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MEXICAN HERPETOLOGICAL MISCELLANY

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STUDIES on the reptiles from Mexico in the United States National Museum have brought to light a number of unnamed races and species. Some of them have been diagnosed elsewhere, and the present compilation includes the remaining notes that appear worthy of preliminary publication in advance of the contemplated complete summary. A large portion of the material on which the present notes are based was collected and studied during my tenure of the Walter Rathbone Bacon Traveling Scholarship of the Smithsonian Institution, to whose authorities I am greatly indebted.

The following notes have been segregated under nine subtitles:

- 1.—Six new species and subspecies of *Sceloporus*, with a redefinition of the *formosus* group.
- 2.—A new horned lizard from Durango.
- 3.—A tentative arrangement and key to Mexican *Gerrhonotus*, with the description of a new race.
- 4.—An unnamed *Celestus* from Mexico, with a key to mainland species of the genus.
- 5.—New xantusiid lizards.
- 6.—The Mexican subspecies of *Drymobius margaritiferus*.
- 7.—Notes on Mexican *Imantodes*.
- 8.—Two new snakes of the genus *Clelia*.
- 9.—Additional notes on *Conophis*.

1.—SIX NEW SPECIES AND SUBSPECIES OF SCELOPORUS, WITH A REDEFINITION OF THE FORMOSUS GROUP

Material recently obtained in Mexico, particularly by my wife and me in 1939 and 1940, during my tenure of the Walter Rathbone Bacon Traveling Scholarship of the Smithsonian Institution, has

necessitated a redefinition of the entire *formosus* group, as well as of the subspecies of *jarrovi* in the *poinsettii* group. One other subspecies, anticipated when the review of the Mexican species was written,<sup>1</sup> has been defined on the basis of material collected by Dr. E. H. Taylor at Omilteme, Guerrero. Still another race, also anticipated previously, has been defined in *melanorhinus* of the *spinosus* group.

I am much indebted to Dr. Taylor for assistance in collecting numerous specimens, for the gift of several obtained by him in regions not visited by me, and for the loan of his own material. I am also greatly indebted to Dr. L. C. Stuart for permitting me to examine material recently collected by him in Guatemala, without which a satisfactory allocation of northern Central American members of the *formosus* group would have been impossible.

SCOLOPORUS STEJNEGERI, new species

*Holotype*.—U.S.N.M. No. 112634, an adult male from Tierra Colorado, Guerrero.

*Paratypes*.—Twenty, including U.S.N.M. Nos. 112635–112648, and EHT-HMS Nos. 22285–22287, 27299–27301, all topotypes, collected by E. H. Taylor, Richard Taylor, and H. M. Smith.

*Diagnosis*.—A member of the *formosus* group, with a complete or very nearly complete, black nuchal collar, not light bordered; supraoculars large, seldom with an outer row of small scales, all separated from median head scales; frontonasals normal, in contact with each other; 2 canthals; dorsals 37 to 42; scales around body 45 to 50; femoral pores 16 to 21; generally 4 scales (minimum count) from median frontonasal to rostral.

*Description of holotype*.—Head somewhat elongate, not shortened and thickened as in *spinosus* group; interparietal relatively large, larger than entire frontal; parietal short, subtriangular, not reaching posterior edge of interparietal; a small, rectangular frontoparietal on each side; posterior section of frontal in contact with interparietal, less than a third size of anterior section of frontal; frontal ridges prominent; five large supraoculars, separated from median head scales by one row of small scales, from superciliaries by one complete row of small scales and by one or two tiny, extra scales; small, azygous scale separating prefrontals medially; frontonasals large, in contact with each other, median the largest; a large (mutilated), transversely elongate scale in front of median frontonasal; three scales from latter to rostral; two canthals; a subnasal, loreal, and single preocular; subocular elongate, followed by two keeled postoculars; six superciliaries, five visible from above.

<sup>1</sup> Field Mus. Nat. Hist., zool. ser., vol. 26, 1939.

Snout somewhat mutilated; labiomentals not reaching mental; gular scales notched posteriorly; temporal scales keeled, mucronate; no distinct auricular lobules.

Dorsal scales keeled, strongly mucronate, with several lateral mucrones, 39 from occiput to base of tail; 47 scales around middle of body; femoral pores 18–19; 20–21 lamellae under fourth toe.

Snout to vent 94 mm.; tail 128 mm.; snout to posterior border of ear 21 mm.; fourth toe 21 mm.

*Color.*—Bluish green above (yellowish where scales are not shed), unmarked save by a broad, black, nuchal collar, complete dorsally, and narrowly continuous around throat; digits and tail not notably barred. Throat greenish yellow anteriorly, becoming dark blue posteriorly; chest white; sides of belly dark blue, these areas reaching to groin and nearly to axilla but not onto thighs, and separated medially by a narrow light area only two or three scales wide; blue patches not dark bordered medially; ventral surfaces of limbs bluish.

*Variation.*—The 20 paratypes have the frontoparietals separated by contact of frontal and interparietal, except in one in which they are separated by a small azygous scale. The prefrontals are in contact in 3, separated by contact of frontal and median frontonasal in 3, and separated by an azygous scale in 14. The canthals are 2 in all, the anterior never above the canthal ridge. The frontonasals are normal except in 1, in which the median is separated from one of the laterals; the supraoculars are generally 5, sometimes 4 or 6, usually in 1 row, sometimes with a few small scales representing an outer row. The lorilabials are reduced to 1 row below subocular on 1 side in 4, on both sides in 8; the remainder have 2 complete rows below the subocular. The scales from the median frontonasal to rostral are 4 or 5 (4, 11; 5, 9). Other variations in scale counts are given in Table 1.

The young have faint, diagonal light and dark marks on the sides of the body. Both young and females have narrow, interrupted, transverse dark bands, about seven on the body and one or two on the neck. The nuchal collar is regularly present and complete in all, although sometimes not very well defined (in discolored specimens).

*Comparisons.*—This species has a higher femoral pore count than any other of the group. The only ones with which it may be compared are *m. acanthinus*, *formosus*, and *asper*. The first rarely has 16 femoral pores (its maximum count, occurring 3 times in 84 counts), the supraoculars are generally in contact with the median head scales, and the maximum dorsal scale count is 39. In *formosus* the dorsal scales reach their maximum count at 37 (4 in 52), the internasals are larger, there is no single large scale preceding the median frontonasal, and the coloration is considerably different. In *asper* the dorsals are 35 or less, and the coloration is much different.

*Habits.*—The species was found only on the boulders in the amazingly rugged canyon at the city limits of the small town of Tierra Colorada. They are not common, and are exceedingly wary; in fact, only one adult male has been obtained.

*Remarks.*—The name *stejnegeri* appeared as a nomen nudum in 1939<sup>2</sup>. It was a lapsus for some other name, the identity of which is not apparent. It is a pleasure to fix the name for a species so distinct from others.

TABLE 1.—Variation in scale counts of *stejnegeri*

Catalog number	Sex	Dorsals	Scales around body	Femoral pores
U.S.N.M. 112635	♂	41	48	17-17
U.S.N.M. 112636	♂	39	48	17-19
U.S.N.M. 112637	♂	41	46	16-18
U.S.N.M. 112638	♂	41	49	17-17
U.S.N.M. 112639	♂	39	-----	18-?
U.S.N.M. 112640	♂	39	-----	16-17
U.S.N.M. 112641	♂	42	50	18-?
U.S.N.M. 112642	♂	41	49	17-17
U.S.N.M. 112643	♂	40	45	17-17
U.S.N.M. 112644	♂	37	48	19-19
U.S.N.M. 112645	♂	37	45	18-19
U.S.N.M. 112646	♂	40	46	16-19
U.S.N.M. 112647	♂	41	46	16-17
U.S.N.M. 112648	♂	-----	-----	-----
EHT-HMS 22285	♂	38	48	19-21
EHT-HMS 22286	♂	37	47	17-17
EHT-HMS 22287	♂	41	50	20-20
EHT-HMS 27299	♂	38	48	19-20
EHT-HMS 27300	♂	39	46	18-18
EHT-HMS 27301	♂	-----	50	18-20

## SCOLOPORUS FORMOSUS SCITULUS, new subspecies

*Holotype.*—EHT-HMS No. 26962, an adult male from Omilteme, Guerrero, collected August 2 to 4, 1940, by Richard C. Taylor and E. H. Taylor.

*Paratypes.*—EHT-HMS Nos. 26956-26961, 26963-26975, and U.S.N.M. Nos. 111827-111828, same data as holotype; U.S.N.M. No. 47738, a topotype<sup>3</sup>; Mus. Comp. Zool. Nos. 34228, 34230, from Chilpancingo, Guerrero.

*Diagnosis.*—Similar to Veracruz and Oaxaca *f. formosus*, except: Males with large, scattered, light blue spots on head; dorsal surface brilliant green, save a dark line down the adjacent edges of the

<sup>2</sup> *Ibid.*, p. 70.

<sup>3</sup> This is a very young specimen, once referred by me to *mueronatus omiltemanus* (Univ. Kans. Sci. Bull., vol. 24, p. 594, 1936), before I was aware that other large species of *Sceloporus* occur in the region.

dorsal scale rows; posterior portion of throat (males) black, scales in median area black-edged with blue centers, scales anteriorly pale blue; no yellow or orange on throat; females and young of both sexes with parallel, longitudinal, alternating light and dark lines on neck.

*Description of holotype.*—Dorsal scales 30; scales around body 39; femoral pores 14-14; 2 canthals.

*Color.*—Dorsal surface of body brilliant green; continuous, parallel, longitudinal black lines following the edges of the dorsal scale rows; dorsal surface of head black, with a light spot on each parietal, on the interparietal, posterior section of frontal, both prefrontals, lateral frontonasals, posterior pair of internasals, and on several of the supraoculars and superciliaries; a large, black shoulder patch on each side, the two separated from each other by six scale rows; the black of shoulder patches continuous around neck; scales on posterior part of throat edged with black or very dark blue, the centers light blue; scales on anterior part of throat and chin pale blue with darker edges. Chest, a broad line down middle of abdomen, ventral surfaces of limbs and tail and preanal region all slightly bluish; sides of abdomen dark blue, and these areas with a narrow, poorly defined, black median border.

*Variation.*—Females lack the brilliant green and blue color of the males, but may have light spots on the head.

In the young the back is more or less uniform gray or slate; on the neck is a median longitudinal light line extending from the upper edge or slightly above the ear to the upper edge of the black shoulder patches; these are bordered medially by a narrow dark line of similar extent; these in turn bordered by a light line, which is separated from its mate by a median dark line; another light line extends from the posterior portion of the supralabial region through the ear and terminates abruptly on the middle of the neck; below this is another light line from ear to the black shoulder patches.

Females are marked much like the young, except that the neck markings are not quite so distinct; most distinct is the dorsolateral light line and its bordering dark line, from upper edge of ear to upper edge of the shoulder patch. Some adult females have light marks on the head, similar to males.

*Comparisons.*—There are no well-marked differences between *f. formosus* and *f. scitulus* in scutellation. The latter form has a lower average dorsal count than the former, but the range of variation of the one form overlaps that of the other too extensively to permit separation of any population on the basis of this character. Twenty-six of *f. scitulus* show a range from 30 to 34 (30, 4; 31, 7; 32, 4; 34, 4),

average 31.9; while 49 *f. formosus* show a range of from 32 to 37 (32, 8; 33, 11; 34, 9; 35, 11; 36, 6; 37, 4), average 34.2.

The only difference of recognizable significance between the two races is in pattern; in this there is a very striking divergence between them. Males, females, and young of *f. formosus* lack the longitudinal light and dark lines on the neck, and the scattered light spots on the head, of *f. scitulus*; and the adult males of the former are blue, not green as in the Guerrero race, lack the longitudinal dark lines on the dorsal surface of the body and have a broad yellow or orange area on the middle of the throat. In males of *f. scitulus* yellow or orange on the throat is completely absent, the whole throat being blue.

*Remarks.*—The race *f. scitulus* is illustrated in The Mexican and Central American Lizards of the Genus *Sceloporus*.<sup>4</sup>

SCELOPORUS PREZYGUS, new species

*Holotype.*—U.S.N.M. No. 46881, from Conjab, 5,300 feet. Chiapas (between San Bartolomé and Comitán). Collected by E. W. Nelson and E. A. Goldman.

*Diagnosis.*—A member of the *formosus* group, with 31 dorsal scales, supraoculars in 2 rows, 13 to 14 femoral pores, 2 canthals and median frontonasals separated from lateral frontonasals.

*Description of holotype.*—Head somewhat flattened and elongate; interparietal about three times as large as a parietal; a single parietal on each side, but little larger than a frontoparietal; latter single on each side; frontal narrowly in contact with interparietal; supraoculars in two rows; the scales of the inner row about twice as large as those of outer row, which is composed of three scales; supraoculars separated from median head scales by a complete row of granular scales, from superciliaries by one complete and another incomplete row of small scales; frontal in contact with median frontonasal; latter considerably larger than lateral frontonasals, separated from them by a small scale; scales in internasal area large, keeled, pitted, three from median frontonasal to rostral; two canthals; a large, elongate subnasal; three small loreals; preocular longitudinally divided, a large upper and small lower scale; an elongate subocular and two keeled postoculars; two complete rows of lorilabials below subocular; four supralabials and five infralabials to a point below middle of eye.

Two rows of labiomentals, the outer not reaching mental, the inner extending anteriorly to a point even with the suture between the second and third infralabials; posterior gulars notched; temporal scales keeled, very feebly mucronate; three small auricular lobules, upper largest; scales between ear and lateral nuchal pocket more strongly

<sup>4</sup> Field Mus. Nat. Hist., zool. ser., vol. 26, pl. 1, 1939.

keeled and mucronate, with a number of fine, lateral mucrones; scales between lateral nuchal pocket and foreleg keeled, rather strongly mucronate, the largest larger than scales posterior to ear or in temporal region.

Dorsal scales keeled, mucronate and denticulate to a moderate degree, 31 from occiput to base of tail; 36 scales around middle of body; 13 to 14 femoral pores; 22 lamellae under fourth toe; snout to vent 77 mm.; tail 112 mm.; snout to posterior margin of ear 19.9 mm.; snout to occiput 15.9 mm.; fourth toe 21.7 mm.; hind leg 55.5 mm.

*Color.*—Dorsal surface yellowish gray (slightly bluish where scales are shed); a narrow, black nuchal collar, complete on dorsal surface, scarcely visible on throat; collar not extending onto arm, not over two scales in width. Dorsal surface otherwise unmarked. Gular region and chin uniform blue, except a gray area about throat in front of chest; latter white; sides of abdomen apparently lavender, with a broad border covering a width of three scales; latter extending from groin nearly to a line even with axilla, but not extending laterally anteriorly to enter axilla. Ventral surfaces of limbs and tail white.

*Remarks.*—This specimen was referred by me in 1936<sup>5</sup> to *serrifer*, although several of its peculiarities were pointed out; and in 1939<sup>6</sup> it was referred to *mucronatus omiltemanus*. Recent material from Chiapas and Guatemala has shown that the characters previously considered as anomalous have considerable significance. This specimen does not belong to *serrifer*, although the belly pattern is the same, since it has the supraoculars in two rows and the frontonasals separated from each other. The latter species is the nearest one of the *poinsettii* group; the more remote *omiltemanus* and its relatives, although having similar supraoculars, have the frontonasals in contact and a different belly pattern. In fact, it is believed that *prezygus* belongs to the *formosus* rather than to the *poinsettii* group, since it has a very narrow collar not light bordered (apparently). It differs widely from others of the *formosus* group, however, in having large dorsals, the frontoparietals separated from each other, supraoculars in two rows, etc. It appears to be a link between the *formosus* and *poinsettii* groups, in the same manner as *lunaei* and *acanthinus* are obviously links between the *formosus* and *spinosus* groups. All members of the latter group can be traced to *acanthinus* and *lunaei*, while all of the *poinsettii* group can be traced to *prezygus* and *serrifer*. The name *prezygus* refers to the phylogenetic position of this species, near the ancestral type of the collared (*poinsettii*) group of the genus.

