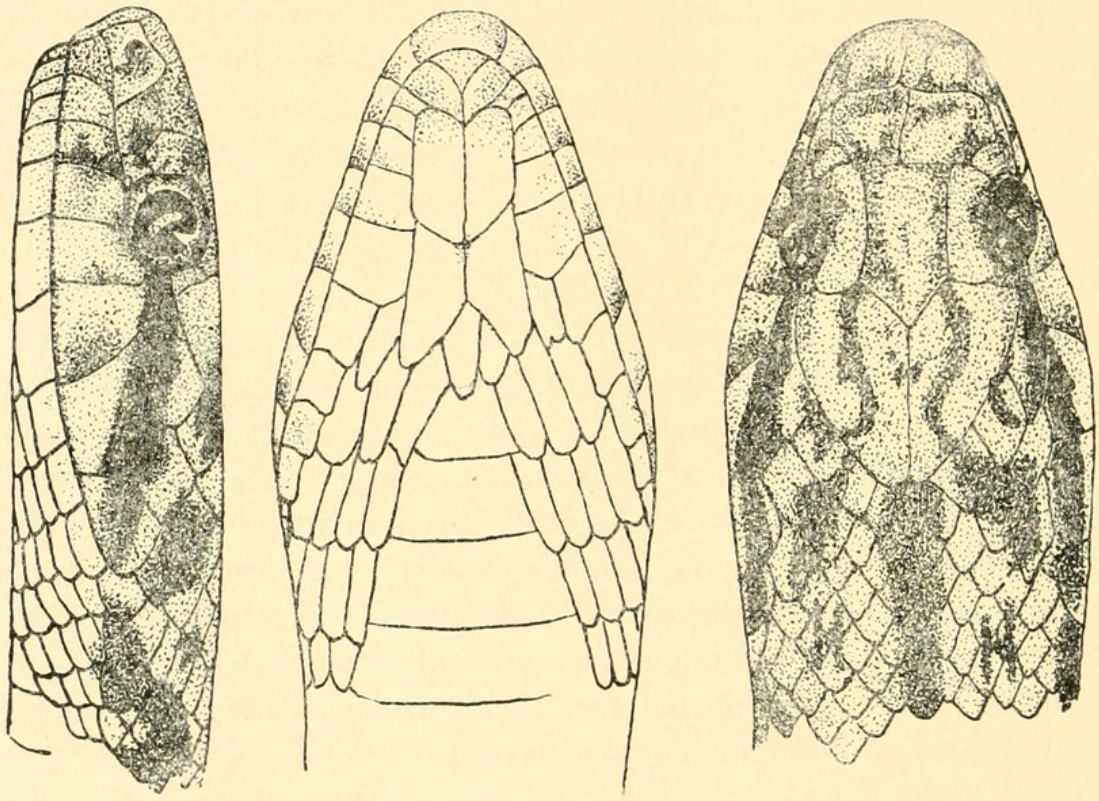

FIG. 2. *Leptodeira bressoni* sp. nov. Paratype. EHT-HMS, No. 5173. Hda. El Sabino, Uruapan, Michoacán (enlarged).

terior fourth or fifth of body; a bar on the nape of the neck, but not joining the first dorsal mark. Dorsal spots, 32-38; lateral intercalated spots prominent.

Description of the type. Rostral barely visible from above, its width once and one third its height; internasals typically small, their areas about one third that of prefrontals; latter large, distinctly wider than long; frontal much wider than long, its length equal to its distance from tip of snout; parietals typical, their length about one and one half times their width; nasal divided, or at least partially so; loreal slightly longer than high; three preoculars, the upper more than double size of middle one, not touching frontal; lower preocular (subocular) very small, separating third labial from eye;

supraocular widened posteriorly; temporals, 1+2+3; two postoculars; upper labials, 8-8, fourth and fifth entering orbit, having the following order of size, 1, 3, 2, 4, 5, 8, 6, 7; lower labials, 8-9 (abnormal, due to fusion of the ninth and tenth on one side); the posterior chinshields are longer than the anterior, pointed behind, separated from first widened ventral by two pairs of scales. Scale formula, 19-21-17; scales of the dorsal rows with keels on posterior fourth of body, growing more pronounced posteriorly above the base of tail; some of the keels are not continuous; some have a slight, knoblike termination. Ventrals, 171; subcaudals, 84; anal divided, lengthened abnormally, preceded by an unequal pair of scales.

Color. The general ground color is a rosy flesh. The body has a series of spots continuous across the middle of the back or broken medially and tending to alternate, but usually in contact. When broken the parts are quadrangular. The number of spots and pairs of spots on body, 38; on tail, 24+. On the intervening areas of ground color, there is an indistinct darker band which traverses the body from the first or second scale rows. The primary dark blotches reach to fifth scale row, and below these are indistinct blotches reaching to the ventrals. These intercalated markings are visible in the very young, the lower parts being darkest. First dorsal blotch forms a V-shaped mark, which is about three scales wide on the middorsal line; the bar on the nape beginning at the parietals extends back between the anterior arms, but does not touch the spot; a black bar from the eye runs to posterior edge of the eighth labial; this is followed by a small dark spot at a short interval. The top

Table of scale data and measurements in mm. of *Leptodeira bressoni*

Number	5172	5173	4617	4619	MCZ 11411	USNM 46459
Sex or age	♂	♂	♂	yg.	♀	♀
Ventrals	171	168	177	169	172	182
Subcaudals	84	90	81	82	71	78
Upper labials	8–8	8–8	8–8	8–8	8–8	8–8
Lower labials	8–9	10–10	10–10	10–10	10–10	10–10
Preoculars	3–3	3–3	3–3	3–3	3–3	3–3
Postoculars	2–2	2–2	2–2	2–2	.....	2–2
Temporals	1+2+3	1+2+3	1+2+3	1+2+3	.....	.....
Scale formula	19–21–17	19–19–17	21–19–17	21–21–17	21–19–17	21–21–17
Length, total (mm.)	481	430	335	210	372	548
Length, tail (mm.)	124	118	89	53	107.5	128

of the head is variously mottled with black, but is injured so that no definite pattern can be discerned. The ventral surface is rosy flesh; the lateral edges of the ventrals with scattered dark pigmentation; the anterior chin scales likewise with some dark pigment; subcaudals with very slight pigmentation near tip of tail.

Variation. Dr. Emmet R. Dunn called my attention to the fact that MCZ, No. 11411, Colima, Mex. (plate XXXIII, fig. 4), probably belonged to this form. An examination proves that such is the case. It agrees very well, falling within the variation observed in the Michoacán specimens. Being a female, the ventral count is somewhat lower. The spotting on the body is irregular (31 on one side, 34 on the other, due to the fact that certain spots have broken apart). The tail has 12 spots on one side, 13 on the other. Dorsal scales are keeled on posterior part of body. Stippling present on chin and on under side of tail.

I am likewise associating with this species USNM No. 46459, Plomosas, Sinaloa; Nelson and Goldman, collectors. It is a female, with a slightly reduced subcaudal count; the general head and neck pattern is generally similar but somewhat obscured, due to injury to the top of the head. The most pertinent difference is that the spots are transverse, larger, wider, not tending to break medially. They extend to the second scale row, with some smaller spots on the first row below the lateral ends of the dorsal spots. The large spots are two and one half to three scales long on dorsal surface. The spots are brownish-gray, darker on their edges.

The number of spots on the tail is 18-19, fewer than in the type. The scales are keeled on the posterior fourth of the body. The fangs are grooved. The frontal is shorter than its distance to the tip of the snout.

It is probable that with a considerable series from this region it might be possible to separate this from the typical *L. bressoni* as a subspecies.

Remarks. This form has the dorsal spots varying in number between 32 and 38. In the youngest specimen, No. 4619, the flesh color is less pronounced.

This species is named for Don Julio Raymond Bresson, Dr. Smith's host at Hda. El Sabino, who showed him every courtesy and contributed much in the way of assistance in collecting, and presented him with many specimens.

The species differs from *Leptodeira splendida* in having a different pattern on the head, larger number of spots on the body, 32-38

(19-25 in *L. splendida*), the presence of a heavy reticulation on the ground color, and a somewhat higher ventral count, 167 to 182, instead of 165 to 168.

Leptodeira mystacina Cope

1869. *Leptodeira mystacina* Cope, Proc. Amer. Philos. Soc., XI, 1869, 151 (type description; type locality, "Western Region of Mexico near the isthmus of Tehuantepec." Two specimens, F. Sumichrast, collector); Günther, Biologia Centrali-Americana, Rept. Batr., May, 1896, p. 169 (description of specimen not the type); Dunn, Proc. Nat. Acad. Sci., 22, No. 12, Dec., 1936 (Acapulco, Guerrero, and Tapanatepec, Oaxaca).

1887. *Sibon mystacinum* Cope, Bull. U. S. Nat. Mus., No. 32, 1887, p. 67 (Nicaragua and West Tehuantepec).

1892. *Sibon nigrofasciatum* Cope, Proc. U. S. Nat. Mus., XIV, 1892, p. 678 (Unites *L. nigrofasciata* and *L. mystacinum* and gives generic key); and Ann. Rep. U. S. Nat. Mus., 1898 (1900), p. 1107.

1896. *Leptodeira nigrofasciata* (*part.*) Boulenger, Cat. Snakes British Mus., vol. III, 1896, p. 92 (specimen from Tehuantepec); Mocquard, Mission Scientifique au Mexique et dans l'Amérique Central, livr. 16, 1908, pp. 900, 901 (description of a Tehuantepec specimen).

Opinions as to the distinctness of this form have differed. Cope, 1892, regards his own species a synonym of *L. nigrofasciata* Günther, which was described some months earlier than *L. mystacina* Cope. Günther, who had available a specimen from Tapana, Tehuantepec, likewise collected by Sumichrast, regarded the species distinct from his *L. nigrofasciata*, in spite of Cope's action, which Günther mentions in a footnote. Mocquard (1908) with three specimens collected by Sumichrast in Tehuantepec, either on his own judgment or on Cope's action, regards them as *L. nigrofasciata*. Dunn, 1936, with 13 Nicaraguan, and 2 Costa Rican specimens, together with Cope's types of *L. mystacina* and three additional specimens from Guerrero and Oaxaca, México, accepts them as distinct species. The following distinguishing characters are presented in the key:

L. nigrofasciata: 15-18 bands; ventrals, 168-172; Nicaragua and Costa Rica.
L. mystacina: 10-12 bands; ventrals, 187-196; Guerrero and Oaxaca.

The higher ventral count of *L. mystacina* as well as the reduced number of bands seem to warrant the retention of *L. mystacina*. Certainty as to whether intergradation occurs will have to await more extensive collecting in territory between the known ranges.