<sup>5</sup> Kansas Univ. Sci. Bull., vol. 25, pp. 561, 562, 1936.

<sup>6</sup> Field Mus. Nat. Hist., zool. ser., vol. 26, p. 221, 1939.

## KEY TO MEMBERS OF THE FORMOSUS GROUP

1. Typically one canthal----- 2  
Typically two canthals----- 4
2. Supraoculars very large, in a single row, frequently one or more in contact with median head scales; dorsals 31 to 38; a lowland species; Motagua River valley and arid basin at Salamá, Guatemala----- *lunaei*  
Supraoculars smaller, in 2 rows, rarely any in contact with median head scales; dorsals 30 to 51; highland races----- 3
3. Dorsals 30 to 33; El Salvador and central Honduras to Panama  
*malachiticus malachiticus*  
Dorsals 39 to 51; central plateau of Guatemala and its extensions  
*m. smaragdinus*
4. Median separated from lateral frontonasals----- 5  
Median in contact with lateral frontonasals----- 7
5. Dorsals about 31; internasals large, keeled, 3 from rostral to median frontonasal; known only from Conjab, between San Bartolomé and Comitán, Chiapas----- *prezygus*  
Dorsals 37 to 45; internasals smaller, not keeled, rugose or not----- 6
6. A complete nuchal collar, sometimes narrowly interrupted medially; central Veracruz to Isthmus of Tehuantepec----- *malachiticus salvinii*  
Nuchal collar incomplete; highlands of Chiapas and northern Guatemala in Cobán area----- *m. taeniocnemis*
7. Anterior section of frontal usually longitudinally divided; canthals sharply ridged; no nuchal collar; ventrals a fourth, laterals not more than two-thirds, size of dorsals; mountainous regions of western Mexico from Nayarit to Guerrero----- *asper*  
Anterior section of frontal rarely longitudinally divided; canthals rounded; a nuchal collar or not; ventrals a half, laterals three-fourths size of dorsals----- 8
8. A broad, nearly or quite complete, nuchal collar----- 9  
Collar, if present, restricted to sides of neck----- 10
9. Femoral pores 12 to 16; one or more of supraoculars generally in contact with median head scales; Pacific coast foothills, Chiapas to El Salvador  
*malachiticus acanthinus*  
Femoral pores 16 to 21; supraoculars not in contact with median head scales; central Guerrero (Tierra Colorada)----- *stejnegeri*
10. Males without yellow on throat, dorsal scale rows black-edged, dorsal head scales with a light blue center; central Guerrero----- *formosus scitulus*  
Males with yellow or orange on throat, dorsal surface uniform blue, head scales not light-spotted; central Veracruz south in mountainous regions to the Isthmus of Tehuantepec----- *f. formosus*

## SCELOPORUS MUCRONATUS AUREOLUS, new subspecies

*Holotype*.—U.S.N.M. No. 112232, male, 2 miles west of Acultzingo, Veracruz.

*Paratypes*.—Twenty-six topotypes (Nos. 112233–112258) in the United States National Museum; 36 topotypes (Nos. 3073–3080, 3082–3102, 3171–3174, 3193–3195) in the EHT–HMS collection; 16 specimens (No. 1516) from Atzitzintla, Puebla, in the Field Museum of Natural History; and 6 specimens (Nos. 18815–18820) from the vicin-

ity of Puebla, Puebla, in the American Museum of Natural History.

*Diagnosis.*—Similar to *m. mucronatus*, except: Dorsal scales usually more than 32; femoral pores usually over 13; no parallel longitudinal dark lines on middle of throat; adult males usually with longitudinal dark lines following the edges of the dorsal scale rows; centers of scales light; collar involving not over 4 scale lengths longitudinally.

*Remarks.*—I described this subspecies in detail<sup>7</sup> as *mucronatus omiltemanus*. The latter name, however, must be restricted to the larger scaled, broad-collared form lacking longitudinal dark lines following the dorsal scale rows, that occurs in the isolated mountain range of central Guerrero.

*Comparisons.*—*S. m. aureolus* is amply well differentiated from both *mucronatus mucronatus* and *m. omiltemanus* by having more numerous dorsals (30 to 38, average 34.3, 91.6 percent over 31 in 59 *aureolus*; 27 to 32, average 29.6, 93.6 percent 31 or less in 49 *mucronatus*; 29 to 32, average 30, 92.3 percent less than 32 in *omiltemanus*), and a lined dorsal pattern in adult males. From *m. mucronatus* it also differs in average femoral pore count (11 to 17, average 14, in 124 counts of *aureolus*; 10 to 17, average 12.8, in 94 counts of *mucronatus*; 11 to 16, average 13.8, in 26 counts of *omiltemanus*) and in lacking the parallel, longitudinal dark lines on the throat (present in all except adult male *mucronatus*, lacking in *omiltemanus*). It is apparent that *m. mucronatus* and *m. omiltemanus* are more like each other than either is like *aureolus*. They differ from each other in dorsal pattern; *omiltemanus* lacks the large dorsal blotches and the parallel, longitudinal dark lines on the throat of *mucronatus*, and in addition has a collar involving at least 4½ scale lengths (4 or less in *mucronatus*).

**SCELOPORUS JARROVII SUGILLATUS, new subspecies**

*Holotype.*—U.S.N.M. No. 112100, male, from the edge of the east end of Lake No. 4, Zempoala, Mexico, Mexico.<sup>8</sup>

*Paratypes.*—Fifty-four, all topotypes, including U.S.N.M. Nos. 112072–112099, 112101–112111, and EHT–HMS Nos. 22311–22321.

*Diagnosis.*—Supraoculars in 2 rows; dorsal scales 37 to 44, average 40.6; median lateral body scales distinctly smaller than middorsal scales; scales on dorsal surface of upper foreleg about twice as large as those on lower foreleg; gray or blue-gray above, streaked, with a rather broad, black nuchal collar (6 to 8 scales wide); sides of belly slate blue, not black-edged, with vertical streaks of black; chin light blue; males and females practically indistinguishable in ventral color.

<sup>7</sup> Kansas Univ. Sci. Bull., vol. 24, pp. 591–598, text fig. 12, pl. 50, fig. 1, 1936.

<sup>8</sup> The boundary line between the states of Morelos and Mexico passes through the National Park of Zempoala. Most of the park is in the State of Mexico.

*Description of holotype.*—Interparietal a little less than three times size of parietal; one frontoparietal on each side, separated from each other by a small median scale; posterior section of frontal a little more than half size of anterior; two prefrontals in contact medially; three frontonasals, the median not separated from the others; internasals irregular; four postrostrals; two canthals; a subnasal and an elongate loreal; preocular divided transversely; an elongate subocular and two postoculars; two rows of lorilabials, complete below eye; two rows of supraoculars, the scales in the outer row about one-half to one-third size of scales in inner row; outer row of labiomentals not reaching mental; inner row reaching to suture between second and third infralabials; four supralabials to a point below middle of eye; most of gular scales with a single apical notch; those near gular fold area with two notches.

Temporal scales keeled, rather strongly mucronate; six auricular lobules on one side, four on other; scales between ear and lateral nuchal pocket about half size of dorsal scales, larger than scales between lateral nuchal pocket and arm, keeled and strongly mucronate, weakly denticulate. Dorsals weakly keeled, mucronate, feebly denticulate (more strongly anteriorly); lateral scales a little more strongly mucronate and more denticulate than dorsal scales; scales distinctly decreasing in size laterally, those halfway between axilla and groin smaller than middorsal scales; 41 scales from occiput to base of tail; 46 scales around middle of body.

Scales on dorsal surface of upper foreleg nearly twice as large as those on lower foreleg, all keeled, mucronate and denticulate; dorsal scales on shank and thigh subequal to each other and to scales on dorsal surface of upper foreleg, a little smaller than dorsal scales on body, and a little more strongly keeled and mucronate; dorsal scales on tail considerably larger than dorsals on body, more strongly keeled and mucronate; subcaudals smooth except toward tip of tail; femoral pores 15-16.

Snout to vent 85 mm.; tail 125 mm.; tibia 15 mm.; snout to occiput 16 mm.; snout to posterior border of ear 20 mm.

*Color.*—Adult male: Entire dorsal surface dark slate gray, without markings save a broad, black nuchal collar covering eight scales medially; collar bordered on either edge by a narrow, light, uninterrupted band one scale wide; digits feebly banded; tail with very indistinct dark bands distally. Ventral surface of head dark blue; black nuchal collar extending onto gular region, almost interrupted midventrally; area between arm insertions and a broad median line on belly mostly light; sides of belly, from axilla to groin, blue-gray, not black-bordered medially; numerous, distinct, transverse black streaks on sides of belly, not extending as far medially as the bluish

patches; groin nearly black; ventral surfaces of limbs and tail light.

*Variation.*—In 44 specimens the dorsals vary from 37 to 44, average 40.3; in 64 counts the femoral pores vary from 14 to 18, average 16. In all the dorsal scales on the lower foreleg are constantly about half the size of those on the upper foreleg.

Adult females are so remarkably like the males in ventral as well as dorsal coloration that they can be distinguished only with difficulty by this means. The largest measures 77 mm. snout to vent; the largest male measures 87 mm.

*Comparisons.*—This is one of the most distinct of the races of *jarrovi*, having peculiarities both in pattern and scutellation. The transverse black streaks on the sides of the belly do not occur in any other form of *jarrovi*; in fact the only other species having similar marks is *dugesii*, a species very different from *jarrovi* in the conformation of the scales (mucrones arising within the edges of the scales on sides of body and neck). In no other subspecies of *jarrovi* do the females have the same ventral coloration as the males; such a phenomenon is of rare occurrence in *Sceloporus*, and has been observed in no other species of the *poinsettii* or related groups.

The most obvious peculiarity in scutellation is the relatively small size of the dorsal scales on the lower foreleg, compared with those on the upper foreleg (nearly twice as large). This character will separate it from all other subspecies of *jarrovi*. It agrees with *immucronatus* in having the lateral scales distinctly decreasing in size, and distinctly smaller than the dorsals. In the other subspecies the lateral scales, at a point about halfway between axilla and groin, are subequal to or larger than the dorsals; they do not distinctly increase in size medial to this point.

*Habits.*—These specimens were found sunning themselves on the rocks scattered on the eastern edge of Lake No. 4, at the Lakes of Zempoala, in the State of Mexico (reached via Tres Cumbres, Morelos). The elevation is about 10,000 feet above sea level. The lizards are extremely wary, so that it was necessary to stalk them from behind boulders in order to get within gunshot of them. Although the rocks and cliffs around several other lakes on the park were examined, *sugillatus* was not found, although *f. ferrariperezi* was very abundant. The latter was excluded in the spots where the former was found.

#### KEY TO THE SUBSPECIES OF SCELOPORUS JARROVII

1. Lateral body scales distinctly decreasing in size laterally, at a point halfway between axilla and groin, distinctly smaller than dorsal scales----- 2
- Lateral body scales not decreasing in size laterally at least up to a point halfway between axilla and groin, where they are still subequal to, or even a little larger than, middorsal scales----- 3
2. Dorsal scales on lower foreleg about half size of those on upper foreleg; dark transverse streaks in lateral belly patches; nuchal collar covering six scales

medially, or more; high mountains near the southern edge of the plateau, known only from Zempoala, Morelos and Mexico----- *jarrovii sugillatus*  
 Dorsal scales on lower foreleg but little if any smaller than those on upper foreleg; no dark streaks in lateral belly patches; nuchal collar less than four scales long middorsally; eastern mountains of Mexico, from northern Querétaro south into Hidalgo and possibly central Veracruz

*jarrovii immucronatus*

3. Supraoculars essentially in one row; if an outer row is evident, it is composed of scales much smaller than those of inner row, and usually number no more than two; mountains of western Mexico, from Nayarit north into southern Arizona and New Mexico----- *jarrovii jarrovii*

Supraoculars in two rows, those of outer row a little smaller than those of inner, usually numbering three or more----- 4

4. Adult males black above and below, with orange areas and spots on sides of head, belly, and tail; only throat, underside of tail, and posterior surface of hind leg not black; females somewhat similar, very dark above, the collar poorly defined; young with poorly defined, narrow, light borders on neck collar; dorsal scales average 37.5; southeastern Coahuila-- *jarrovii oberon*

Adult males light brown above, with very broad, very well defined nuchal collar; a median area on belly white except in very largest males; sides of abdomen blue, black edged; females and young with more distinct light borders on nuchal collar; dorsal scales average 40.6; central plateau region from central Mexico (State) north to northern Zacatecas--- *jarrovii minor*

**SCELOPORUS MELANORHINUS CALLIGASTER, new subspecies**

*Holotype*.—U.S.N.M. No. 112201, Acapulco, Guerrero.

*Paratypes*.—U.S.N.M. Nos. 112199–112200, 47732, topotypes; No. 112186, Coyuca, Guerrero; Nos. 112202–112203, 4 kilometers north of Apatzingán, Michoacán; San Blas, Nayarit (Nos. 51384–51389, 64667); “Guadalajara,” Jalisco (Nos. 24925–24926); Colima (Nos. 31496, 58159); Tamarindo, Guerrero (No. 47731). Also EHT-HMS Nos. 8279–8299, Hda. El Sabino, Michoacán; Nos. 8302–8310; Acapulco; Nos. 8267–8270, Hda. Quesería, Colima; Nos. 8273A, 8271–8278, Hda. Paso del Río, Colima. Univ. Mich. Mus. Zool. No. 80070, Hda. Paso del Río, Colima; No. 80069, Hda. Gloria, Colima.

*Diagnosis*.—Similar to *S. melanorhinus melanorhinus*, except femoral pores usually (84 percent) less than 20 on each side; lateral belly patches usually confluent medially in adult males.

*Description of holotype*.—Adult male, 85 mm. snout to vent; dorsal scales 27; femoral pores 17–18; lateral belly patches partially confluent medially.

*Comparisons*.—This subspecies is distinguished from typical *melanorhinus* largely upon the basis of average femoral pore count. Ninety-three counts of 46 specimens from Guerrero north show a range of variation from 17 to 24, average 19.2, with 16.1 percent of the counts over 20. Fifty-eight counts of 29 specimens of typical *melanorhinus* from Oaxaca show a range of variation from 18 to 27, average 21.6, with 77.6 percent of the counts over 20.

An approximately similar comparison can be made of the total pore counts of specimens of the 2 subspecies. In *m. calligaster* the range is from 34 to 46, average 38.4, and 19.6 percent of the counts (46) are over 40. In *m. melanorhinus* the range is from 37 to 53, average 42.8, and 82.8 percent of the counts (29) are over 40.

All counts available for the species were used in calculating percentages. The contrasts between the 2 races would be somewhat greater if specimens from certain central Guerrero localities (Mexcala, Tierra Colorada) were omitted as intergrades. The series available are not sufficiently large to demonstrate whether these localities actually are occupied by intergrading populations, and for this reason the questionable specimens were not omitted. It is noteworthy, however, that the occurrence of counts over 20 is greater there than elsewhere in *m. calligaster*. Subspecies of other species apparently intergrade also in this area: *e. g.*, *Uta b. bicarinata* and *b. anonymorpha*; *Sceloporus h. horridus* and *h. oligopus*.

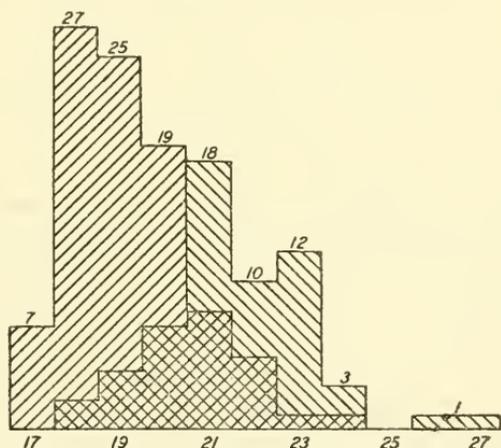


FIGURE 38.—Diagram showing range of variation in femoral pore counts of *melanorhinus*. The numbers on the vertical columns refer to the number of specimens, and those on the base line refer to the number of pores. The lines directed toward the upper right represent *m. calligaster*, while those directed toward the upper left represent *m. melanorhinus*. The cross-hatched area indicates the extent of overlap.

## 2.—A NEW HORNED LIZARD FROM DURANGO

A series of four specimens of *Phrynosoma douglassii* from the zoologically poorly known Mexican state of Durango differs from all others of the species by having a much-reduced tail. These individuals are very different from the longer-tailed *Phrynosoma orbiculare* recorded from Chihuahua<sup>9</sup> and Durango (El Salto, U.S.N.M. No. 47469). They appear to belong to an unnamed race, for which I propose the name

<sup>9</sup> Taylor and Knobloch, Proc. Biol. Soc. Washington, vol. 53, pp. 125, 126, 1940.

## PHRYNOSOMA DOUGLASSII BRACHYCERCUM, new subspecies

*Holotype*.—U.S.N.M. No. 23993, from "Durango," Mexico, collected by Dr. Edward Palmer, September 1896.

*Paratypes*.—Three topotypes, Nos. 23994–23996, same collector and date.

*Diagnosis*.—Similar to *Phrynosoma douglassii*, but with a tail shorter than head is wide, or, in adults, very slightly longer; gular scales in straight rows slightly diverging posteriorly, the scales small and tubercular (strongly convex), not flat; chest scales keeled; horns of head very short, postorbitals, temporals, and occipitals subequal in size.

*Description of holotype*.—Head a broad, short, conventionalized heart-shape in dorsal profile; in lateral profile, postorbital spines highest, supraocular and internasal areas forming an obtuse angle with each other (not a curve); width of head (26.2 mm.) at widest point in temporal region much greater than length of head from snout to occiput (15.6 mm.) or to posterior tip of temporal spines (21 mm., in a projected straight line); supraocular region flat, with no enlarged scales; posterior border of supraocular region strongly indented medially, marked by a series of enlarged, slightly protuberant scales; each series begins at postorbital spine and extends anteromedially, but fails to reach its mate by 1 scale; postorbital, occipital, and temporal spines subequal in size; 5 scales between occipital spines; 2 small, flat spines, separated from each other by a scale, preceding occiput; 3 subequal temporal spines, the posterior slightly separate from others, the series continuing anteriorly as a row of enlarged scales, disappearing below about middle of eye.

Three posterior infralabials considerably enlarged; all labials keeled; a series of enlarged, keeled scales in contact with a few infralabials anteriorly but separated throughout the remainder of its length by one to three rows of small scales; gulars in very definite, straight rows slightly diverging posteriorly; these scales not flat, but small and convex (tubercular); in extreme posterolateral portion of throat the scales are strongly protuberant and conical, and have no free lateral edges.

An irregular series of preauricular spines; tympanum exposed; a large skin fold anterior to lateral nuchal pocket, and a small one posteriorly, the former surmounted by two series of spines, the latter by one or two spines; a small, vertical series of spines in front of and above arm insertion.

All dorsals keeled, imbricate (except enlarged spines), not granular; among these are scattered, enlarged, keeled spines of varying size, diminishing laterally; a single row of lateral spines (fringe); in the posterior part of fringe the spines are separated from each

other, while anteriorly they are in contact; spines on tail few, small; tail very broad at base, but remainder very slender, not tapering into base; eight longitudinal series of spines at base of tail.

Scales on chest rather distinctly keeled; remainder of ventral scales smooth; femoral pores 16–18; 14–16 lamellae under fourth toe. Total length 80 mm.; tail 24 mm.

Head slightly reddish; body dirty straw yellow, with transverse, median, dusky (gray) crossbands; limbs feebly barred; throat, chest, and sides of abdomen with small, round, scattered dark spots.

*Variation.*—The three paratypes are much as the type. All have convex gulars, although some of the scales show edges. The keels on the chest scales are very evident even in the smallest specimen.

*Measurements (in millimeters) of d. brachycercum*

Catalog number	Sex	Snout to vent	Head width	Tail	Percent, tail of body	Percent, head of tail
U.S.N.M. 23993.....	♀	80.0	26.2	24.0	30.0	109.1
U.S.N.M. 23994.....	♀	71.0	24.0	23.0	32.4	104.3
U.S.N.M. 23995.....	♀	38.7	12.8	10.0	28.7	128.0
U.S.N.M. 23996.....	♀	71.0	22.8	23.0	32.4	99.1

*Comparisons.*—These four specimens appear to represent a race closely related to *douglassii* and its subspecies. The ludicrously short, slender tail attached to a broad base readily characterizes it, and is the chief difference between it and other races of *douglassii*. The convex gular scales and keeled chest scales also appear to be peculiar to *d. brachycercum*.

In 74 specimens of other races of *douglassii* (including 15 whose measurements are given by Van Denburgh, Rept. Western North Amer., 1922), the tail varies from 36.1 to 65.2 percent of the body length, average 47.5; sexed specimens show a range of from 36.1 to 53.2 percent, average 45.4, in females, 44.1 to 65.2 percent, average 51.4, in males. The width of the head varies from 36 to 92.4 percent of the tail length, average 65.1; sexed specimens show a range from 53 to 86.9 percent, average 67.3, in females, 48.6 to 80.2 percent, average 62.0, in males.

### 3.—A TENTATIVE ARRANGEMENT AND KEY TO MEXICAN *Gerrhonotus*, WITH THE DESCRIPTION OF A NEW RACE

A survey of the Mexican *Gerrhonotus* in the United States National Museum has revealed the existence of a much greater variability in certain characters in scutellation of the head than has heretofore been known. Of surprising variability is the azygous

prefrontal, the presence or absence of which has been used as a generic or group character. In the most primitive group (*deppii*) of the genus, it varies intraspecifically to a considerable degree; in specimens from a single locality of at least two species it is completely absent in some, well formed in others. In the next most primitive group (*antauges*) it varies greatly interspecifically; three species regularly lack it, while the remainder regularly have it. Only in the other three, more highly modified groups does the azygous prefrontal serve as a group character; in the *liocephalus* and *caeruleus* groups it is regularly present, and in the *imbricatus* group it is regularly absent.<sup>10</sup>

All five groups of the genus are represented in Mexico by at least one species. The *deppii* group is composed of six in Mexico: *deppii*, *fimbriatus*, *gramineus*, *oaxacae*, *taeniatus*, and *ochoterenai*. Only four other names have been proposed in this group; *digueti* from Puebla (a synonym of *taeniatus*, not of *deppii*, of which it was described as a subspecies), *auritus* from Verapaz, Guatemala (apparently distinct; the type has an azygous prefrontal, contrary to Boulenger's statement), *vasconcelosii* from Argueta, Pacific slope of Guatemala, and *rhomboifer* from Panama. The latter is placed in this group with some hesitation, by description alone; I have seen no specimens. The group is the only one arboreal in habits. The flat head, poorly developed lateral fold, elongate dorsal scales, and large size of the granular scales on the limbs as well as on the sides of the head and neck, characterize this group. Several species are green.

The other 4 groups are composed of terrestrial species. The most primitive group (*antauges*) is composed of apparently 6 species, in Mexico: *antauges*, *bocourti*, *gadovii*, *modestus* (type locality apparently Orizaba, not Guatemala as guessed by Cope), *obscurus*, and *viridiflavus*. All but one of these (*gadovii*) is known from so few specimens that further material may show that some of these names are based on variants. All names proposed for Mexican specimens appear to be valid. Extralimital are *aljaroi* (Costa Rica), *monticola* (Costa Rica), *moreletti* (Guatemala) and *salvadorensis* (Salvador); the first 2 appear to be identical<sup>11</sup> and the last 2 also may prove conspecific with each other.<sup>12</sup> The group is characterized by having a moderately well developed lateral fold (not a deep one as in the 3 more recent groups); essentially a single loreal (sometimes a very small accessory loreal); supranasals present (sometimes enlarged to appear like a *second* pair of internasals); head scales flat; superciliary series complete; dorsal scales 45 or more.

<sup>10</sup> One specimen in 83 of the whole group has a tiny azygous prefrontal.

<sup>11</sup> Wettstein, Sitz. Akad. Wiss. Wien, math.-naturw. Kl., Abt. 1, vol. 143, pp. 28-29, figs. 1-9, 1934.

<sup>12</sup> Dunn and Emlen, Proc. Acad. Nat. Sci. Philadelphia, vol. 84, pp. 28-30, 1932.

The *liocephalus* group is composed of a single widely distributed species, which appears to have recognizable races. The names *infernalis*, *lemniscatus*, *liocephalus*, *ophiurus*, *tessellatus*, and *ventralis* have been proposed and are available in this group. I can distinguish three races: *l. liocephalus*, *l. ophiurus*, and *l. infernalis*. The elongate body and tail, and the presence of at least two large loreals, one following the other, characterize the group; the superciliary series is complete, and the azygous prefrontal is large and regularly present.

The *caeruleus* group, with 11 recognized species and subspecies<sup>13</sup> is the largest of the genus. The 19 names proposed in the group are: *burnettii*, *caeruleus*, *cedrosensis*, *formosa*, *grandis*, *ignavus*, *kingii*, *marginata*, *multicarinata*, *multifasciata*, *nanus*, *nobilis*, *palmeri*, *paucicarinatus*, *principis*, *scincicauda*, *shastensis*, *webbii*, and *wiegmanni*. Only *kingii* occurs in mainland Mexico. The group is characterized by the absence of the supranasal (fused with first pair of internasals, a unique character in *Gerrhonotus*), regular contact of rostral and nasal, and regular presence of an azygous prefrontal.

The most highly modified group (*imbricatus*) is confined to Mexico, so far as known at present. It is the only one that has completely lost the azygous prefrontal. Other characters are: Convex head scales (except *planifrons*); reduction of superciliary series, which rarely reaches beyond the median outer supraocular, leaving the posterior outer and posterior inner in contact with orbit. Seven names have been proposed in this group, and one more is added below; of these eight, six can be associated with apparently recognizable species and subspecies: *i. imbricatus*, *i. adpersus*, *l. levicollis*, *l. ciliaris*, *planifrons*, and *rudicollis*. Of these the most doubtful are *i. adpersus* and *planifrons*. *G. lichenigerus* and *olivaceus* are synonyms of *i. imbricatus*.

**GERRHONOTUS LEVICOLLIS CILIARIS, new subspecies**

*Holotype*.—U.S.N.M. No. 47496, from Sierra Guadalupe, Coahuila, collected by E. W. Nelson and E. A. Goldman, April 28, 1898.

*Paratypes*.—Thirteen. Two topotypes, Nos. 47497–8; Sierra Madre, Zacatecas (Nos. 46723–46724); Inde, Durango (No. 46843); mountains near San Luis Potosí, S.L.P. (Nos. 47207–47210); and San Felipe, Guanajuato (EHT–HMS Nos. 10418–10421).

*Diagnosis*.—Like *levicollis*, with 16 dorsal scale rows, no azygous prefrontal and convex head shields, except: Dorsal scales 40 to 50, average 42.7; 2 superimposed loreals or, if 1, obviously the lower fused with upper; loreal in contact with prefrontal; usually 3 superciliaries, and always at least an anterior superciliary between preocular and anterior supraocular.

<sup>13</sup> Fitch, American Midl. Nat., vol. 20, No. 2, pp. 381–424, 1938.

*Description of holotype.*—Head not flattened, nearly as thick as broad; an elongate, narrow interparietal in contact with frontal; on each side a parietal, no larger than scale following; 2 frontoparietals on each side, a little smaller than parietals, the anterior broadly in contact with frontal; a pair of large prefrontals, and 2 pairs of internasals; 5 large inner supraoculars, the anterior separated from posterior internasals by contact of loreal and prefrontal; 3 small outer supraoculars, the posterior bordering orbit immediately in front of posterior supraocular of inner series, the other 2 not reaching orbit; posterior superciliaries missing, the series represented by 3 scales separating the anterior 2 outer supraoculars from orbit, and separating preocular from anterior inner supraocular; a very elongate supranasal; a single postnasal; a small lower loreal, bordered above by another loreal more than twice as large; a large preocular; two suboculars, the posterior elongate; 3 postoculars; supralabials 10–10, the last elongate, none posterior to eye higher than those anterior to eye; 3 anterior temporals.

Ten infralabials to a point even with posterior supralabial; about five pairs of chinshields, the scales of the anterior two pairs in contact medially, the remainder widely separated; a row of large labimentals, larger than the infralabials they border, separating all of chinshields, except the anterior and a narrow portion of the second, from infralabials.

Lateral fold deep, both on neck and on body; fold on neck enclosing a small, nearly scaleless pocket medially; 16 longitudinal rows of dorsals; 12 rows of ventrals; 42 dorsals from interparietal to posterior margin of thighs; 6 median rows of dorsals obtusely keeled, others smooth.

Snout to vent, 116 mm.; tail regenerated; snout to posterior border of ear 29 mm.; width of head 20 mm.; depth of head 17 mm.; hind leg 32 mm.; foreleg 26 mm.

No dark markings above or below; head reddish yellow; body brownish yellow; venter cream. No light flecks present.

*Variation.*—All specimens have 16 rows of dorsal scales, and all but 1 (with 14) have 12 rows of ventral scales; dorsals from occiput to base of tail 40 to 50, average 42.7 (40, 1; 41, 3; 42, 5; 43, 3; 46, 1; 50, 1). The number of keeled rows of dorsals varies from 6 to 8, and usually is 6. Two have 2–2 loreals, one has 1–2, one has 2–?, and the remainder have 1–1; in those specimens with single loreals, the scale is narrowed and otherwise so shaped that it evidently is formed by the fusion of two scales. The loreal is in contact with the prefrontal in all. Supralabials 9–10 in 1, 10–10 in 7, 10–11 in 2, 11–11 in 3. The anterior superciliary is present in all, and in all but 1 this scale completely separates the preocular from the anterior supraocular. In

1 specimen there are 4-6 superciliaries; the series is practically complete, and separates all the outer supraoculars, and all but the posterior inner supraocular, from the orbit. The others have 2 to 4 superciliaries, except in 1, on 1 side of which only the anterior superciliary is present (median fused with an outer supraocular on 1 side). One specimen has a very small azygous prefrontal.

*Color.*—Some specimens have faint, narrow, darker brown crossbands, margined irregularly with flecks of white. Others have flecks of white scattered irregularly over the back and head. Otherwise the coloration is a more or less uniform, brownish yellow.

*Comparisons.*—This race is very similar to *levicollis*, having 16 dorsal scale rows. It differs from that in having at least an anterior superciliary (*levicollis* never has more than the median superciliary), which rarely does not separate the preocular from the anterior supraocular (preocular always contacts supraocular in *levicollis*); 2 loreals, or a single loreal formed of 2 fused scales (an obviously single, more or less rounded loreal in *levicollis*); loreal always in contact with prefrontal (loreal generally separated from prefrontal by contact of supraocular and posterior internasal); and generally fewer dorsals, varying from 40 to 50, average 42.7 (47 to 50, average 49, in *levicollis*).

There is a possibility that this is identical with a specimen described by Bocourt as *planifrons*, from "Oaxaca." If so the type probably bears incorrect locality data, as it now seems very doubtful that the species that has been known by the name of *levicollis* (including *ciliaris*) occurs on the Oaxaca highlands. *G. planifrons* moreover is said to have perfectly flat head scales, unlike all others of the *imbricatus* group. It may possibly be an aberrant specimen of some other species, such as *imbricatus*, the only other member of the group definitely recorded from the Oaxaca region. That no further specimens like the type have been collected has no bearing on the validity of the species, since the very distinct *oaxacae* also has remained a desideratum at least in the collections examined by me. In view of this doubt concerning *planifrons*, I believe it best to retain that name for a species distinct from *levicollis*; to synonymize the two would require a shift of names (since *planifrons* was the earlier named) not at all warranted by present knowledge.