The following data were taken from specimens in the U. S. National Museum.

The cotypes (Nos. 30339-40, Tehuantepec, México; Sumichrast, collector) present the following characters:

No. 30339: Rostral visible above as a line; frontal narrow, elongate, distinctly longer than its distance from end of snout; parietals much widened anteriorly; prefrontals very large, forming an angle

laterally on right side; preoculars 2, 2, the upper very large—much widened and much elongated, forming a suture with frontal, more or less angular on its anterior edge, pushing between prefrontal and loreals; upper labials, 8 (right), 7 (left, 2 anterior labials abnormally fused); the sixth labial on right side touches upper postocular, but is minutely separated from the parietal; the fifth labial touches the parietal on the left side; lower labials, 10-10; postoculars, 1, 2; temporals 1+1+2+3; scale formula, 23, 19, 19, 17; ventrals, 187; caudals, 69; 11½ spots on body counted from one side, 13½ on the other; posterior chinshields separated; the head does not have the scales outlined with lighter color, and there is a very slight segregation of pigment at the anterior edges of the parietals and toward their posterior parts; a dark line in front of eye, continued behind eye to angle of mouth, and a second line below eye, diagonally to labial border, separated from the other dark line by a light line; upper labials with dim markings; on body there is a segregation of pigment to the edges of the scales of the dark spots.

No. 30340: General characters the same; preoculars, 2-2; postoculars, 2-2; the labials narrowly separated from the parietals; temporals, 1+2+3; second chinshields partially separated; 11½ spots on body; 4½ on tail, no evidence of pigment segregation on dorsal surface of head. Ventrals, 194; subcaudals, 65.

No. 46551: (Nelson and Goldman, Acapulco, Guerrero, 1895). Agrees with the preceding specimens in general characters. Scale formula, 23, 17, 19, 17; preoculars, 2, 2; postoculars, 1, 1, the lower apparently fused to the fifth labial, which rises as high as middle of the eye; temporals, 1+2+3; upper labials, 8-8; lower labials, 9-9; chinshields of equal length, the second pair separated; ventrals, 192; subcaudals, 65. Body with 11 deep lavender spots, the two sides not the same, since one half of each spot has moved forward nearly a half its length; each scale of the dorsal spots has a lighter center, thus giving the marking a reticulated appearance; each spot has a darker border; intervening ground color distinctly lighter, lightest where it contacts the dark spots; three spots on tail, not strongly distinct from intervening spaces. A brown line from nostril to eye, and from eye to jaw angle; a light line along the upper part of upper labials anteriorly, which turns down across posterior labials; a strongly defined dark line from below eye on fifth and sixth labials; chin powdered with dark pigment which forms indistinct spots; the lateral coloration encroaches on the ventrals; ventral surface of tail pigmented. Top of head stippled lightly with lavender-brown.

Leptodeira dunckeri (Werner)

1913. *Leptodeira dunckeri* Werner, Mitt. Nat. Mus. Hamburg, 1913, 30, pp. 28, 29 (type description, type locality, "Mexico oder, Venezuela"; also a key to the American species of the genus).

1929. *Leptodeira annulata annulata, (part.)* Amaral, Mem. Inst. Butantan, 4, 1929, p. 204.

1936. *Leptodeira septentrionalis maculata (part.)* Dunn, Proc. Nat. Acad. Sci., 22, 1936, p. 691.

Dunn has regarded this species as being probably Mexican and has placed it as a synonym of *Leptodeira septentrionalis maculata* (Hallowell).

The form is diagnosed as having twenty-one scale rows, 183 ventrals, seven supralabials, one preocular, one postocular; whitish with twenty-five dark red-brown transverse bands which reach to the ventrals, narrowing on the sides, some of which bands are in contact dorsally, tending to form a zig-zag band. Between the dark bands near the ventrals are larger dark flecks. Two spots, side by side, on the parietals; snout darkly punctate: upper labials flecked with dark color; underside white.

It may be noted that the form differs from Mexican *Leptodeira maculata* in the presence of a single postocular instead of two, one preocular instead of two (one occasionally in western "*personata*"), seven instead of eight upper labials, 21 instead of 23 scale rows around the body (rarely 21 in *maculata*). The ventral count is higher than any Mexican specimen of *maculata* (Dunn gives 186 as maximum. I have not seen this specimen).

I feel that the evidence available does not wholly justify association of this name to the synonymy of *Leptodeira maculata* regardless of whether the specimen originated in Venezuela or México. The very brief description suggests a specimen more closely related to *L. yucatanensis malleisi* than to *L. maculata.* It has the scale rows of this form; one postocular (occasional in *malleisi*), the same number of bands, a ventral count within the range of the latter, and paired spots on the parietals, usually present in *malleisi.* However, this cannot be satisfactorily settled until the type of *L. dunckeri* is studied in greater detail.

Leptodeira yucatanensis malleisi Dunn and Stuart

(Text Fig. 3)

1935. *Leptodeira yucatanensis malleisi* Dunn and Stuart, Occ. papers, Mus. Zoöl., U. of Michigan, No. 313, May 29, 1935, pp. 1-4 (type description; type locality, Tuxpena, Campeche, México); Stuart, Univ. Michigan, Mus. Zoöl., mis. publ. No. 29, Oct. 1, 1935, pp. 8, 24, 53; Gaige, Carnegie Inst. Washington publ. No. 457, p. 302; Dunn, Proc. Nat. Acad. Sci., 22, 1936, pp. 691, 696.

Two specimens of this form collected by Dr. Hobart Smith are in the collection, Nos. 11618 ♂ from Encarnacion, Campeche, and

11619 ♀, from Pital, Campeche, collected on October 14, and October 16, 1936. These have the following characteristics respectively: Scale formula, 19-21-15, 19-21-15; ventrals, 179, 188; subcaudals, 79, 67; supralabials, 8, 8; lower labials, 10-10; preoculars, 2-1, 2-2; postoculars, 2-2, 2-2; temporals, 1+2+3, 1+2+3; total length, 431 mm., 627 mm.; tail, 97 mm., 138 mm.; spots on body, 33, 28.

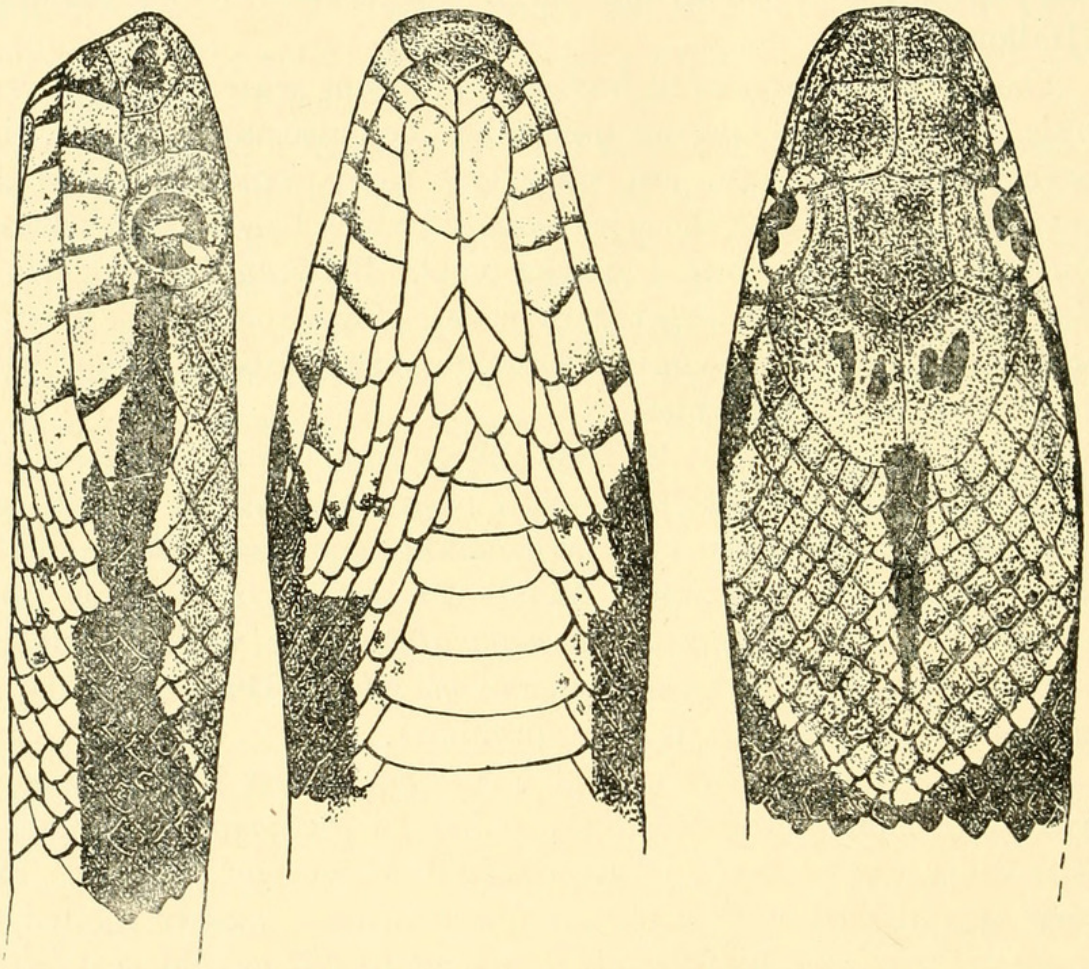

FIG. 3. *Leptodeira yucatanensis malleisi* Dunn and Stuart. EHT-HMS, No. 11619 ♀. Pital, Campeche, México (enlarged).

In No. 11619 the ground color and ventral surfaces are quite reddish. The black blotches are lighter in their centers and bordered by a thin whitish line. Many of the blotches are united, forming a zig-zag line on back. The blotches reach to the second or third scale row. Intercalated spots low on the side are distinct. There are also spots below the ends of the blotches; a nape stripe, not reaching the first nuchal blotch, and a pair of spots on the parietals. The lines from the eye reach the first nuchal blotch.

The smaller specimen is lighter pink on the ground color and ventral surfaces, and the spots are regular; the paired spots on the parietals are surrounded by a light ring.

Leptodeira yucatanensis yucatanensis (Cope)

Leptodeira annulata var. Cope, Proc. Acad. Nat. Sci., Philadelphia, 1866, p. 127.

Sibon annulata yucatanensis Cope, Bull. U. S. Nat. Mus., 32, 1887, p. 67 (type description by reference to Cope, 1866; type locality, Yucatán).