#### KEY TO MEXICAN GERRHONOTUS

1. Arboreal species with flattened heads; dorsals with feeble or no keels, longer than broad; lateral fold poorly defined; scales on posterior surface of thigh and on sides of neck large granules; adults usually greenish; central Mexico to Panama-----*deppii* group----- 2
- Terrestrial species seldom found in trees, with thick heads not flattened although frequently widened posteriorly; temporal and supra-auricular scales never protuberant; lateral fold moderately to very well defined;

- scales on posterior surface of thigh and on sides of neck minute or not; dorsals as long as broad or broader, with well-defined keels; adults generally brown or gray----- 7
2. A series of projecting scales above ear----- 3  
No projecting scales above ear----- 4
3. Scales above ear short, obtusely conical; an azygous prefrontal; central Chiapas (near Comitán)----- *ochoterenai*  
Scales above ear very elongate; no azygous prefrontal; all scales between frontal and rostral paired; central Chiapas, Guatemala----- *fimbriatus*
4. Suboculars missing or reduced to minute scales; only one anterior temporal bordering orbit; central Guerrero----- *deppii*  
Suboculars present; two anterior temporals bordering orbit----- 5
5. Area of granules on sides of neck very narrow; no granular zone in lateral fold----- *oaxacae*  
Area of granules covering entire sides of neck; a granular zone in lateral fold----- 6
6. Dorsals larger, 25 to 29 from interparietal to posterior margin of thighs; scales across nape usually reduced to 4 or 5 in at least 1 transverse row; central Veracruz and adjacent Puebla----- *gramineus*  
Dorsals smaller, 32 to 34 from interparietal to posterior margin of thighs; scales across nape not reduced to less than 6 in any transverse row; southern Hidalgo, central and northern Puebla----- *tenuatus*
7. Supranasal plates absent or fused with first pair of internasal scales; nasal in contact with rostral; a large azygous prefrontal; western Chihuahua, probably eastern Sonora----- (*caeruleus* group)---- *kingii*  
Supranasal plates present, small or, if enlarged, forming the second pair of scales behind rostral; nasal rarely in contact with rostral; a large azygous prefrontal or not----- 8
8. Posterior inner (usually outer also) supraocular in contact with orbit; superciliary series short, only anterior portion present (rarely posterior portion present, separating two posterior supraoculars from orbit); rarely an azygous prefrontal, minute when present; dorsals from interparietal to posterior margin of thighs 27 to 50----- *imbricatus* group---- 9  
Posterior supraoculars separated from orbit by a complete series of superciliaries; an azygous prefrontal or not; dorsals not less than 45----- 14
9. Longitudinal rows of dorsals 14 or less----- 10  
Longitudinal rows of dorsals 16----- 12
10. Dorsal scales less than 35 (27 to 29); western Mexico (State)---- *rudicollis*  
Dorsal scales 35 to 43----- 11
11. Rows of dorsals 12; western Mexico (State), perhaps adjacent Michoacán and Guanajuato----- *imbricatus adpersus*  
Rows of dorsals 14; Oaxaca highlands and southern edge of central plateau in Michoacán east to Veracruz----- *imbricatus imbricatus*
12. Only median superciliary plate present; preocular in contact with anterior supraocular; western Chihuahua, and probably adjacent areas in Sonora and Durango----- *levicollis levicollis*  
At least an anterior as well as median, and generally a total of three superciliaries; preocular rarely in contact with anterior supraocular-- 13
13. Head scales perfectly flat (*c.f. gadovii* et al.); Oaxaca----- *planifrons*  
Head scales convex; southern Coahuila to northern Guanajuato, central Durango to San Luis Potosí----- *levicollis ciliaris*
14. Two large loreals, one following the other (sometimes the posterior split into several scales); last two supralabials low, nearly straight-edged above (not angular); body and tail very elongate----- *liocephalus* group-- 20

- One loreal bordering labials, or if two one very small and split from some other scale; two posterior supralabials nearly or quite as high as antepenultimate labial at end of supraocular, and at least one of them (penultimate) angular above..... *antauges* group-- 15
15. An entire postmental; scale rows 14..... 16  
Only paired scales following mental; scale rows 16 or more..... 18
16. An azygous prefrontal; range unknown ("Mexico")..... *obscurus*  
No azygous prefrontal..... 17
17. Supranasals small; three pairs of scales between frontal and rostral; Oaxaca highlands..... *bocourti*  
Supranasals enlarged, simulating internasals, and forming a total of four pairs of scales between rostral and frontal; mountains north of Oaxaca city..... *viridiflavus*
18. No azygous prefrontal; Mount Orizaba, Veracruz..... *antauges*  
An azygous prefrontal..... 19
19. Supranasals narrow, not at all enlarged; no postrostral; Oaxaca highlands and central Guerrero..... *gadovii*  
Supranasals enlarged, simulating internasals; a postrostral (regular?); Mount Orizaba, Veracruz..... *modestus*
20. A loreal segmented from lower portion of "posterior canthal," which usually is separated from labials; generally two superimposed preoculars; distinct dorsal bands; belly and tail mottled with gray and with *black* flecks; central Veracruz, foothills (not at high elevations) -- *liocephalus ophiurus*  
Seldom a loreal segmented from lower portion of "posterior canthal," which rarely is not in contact with labials; generally one preocular; bands present or not; belly mottled or with black flecks but not both..... 21
21. Dorsals 46 to 52, interparietal to posterior margin of thighs; dorsal bands distinct; no black marks whatever on ventral surfaces; belly mottled (gray) in adults; northern San Luis Potosí through most of Coahuila to southwestern Texas..... *liocephalus infernalis*  
Dorsals 54 to 59; dorsal bands very indistinct in adults; belly not mottled, generally uniform, sometimes with black flecks which may form broken longitudinal lines; central plateau, southern Puebla to Guanajuato  
*liocephalus liocephalus*

#### 4.—AN UNNAMED CELESTUS FROM MEXICO, WITH A KEY TO MAINLAND SPECIES OF THE GENUS

Material recently acquired during my tenure of the Walter Rathbone Bacon Traveling Scholarship of the Smithsonian Institution has, in conjunction with other specimens in the United States National Museum, thrown considerable light upon the status of the Mexican species of *Celestus*. In the material available and also that reported in the literature, only two Mexican forms can be distinguished. One of these has not been named, while the other has received three names.

There is another name in the literature, *Euprepis microcephalus* Hallowell,<sup>14</sup> which was placed in *Diploglossus* (includes *Celestus*) by

<sup>14</sup> Proc. Acad. Nat. Sci. Philadelphia, vol. 8, p. 155, 1856 (perhaps published 1857); also Trans. Amer. Philos. Soc., ser. 2, vol. 11, pp. 79-80, 1860 (reprints perhaps appeared 1857).

Boulenger.<sup>15</sup> Hallowell's species was based on a single specimen said to be from "Mexico," collected by Keating. It is obviously not the same (by description) as the two species of *Celestus* now known from Mexico, however, and moreover Hallowell cites *Scincus ventralis* [= *Gerrhonotus liocephalus*] as a synonym. The question of its identity was submitted to Dr. E. R. Dunn, who very kindly supplied considerable additional data on the type. He states that it is not an Anguid, as *Diploglossus*, but belongs to the Scincidae. The type is not in good condition (portions of the head mutilated), but appears to belong to a non-American genus, probably *Dasia*. It may possibly be one of the original series of three specimens of Peale and Green's *Scincus ventralis*, since only two of them are now present in the series labeled as the cotypes, and thus would be explained Hallowell's citation of *Scincus ventralis* as a synonym of his species. It is also possible that a confusion of specimens occurred, the original *Gerrhonotus* being exchanged for the present type of *microcephalus*, which Hallowell erroneously thought was one of Peale and Green's cotypes. One of these alternatives must be true: Either a peculiar skink, unknown except by the type of *microcephalus*, occurs in Mexico, or else some shift of specimens occurred in the Philadelphia Academy collections between 1830 and 1856. Dr. Dunn, as well as I, favors the latter alternative. Regardless of the provenance of the type, however, it is apparent that it is not a *Diploglossus* or a *Celestus*.

#### CELESTUS ENNEAGRAMMUS (Cope)

*Siderolamprus enneagrammus* COPE, Proc. Acad. Nat. Sci. Philadelphia, 1860, p. 368 (Jalapa, Veracruz).

*Diploglossus steindachneri* COPE, Proc. Acad. Nat. Sci. Philadelphia, 1864, p. 179 (Orizaba, Veracruz).

*Diploglossus chalybacus* COPE, Proc. Acad. Nat. Sci. Philadelphia, 1866, p. 321 (Mount Orizaba, 4,000-6,000 feet, Veracruz).

The 6 specimens available include the type of *steindachneri* (U.S.N.M. No. 6342); the type of *chalybaeus* (U.S.N.M. No. 6603); two small specimens from Tequeyutepec, 7 miles above Jalapa, Veracruz (U.S.N.M. Nos. 113524-113525), which duplicate in detail the color description of *enneagrammus*, and which are practically topotypes; a juvenile from Totontepec, Oaxaca (U.S.N.M. No. 46651); and an adult from "Tehuantepec," Oaxaca (U.S.N.M. No. 30189).

*Diagnosis.*—The young specimens have a broad, dark brown lateral stripe on each side, extending from the snout to the sides of the base of the tail. Bordering these stripes medially is a fine light line, continuous around snout and passing through the outer supraoculars.

<sup>15</sup> Cat. Liz. British Mus., vol. 3, p. 504, 1887.

A similar, fine light line extends along the middle of each of the seven median dorsal scale rows, but does not extend onto head; the remainder of the back, between the light lines, is dark brown. The ventral surfaces are bluish, and the tail is bright blue (in life). The two specimens from near Jalapa, and the one from Totontepec, Oaxaca, form the basis of this description; they do not differ in pattern in any respect. The largest measures 45.2 mm. snout to vent.

The three adults or subadults (smallest 65 mm. snout to vent) retain the broad, dark lateral stripes as in the young, but the light lines on the dorsal surface increase in width at the expense of the intervening black, until the whole dorsal surface is light, with longitudinal streaks of black on the edges of the scale rows. In the smallest adult the black lines are continuous, but very narrow; in a larger adult (87.5 mm.) the black lines are broken and appear as rows of elongate spots on the edges of the scale rows; the other adult (89 mm.) is described by Cope: "Sides of head and body with limbs, black; \* \* \* Dorsal region for a width of seven and two half rows of scales olive brown, the edges of each row blackish and forming narrow, imperfect lines \* \* \* (this specimen, the type of *chalybaeus*, has now lost all markings)."

All specimens have rather short snouts; posterior edge of first labial even with middle of naris; supralabials to posterior edge of subocular 7-7 in 4, 7-8 in 1 (U.S.N.M. No. 113525), 8-8 in 1 (U.S.N.M. No. 113524); supralabials to below middle of eye 1 less than to posterior edge of subocular; 2 superimposed postnasals, except in 2 (U.S.N.M. Nos. 6603, 113525), in which the lower is fused with the first loreal; an anterior loreal following postnasals in all; median loreal very variable, small or fused with adjacent scales (distinct in 1; fused with lateral prefrontals in 2; fused with anterior loreal in 1; and in 2, fused with lateral prefrontal on one side, with anterior loreal on other); distance between anterior and posterior loreals considerably less than length of either; 2 superimposed posterior loreals on one side in 1, on both sides in another, 1 posterior loreal in the remainder; 1 preocular, separated from labials on one side in 1, on both sides in another; suboculars 1-1 in 1, 2-2 in 3, 2-3 in 1, indeterminate in 1; postoculars 3-4 in 1, 4-4 in 2, 4-5 in 1, 5-5 in 1; supraoculars 5-5 in all; outer supraoculars 3-3 in all; superciliaries 6-6 in 1, 7-7 in 3, 8-8 in 1, indeterminate in another; frontal anteriorly in contact with a single, azygous prefrontal, a little less than twice as long as broad; prefrontal in contact only with anterior supraocular; 3 frontoparietals on each side (an extra 1 split off frontal on one side in 1); interparietal a little smaller than either parietal, subequal to or a little larger than occipital; a small scale split from interparietal in 1 separates it from frontal;

median prefrontal in contact with the anterior internasals in 1, separating medially the scales of the posterior pair.

Scale rows 33 in 4, 35 in 2 (Nos. 46651, 113525); lamellae under terminal digits flatter than others; lamellae on fourth toe 15-16 in 2, 16-16 in 1, 17-18 in 1, 18-? in 1, indeterminate in 1.

CELESTUS ROZELLAE, new species

*Holotype*.—U.S.N.M. No. 113526, an adult from the vicinity of Palenque, Chiapas.

*Paratypes*.—Two, one from Piedras Negras, Petén, Guatemala (U.S.N.M. No. 113527); the other (U.S.N.M. No. 62992) is from an unknown locality (from fruit ship at New Orleans, La.).

*Diagnosis*.—Scale rows 31 to 33; frontal in contact with a single prefrontal; latter in contact with only anterior supraocular; 8 to 10 labials to posterior edge of supraocular; first labial not extending beyond anterior margin of naris; median loreal as long as either of the others, or longer; portion of rostral visible from above greater than its distance from second pair of internasals; sides dark with vertical light bars, in young and adults; young with a broad, dorsolateral light stripe on each side, fading and indistinguishable in adults.

*Description of holotype*.—Portion of rostral visible from above two-thirds as long (1.1 mm.) as its distance from prefrontal (1.5 mm.); two pairs of internasals; a large median prefrontal in contact with anterior supraocular and narrowly separated from anterior superciliary; width of frontal (3 mm.) two-thirds its length (4.7 mm.); interparietal subtriangular, its suture with frontal a little smaller than suture with either anterior frontoparietal; interparietal and occipital subequal in size, two-thirds size of either parietal; 3 frontoparietals, anterior largest, median smallest; nasal very elongate, nostril pierced posteriorly; 2 superimposed postnasals; 3 loreals, 2 anterior subequal in size, smaller than posterior; lateral prefrontal a little larger than median loreal, separating latter from median prefrontal; a single preocular, equal in size to anterior loreal; a short anterior and long posterior subocular; 4-5 postoculars; 8 superciliaries; 5 primary (inner) supraoculars, 3 secondary outer supraoculars; posterior edge of first labial about even with anterior border of naris; 7-8 labials to below middle of eye, 8-9 to posterior end of subocular; 1 postmental and 3 large pairs of chinshields, the scales of the anterior pair in contact medially.

Ear opening small, much smaller than eye opening; 31 scale rows around middle of body; 21-22 lamellae under fourth toe; lamellae under distal phalanx larger and flatter than others.

Snout to vent 84 mm.; snout to posterior border of ear 14.9 mm.; foreleg 19.2 mm.; hind leg 26 mm.

*Color.*—Head gray-brown, with a few darker brown flecks, and some of the scales edged with dark brown; sides of body and neck darker brown, with numerous, somewhat irregular, vertical light bars a little over a scale wide, and separated from each other by the width of from two to three scales; dorsal surface gray-brown as head, with small dark flecks scattered on many of the median scales; scales just above the dark sides with very few flecks; tail a little lighter than body, with longitudinal flecks of brown on the centers of the scales, particularly prominent on the two median scale rows. Ventral surfaces of body and tail bluish, except for the preanal region, a narrow area across chest, posteroventral surfaces of limbs, and midventral surface of tail, which are white.

*Variation.*—The adult paratype (U.S.N.M. No. 62992) is marked like the holotype. The juvenile from Piedras Negras, however, which measures 44 mm. snout to vent, is somewhat different. The sides of the body are dark and with vertical light bars as in the adults; the light bars are not quite so broad and a little more broken into spots; they extend somewhat into the dorsal region. A very broad, black band extends from the snout along the middle of the back onto the base of the tail; it covers three and two half-scale rows on the middle of the back, and on the head involves nearly all of the prefrontal and parietals. This band is separated from the lateral band by a broad light line extending from snout through the lateral supraocular region to the tail; these cover two and two half-scale rows at the middle of the body, and are greenish in the temporal region, cream on snout, and of a golden tint over most of the body. The lateral light streaks are very pale blue. Ventral surface of body rather bright blue, lighter on chin and on limbs.