Leptodeira yucatanensis yucatanensis Gaige, Carnegie Inst. Washington Pub. No. 457, Feb. 5, 1936, p. 302 (Chichen Itza).

I have not examined specimens of this form.

Leptodeira septentrionalis (Kennicott)

(Plate XXXI, fig. 3; Text fig. 4)

Dipsas septentrionalis Kennicott, in Baird, Report Mexican Boundary Survey, 2, Rept., 1859, p. 16, pl. 8, fig. 11 (type description, type locality, Matamoras, Tamaulipas, México, and Brownsville, Texas; collected by Lieut. Couch and Van Vliet); Cope, Proc. Acad. Nat. Sci. Phila., 1860, p. 266.

Sibon annulatum septentrionale Cope, Check-list Batr. and Rept. N. Amer., 1875, p. 38; Bull. U. S. Nat. Mus., 1887, p. 67 (*part.*).

Sibon septentrionale (*part.*) Cope, Proc. U. S. Nat. Mus., XIV, 1891, pp. 677-678 (Key; ranges from Panamá to Cameron county, Texas); Ann. Rep. U. S. Nat. Mus., 1898 (1900), pp. 1007-1008, fig. 316 (Matamoras, Mex.).

Leptodeira septentrionalis Stejneger, Proc. U. S. Nat. Mus., XIV, 1891, p. 505.

Leptodeira annulata (*part.*) Günther, Biologia Centrali-Americana, Reptilia, 1895, p. 170.

Leptodeira septentrionalis Boulenger, Cat. Snakes British Mus., III, 1896, p. 93.

Sibon septentrionalis Strecker, Baylor Bull., XVIII, No. 4, Aug. 1915, p. 41 (Cameron county, Texas).

Leptodeira septentrionalis septentrionalis Dunn., Proc. Nat. Acad. Sci., vol. 22, 1936, pp. 692, 697 (Cameron county, Texas, to Tampico, San Luis Potosí, México, Zacualtipan, Hidalgo, Mexico).

This large, robust form is represented in our collection by three specimens: No. 4615, seven miles west of Victoria, Tamaulipas; 4616, Hda. La Clementina, Tamaulipas; and 4652, uncertain locality.

This form may be diagnosed by the presence of three preoculars (pre- and suboculars); by the large black blotches touching or reaching near the first scale row; the high number of ventrals and subcaudals (186 to 197; 63 to 79, combination of data given by Dunn [1936] and my own data), and the presence of more or less pigment on the posterior edges of the ventrals; the scale count reduces to 15 in front of the anus. There is a black spot on the posterior edges of the parietals, usually confluent with an indistinct head pattern.

Data on the three specimens, Nos. 4615, 4616, and 4652, respectively, follows: Sex, ♂, ♂, ♂; ventrals, 193, 191, 186; subcaudals, 79, 81, 77; supralabials, 8-8, 8-8, 8-8; lower labials, 10-10, 10-10, 10-10; preoculars, 3-3, 3-3, 3-3; postoculars, 2-2, 2-2, 2-2; temporals, 1+2+3, 1+2+3, 1+2+3; scale formula, 26-21-23-15, 25-21-23-15, 26-21-23-15; rhombs on body, 23, 23, 24; spots on tail, 14, 12, 15; total length in mm., 785, 360, 256; tail, 180, 83, 55.

The black of the large spots is rather dense and does not show

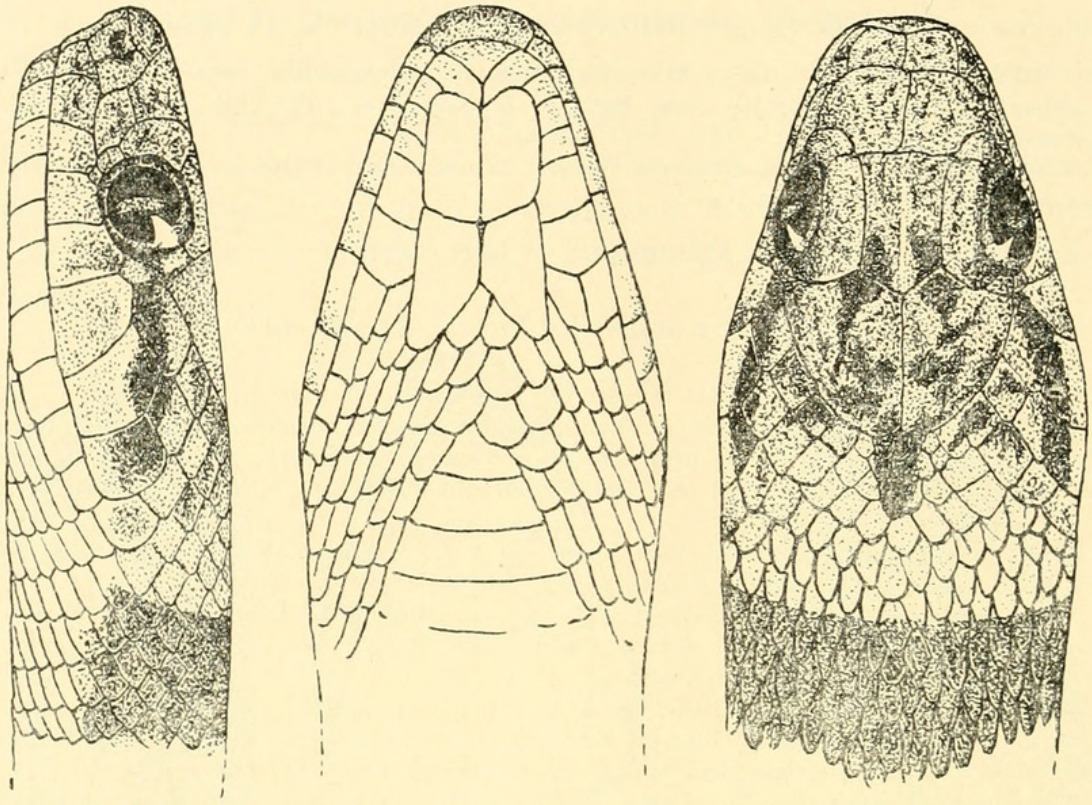

FIG. 4. *Leptodeira septentrionalis* (Kennicott). EHT-HMS, No. 4616. Hda. La Clementina, near Forlon, Tamaulipas, México (enlarged).

flecks of white. The posterior teeth of the maxillae are strongly grooved.

Doctor Dunn has very kindly supplied data on specimens of *L. septentrionalis*. He lists from Zacualtipan, Hidalgo, ANSP Nos. 11662 ♀ , 11663 ♂ , 14775 ♂ . They have the following ventral counts, respectively: 197, 196, 197. All have three preoculars. His specimen of *maculata* from this locality, ANSP No. 14744 ♂ , has only 167 ventrals and two preoculars.

A series of *L. septentrionalis* from Tuxpan, Veracruz, in the U. S. National Museum, Nos. 25206 ♀ , 25207, 25209, 25210, 25211 (the last four young), have the following ventral and subcaudal counts, respectively: 192, 80; 193, —; 191, 82; 201, 73; 201, 73. All reduce the scale count to 15 in front of anus. The spots on the body vary between 27 and 33. The typical head marking and the small postparietal black spot are present. The body spots are less square on the sides, tending to narrow more than in more northern forms, and the interspaces are somewhat wider. All have three preoculars.

Two of the cotypes (USNM No. 4267, two specimens, Matamoras, Tamaulipas, México) are small. Each has three preoculars. The ventral counts are 186 and 189; the subcaudal counts, 77 and 64. Scale formulae, 17-21-15; 21-23-15. Another cotype mentioned, No. 2288, Brownsville, Tex., is not to be found. It may be the speci-

men figured by Kennicott (*loc. cit.*). This specimen is abnormal in having several undivided subcaudals following the anus.

USNM No. 4273, from Matamoras, Tamaulipas, is the only specimen examined having the scale count of 17 one-half inch in front of vent. In all others it is reduced to 15.

Dunn (1936) has proposed the placing of *Leptodeira septentrionalis* as a subspecies of *L. maculata*, and suggests that *L. maculata* replaces the form off the plateau. The data here presented show a much greater overlap of the ranges than was hitherto suspected and in this range there is no evidence that the characters of the one approaches the general characteristics of the other. Because of this wide difference in the count of ventral scales, the presence of three instead of two preoculars, a different head pattern, and the pigmentation on the ventral scales, I regard the two forms specifically distinct.

Despite the fact that *Leptodeira polysticta* shows certain characteristics in common with *L. septentrionalis, i. e.*, scale counts within the same ranges, three preoculars and pigmentation on the posterior edges of the ventral scales, I am thoroughly convinced that the two forms are only remotely related.

Leptodeira annulata polysticta Günther

(Plate XXX, fig. 3)

Leptodeira annulata (*part.*) Günther, Cat. Col. Snakes British Mus., 1858, p. 166.

Leptodeira polysticta Günther, Biologia Centrali-Americana, Reptilia and Batrachia, May, 1895, p. 172, pl. LV, fig. a (type description; type locality, México, Jalapa, Oaxaca, Yucatán; British Honduras, Belize; Honduras, and Panamá).

Leptodeira albofusca (*part.*) Boulenger, Cat. Snakes, British Mus., 1896, pp. 95-97; Mocquard (*part.*), Mission Scientifique au Mexique, etc., Rept., liv. 16, 1908, pp. 905-906; ? Werner Abh. Akad. Wiss., Bd. XVII, Abt. II, p. 348 (Coban, Guatemala); ? Shattuck, et al., The Peninsula of Yucatán, 1933, p. 575 (Yucatán).

? *Leptodeira annulata* Dunn and Emlen, Proc. Acad. Nat. Sci. Phila., LXXXIV, 1932, p. 32 (Rancho El Jarrae, Honduras); Sumichrast, Arch. Sci. Phys. Natur., 46, 1873, p. 246.

Leptodeira annulata polysticta Stuart, Misc. Publ. No. 29, U. of Michigan, Mus. Zoöl., Oct. 1, 1935 (La Libertad, Guatemala); Gaige, H. T., Carnegie Inst. Washington, Publ. No. 457, Feb. 5, 1936, p. 302 (Chichen Itza, Yucatán, Mexico); Dunn, Proc. Nat. Acad. Sci., 22, 1926, pp. 691, 693 (Colima, Southern Veracruz, Yucatán, to Petén, Guatemala and Eastern Honduras).