There is but little variation in scutellation. In 1 the anterior superciliary is narrowly in contact with prefrontal on one side; the occipital and interparietal are half the size of the parietals in 1; median loreal fused with scale above it on one side in 1, but the distance between the anterior and posterior loreals still greater than the length of either; 7-8 superciliaries in 1; 7-8 supralabials to below middle of eye in 1, 8-9 in other (8-9, 9-10, respectively, to posterior border of subocular); scale rows 31 in 1 (No. 113527), 33 in other; lamellae under fourth toe 23-23, 26-?

*Remarks.*—The holotype was discovered during the day by my wife, for whom it is named. It was rapidly running up the trunk of a small tree near an open spot in a wooded area.

The species differs from *enneagrammus* chiefly in the elongate, flattened snout and different pattern. The lengthening of the snout is expressed in the larger size of the medial loreal, the elongation of the nasal, and the enlargement of the rostral.

## KEY TO MAINLAND CELESTUS

1. Three prefrontals in contact with frontal<sup>16</sup>; green above, lighter on sides (adult)----- montanus  
 Only one prefrontal in contact with frontal----- 2
2. Two loreals; prefrontal in contact with two supraoculars; 6 labials to below middle of eye; a broad dorsolateral light stripe; sides uniform dark, in young----- bivittatus  
 Three or more loreals (the median may be fused with another scale, the lateral prefrontal), or, if only two, prefrontal separated from second supraocular\_ 3
3. Postnasals followed by two pairs of superimposed loreals; "frontal twice as wide as long; four external and four internal supraorbitals"-- cyanochloris  
 Postnasals followed by two or three loreals, not paired; frontal much longer than broad; five inner supraoculars, three outer----- 4
4. First labial reaching to middle of naris; distance between anterior and posterior loreals less than the length of either; no vertical light bars on sides in young or adults----- enneagrammus  
 First labial reaching to anterior border of naris; distance between anterior and posterior loreals practically as great as, or greater than, the length of either; vertical light bars present on sides in young and adults---- rozellae

## 5.—NEW XANTUSIID LIZARDS

The collections obtained in Mexico through the aid of the Walter Rathbone Bacon Traveling Scholarship in 1938 to 1940 have revealed the existence of two previously unknown species of *Gaigeia*, and an undescribed race of *Lepidophyma*. Specimens previously collected for the United States National Museum by E. W. Nelson and E. A. Goldman include still another unnamed race of *Lepidophyma*, making a total of four species and subspecies of each genus in Mexico.

## GAIGEIA DONTOMASI, new species

*Holotype*.—U.S.N.M. No. 111473, an adult female from Lachiguiri, Oaxaca, at 7,100 feet, collected by Thomas MacDougall, January 20, 1940.

*Paratype*.—No. 111474, a topotype, same collection data as the holotype.

*Diagnosis*.—Dorsal whorls three to a caudal segment, ventral whorls two; scales on body of nearly equal size; no distinctly enlarged, keeled scales on thigh; four or five rows of granules middorsally; three temporals, the anterior half as large to as large as the posterior; enlarged scales in paravertebral rows separated from each other by an average of two scales.

*Description of holotype*.—Head and body somewhat flattened; length of portion of rostral visible from above considerably greater than its distance from frontonasal; nasals in contact medially behind

<sup>16</sup> This is also true of *nuchalis* Boulenger (Proc. Zool. Soc. London, 1898, p. 920, pl. 56, fig. 1) from an unknown locality.

rostral; frontonasal in contact with anterior loreal; three prefrontals, the median slightly smaller than others and narrowly separated from frontonasal; two frontals, their median suture less than half their maximum length; interparietal hexagonal, longer than and as large as either parietal; temporals three, the anterior and posterior subequal in size and less than a fourth size of parietals; median temporal a little larger than or subequal to a parietal, very narrowly separated from frontal; two nasals, the nostril pierced in anterior; two loreals, the anterior not quite two-thirds size of posterior; two preoculars, lower larger, triangular; three suboculars, three postoculars and three superciliaries, all small; eight supralabials, the fifth below middle of eye; granular temporals a little larger than nuchals, somewhat irregular in size, becoming larger anteriorly; a row of small auricular lobules bordering ear.

A large mental, with a considerably larger labial border than rostral; three large pairs of scales (chinshields) following mental, the first two in contact, the posterior separated by about four scales (three to five); gular scales small, rounded, not imbricating, becoming flat and a little larger anteriorly; a rather well defined gular fold preceding arms, terminating on sides of neck, ventrally involving smaller scales than occur anteriorly.

Sides and back with small, nonimbricating scales of nearly equal size, most conical or bluntly keeled; four or five middorsal rows of small, uniform granules, bordered on either side by a series of rather widely spaced, somewhat enlarged scales separated from each other generally by two scales; on dorsolateral surface are similar, scattered, slightly enlarged scales; sides with granules of uniform size.

Thirty-two transverse rows of enlarged, flat, juxtaposed, ventral scales from gular fold to anus; 10 longitudinal rows of ventrals at middle of belly; 4 large, subequal preanals, and in addition the posterior pair bordered on either side by a scale half as large.

Dorsal surface of foreleg with small, conical tubercles, smaller on lower foreleg; ventral surface similarly protected, except that the smaller scales are on the upper foreleg, the large on the lower; lamellar formula for fingers 10-15-15-10-7.

Dorsal surface of thigh with nearly uniform, conical tubercles, shank with scales of irregular size, the larger ones bluntly keeled; ventral surface of hind leg with flat scales, largest anteriorly on shank; femoral pores 10-10; the pore series terminating medially at a large, flat scale; lamellar formula for toes 16-23-18-12-8.

Dorsal caudals feebly keeled, subcaudals smooth; on dorsal surface, every third whorl of scales slightly enlarged; first whorl of each caudal segment (i. e., that which follows the whorl of enlarged scales) incomplete ventrally.

Snout to vent 50 mm.; tail 61 mm. (regenerate); foreleg (from axilla) 15 mm.; hind leg (from base of tail) 21 mm.

*Color.*—Dorsal surface light gray, lighter on head; no marks on dorsal surface of latter; sides of head dark brown (black), with numerous, large, light areas in labial and lower temporal region; centers of supralabials dark; chinshields and mental with large dark areas toward border, and a smaller dark area medially; throat with a few small flecks of black; posterior temporal region and sides of body with small, scattered, round, light spots bordered by black; these spots form a more or less definite paravertebral and dorsolateral row on each side, and in these rows their dark borders expand anteriorly and posteriorly and become continuous; middorsal area unmarked; tail with similar, scattered light spots (which occupy more than half the total caudal surface), but here they are rectangular; large, light, dark-bordered ocelli occur on the limbs as well as on the body; ventral surface of body light, with some dark suffusion on the anterior edges of the belly scales, especially prominent laterally; subcaudal surface spotted (except midventrally) as dorsal surface.

*Variation.*—The paratype (male) is essentially similar to the holotype. The anterior temporal is half the size of the posterior; the median prefrontal is in contact with the frontonasal. There are 10–10 femoral pores.

*Remarks.*—The specimens are named for their collector, Thomas MacDougall, in whose company we spent several very pleasant weeks on the Isthmus of Tehuantepec. They were found under fallen logs in a pine forest.

GAIGEIA RADULA, new species

*Holotype.*—U.S.N.M. No. 111472, an adult female from San José Manteca, 5 kilometers from San Carlos Yautepec, Oaxaca.

*Diagnosis.*—Dorsal whorls three to a caudal segment, ventral whorls two; scales on body irregular in size, with many, closely placed, enlarged, keeled scales; thigh with enlarged, keeled scales; two or three rows of granules middorsally; three temporals, the anterior a third size of posterior; enlarged scales in paravertebral rows separated from each other by an average of one scale.

*Description of holotype.*—Similar to *dontomasi* in general features of cephalic scutellation; frontals rather narrowly in contact; a short, vertical series of somewhat enlarged scales preceding ear.

Dorsal scales mostly keeled and conical; 2 or 3 rows of granules middorsally, bordered on either side by a series of enlarged, keeled scales generally separated from each other by 1 small scale; scales on sides of body irregular; scattered, enlarged, keeled, closely placed tubercles present; many of dorsal scales of thigh enlarged, keeled; femoral pores 10–10; ventral scales 32, in 10 longitudinal series at middle of belly; lamellar formula for toes 14–20–16–10–6.

*Color*.—Dorsal color dark gray; sides of head darker, with vague light areas; a dark stripe through upper temporal region; dark marks on labials, mental and chinshields as in *dontomasi*; a body pattern faintly discernible, similar to that of *dontomasi*.

*Remarks*.—This species is obviously a close relative of *dontomasi*; it is with some hesitation that I have held the present specimen as different from the other two. The differences between *radula* and *dontomasi* are rather striking, however, in scutellation of the body, as can be seen by a comparison of the diagnoses of the two.

LEPIDOPHYMA SMITHII TEHUANAЕ, new subspecies

*Holotype*.—U.S.N.M. No. 111488, from Cerro Arenal, 30 kilometers west of Tehuantepec, Oaxaca.

*Paratypes*.—Eleven. U.S.N.M. No. 111489, EHT-HMS 28136, Tres Cruces, Oaxaca; U.S.N.M. No. 111490, El Limon, Oaxaca; U.S.N.M. Nos. 111491, 111492, La Concepción, Oaxaca (all between 30 and 50 kilometers west of Tehuantepec); U.S.N.M. No. 46687, Santa Efigenia, Oaxaca; U.S.N.M. Nos. 46997 to 47000, near Tehuantepec, Oaxaca; and U.S.N.M. No. 48105, mountains near Santo Domingo, Oaxaca.

*Diagnosis*.—Three dorsal and two ventral whorls of small scales separating the whorls of enlarged scales on tail; femoral pores 13 or less; no median frontonasal; very young with pink tails.

*Description of holotype*.—Head scutellation typical, except: No median frontonasal; anterior of the three enlarged temporals small, separated from labials by a narrow row of granules and a row of somewhat enlarged scales; scales in posterior temporal region irregularly enlarged, some of the larger ones arranged in a diagonal row a little in front of ear; no enlarged scales adjoining enlarged temporals; auricular lobules prominent; granules in gular region relatively large, about nine in the vertical diameter of ear opening (at about middle of throat).

Enlarged tubercles on sides of body flattened on their posterior faces, arranged in vertical rows in which seldom more than two of the tubercles are separated on both sides from the adjacent enlarged tubercles; generally four rows of granules middorsally between paravertebral rows of enlarged tubercles.

Ten longitudinal rows of ventrals, 37 rows from gular fold to anus; 9–10 femoral pores; 75 mm. snout to vent. Three rows of small, keeled scales dorsally on tail, separating the whorls of enlarged scales; scales of whorl following the whorl of enlarged scales much reduced in size toward base of tail, proportionately equal to others only distal to about middle of tail; the latter whorl is dropped on the ventral surface, leaving 3 whorls to a segment.

*Color.*—Dark brown above, with small, light ocelli on body arranged in paravertebral, dorsolateral, and lateral rows on each side; belly unmarked; gular region feebly mottled; dark marks present in the center of each chinshield (infralabial) and of mental.

*Variation.*—The femoral pores in the 8 adult paratypes vary from 10 to 13 (10, 6; 11, 2; 12, 5; 13, 2). The 3 juveniles (largest 29 mm. snout to vent) had bright pink tails in life; after a year of preservation they appear of very light flesh color, with vague reticulations of dark pigment.

All specimens lack a median frontonasal, and largely on the basis of this character the specimens from the Tehuantepec area are distinguished from typical *smithii*. This scale is regularly present in *smithii*, as shown by a large series of 127 specimens from various localities in southern Chiapas near Escuintla. The young *smithii*, moreover, many of which were seen in life, do not have pink tails, but rather the tails are dark, as are the bodies.

LEPIDOPHYMA SMITHII OCCULOR, new subspecies

*Holotype.*—U.S.N.M. No. 47133, from Jalpan, Querétaro, collected by Nelson and Goldman.

*Paratypes.*—Two topotypes, U.S.N.M. Nos. 47134–47135.

*Diagnosis.*—Three dorsal and 2 ventral whorls of small scales separating the whorls of enlarged scales on tail; femoral pores less than 14 (in known specimens, 10–11); no median frontonasal; young unknown; scales anterior to ear very small and uniform, except for a row of enlarged tubercles adjacent to enlarged temporals; whorls on tail relatively poorly differentiated; most of tubercles on sides of body separated from each other; about 12 granules near middle of throat contained in vertical diameter of ear opening.

*Description of holotype.*—Head scutellation typical, except: No median frontonasal; anterior of the 3 enlarged temporals small, separated from labial by a single large scale nearly as large as labial; scales in front of ear (anterior to prominent auricular lobules) very small and even in size, except for a row of enlarged ones adjoining the enlarged temporals; granules in gular region very small, about 12 (at middle of throat) in the vertical diameter of ear opening.

Enlarged tubercles on sides of body flattened on their posterior faces, arranged in vertical rows in which practically all the enlarged tubercles are separated from each other; generally five rows of granular scales middorsally between paravertebral rows of enlarged scales.

Ten longitudinal rows of ventrals; 37 rows from gular fold to anus; 10–11 femoral pores; 93 mm. snout to vent.

Three whorls of small, keeled scales dorsally on tail, separating the whorls of enlarged scales; scales of whorl following the whorl of

enlarged scales much reduced in size toward base of tail; this whorl dropped on ventral surface, leaving three whorls to a segment.

*Color.*—Dark brown above, with large, anastomosing light spots; head light; belly, throat, and tail unmarked; chinshields with feeble dark marks.

*Variation.*—The two paratypes have 10 femoral pores on each side (uncertain on one side of one). Both lack a median frontonasal, and the temporal scales anterior to ear and gular scales are small, as in the type.

*Comparisons.*—This subspecies is similar to *tehuanae* in the absence of the median frontonasal, but it differs from that subspecies as well as from *smithii* in the small size of the temporal and gular scales, presence of a row of enlarged tubercles next to the enlarged temporals, and in the reduction in size of the scales in the enlarged tail whorls.

The 3 subspecies of *smithii* hold in common a low femoral pore count, a maximum of 4 (1 incomplete) dorsal and 3 ventral whorls to a caudal segment, and in these characters differ rather widely from *flavomaculatum*, which usually has 14 or more femoral pores and a maximum of 5 whorls (2 incomplete) to a caudal segment. In 17 typical specimens of *flavomaculatum* (Guatemala and Mexico), the median frontonasal is absent in 1, the femoral pores are 15 to 22 (15, 1; 16, 4; 17, 4; 18, 7; 19, 1; 20, 3; 22, 1), and in all the additional dorsal whorls of caudal scales are present even near the base of the tail. In 12 *f. obscurum* from Tela, Honduras, to Panama, the median frontonasal is absent in 3, and the femoral pores vary from 13 to 19 (13, 1; 14, 5; 15, 10; 16, 2; 17, 4; 18, 2; 19, 1); in the 2 Panama specimens the tail is as in typical *flavomaculatum*, while in the others the additional whorls become evident only distal to the middle of the tail.

These data seem to indicate that there is a closer relationship between *smithii*, *tehuanae*, and *oculor* than between any of them and *flavomaculatum* or *obscurum*. For this reason the former three are assumed to be races of one species, while the latter two belong to another.