This subspecies is represented in the collection by the following specimens: No. 4618, Acultzingo, Veracruz, elevation 6,000 feet, E. H. Taylor, collector, 1932; 4620, Hda. Paso del Rio, Colima, H. M. Smith, collector, 1936; 11616, Pital, Campeche, and 11617, Encarnacion, Campeche, H. M. Smith, collector, 1936. I have also examined a specimen in the collection of the University of Kansas, No. 8486, from an unknown locality (collected in Pocatello, Idaho, by Wayne Whitlow from a bunch of bananas), and a series of specimens in the United States National Museum.

This elongate, slender species is characterized by the large number

of small dorsal blotches on the body with a more or less distinct series of small lateral spots alternating with the dorsal spots; a black bar on the nape not connecting with the first dorsal blotch; a dim, dark bar behind eye, not connecting with the first dorsal bar; three preoculars (preoculars and suboculars); the high ventral count is characteristic of the species (198-211 ventrals; 80 to 102 subcaudals [according to Dunn, 1936, 193-211, 75-102]. I suspect the lower counts are from U. S. N. M. 25206-7, 25209-11, from Tuxpan, which I refer to *L. septentrionalis*).

The body is more or less compressed in all the specimens, but in the Colima specimen it is especially compressed, leaving a sharp dorsal ridge evident. This does not appear to be due to emaciation. This character is absent in the other specimens. In all there is some distribution of fine pigment on the ventrals, especially on the posterior half of the body. It is more dense under the tail. The top of the head is pigmented more or less uniformly, but there is no definite pattern.

The ground coloration of the Veracruz and Campeche specimens is a light brown, sometimes flesh or pinkish brown; ventral surface flesh color. The Colima specimen is gray, the ventral coloration being nearly white. The first dark nuchal blotch is V-shaped or U-shaped, usually not more than two or three scales wide on dorsal line.

The following table gives variational data, presented by the specimens:

Table of data for *Leptodeira annulata polysticta* Günther

Number	4620	4618	11617	11616	8486
Sex or age	♂	yg.	yg.	yg.	♀
Scale formula	25–21–*23*–17	26–23–*23*–17	26–21–*23*–17	26–21–*23*–17	26–21–*23*–17
Ventrals	209	198	208	205	203
Subcaudals	80	84	86	83	90
Upper labials	8–8	8–8	8–8	8–8	8–8
Lower labials	10–10	10–11	10–10	10–11	10–10
Preoculars	3–3	3–3	3–3	3–3	3–3
Postoculars	2–2	2–2	2–2	2–2	2–2
Temporals	1+2+3	1+2+3 1+2+4	1+2+3	1+2+3	1+2+3
Total length (mm.)	845	340	347	437	878
Tail length (mm.)	186	76	78	97	205
Spots, body	60	45	52	57	56
Spots, tail	29	22	24	23	25

A series of specimens in the United States National Museum from Veracruz (7088, 30207, 30208, Orizaba, Sumichrast, collector; and 65154, hills West of Veracruz, Sartorius, collector; 30508, Veracruz, Sumichrast, collector) together with my specimen from Acultzingo, Veracruz, differ from the western Mexican specimen from Colima in having the dorsal spots number only 38 to 54 instead of 60. Two of these have only 2 preoculars, the small lower preocular being absent. The specimens from British Honduras, USNM No. 26058, Tela, Honduras, USNM 64683, and my specimens listed from Campeche have the dorsal spots varying between 52 and 57.

Since I discern no significant differences in squamation or general color characteristics in these specimens, I shall await more material before considering the possibility of separating the eastern and western Mexican forms.

Leptodeira frenata (Cope)

Sibon frenatum Cope in Ferrari-Perez, Proc. U. S. Nat. Mus., 9, 1886 (1887), p. 184 (type description, type locality, Jalapa, Mexico).

Leptodeira annulata personata (part.), Amaral, Mem. Inst. Butantan, IV, 1929, p. 204.

Leptodeira frenata Dunn, Proc. Nat. Acad. Sci., 22, 1936, pp. 692, 696.

This form has not been rediscovered, and the type is lost. The original description follows:

"Scales in twenty-three longitudinal series. Body rather slender, tail rather short, head very distinct and depressed. Superior labials nine, eye resting on the fourth and fifth, and only separated from the third by the small inferior preocular. All are higher than long, excepting the eighth and ninth, which are longer than high; the sixth and seventh are the largest. Inferior labials, eleven. Postgeneials much longer than the pregeneials. Loreal plate subquadrate; oculars, 2-2; the superior anterior not reaching the frontal plate. Temporals, 1 + 2 + 3. Frontal twice as long as wide, with parallel sides. Occipitals moderate, reaching to above middle of eighth superior labials. Gastrosteges, 188; anals, 1-1; urosteges, 69.

"*Colors:* Above black, below white. At distance of from six to nine scales, narrow cross-bands of one scale in width rise from the abdominal border color, and meet or terminate in alternating positions on or near the middle line of the back. These bands are more or less gray, sometimes darker in the middle. The top of the head is gray, densely mottled with blackish, leaving a crescentic space of light gray between a black spot behind the head-shields and the beginning of the black of the superior surfaces. A broad, black band passes downwards and posteriorly from the eye, and crossing the angle of the mouth, covers the side of the neck and unites with the black of the following regions. The superior labials are light gray, with black borders. The dark borders of the inferior labials are less distinct.

"Total length, 305 mm.; of tail, 66 mm.; of head to canthus oris, 11 mm. No. 298 [of the Comision Geografica Exploradora de Mexico collection exhibited at the New Orleans Exposition] Jalapa, Mexico.

"This species is nearest the *S. personatum* Cope from Mazatlán, although the coloration is very different. That species had but one preocular, eight superior labials, etc."—E. D. Cope.

There is a possibility that the type of this species was returned to Mexico and it may be rediscovered there. There is no evidence that it was entered in any eastern museum. Cope studied the specimens at New Orleans according to a statement (*loc. cit.*) of Ferrari-Perez (p. 182).

Leptodeira smithi sp. nov.

(Plate XXXI, fig. 2)

Type. EHT-HMS No. 5187. Collected Hda. El Sabino, 19 miles south of Uruapan, Michoacán, México, August 2, 1936. Hobart Muir Smith, collector.

Paratypes. EHT-HMS No. 4633, July 21-28, 1935; No. 5186, July 21, 1936, and No. 5188, August 2, 1936, all collected by Hobart M. Smith at Hda. El Sabino, Michoacán; FMNH No. 985, Balsas, Guerrero, S. E. Meek, collector.

Diagnosis. Fangs grooved; body with 12-15 dark bands, at least double the width of the intervening light spaces; no nuchal line; body not, or but slightly compressed, lacking all trace of keels in

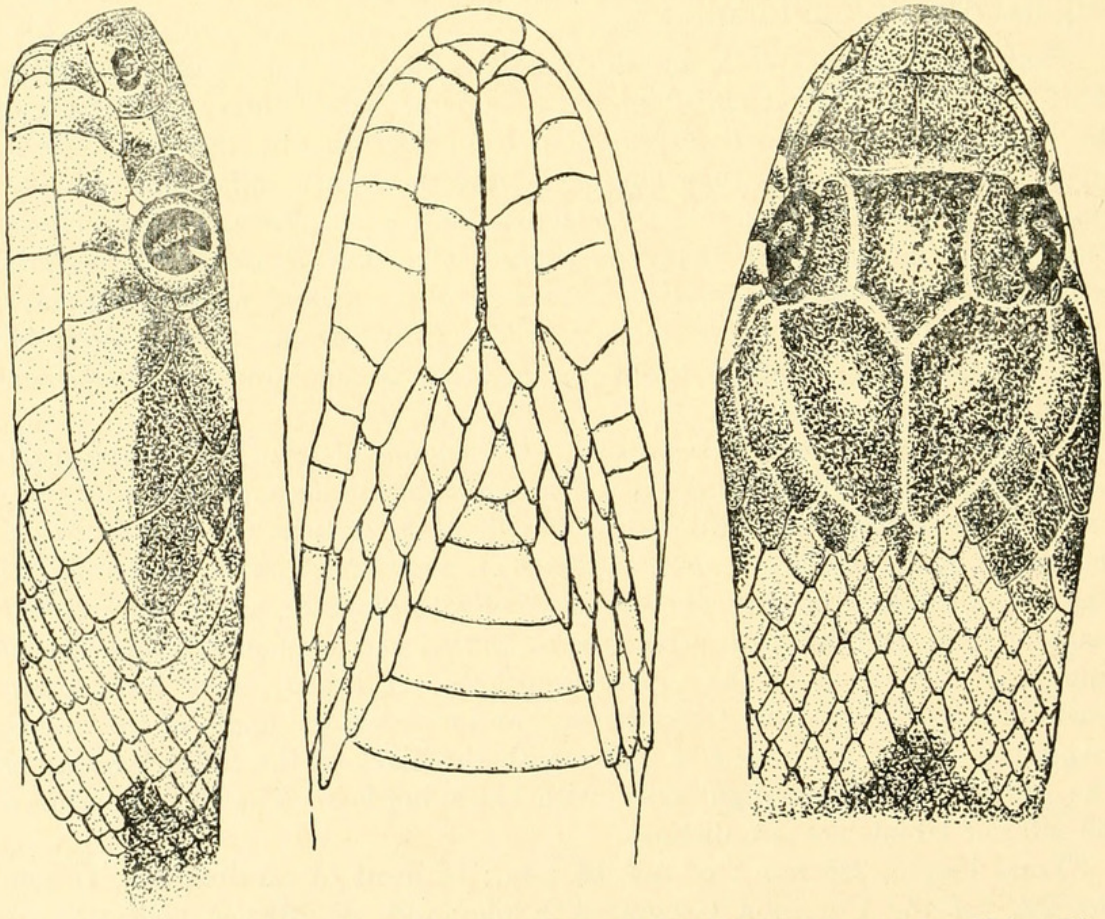

FIG. 5. *Leptodeira smithi* sp. nov. Type EHT-HMS, No. 5187. Hda, El Sabino, Uruapan, Michoacán, México (enlarged).

males and females; 23 (or 21) scale rows; ventrals ♂, 167-168; ♀, 169-173; caudals ♂, 77-79, ♀, 70; preoculars, 2; postoculars, 2; temporals, 1 + 2 + 3; upper labials, 8; lower labials, 10.

Description of the type. Head rather flattened, distinct from neck; rostral not or scarcely visible above, 3.2 mm. wide by 2 mm. high; internasals about as long as broad, their length along median suture, 2 mm.; prefrontals slightly wider than long, 3 × 3.2 mm.; frontal a little shorter than its distance from end of snout, widest anteriorly, the sides not parallel; trace of a groove in the middle line of frontal, with a small regular depression (roughly arrow shaped) at the posterior end of the groove; parietals 6.4 mm. × 4.2 mm., touching only upper postocular; median scale, following median parietal suture only slightly enlarged; nasal large, at least partially divided, the nostril near the middle of the scale, the posterior moiety larger than the anterior; loreal large, longer than high, the lower border much longer than upper; upper preocular very large, irregular, touching the frontal above and the third labial below; lower preocular (subocular) small, square, separating the third labial from the eye; supraoculars wider posteriorly than anteriorly; a large anterior temporal touching both postoculars, followed by two, the upper the larger; these followed by three temporals, the lower of the three extending half its length behind the eighth labial; eight upper labials; fourth and fifth form lower edge of orbit, arranged in the following ascending order of size: 1, 3, 4, 2, 5, 8, 6, 7. The scale following the last upper and lower labials is enlarged; mental small, nearly an equilateral triangle; lower labials ten, five touching the anterior chinshields; the latter scales equally as long and somewhat larger than posterior; two pairs of scales between second chinshields and the first ventral; five rows of scales between the last lower labial and the third ventral; scale formula, 25, 19, 23, 17; ventrals, 169; anal divided; caudals, 70. Total length, 510 mm.; tail, 115 mm.; proportion of tail to body length, .22.

Color. Ground color dirty brownish, the lateral scales of the ground color being edged with blackish, while those on the dorsal part are clear light brown, almost lacking black pigment. Head above blackish or blackish brown, with a trace of whitish bordering most of the head scales, and slightly lighter areas on frontal and parietals; temporal scales usually light-edged, with dark centers; two or three labials with dim dark spots in center; upper edge of posterior upper labials crossed by a dark bar from eye, which terminates on the eighth labial; first light band on occiput about four and

one half scale-rows wide; first black band largest, 15 scale-lengths wide; succeeding bands vary from a width of 10 scales to 8 scales; the smaller bands are more posterior. Ventral surface immaculate, save for a peppering of pigment on the anterior part of chin and a few flecks under posterior part of tail. The bands reach laterally and cover part of the scales of the first row.

Table of Measurements in mm. and data of *Leptodeira smithi* sp. nov.

Number	4633	5186	5187	5188
Sex	♂	♂	♀	♀
Ventrals	167	169	169	173
Subcaudals	79	77	70	?
Preoculars	2–2	2–2	2–2	2–2
Postoculars	2–2	2–2	2–2	2–2
Temporals	1+2+3	1+2+3	1+2+3	1+2+3
Scale formula	21–23–17	21–21–15	(19-21)-23-17	20–23–17
Length, total	262	408	510	434
Length, tail	68	97	115	22 (broken)
Spots, body	14	12	14	15
Spots, tail	7	8	7	7

Variation. Outside of variations listed in the table, the specimens are remarkably uniform in squamation and likewise in color and markings. Neither males or females show any trace of keels on the dorsal scales above the anal region. Variation in proportion of tail to body length varies from twenty-five percent in a young male to twenty-one percent in a female.

Relationship. I believe this form is a derivative of *L. maculata* rather than *L. mystacina*, which it superficially resembles in the broad dorsal markings. The light edging of the scales on the head, characteristic of *L. maculata*, is in evidence in this species. The species is dedicated to Dr. Hobart M. Smith, its discoverer, in recognition of his extensive herpetological exploration in Mexico.

A single specimen of this species (No. 985 Balsas, Guerrero) present in the collection of the Field Museum of Natural History, Chicago, has been made available to me due to the characteristic kindness of Dr. Karl P. Schmidt. This specimen is typical. Ventrals, 166; subcaudals, 68; preoculars and postoculars, 2-2; spots on body, 15; on tail, 6. The head is generally dark with the characteristic light edges on the dorsal scales.

Leptodeira maculata (Hallowell)

(Plate XXXI, fig. 1; Pl. XXXII, figs. 1-4; Pl. XXXIII, figs. 1-3)

§ *Dipsas annulata* var. C, Duméril and Bibron, Erp. Gén. VII, 1854, p. 1141 (two specimens from Mexico).

Leptodeira annulata (*part.*) Günther, Cat. Col. Snakes British Museum, 1858, p. 166 (certain Mexican specimens).

Sibon annulata (*part.*) Cope, Proc. Acad. Nat. Sci. Philadelphia, 1860, p. 266 (Mexican specimens from Jalapa).

Megalops maculatus Hallowell, Proc. Acad. Nat. Sci. Philadelphia, 1860, p. 488 (type description; type locality, "Tahiti"; probably Nicaragua [*fide* Dunn, 1936]).

Leptodeira personata Cope, Proc. Acad. Nat. Sci. Philadelphia, 1868 (1869), p. 310 (type description; type locality, Mazatlán, Sinaloa, Mexico); Günther, Biologia Centrali-Americana, Reptilia and Batrachia, May, 1895, p. 171, pl. LIV, figs. A and B (Presidio, and Mazatlán, Sinaloa; Santo Domingo de Guzman and Hda. Santa Gertrudis, Jalisco; Mexico City; Jalapa, Veracruz); Boulenger, Cat. Snakes British Mus., III, 1896, pp. 93-94 (Southern Mexico and Guatemala, several localities); Mocquard, Mission Scientifique au Mexique Rept., livr. 16, 1908, pp. 903-904.

Eteirodipsas annulata, var. *septentrionalis* Jan, Icon. Gén., 39, 1872, pl. 1, fig. 2.

Sibon personatum Cope, Bull. U. S. Nat. Mus., No. 32, 1887, p. 67; Proc. U. S. Nat. Mus., XIV, 1892, p. 677; Ann. Rep. U. S. Nat. Mus., 1898 (1900), p. 1107.

Leptodeira albofusca Stejneger, Proc. U. S. Nat. Mus., 69, 1926, pp. 2-3 (refers *Megalops maculatus* Hallowell to this species).

Leptodeira annulata annulata (*part.*) Amaral, Mem. Inst. Butantan, IV, 1929 (includes *Megalops maculatus* as a synonym of this form).

Leptodeira septentrionalis maculata Dunn, Proc. Nat. Acad. Sci., XXII, 1936, pp. 692, 697 (Cape San Lucas, Baja California; Mazatlán, Sinaloa; Zacualtipan, Hidalgo; Tuxpan, Veracruz; "Tepanatepec" and "Zamtepec," Oaxaca:[?] Nicaragua and Costa Rica).

The type of *Megalops maculatus* Hallowell was supposed by Hallowell to have been collected in Tahiti by Mr. Adams of the Rogers Exploring Expedition. The type specimen, subsequent to its study by Hallowell at Philadelphia, in 1860, was returned to the National Museum at Washington and there apparently was lost or mislaid until rediscovered by Dr. Leonhard Stejneger in 1926. After an examination of the specimen, Doctor Stejneger identified it as belonging to the genus *Leptodeira* and the species *Leptodeira albofusca* Lacépède as interpreted by Boulenger, Cat. *op. cit.* p. 95. Dunn (*loc. cit.*), however, regarded it as being identical with Cope's species *Leptodeira personata.*

I examined this type specimen in Washington (USNM 7367). It is in a fair state of preservation, but a serious injury to the head makes it difficult to determine the exact characters of many of the dorsal head scales.

The following characters can be discerned. The single preocular is well separated from the frontal, and has a curved rather than an angular front edge; the prefrontals are fused for more than half their length, and are double the length of the internasals; loreal elongate, much longer than high; apparently only one postocular; fourth and fifth labials enter eye; first light band six scales long;

no nape stripe; twenty dark bars across body; 9 + bands on the tail; ventrals, 171; tail tip missing; the spots tend to break, and are irregular; the contrast between the dark spots and light interspaces is very pronounced; head markings indiscernible save that the frontal appears a little darker than other dorsal head scales, and the edges are somewhat lighter.

The scale formula, 19, 21, 21, 17, differs from the usual formula as shown in the table.

Both Dunn and Stejneger regard it probable that this specimen originated in Nicaragua. Dunn states that aside from six specimens in the Museo Nacional de Costa Rica, no others are known south of Tehuantepec.

I believe that the identity of this form with *L. personata* is still open to question. Dunn advises me that data was not taken by him on the specimens in Costa Rica, and that he does not doubt that they originated in Costa Rica despite the lack of specific locality data. It may be that the type of *Megalops maculata* is conspecific with *L. dunckeri*, since they agree in certain characters in which both differ from Mexican forms considered here under the name of *maculata*. This can only be settled by a series of specimens from Nicaragua and Costa Rica. While I am here following Dunn in placing *Leptodeira personata* as a synonym of *Leptodeira maculata*, I feel that this disposition should not be regarded as final until the form *L. maculata* is rediscovered in Nicaragua and Costa Rica, and scale data taken to prove that the apparent differences, in pre- and postoculars, and the reduced scale formulae are not sufficiently constant to warrant its separation from *L. personata*.

Forty-five specimens in the collection have been referred to this species. These are as follows: Nos. 5175, 5174, km. 609, Mexico-Laredo Highway, a few miles north of Limon, June, 1936, E. H. Taylor, collector; 4638-4640, Hda. La Clementina, Tamaulipas, David Dunkle and H. M. Smith, collectors; 4631, five miles east of Jalapa, Veracruz; 4632, 4635, 4637, four miles east of Encero, Veracruz, July 14, 1932, and 4636, Tierra, Colorada, Veracruz, July 16, 1932, collected by H. M. Smith and E. H. Taylor; 5176, 15 miles west of Veracruz, August 31, 1936, E. H. Taylor, collector; 4624-4626, near Totolapam, Oaxaca, August 6, 1935, H. M. Smith, collector; 4643, 4644, 4651, near San Ricardo, Chiapas, September 2, 1935, and 4642, 4647-4650, near Asunción, Chiapas, September 1, 1935, E. H. Taylor and H. M. Smith, collectors; 4656-4657, Presidio, Mazatlán, Sinaloa, July 19, and July 23, 1934, E. H. Taylor, collector; 4621-4623, 4641,

Hda. Paso del Rio, Colima, H. M. Smith, collector; 4645-4646, uncertain Mexican locality (probably Puente Nacional, Veracruz).

Aside from the above 30 specimens are 15 specimens from Guerrero as follows: No. 4653 Mazatlán, 1400 meters, 5180 Agua del Obispo 1000 m., 5182 Dos Caminos, 615 m., 4627, 4627 A, 4634, 4654 Garrapatas, 520 m., collected by E. H. Taylor and H. M. Smith, June, 1932; Nos. 5183, 5183 A, 5184, 5185, 200 m., E. H. Taylor, August 1, 1936; Nos. 4629, 4655, 4628, 4630, one mile north Organos, E. H. Taylor and H. M. Smith.