#### KEY TO MEXICAN LEPIDOPHYMA AND GAIGEIA

1. Distinct, vertical rows, separated from each other by granular areas, of well-differentiated, enlarged, keeled scales on sides of body\_\_\_ *Lepidophyma* 2  
No distinct, vertical rows of enlarged scales on sides of body---- *Gaigeia* 5
2. All (except basal) whorls of enlarged scales on tail separated from each other dorsally by 4 rows of scales; femoral pores 15 to 22; median prefrontal normally present, sometimes absent; Atlantic slopes, Tabasco into Guatemala----- *flavomaculatum flavomaculatum*  
All whorls of enlarged scales on tail separated from each other dorsally by 3 rows of scales (rarely feeble evidence of a fourth row); femoral pores less than 14; median prefrontal present or absent----- 3

3. A median prefrontal; Pacific slopes, Chiapas into Guatemala  
smithii smithii<sup>17</sup>  
 No median prefrontal..... 4
4. Scales in posterior temporal region (anterior to ear) minute and very uniform in size, except for a series of relatively large, projecting auricular lobules and a row of larger scales beside the upper temporals; whorls on tail relatively little differentiated; Atlantic slopes, probably from southern San Luis Potosí to northern Veraacruz; type locality Jalpan, Querétaro.  
smithii ocular  
 Scales in posterior temporal region (anterior to ear) larger, irregular in size; auricular lobules poorly defined or absent; no scales bordering upper temporals; tail whorls strongly differentiated; Pacific slopes, Isthmus of Tehuantepec..... smithii tehuanae
5. All whorls on tail complete, none restricted to dorsal surface..... gaigeae  
 Some of scale whorls on tail restricted to dorsal surface..... 6
6. Only one row of scales on ventral surface between the whorls of enlarged scales (i. e., every third whorl restricted to dorsal surface)..... 7  
 Two proximally, three distally, rows of scales on ventral surface between the whorls of enlarged scales..... sylvatica
7. Numerous, very closely approximated, enlarged, keeled scales, separated by small granules, present on sides of body; two or three rows of granules in vertebral region..... radula  
 Dorsal scales practically uniform in size; four rows of granules in vertebral region..... dontomasi

#### 6.—THE MEXICAN SUBSPECIES OF *DRYMOBIUS MARGARITIFERUS*

I first observed that very easily recognizable differences occur in Mexican *Drymobius margaritiferus* when my wife and I were collecting in the vicinity of La Esperanza, Chiapas, in April and May of 1940, as guests of Mr. and Mrs. Eizi Matuda. Although we had collected *Drymobius* in most of the provinces in Mexico where it occurs, and had never before had any hesitancy whatever in identifying *margaritiferus* as such at first sight, the specimens we collected in southern Chiapas were so different that at first we did not recognize them at all, and only after capturing several specimens did we realize they might be close to the familiar *Drymobius margaritiferus* of areas to the north.

Subsequent study of these and other Mexican specimens revealed no significant differences in scutellation, but did verify the remarkable differences in color and pattern that we had observed in the field.

<sup>17</sup>An overlooked synonym of *smithii* is the monotypic *Akleistops guatemalensis* Müller, Verh. Naturf. Ges. Basel, vol. 6, pp. 390-398, pls. 1-2, 1878. It is also to be noted that the "Tehuantepec" types may or may not be typical *smithii* as described and figured by Bocourt. This author mentions six specimens of his new form, four from "Tehuantepec" (Sumichrast) and two from the west coast of Guatemala. However, the species is both described and figured with a median frontonasal, and no specimens are mentioned without one. It must be concluded that the "Tehuantepec" specimens either are not from the vicinity of Tehuantepec city but from the extreme eastern part of the Isthmus (near or in Chiapas), or that the scale is actually absent, since Bocourt, paying no great attention to the presence or absence of it, neglected to specifically describe its nature. In view of the doubt concerning the nature of the "Tehuantepec" types, I believe it best to restrict the name to the form best characterized by his description and figure, and to the cotype from Guatemala, which beyond question belongs to the same race as the large series available from the vicinity of La Esperanza, Chiapas.

The southern Chiapas specimens are characterized chiefly by their dull color, which differentiates that population from all other *margaritiferus* of Central America, Mexico, and the United States. To this the name *occidentalis* Bocourt is applicable. In mature specimens of this race the light central spot of each dorsal scale (characteristic of the whole species) is gray-brown, diffuse, poorly defined, and stippled with darker. Young specimens are the same, except that the light areas are better defined. In all other mature specimens of the species, from Costa Rica to Texas, the light central spot is blue, or yellow to orange, or is partly blue and partly yellow or orange. The difference is striking, even in many long-preserved specimens (unless badly discolored by formalin).

Correlated with this color difference in *occidentalis* are two readily discernible differences in pattern. The most uniform difference, but perhaps less readily defined in words and also perhaps varying with age, is the complete absence (in mature specimens) or poor definition (in young specimens) of the dark area on the side of the head. Of all other specimens of the species this dark area is very characteristic, is well defined, and (as a key basis of comparison) is much darker than the general tone of the median dorsal nape area (equal in *occidentalis*). A more easily definable pattern difference of *occidentalis* is the complete absence of black edges on the subcaudals; the ventral surface of the tail is white, totally immaculate. Many specimens from the Atlantic slopes of Mexico and Texas have been checked for this character, and without a single exception all have the posterior edges of the subcaudals black. Frequently the belly scales are black-edged also (not or only laterally in *occidentalis*). This character, therefore, completely separates Atlantic coast Mexican and United States *margaritiferus* from *occidentalis*, but the character fails when applied to Pacific coast specimens from Tehuantepec north, in which is found the proportion of one white-tailed specimen to two banded-tailed specimens, with some specimens arbitrarily allocated to one category or the other.

Accordingly, other differences were sought, and it was then discovered that Pacific coast specimens uniformly differ from Atlantic coast specimens in having black the entire border, anterior as well as posterior, of the middorsal scales (not the extreme lateral scales). In Atlantic coast specimens the posterior border of the middorsal scales is black, but the anterior borders (from center) are blue; in discolored and young specimens, of course, the anterior borders do not appear blue, but are readily discernible as lighter and well differentiated from the jet black border of the posterior edge. The difference is not uniformly discernible in the pattern of the lateral scales, but is well defined on the middorsal scales.

Application of this character to *occidentalis* does not yield completely satisfactory results, however, for the black tips of the middorsal scales shade more or less gradually into a gray, stippled posterior portion. Nevertheless, the four characters above described (1, dorsal color, light spots; 2, black areas on sides of head; 3, bands under tail; 4, individual pattern of middorsal scales) do serve to differentiate three races in Mexico: *occidentalis*, in southern Chiapas and southern Guatemala; *margaritiferus*, on Atlantic slopes from southern Texas into Central America; and an unnamed form described below as *fistulosus*, occurring from the Tehuantepec area northward on Pacific slopes to southern Sinaloa. It is of great interest that specimens from Tonalá, Chiapas, are neither *fistulosus* nor *occidentalis*, but typical *margaritiferus*. This distribution corresponds more or less with that of *Sceloporus v. variabilis*. It is the only area in Mexico where typical *margaritiferus* occurs on Pacific slopes.

In studying differences in Mexican *margaritiferus* I have largely neglected Central American specimens, some of which I realize do not conform to the present definition of typical *margaritiferus* (subcaudals not uniformly black-edged). Their dorsal color prevents any except those from southern Guatemala from inclusion with *occidentalis*, and their separation geographically from *fistulosus*, as well as the individual scale pattern (like *margaritiferus*), makes unwise association of any specimens with that race. Pending further studies, probably all Central American specimens (except *occidentalis*) should be referred to typical *margaritiferus*, with which they agree in most respects.

The Mexican specimens I have examined (about 100) can be identified easily by the accompanying key, with the exception of some juveniles (discolored) and of certain adult specimens from the Tehuantepec area, which also unfortunately are discolored by long preservation in formalin. Specimens thus discolored cannot always be definitely identified, and are best named by geographic probability.

KEY TO MEXICAN SUBSPECIES OF DRYMOBIUS MARGARITIFERUS

- |  |                       |
|--|-----------------------|
| 1. All or most of posterior edge of subcaudals dark or black.....  | 2                     |
| All or most of posterior edge of subcaudals white (the subcaudal surface unmarked).....  | 3                     |
| 2. Anterior edges of median dorsal scales blue (in adult specimens), white (faded specimens) or gray (young specimens), the color well differentiated from a black tip of scale..... | <i>margaritiferus</i> |
| Anterior edges of median dorsal scales black, the color completely surrounding a light central spot.....   | <i>fistulosus</i>     |
| 3. Sides of head in temporal region no darker than general tone of dorsal surface of nape; light spots in centers of scales diffuse, gray-brown, stippled                            | <i>occidentalis</i>   |

An elongated dark (black) area on either side of head behind eye, much darker than general tone of dorsal surface of nape; light spots in centers of scales well-defined, blue or tinged with orange, not or very slightly stippled

*fistulosus*

**DRYMOBIUS MARGARITIFERUS MARGARITIFERUS (Schlegel)**

*Herpetodryas margaritiferus* SCHLEGEL, Essai Phys. Serp., vol. 2, p. 184, 1837 (New Orleans, Louisiana, by error; here restricted to Veracruz, Veracruz).

*Diagnosis.*—Subcaudals black-edged posteriorly; a distinct dark (black) area in temporal region, much darker than any other part of head, darker than general tone of body anteriorly; posterior edge of each middorsal scale black, the anterior (concealed) edges blue (in adults; white in faded specimens, gray in young), middle yellow or light orange (white in faded specimens, light in young).

*Specimens examined.*—Forty-six from Mexico, 6 from Texas, various from Central America. Mexican localities represented by specimens examined are in the states of *Tamaulipas* (Alta Mira, Antiguo Morelos, 7 miles west of Victoria, Hda. La Clementina nr. Forlón), *San Luis Potosí* (Jilitla), *Veracruz* (Catemaco, Cautlapan, Minatitlán, Mirador, Orizaba, San Rafael, Potrero Viejo, Tuxpan), *Tabasco* (Tenosique), *Chiapas* (El Salto and San Juanito, nr. Palenque; Tonalá), *Campeche* (Campeche), and *Yucatán* (Chichen Itzá, Puerto Morelos).

*Range.*—Atlantic slopes below about 4,500 feet, from extreme southern Texas into Central America; also western Chiapas, Pacific slopes.

**DRYMOBIUS MARGARITIFERUS OCCIDENTALIS Bocourt**

*Drymobius margaritiferus occidentalis* BOCOURT, Miss. Sci. Mex., Rept., p. 718, 1890 (Volcán Atitlán, Guatemala).

*Diagnosis.*—Subcaudal surface white, completely unmarked; sides of head in temporal region little if any darker than median parietal region, about same shade as general tone of dorsal surface on nape; central spots of dorsal scales gray-brown, diffuse, stippled; black tips of dorsal scales shading into gray posterior color.

*Specimens examined.*—Nine, all from the vicinity of La Esperanza (near Escuintla), Chiapas.

*Range.*—Pacific slopes of southern Chiapas and of Guatemala.

**DRYMOBIUS MARGARITIFERUS FISTULOSUS, new subspecies**

*Holotype.*—U.S.N.M. No. 51480, female, from Miramar, Nayarit, collected by J. C. Thompson in 1913.

*Paratype.*—U.S.N.M. Nos. 31480–31483, 56163, Colima; No. 30484, Tehuantepec, Oaxaca; No. 46545, Puente de Ixtla, Morelos. EHT-HMS No. 4607, Paso del Río, Colima; Nos. 4608, 5363–5365, Hda.

El Sabino, nr. Uruapan, Michoacán; No. 4613, Cuernavaca, Morelos; No. 5366, Ocotito, Guerrero; No. 23627, Tierra Colorada, Guerrero.

*Diagnosis.*—Subcaudals usually black-edged, but not always (about 65 percent); a distinct dark (black) area in temporal region, much darker than any other part of head, darker than general tone of body anteriorly; entire border, anterior as well as posterior, of mid-dorsal scales black, a small central area blue or yellow.

*Description of holotype.*—Nine supralabials, fourth and fifth entering orbit; 9–10 infralabials; ventrals 146; anal divided; tail incomplete.

Anterior part of head (in front of frontal) light brown, posterior part bluish; a large dark brown spot including temporal region, upper part of posterior supralabials, sides of parietals, and most of supraoculars; body black, with a light spot in the center of each scale; anterior spots blue, and with a small yellow center, posterior spots mostly yellow; light spots not reaching anterior border of scales except on lateral anterior scales, on all others restricted to centers of scales by a complete black border; a dark line, dimmer toward venter, marking each ventral suture; similar lines, but better defined, marking subcaudal sutures.

*Specimens examined.*—Besides the type series (16), 17 (discolored by formalin) from the vicinity of Tehuantepec, Oaxaca.

*Range.*—Pacific slopes, southern Sinaloa to the region about Tehuantepec; does not reach Tonalá, Chiapas.

#### 7.—NOTES ON MEXICAN IMANTODES

Specimens of *Imantodes* in the Museum of Comparative Zoology, United States National Museum, and the E. H. Taylor–H. M. Smith collection, examined in preparation for a checklist and key to Mexican snakes, do not conform with current nomenclature. A number of changes appear necessary, and so that at least some of those which involve Mexican species may be available for citation, the following arrangement is presented.

I am much indebted to Dr. E. R. Dunn for very generous assistance and the benefit of his observations on Central American *Imantodes*, to Arthur Loveridge for the loan of specimens in the Museum of Comparative Zoology, and especially to Dr. E. H. Taylor for loan of specimens and for the photographs here reproduced.

#### IMANTODES CENCHOA LEUCOMELAS Cope

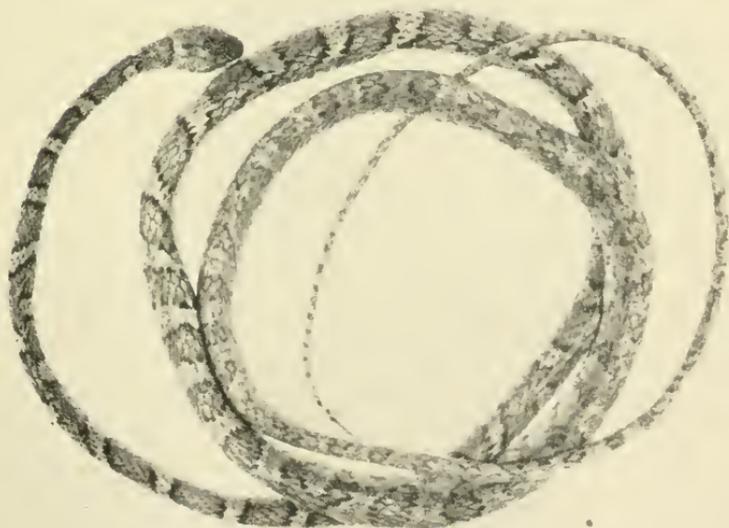
##### PLATE 37, FIGURE 1.

*Himantodes leucomelas* COPE, Proc. Acad. Nat. Sci. Philadelphia, 1861, p. 296 (Mirador, Veracruz; U.S.N.M. Nos. 25035–25036.)

*Dipsas cenchoa rhombeata* MÜLLER, Verh. Naturf. Ges. Basel, vol. 7, p. 151, 1882 (Guatemala).

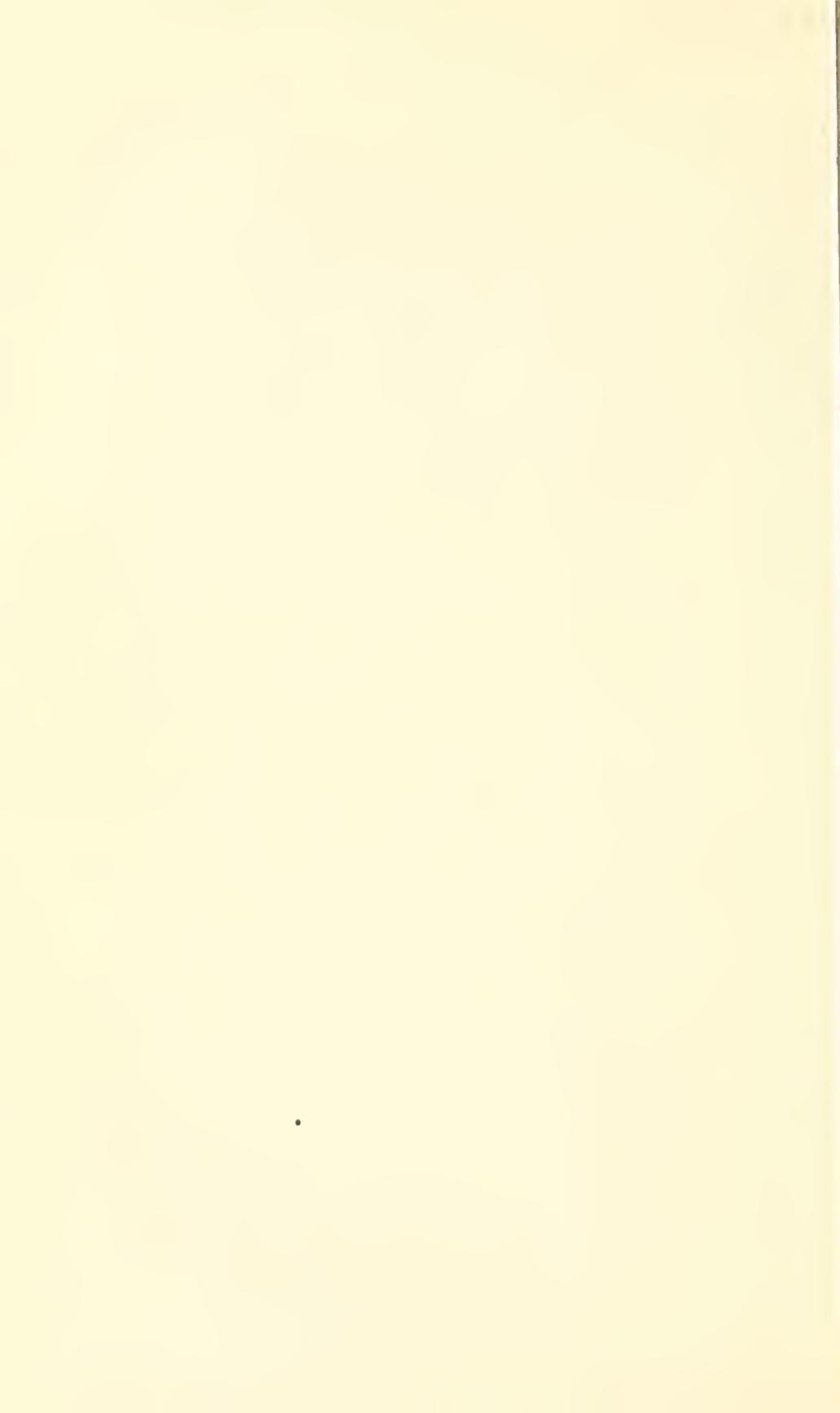


1



2

1, *Imantodes cenchoa leucomelas* Cope, EHT-HMS No. 5585, from Atoyac, Veracruz.  
2, *Imantodes latistratus* Cope, EHT-HMS No. 5517, from near Cuernavaca, Morelos.



*Diagnosis.*—Vertebral scales 3 to 4 times as broad as adjacent scales; dorsal spots on body 31 to 40; no V-shaped light mark bifurcating on posterior part of parietals, the arms reaching toward posterior corner of eyes; bands rarely broken on sides of body posteriorly.

*Range.*—Mexico north to central Veracruz, southern Chiapas, at least parts of Guatemala.

*Specimens examined.*—Twenty-two.

*Remarks.*—This form is easily distinguished from Central and South American *cenchoa*, and perhaps does not even intergrade with them. The differences are of a type that could conceivably show intergradation, however, and furthermore all are members of a very definite, compact morphologic group characterized by having the vertebrals three times as wide as adjacent scales, or wider, and usually two labials entering orbit.<sup>18</sup>

It appears that 3 forms are distinct: *leucomelas*, with 30 to 40 bands on body, bands not or rarely broken on sides of body posteriorly, no V-shaped light mark bifurcating on posterior part of frontal and extending toward posteromedial border of orbit; *semifasciatus*, with 40 or more bands on body, bands broken on posterior part of body and consisting of a small lateral spot widely separated from a large spot restricted to dorsal area, and head markings as in *leucomelas*; and typical *cenchoa*, with 39 or more bands on body, bands not or rarely broken on sides of body posteriorly, and a V-shaped light mark bifurcating on posterior part of parietal, usually reaching posteromedial border of orbit. The subspecies *semifasciatus* occurs from Nicaragua to Panama, and *cenchoa* from Panama to South America. I have seen no specimens of this morphologic group from Honduras, and cannot say which form occurs there. North of Honduras all specimens examined are typical and undoubted *leucomelas*, while south of Honduras all are *semifasciatus* or *cenchoa*.

#### IMANTODES GEMMISTRATUS Cope

*Himantodes gemmistratus* COPE, Proc. Acad. Nat. Sci. Philadelphia, 1860, p. 264 (Izaleo, Salvador).

*Himantodes cenchoa elegans* JAN and SORDELLI, Icon. Gén., livr. 38, pl. 2, fig. 1, 1871 (Central America).

*Dipsas cenchoa reticulata* MÜLLER, Verh. Naturf. Ges. Basel, vol. 7, p. 151, 1882 (Guatemala).

*Leptognathus stratissima* COPE, Proc. Amer. Philos. Soc., vol. 23, p. 280, 1886 (Panama).

<sup>18</sup> In a letter Dr E. R. Dunn tells me that "of 291 *cenchoa* from Nicaragua, Costa Rica, and Panama, only 16 have more than two labials in orbit. Of 188 *elegans* eight have less than three labials in orbit." The proportion is higher in Mexican *leucomelas*, however, making impossible the use of this character in keys: three labials enter orbit on one or both sides in 8 out of 18 specimens.

*Diagnosis*.—Vertebrae enlarged, about twice width of adjacent scales; usually three labials enter orbit; bands on body numerous, 52 to 65, broken posteriorly or not.

*Range*.—Pacific coast of Chiapas, south to Panama.

*Specimens examined*.—Four.

*Remarks*.—This species is distinguished from all others by having most of the vertebral scales about twice as wide as the adjacent scales; they are larger than in any other species except *cenchoa*.

The name *gemmistratus* has long been used for the Mexican *Imantodes* with scarcely or not enlarged vertebrae. Even Cope eventually used it in this sense. Unfortunately, the type is missing, so it is impossible to prove what form Cope may have originally described. Fortunately, however, the type locality is definite. It is fairly certain that the name does not apply to *cenchoa*, because (1) Cope definitely says the vertebrae are relatively small, (2) he gives 42 bands on body, while 40 is the maximum for *leucomelas* (definitely known from southeastern Chiapas, therefore probably the species of Pacific coast Salvador, which is in the same faunal zone), and (3) he says the bands "are peculiar in being connected by a median dorsal vitta." The latter is a characteristic of many specimens of other species of *Imantodes*, but not of *cenchoa*.

I conceive that *gemmistratus* and *splendidus* (see below) are members of a single morphologic group (having similar ventral and caudal scale counts, similar pattern), and accordingly that one does not occur with the other. If this is true, then the species with small dorsals (*gemmistratus* auct.=*splendidus*) cannot occur in the same territory with the species with larger dorsals (*elegans* auct.=*gemmistratus*). Since the only specimens now known from the faunal area that includes Izalco, type locality of *gemmistratus*, are two<sup>19</sup> which have the vertebral scales enlarged (as in *elegans* auct., I believe the name *gemmistratus* must be applied to that species. Unfortunately it is an older name than *elegans*, which it replaces.

While *gemmistratus* is very uniform in character of the vertebral scales, extensive variation in pattern occurs. Panama and Costa Rica specimens have the bands complete on the posterior part of the body, as well as anterior, while Nicaragua and Chiapas specimens have them broken posteriorly. The ventrals and caudals are usually low (as in Mexican *splendidus*), and vary from 220 to 237 (ventrals) and 114 to 146 (caudals). The exception is a small Nicaragua specimen with 251 ventrals and 155 caudals (U.S.N.M. No. 25248).

<sup>19</sup> La Esperanza, Chiapas (U.S.N.M. No. 110521) and Pacific Coast of Guatemala (Brit. Mus.).

## IMANTODES GRACILLIMUS (Günther)

*Dipsas gracillima* GÜNTHER, Biol. Centr. Amer. Rept. Batr., p. 177, pl. 56, fig. B, 1895.

*Himantodes gracillimus* BOULENGER, Cat. Snakes Brit. Mus., vol. 3, p. 87, 1896.

*Diagnosis.*—Dorsal cross bands very numerous (74 in single specimen examined), becoming broken and indistinct on posterior part of body; ventrals 244 to 253 (3 specimens).

*Range.*—The west coast of Mexico, presumably from Nayarit to central Guerrero. The only definite records are from Tres Marias Islands (Boulenger *loc. cit.*) and Acapulco, Guerrero (M.C.Z. No. 823).

*Specimens examined.*—One.

*Remarks.*—The apparent existence in the area between Guerrero and Nayarit of three relatively closely related species of *Imantodes* is extraordinary and invites further attention as other specimens become available. At present, however, all three species seem very well founded.

## IMANTODES LATISTRATUS (Cope)

## PLATE 37, FIGURE 2

*Dipsas gemmistrata latistrata* COPE, U. S. Nat. Mus. Bull. 32, p. 68, 1887 (Guadalajara and Valley of Toluca).

*Diagnosis.*—Vertebral scales not enlarged; dorsal bands 33 to 67, nearly or quite as wide laterally as dorsally, middorsally separated from each other by narrow light areas of about one scale length, none of dark bands broken laterally as in *splendidus*, but the bands becoming indistinct and sometimes indistinguishable on posterior part of body in adults (in young, the bands remain distinct on all parts of the body, but are not broken laterally); ventrals 223 to 233 (4 specimens), caudals 128 to 134.

*Range.*—Nayarit southward to central Guerrero.

*Specimens examined.*—Ten.

*Remarks.*—This very distinct species appears to overlap the range of *splendidus oliveri*. Records available are from Miramar (U.S.N.M. Nos. 51481–51483) and Compostela (Univ. Rochester No. 5379), *Nayarit*; ? Hda. Santa Gertrudis<sup>20</sup>; Guadalajara (U.S.N.M. No. 24963), *Jalisco*; Hda. El Sabino (EHT–HMS No. 5330), *Michoacán*; Huajintlán (EHT–HMS No. 5205) and 6 miles northeast of Cuernavaca (EHT–HMS No. 5517), *Morelos*; Toluca (A.N.S.P. No. 11677) and Motajé,<sup>21</sup> *Mexico*; and Chilpancingo (M.C.Z. Nos. 33651–33652), *Guerrero*.

<sup>20</sup> Boulenger, Cat. Snakes Brit. Mus., vol. 3, pp. 81–87, 1896.

<sup>21</sup> Herrera, Cat. Rept. Batr. Mus. Nac. Mex., ed. 2, p. 30, 1904.

## IMANTODES SPLENDIDUS SPLENDIDUS (Günther)

*Dipsas splendida* GÜNTHER, Biol. Centr. Amer. Rept., p. 176, pl. 56, fig. A., 1895 (Yucatán).

*Imantodes splendidus* SCHMIDT and ANDREWS, Field Mus. Nat. Hist., zool. ser., vol. 20, pp. 176-177, 1936.

*Imantodes gemmistratus* HARTWEG and OLIVER, Misc. Publ. Univ. Mich. Mus. Zool., No. 47, p. 24 (part), 1940.

*Diagnosis*.—Vertebrales not or scarcely enlarged, none or very few approaching twice the width of adjacent scales; usually 3 labials enter orbit; all body bands distinct, about 34 to 39, most of them much narrower laterally than dorsally, only those on posterior part of body broken laterally; ventrals 198 to 201.

*Range*.—Northern part of the Yucatán peninsula.

*Specimens examined*.—Two.

*Remarks*.—With the restriction of the name *gemmistratus* to a species with larger vertebral scales, *splendidus* becomes available for the Mexican species previously called *gemmistratus*. There are at least 3 races, and probably more.

## IMANTODES SPLENDIDUS LUCIODORSUS Oliver

*Imantodes luciodorsus* OLIVER, Copeia, 1942, No. 1, pp. 1-2.

*Diagnosis*.—Like *s. splendidus*, except: Dorsal body spots 43 to 52, average 46, broken laterally on posterior half of body; ventral 205 to 225, average 219 (14 specimens).

*Range*.—Coastal or lowland regions on Atlantic slopes from central Veracruz through Campeche and northern Chiapas into Guatemala, avoiding the northern half of the Yucatán peninsula.

*Specimens examined*.—Twelve.

*Remarks*.—With the definition of this race closely related to *splendidus*, and the restriction of the name *gemmistratus* to a species of *Imantodes* with distinctly enlarged vertebral scales, a new name for the Pacific coast race, closely related to *luciodorsus*, is necessary.

## IMANTODES SPLENDIDUS OLIVERI, new subspecies

*Dipsas gemmistrata* FERRARI-PEREZ, Proc. U. S. Nat. Mus., vol. 9, p. 185, 1886 (Chiapas).—COPE, U. S. Nat. Mus. Bull. 3<sup>d</sup>, p. 68, 1887 (Chiapas).

*Himantodes gemmistratus* SUMICHRAST, Bull. Soc. Zool. France, vol. 5, p. 184, 1880 (Tapana [Tapanatepec], Oaxaca).—MOCQUARD, Miss. Sci. Mex., Rept., livr. 16, pp. 917-918, pl. 74, fig. 4, 1908 (Isthmus of Tehuantepec).—? WERNER, Mitt. Nat. Hist. Mus. Hamburg, vol. 26, pp. 229-230, 1909 (Hacienda de Ixtapa, Nayarit).

*Imantodes gemmistratus* OLIVER, Occ. Pap. Mus. Zool. Univ. Mich., No. 360, pp. 23-24, 1937 (Hacienda Albarradita, Colima); HARTWEG and OLIVER, Misc. Publ. Mus. Zool. Univ. Mich., No. 47, p. 24, 1940 (La Mixtequilla, Oaxaca).

*Holotype*.—M.C.Z. No. 27800, Tapanatepec, Oaxaca.

*Paratypes*.—Fifteen, including U.S.N.M. Nos. 12089, 32171, Mexico; Nos. 12443, 30164-30166, 30178-30179, Tehuantepec, Oaxaca; Nos.

30386-30388, Juchitán, Oaxaca; No. 110528, Tonalá, Chiapas; M.C.Z. Nos. 27799, 27801, Tapanatepec, Oaxaca; and Univ. Mich. Mus. Zool. No. 82603, La Mixtequilla, Oaxaca.

*Diagnosis.*—Like *splendidus splendidus* and *s. luciodorsus*, except: Ventrals 222 to 234, average 229 (16 specimens); dorsal body bands 47 to 67, average 57, broken laterally on all except about anterior third of body.

*Description of holotype.*—Head twice as wide as neck; portion of rostral visible from above narrow, but little shorter than distance between anterior tips of nasals; internasals a third size of prefrontals; latter narrowly in contact with supraocular; frontal pentagonal, anterior edge nearly straight, posterior angle slightly less than a right angle; length of frontal (4 mm.) a third greater than its distance from snout (3 mm.), a little longer than median suture between parietals (3.5 mm.), about two-thirds maximum length of parietals (5.5 mm.), and about a third greater than its maximum width (2.7 mm.); nasal completely divided, nares largely in anterior portion, which is much higher and a little larger than posterior part; loreal nearly square, about as high as long; a single large preocular; postoculars 2-3, upper much the largest; temporals 1-2-3; supralabials 8-8, sixth largest, third, fourth, and fifth entering orbit; infralabials 10-10, five in contact with anterior chinshields, 2 (fifth and sixth) with posterior; chinshields nearly subequal in size, posterior a little shorter than anterior and separated from each other medially by a series of small scales; 3 small scales between chinshields and first enlarged ventral.