These Guerrero specimens are tentatively referred to the form *Leptodeira maculata*. They form two color varieties which agree very largely in their squamation, save that one seems to have a higher average of scale rows. In both, males show traces of keels above anal region.

The figures (plate XXXI, fig. 1, a young specimen from Tamaulipas, No. 4638; plate XXXII, fig. 1, adult, No. 4628, near Organos, Guerrero; fig. 2, adult, No. 4653, near Mazatlán, Guerrero; fig. 3, adult, No. 4643, San Ricardo, Chiapas; fig. 4, adult, No. 4624, Totolapam, Oaxaca) given herewith show a remarkable variation in the color and markings. Certain of these are especially striking, particularly the Guerrero specimen (No. 4628) which occurs together in at least two localities with the form represented by plate XXXII, fig. 2. The differences are not due to elevation, age or sex.

The species is apparently absent on the plateau proper, but may reach some elevation along the edges of the plateau. In the Sierra Madre of Guerrero the highest elevation was 1,400 meters; in Oaxaca probably less than 1,000 meters.

Certain of the differences in coloration are accompanied by certain scale differences, and differences in proportion of body to tail, as may be shown by the following tabulation.

A. Tamaulipas specimens. Tail, 15 to 18 percent of total length; body spots, 25 to 28, often confluent; tail spots, 9 to 13; body spots reach to first scale row (plate XXXI, fig. 1).

B. Guerrero (form with general darkened coloration tending to obscure spots). Tail, 19 percent of total length (♀); body spots, 31 to 38; 15 spots on tail; body spots reach 4th to 6th scale rows. Three of eight specimens with 25 scale rows about body, instead of 23 rows (plate XXXII, fig. 1).

C. Guerrero (form with spots distinct). Tail, 23 percent of total length (♂); 29 to 37 spots on body; tail spots, 15+; body spots extend to 4th scale row (plate XXXII, fig. 2).

D. Chiapas specimens. Tail, 21 to 22 percent of total length; body spots, 28 to 30; tail spots, 10 to 14; body spots reach 1st to 4th scale rows; intercalated spots (plate XXXII, fig. 3).

E. Oaxaca specimens. Tail, 21 to 22 percent of total length. 25 to 29 spots on body; 15 to 18 on tail; body spots to fourth row (plate XXXII, fig. 4).

F. Sinaloa and Colima specimens. Tail (young), 21.8 percent total length; spots on body, 22 to 27; on tail, 8 to 10; body spots reach to the first or second row.

With an accumulation of large series from widespread localities it appears likely that it will be possible to define certain of these forms clearly enough to warrant subspecific designations.

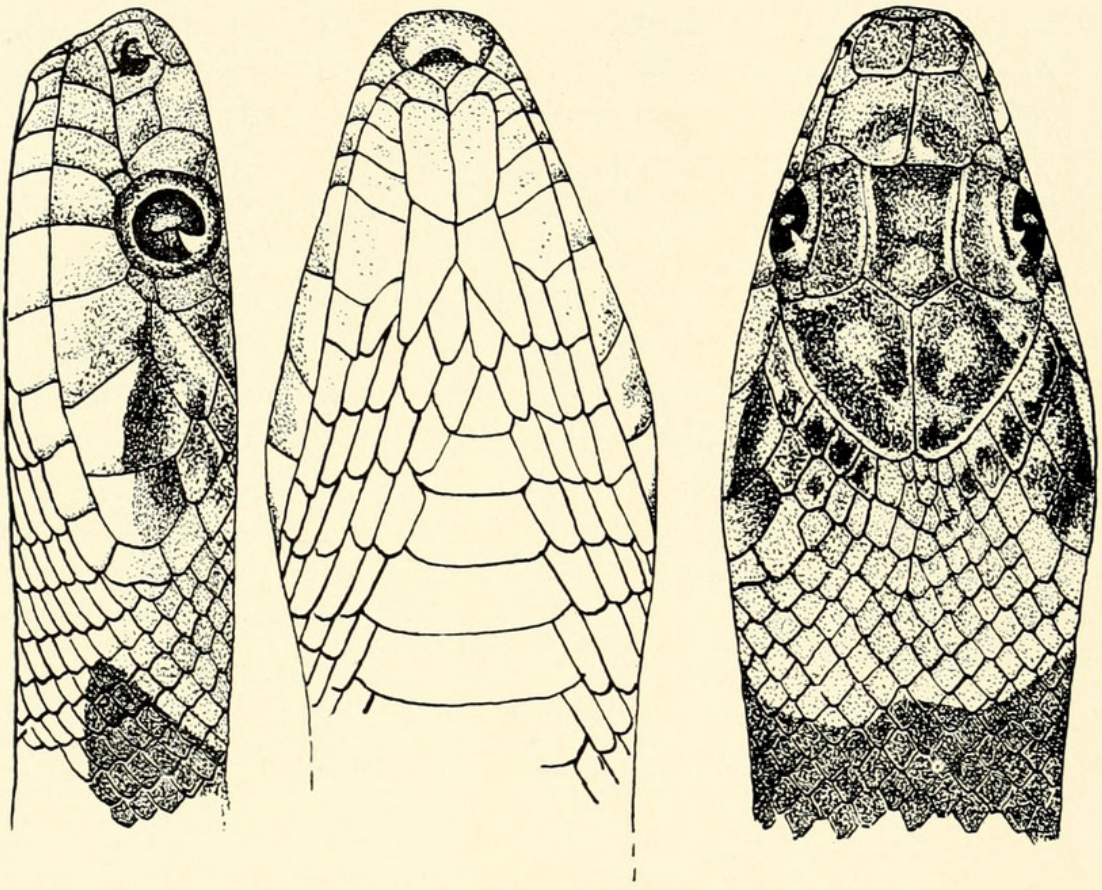

FIG. 6. *Leptodeira maculata* (Hallowell). EHT-HMS, No. 4624. Near Totolapam, Oaxaca, México (enlarged).

The preoculars and postoculars are invariably 2-2, save in Nos. 5180 and 4642, in which the right lower scale is fused with the labial. The postoculars are invariably two. The upper labials are 8-8 invariably; the lower labials 10-10, save that two specimens have 9 on one side, only, and one has 11 on both sides. The relation of the upper preocular to the frontal varies; in northeastern (Tamaulipas) specimens they are invariably in contact; the same is true in all Chiapas specimens; of those from Veracruz, three specimens have them separated; one in contact on both sides, and another in contact on one side only. Specimens from Sinaloa and Colima are variable in this regard, some having them in contact, some separated,

some variable on the two sides of the head. In Guerrero specimens, ten have them touching, three have them separated. The temporal formula is 1 + 2 + 3. Five specimens have this varied by fusion or by the splitting of a scale in the last series. One has the first temporal divided vertically.

The typical juvenile coloration of the species is cream, with blackish bars, wider on the dorsum than on the sides. The adults

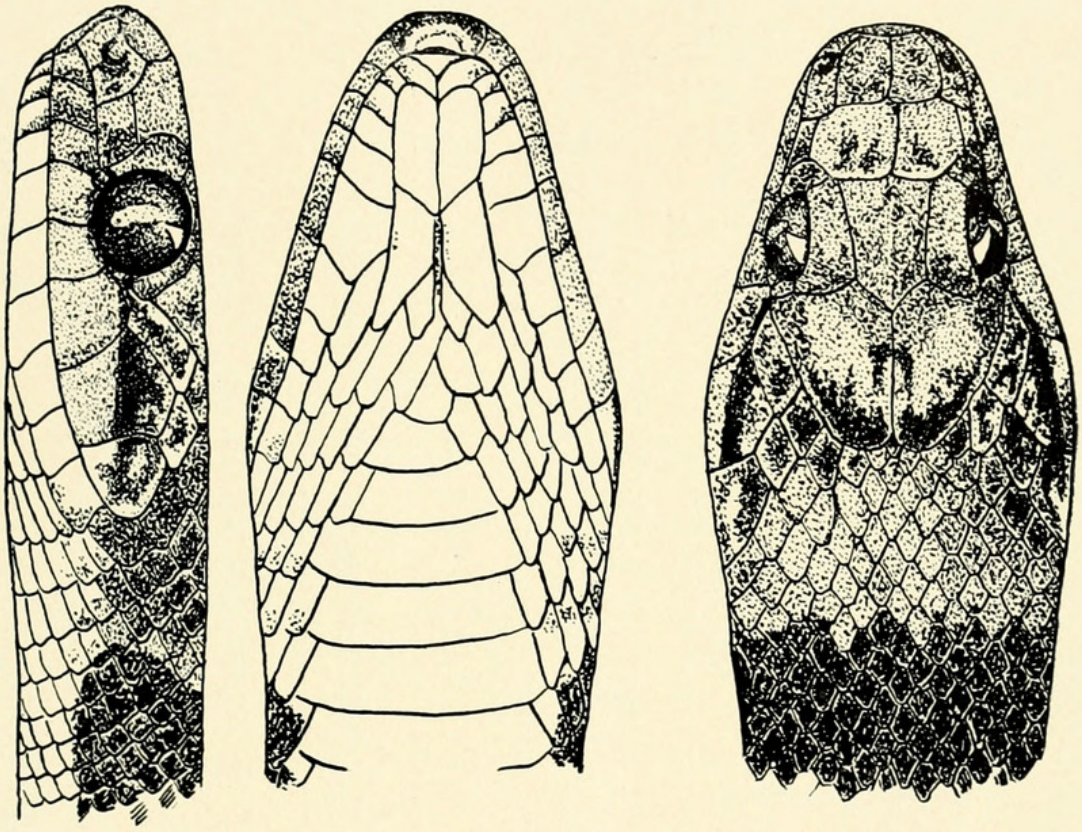

FIG. 7. *Leptodeira maculata* (Hallowell). EHT-HMS, No. 4628. One mile north of Organos, Guerrero, México (enlarged).

have the black less intense, many, if not all, the black scales showing numerous grayish flecks. The ground color becomes covered with darker pigment of a grayish-brown color, which is usually more intense on the outer parts of the scales. The coloration is less intense along the borders of the dark spots and along the back. In general, too, the head is dark, with light edges on the dorsal head scales. One specimen from Chiapas (No. 4649) has a nuchal bar, thus approaching the condition in *rhombifera*.

Three specimens from Oaxaca (4624-4626) and three from Chiapas 4644, 4648, 4651, have the dorsal spots reaching only to the fourth lateral row. These likewise appear to have a greater number of tail spots and a somewhat higher average of subcaudals.

The darker coloration of certain Guerrero specimens (plate XXXII, fig. 1) is evident in the young specimens (Nos. 5182-5185). (plate XXXIII, fig. 2.)