Dorsal scales in 17-17-15 rows, smooth, with 1 or 2 apical pits; vertebral scales somewhat wider than others; ventrals 222; subcaudals 127; anal divided; total length 774 mm., tail 230 mm., female.

*Color.*—Ground color light brown, stippled; a series of 58 cross bands on body extending to edges of ventrals, and covering about  $1\frac{1}{2}$  to  $2\frac{1}{2}$  scale lengths middorsally; spaces between anterior bands a little less than length of bands middorsally, but increasing in size posteriorly, the posterior bands separated by spaces which may be as much as  $1\frac{1}{2}$  times as long as the bands themselves; a very irregular, broken, narrow, dark streak on middorsal line between bands; bands a little narrower on sides than middorsally; anterior 20 bands unbroken laterally, but the twenty-first and all posterior bands are broken laterally on the left side (at seventy-ninth ventral), while on the right side the twenty-fourth band is the most anterior broken band (at ninety-first ventral); the lateral break in the bands becomes much greater posteriorly so that there remains on the posterior part of the body a median series of large spots, extending laterally to the fifth scale row, separated from a lateral series of smaller, poorly defined spots involving the two edges of the ventrals and the first and

second scale rows; the dorsal spots coincide in position with the lateral spots throughout the body.

Dorsal spots on tail about 38, becoming smaller and less distinct distally; large, dark brown stipple marks on belly and subcaudal surface, except on neck, chin and gular region, which are immaculate.

TABLE 2.—*Variation in Imantodes s. oliveri*

Number	Sex	Ventrals	Caudals	Supralabials	Labials enter eye	Body spots
12443	♀	230	125	8-8	3-4-5	54
30164	♀	229	117	8-8	4-5	59
30165	♀	229	118	8-8	4-5	67
30166	♀	234	-----	8-8	4-5	52
30178	♀	227	130	8-8	3-4-5	58
30179	♀	226	-----	8-8	3-4-5	47
30386	♀	224	-----	6-8	4-5	47
30387	♀	222	130	8-8	4-5	59
110528	♀	226	121	8-8	3-4-5	55
27799	♀	227	-----	8-8	3-4-5	61
27800	♀	222	127	8-8	3-4-5	58
Oliver	♀	231	133	8-8	-----	67
Werner	♀	230	117	-----	-----	50
30388	♂	235	-----	8-8	3-4-5	60
27801	♂	234	137	8-8	3-4-5	67
82603	♂	230	134	9-9	-----	-----

*Range*.—Pacific lowlands from western Chiapas northward, probably to Nayarit. Definite records, however, are lacking for the area between central Oaxaca and Colima.

*Remarks*.—Werner's record from Nayarit may not be referable to this race; it possibly should be referred to *latistratus*.

The species is named for Dr. James A. Oliver, in recognition of his studies on the genus.

#### IMANTODES TENUISSIMUS Cope

*Himantodes tenuissimus* COPE, Proc. Acad. Nat. Sci. Philadelphia, 1866, p. 317 (Yucatán).

*Imantodes gemmistratus* SCHMIDT and ANDREWS, Field Mus. Nat. Hist., zool. ser., vol. 20, pp. 177-178, 1936.

*Imantodes tenuissimus* HARTWEG and OLIVER, Misc. Publ. Univ. Mich. Mus. Zool., no. 47, p. 24, 1940.

*Diagnosis*.—Vertebrae not at all enlarged; caudals 143 to 158; ventrals 240 to 252; bands well defined throughout body, not or rarely broken posteriorly, separated from each other by about half their length or more.

*Range*.—Yucatán.

*Specimens examined*.—Two.

## KEY TO MEXICAN IMANTODES

1. Vertebral scales greatly enlarged, three to four times as wide as adjacent dorsals; bands symmetrical, usually not broken on sides of body posteriorly. cenchoa leucomelas  
 Vertebral scales not enlarged or at most about twice as wide as adjacent scales..... 2
2. Ventrals 240 or more..... 3  
 Ventrals 236 or fewer..... 4
3. Posterior dark bands on body broken laterally, poorly defined; spaces between anterior cross bars less than one scale length..... gracillimus  
 Bands distinct and symmetrical over all of body, usually none broken on sides of body, all involving ends of ventrals or subcaudals; spaces between cross-bands half the length of the bands, or greater..... tenuissimus
4. Ventrals about twice as wide as adjacent scales..... gemmistratus  
 Ventrals not or but slightly enlarged, not twice as wide as adjacent dorsals ..... 5
5. Bands with nearly straight anterior and posterior edges, very little if any narrower laterally than dorsally; bands not broken on sides of body, but becoming much less distinct toward tail, sometimes indistinguishable; ventrals 223 to 233..... latistratus  
 Bands narrower on sides of body than on middorsum, at least the posterior ones broken laterally, and all very distinct and not becoming notably fainter toward tail..... 6
6. Body bands 34 to 39, only those on extreme posterior part of body broken laterally; ventrals 198 to 201..... splendidus splendidus  
 Body bands 43 or more, broken laterally on at least posterior half of body, sometimes on posterior two-thirds; ventrals 205 or more..... 7
7. Body bands 47 to 67, average 57, broken laterally on all except anterior third of body; ventrals 222 to 235, average 229..... splendidus oliveri  
 Body bands 43 to 52, average 46, broken laterally only on posterior half of body; ventrals 205 to 225, average 219..... splendidus luciodorsus

## 8.—TWO NEW SNAKES OF THE GENUS CLELIA

Among the very important discoveries of Dyfrig McH. Forbes of Potrero Viejo, Veracruz, is a rare specimen, generously presented to me in 1939, belonging to the *pethola* group of *Clelia*. This is the third known from Mexico, and apparently the first in American collections. Its characters do not agree with those of Central American specimens, and no name for it is available. It is a pleasure to associate with it the name of Dr. Joseph R. Bailey, in whose hands the genus is in the process of intensive study.

**CLELIA BAILEYI, new species**

*Holotype*.—U.S.N.M. No. 111261, female, from Potrero Viejo, Veracruz, collected by Dyfrig McH. Forbes.

*Diagnosis*.—Subcaudals divided; supralabials eight; preocular in contact with frontal; ventrals 191, caudals 89 in type; 23 crossbands on body, 13 on tail, in type; body bands covering four to five scale

lengths, separated from each other by red spaces of nearly equal size; all except anterior 4 or 5 red interspaces with most of the scales spotted (black-tipped or bases black); first black band (nape) covering about 8 scale lengths; yellow nuchal collar covering three scale lengths mid-dorsally, laterally extending only to posterior portion of seventh supralabials; remainder of sides and top of head black.

*Description of holotype.*—Rostral broader than high; length of portion visible from above three-fourths length of internasal suture; internasal two-fifths size of prefrontals, quadrangular; prefrontals extending well onto sides of head, the greatest extension a point between loreal and preocular; frontal pentagonal, the lateral and posterolateral sides meeting in a broad curve; length of frontal (5 mm.) slightly less than its distance from tip of snout (5.5 mm.) nearly as great as greatest length of parietal (6 mm.); nasal large, completely divided, naris large and centrally placed, anterior section larger than posterior and wedged between first labial and rostral; loreal twice as long as broad; preocular single, nearly as large as supraocular, in contact with frontal and with one (two) labials, much narrower below than above; two postoculars, lower smaller; temporals 2-2 (2-3), the sixth labial narrowly in contact with upper primary temporal; eight supralabials, sixth and seventh subequal and larger than others, fourth and fifth (third also, narrowly, on one side) entering orbit; eye small, its diameter (2.8 mm.) about half its distance from tip of snout (5.8 mm.); ten infralabials, sixth largest, five in contact with anterior chin-shields; latter a little larger than posterior, which are narrowly separated from each other.

Dorsal scales in 19-19-17 rows, smooth, with 2 large apical pits; ventrals 191; anal single; caudals 89. Total length 700 mm., tail 173 mm.

Maxilla with 15 teeth, the 2 posterior somewhat enlarged, and with a deep groove on anterior face; other teeth ungrooved; the anterior ones strongly recurved and a little larger than posterior teeth (of ungrooved series).

*Color.*—Top and sides of head uniform black, this color extending laterally to posterior border of seventh supralabial, medially a little beyond end of parietals; this bordered by a yellow nuchal collar with a straight posterior border, covering about 3 scale lengths medially; follows a series of 23 crossbands on body, 13 on tail; bands shorter on posterior part of body than on anterior, all a little shorter laterally than medially; first band covering about 8 scale lengths, others 6 to  $3\frac{1}{2}$  scale lengths, decreasing posteriorly; these bands involving ends of ventrals; red spaces between black bands nearly equal size of latter; anterior red space without black (a few tiny flecks); succeeding 3 species with numerous, small flecks; succeeding 2 with the tip of

each scale black, and some larger dark marks medially; remainder of red interspaces with numerous black spots, smaller than a scale, at tips or bases of scales.

Infralabial and lateral gular region with poorly defined, small black spots and fine black stippling; belly cream, unmarked save at ends of ventrals (black spotted, bands also encroaching); ventral surface of tail largely black, with irregular light areas and edges of caudals light, giving a mottled (not at all banded) appearance.

*Remarks.*—The present species' nearest relative appears to be that described by Cope<sup>22</sup> as *Oxyrhopus doliatus semicinctus*, the type of which is U.S.N.M. No. 28900, from Sipurio, Costa Rica. Conspecific with this are 4 others in the National Museum from Honduras (Segovia River, No. 24533), Nicaragua (Escondido River, No. 19744) and Panama (Cana, No. 50111; Ancón, C. Z., No. 65867). These specimens show the following differences from *baileyi*: (1) ventrals more numerous, 200 to 209 (191, *baileyi*), caudals more numerous, 92 to 111 (89, *baileyi*); (2) very little or no black spotting on light scales (a great deal in *baileyi*); (3) ventral surface of tail banded, as dorsal surface (mottled in *baileyi*); (4) interspaces between black bands yellow (posteriorly red?) (all red in *baileyi*, except yellow nuchal collar); (5) nuchal collar usually (not in 1) involving posterior ends of parietals, nearly to eye laterally, covering 5 to 8 scale lengths on nape (not involving parietals, not reaching primary temporals laterally, covering 3 scale lengths on nape); (6) first spot on body longer, covering 10 to 16 scale lengths (8 scale lengths in *baileyi*).

So far as I am aware, the only other specimens of this group known from Mexico are two recorded by Boulenger<sup>23</sup> from "Mexico" and Atoyac, Guerrero. The latter very likely is different from *baileyi*, not only because it has more numerous ventrals (204) but primarily because it is from an entirely different faunal province.

This species is not *pethola* Linnaeus, since this name (*vide* Boulenger, *op. cit.*, p. 102) refers to South American specimens with 50 to 75 crossbands; the type of *baileyi* moreover does not fit the descriptions given by Linnaeus of the 9 varieties of *pethola*. The pattern description of *petalarius* Linnaeus does fit the characters of *baileyi*, however, in the few details mentioned; I do not believe the name refers to the Mexican form, however, since the ventrals and caudals are perhaps too numerous (212, 102, respectively), and the type locality is given as "South America" and "India" (latter by error).

*Oxyrhopus doliatus aequifasciata* Werner from Cobán, Guatemala, does not seem to be the same. It has 207 ventrals and 78 subcaudals, the underside uniform yellow, the light spaces between the dorsal bands not dark-spotted.

<sup>22</sup> U. S. Nat. Mus. Bull. 32, p. 76, 1887.

<sup>23</sup> Cat. Snakes Brit. Mus., vol. 3, p. 103, 1896.

*Remarks.*—The only two specimens of *Clelia clelia* examined from the Pacific slopes of Mexico north of the Isthmus of Tehuantepec are markedly different from other Mexican specimens in lacking dark spots at the tips of the dorsal scales. They are named:

**CLELIA CLELIA IMMACULATA, new subspecies**

*Holotype.*—U.S.N.M. No. 24966, from "Guadalajara," Jalisco, collected by J. J. Major.

*Paratype.*—EHT-HMS No. 4568 from Paso del Río, Colima.

*Diagnosis.*—Like *Clelia clelia*, except no dark spots present on tips of dorsal scales.

*Description of holotype.*—Supralabials 7-7; infralabials 8-8; posterior section of nasal elongate; a small loreal; 1 preocular; 2 postoculars; temporals, 2-3; dorsals 19-19-17 rows; ventrals 206; anal entire; subcaudals 78. Total length 595 mm.; tail 118 mm.; male.

Top of head dark brown, about to middle of parietals, the posterior edge irregular; nape and posterior part of head white; an area on nape, beginning three scale lengths behind parietals, dark brown, the color extending posteriorly about eight scale lengths, then becoming diffuse and disappearing; remainder of dorsal surface light, cream (red in life), without any dark marks whatever; ventral surfaces of head, body and tail white.

*Variation.*—The only other specimen seen from the Pacific slopes of Mexico north of the Isthmus of Tehuantepec is a specimen I collected at Paso del Río, Colima. It also lacks dark spots at the tips of the scales. "Ventrals, 211; caudals, 86; upper labials, 7-7; lower labials, 8-8; preoculars, 1-1; postoculars, 2-2; temporals, 2-3; anal single; scale formula 24, 21, 17, 17, 17; preocular separated from frontal; parietals shorter than their distance to end of snout; frontal about equal to its distance to end of snout. Eye (3 mm.) shorter than distance between eye and nostril (3.6 mm.); loreal higher than long; length 675 mm.; tail, 147 mm.; head width, 12 mm.; length, 19.6 mm. Head dark violet to violet-black; cream collar behind parietals 4 scale-rows wide; large blackish violet band behind collar."<sup>24</sup>

*Comparisons.*—Nine specimens of *Clelia clelia clelia* from Chiapas, the Isthmus of Tehuantepec, and Veracruz all have the dorsal scales black-tipped. The black tips are visible even in adult specimens.

9.—ADDITIONAL NOTES ON CONOPHIS

In a recent paper on *Conophis*<sup>25</sup> I overlooked the notice by Dunn<sup>26</sup> of a new species, *C. nevermanni*, from Costa Rica. The

<sup>24</sup> Taylor and Smith, Kans. Univ. Sci. Bull., vol. 25, p. 258, 1938.

<sup>25</sup> Jour. Washington Acad. Sci., vol. 31, No. 3, pp. 117-124, 1941.

<sup>26</sup> Copeia, 1937, No. 4, p. 214, 1938.

latter is a species I have not seen, and it is not represented in the collection of the United States National Museum. It possibly belongs in the group with *pulcher* and *lineatus*, since it has eight supralabials and presumably the first scale row pigmented. It seems closest to *pulcher*, of which it could conceivably be a race. It certainly is a species different from *lineatus*, which also occurs in Costa Rica.

The Central American subspecies of *lineatus*, which I named *similis*, cannot stand, since it is a homonym of *Conophis pulcher similis* Bocourt.<sup>27</sup> I suggest the name *dunni* for the southern race; its type (that of *similis* Smith) is U.S.N.M. No. 79963, from Managua, Nicaragua.

Unfortunately Bocourt's *pulcher similis* was described without citation of the type locality, and many details of its pattern are not mentioned. However, in several respects it agrees with *C. pulcher plagosus*, which I described on the basis of a single specimen from Tonalá, Chiapas (U.S.N.M. No. 109707). Although absolute certainty of the identity of Bocourt's specimen can be obtained only by reexamination of the type, it appears probable that *plagosus* Smith and *similis* Bocourt are identical.

The species of the genus accordingly stand as follows:

- Conophis vittatus vittatus* Peters
- Conophis vittatus viduus* Cope
- Conophis pulcher pulcher* Cope
- Conophis pulcher similis* Bocourt
- Conophis nevermanni* Dunn
- Conophis lineatus lineatus* (Duméril and Bibron)
- Conophis lineatus concolor* Cope
- Conophis lineatus dunni* Smith.

<sup>27</sup> Miss. Sci. Mex., Rept., livr. 10, 1886, pp. 643-4.