The table given herewith shows further variations in squamation and proportions.

Table of data on *Leptodeira maculata* (Hallowell)

NUMBER.	Sex or age.	Scale formula.	Ventrals.	Subcaudals.	Spots, body.	Spots, tail.	Total length.	Tail.
5175	♀	21–23–17	171	59	26	9	677	120
5174	♂	21–23–17	172	55	27	8	432	77
4638	yg.	21–23–17	169	60	26	10	275	53
4639	♂	21–23–17	171	55	26	9	555	104
4640	♀	21–23–17	172	59	27	9	555	104
4631	♀	21–23–17	177	66	28	13	594	115
4632	♂	21–23–16	178	.....	26	10	398*	.....
4635	♂	21–23–17	174	68	26	10	527	101
4637	♀	21–23–17	179	65	25	9	490	97
4636	♀	21–23–17	179	.....	27	11	276*	.....
5176	♀	23–25–17	177	.....	25	.....	502*	.....
4624	♀	21–23–16	172	69	29	13†	405	88
4625	♂	21–23–17	171	75	29	15†	547	121
4626	♂	21–23–17	169	76	25	18†	529	115
4643	♂	21–23–17	177	62	29	11	666	131
4647	♂	21–23–17	178	64	30	9	492	83
4642	♂	21–23–17	177	66	30	11	485	94
4650	♀	21–23–17	170	65	29	11	495	105
4648	♂	21–23–16	172	71	28	14†	507	107
4649	♂	21–23–17	174	.....	29	8†	400*	.....
4644	♀	21–23–16	171	70	30	11	437	97
4651	yg.	21–23–17	174	71	30	12†	371	85
4656	yg.	19–23–17	164	70	24	8	275	60
4657	yg.	21–23–17	170	68	27	10	255	56
4621	♂	21–23–17	173	.....	21	4†	392*	.....
4623	♀	21–23–17	169	70	21	9	309	66
4622	♂	21–23–17	172	73	24	14†	530	122
4641	♀	21–23–17	170	71	21	10	537	118
4645	♀	21–23–17	167	70	24	11	630	135
4646	♀	21–23–17	170	64	25	10	740	146
4654	♀	21–23–17	176	71	37	15†	487	100
4634	♀	21–23–17	178	70	34	13†	694	137
4627	♂	19–21–15	175	84	33	21	592	140
4627A	♂	21–23–17	176	.....	32	13	450*	.....
4629	♂	21–23–17	175	80	34	14†	580	137
4655	yg.	21–23–17	174	71+	32	13†	328	73+
4653	♀	21–23–15	175	73	29	18†	287	67
4628	♀	23–25–17	173	67+	34	.....	673	132+
4630	♀	23–25–17	178	68+	38	.....	715	137+
5185	♀	21–25–17	176	69	37	17†	308	66
5182	♀	21–23–17	176	71	31	15†	308	67
5184	♂	21–23–16	174	77	30	18†	272	65
5180	♂	21–23–16	175	76	33	21	231	57
5183	♀	21–23–17	175	75	35	18†	230	52
5183A	♀	21–23–17	174	75	34	17†	222	41+

* To vent only. † Obscured posteriorly.

Pseudoleptodeira gen. nov.

Genotype. Hypsiglena latifasciata Günther=*Leptodeira guilleni* Boulenger.

Scales in 19-21 rows; head rather broad, the snout not protruding noticeably beyond mouth; nasal divided; loreal present; pupil vertical; anal divided; scales smooth with paired apical pits; two pairs of chinshields; tail relatively long, the subcaudals in two rows, exceeding 60; maxillary teeth about 13-13, increasing in length backward and followed after a short interspace by a large fang, lacking trace of groove.

Hypsiglena discolor Günther is tentatively referred to this genus.

Pseudoleptodeira latifasciata (Günther)

(Plate XXXI, fig. 4)

1894. *Hypsiglena latifasciata* Günther, Biologia Centrali-Americana, Rept. Batr., Oct., 1894, p. 138, pl. XLIX, fig. B (type description; type locality, southern México); Boulenger, Cat. Snakes British Mus., II, 1894, p. 211; Mocquard, Mission Scientifique au Mexique et dans l'Amérique Centrale, Rept., livr. 16, 1908, p. 870; Dunn, Proc. Nat. Acad. Sci., 22, No. 12, Dec., 1936, pp. 696-697 (unites *H. latifasciata* and *Leptodeira guilleni*).

1905. *Leptodeira guilleni* Boulenger, Proc. Zoöl. Soc. London, June 6, 1905, p. 247, pl. VII, fig. 2 (type description; type locality, Rio Balsas, Guerrero: Hans Gadow, collector); Mocquard, Mission Scientifique au Mexique et dans l'Amérique Centrale, livr. 16, 1908, p. 903 (description from Boulenger).

The two specimens in the collection are No. 5189, from a point about 3½ miles southeast of El Naranjo, Guerrero, México (near km. 190), July 18, 1936, E. H. Taylor, collector; and 4658, from Hda. El Sabino, Michoacán, México, Hobart Smith, collector.

The latter is the smaller specimen, but it agrees in striking manner with the general markings and shade of coloration of the larger specimen. The following scale and other data are from Nos. 4658, and 5189, respectively: Scale formula, 25, 21, 21, 17; 26, 21, 23, 17; ventrals, 188, 191; subcaudals, 80, 69; anal, 2, 2; preoculars, 2, 2; postoculars, 2, 2; temporals, 1 + 2 + 3 (1 + 2 + 4); 1 + 2 + 3; nasal divided; upper labials, 8, 8; lower labials, 10, 10; posterior chinshields much the longest in both; maxillary teeth, 13, 13; ptergoid teeth, 30, 31; black bands on body, 8, 8; on tail, 3, 3.

Smith's field book gives the following data on No. 4658: "Very large black blotches—has the parietal region of the head and the nape of the neck brick red. It was found in one of the rooms of the house at night hunting geckoes." My field book records the following for No. 5189. "Occipital region red-orange, the light line on lip flesh; light bands on body edged with yellow and on the median dorsal region this yellow color is also faintly visible; the remainder

of the light blotches or bands are grayish-white. The black bands are darkest along the median line, while the sides show some grayish color which is washed with dim yellow; ventrals with much pigment, the edge and the median part of the scale being the only part which lacks pigment. The lighter color of the venter is dull cream-yellow. The ventrals have a strong iridescence. Taken in a mass of rotten sandstone under a vertically placed slab."

The dim nuchal line is present from parietal almost to the first narrow bar of black. The major part of the parietals is red-orange; the light line behind eye is strongly defined; the dark line above connects with the first black nuchal bar; anterior labials and lower labials with small blotches of pigment.

A recent communication from Mr. H. W. Parker, of the British Museum, assures me that the type of *Leptodeira guilleni* Boulenger does not have grooves on the fangs and is unquestionably conspecific with *Hypsiglena latifasciata* Günther.

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PLATE EXPLANATIONS

PLATE XXX

FIG. 1. *Leptodeira punctata* (Peters). EHT, No. 4614, Mazatlán, Sinaloa.

FIG. 2. *Leptodeira splendida* Günther. EHT, No. 5177, 12 miles south, Puente de Ixtla, Morelos.

FIG. 3. *Leptodeira annulata polysticta* Günther. EHT-HMS, No. 4620, Hda. Paso del Rio, Colima.

FIG. 4. *Pseudoleptodeira latifasciata* (Günther). EHT-HMS, No. 5189, 3½ miles southeast El Naranjo, Guerrero.

PLATE XXX

PLATE XXXI

FIG. 1. *Leptodeira maculata* (Hallowell). EHT-HMS, No. 4638 (young), Hda. La Clementina, near Forlon, Tamaulipas.

FIG. 2. *Leptodeira smithi* sp. nov. EHT-HMS, No. 5186 (paratype), Hda. El Sabino, near Uruapan, Michoacán.

FIG. 3. *Leptodeira septentrionalis* (Kennicott). EHT-HMS, No. 4616, Hda. La Clementina, Tamaulipas.

FIG. 4. *Leptodeira bressoni* sp. nov. EHT-HMS, No. 5172 (type), Hda. El Sabino, 20 miles south, Uruapan, Michoacán.

PLATE XXXI

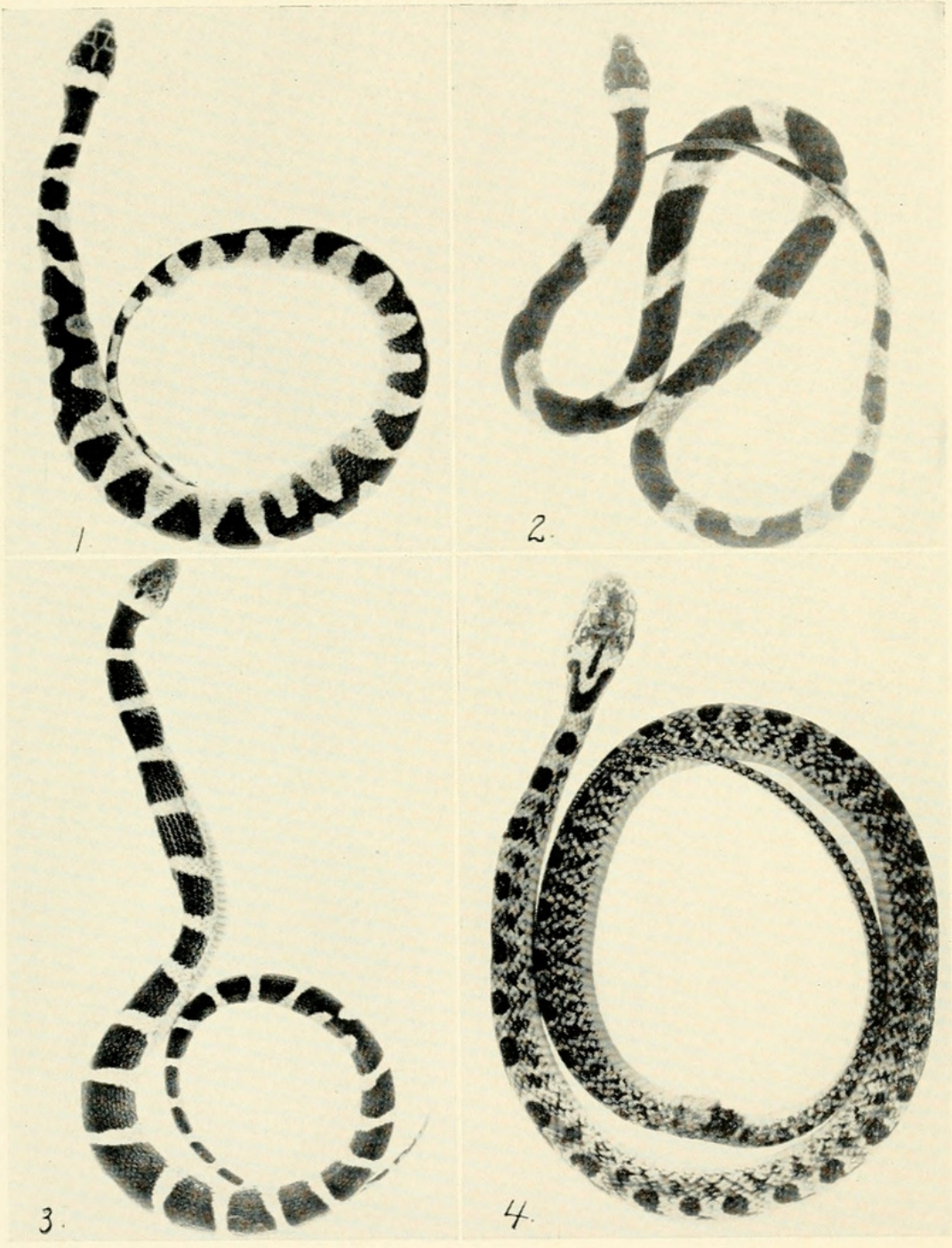

PLATE XXXII

FIG. 1. *Leptodeira maculata* (Hallowell). EHT-HMS, No. 4628, one mile north Organos, Guerrero.

FIG. 2. *Leptodeira maculata* (Hallowell). EHT-HMS, No. 4653, near Mazatlán, Guerrero.

FIG. 3. *Leptodeira maculata* (Hallowell). EHT-HMS, No. 4643, San Ricardo, Chiapas.

FIG. 4. *Leptodeira maculata* (Hallowell). EHT-HMS, No. 4624, Totolapam, Oaxaca.

PLATE XXXII

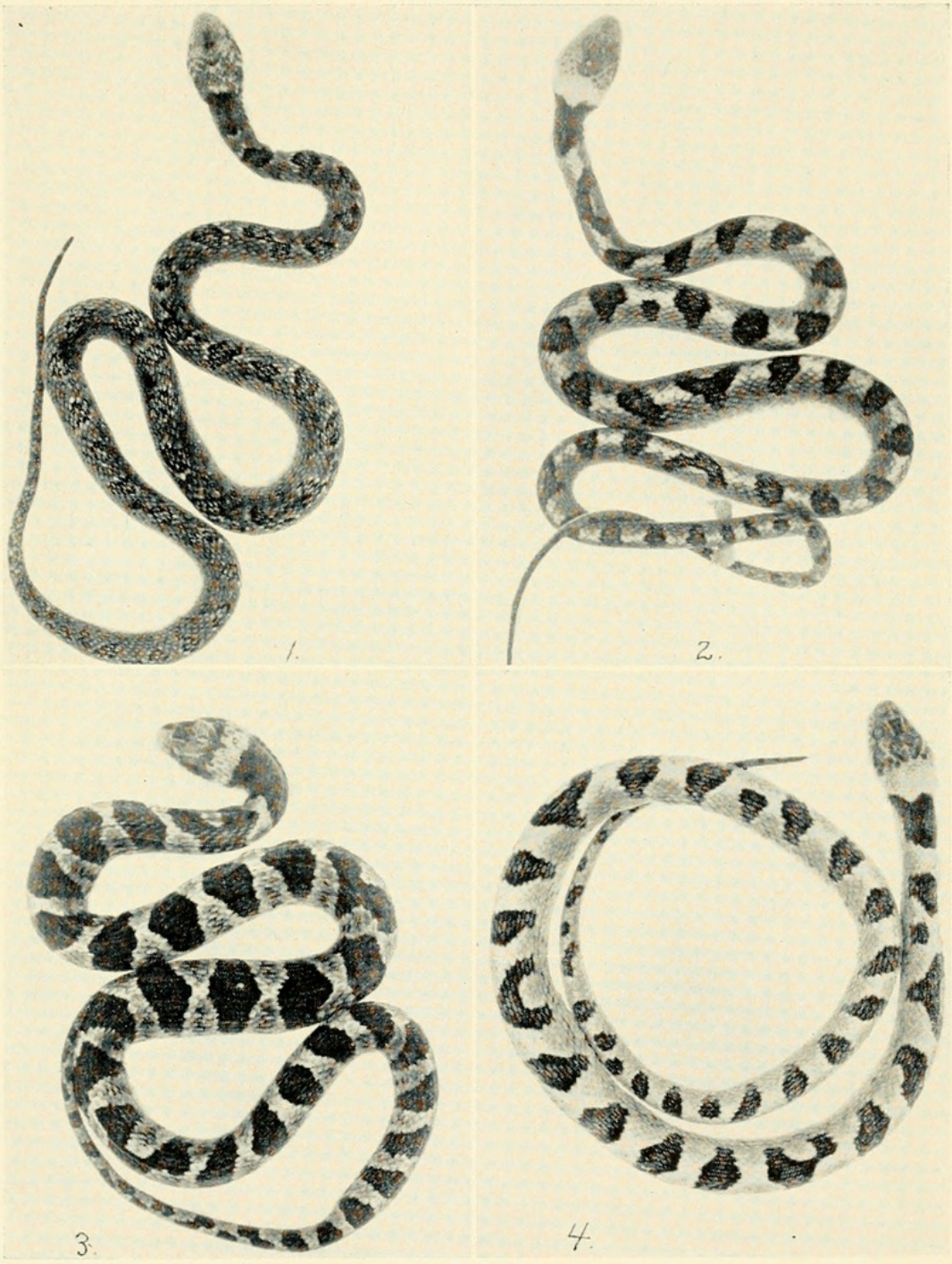

PLATE XXXIII

FIG. 1. *Leptodeira maculata* (Hallowell). EHT-HMS, No. 4653, Mazatlán, Guerrero (young).

FIG. 2. *Leptodeira maculata* (Hallowell). EHT-HMS, No. 5182, Dos Caminos, Guerrero (young).

FIG. 3, 3a. *Leptodeira maculata* (Hallowell). MCZ, No. 11420, Colima, México.

FIG. 4. *Leptodeira bressoni* sp. nov. MCZ, 11411, (♀) Colima.

PLATE XXXIII

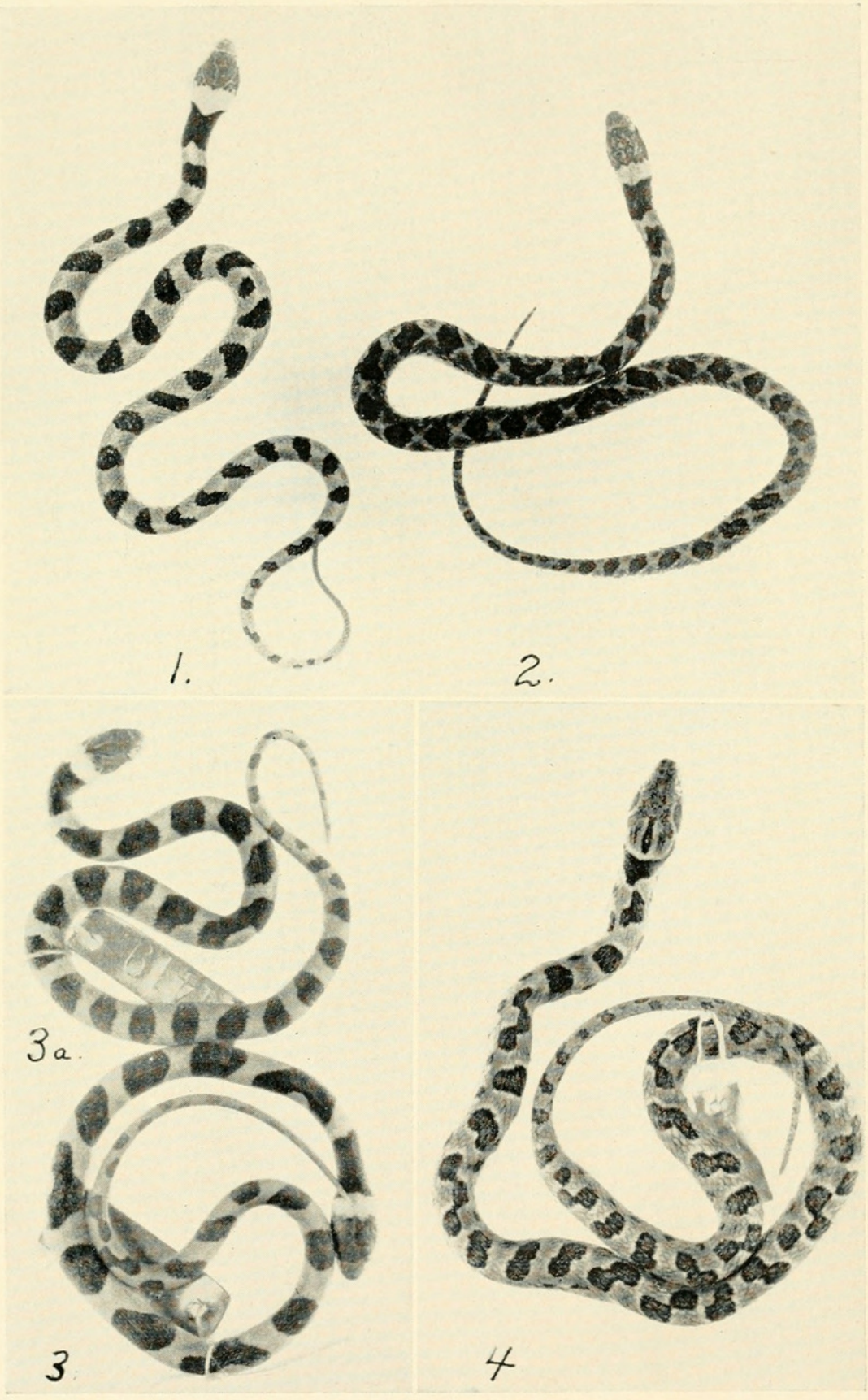

PLATE XXXIV

FIG. 1. *Leptodeira bressoni* sp. nov. EHT-HMS, No. 4619 (young), near Queseria, Colima.

FIG. 2. *Leptodeira annulata polysticta* Günther (young). EHT-HMS, No. 4618, Acultzingo, Veracruz.

FIG. 3. *Leptodeira yucatanensis malleisi* Dunn and Stuart. EHT-HMS, No. 11618 (♂), Encarnacion, Campeche.

PLATE XXXIV