

Article II.—NOTES ON THE HERPETOLOGY OF SANTO DOMINGO

BY KARL PATTERSON SCHMIDT

The collections of The American Museum of Natural History have received important accessions from the Santo Domingan part of Hispaniola, which is herpetologically perhaps the least known of the West Indian islands. Mr. Clarence R. Halter made a collection for the Museum in the summer of 1915, chiefly from the Yuna Valley in the eastern part of the republic and consisting of four hundred and sixty-nine specimens. One hundred and forty-eight specimens from the arid area near Monte Cristi and the interior of the northern Yaqui Valley were collected by Mr. Axel Olsson and myself in the summer of 1916, in connection with the geological reconnaissance expedition from Cornell University. Mr. J. K. Noble presented to the Museum a small but interesting collection made while stationed at Macoris with the forces of the United States Marine Corps. A small collection made by R. H. Beck in the mountainous interior of the republic in 1917 was added to the Museum's collections by purchase. A small collection from the little-known province of Barahona was presented by Mr. John L. Phillips, in 1912. These Santo Domingan collections total six hundred and seventy-two specimens, representing thirty-four species. Two of these have previously been described as new (Schmidt, 1919, Bull. Amer. Mus. Nat. Hist., XLI, pp. 519-525) and an additional new species of *Leiocephalus* is described below.

***Bufo gutturosus* Latreille**

Five specimens in the collection from Cercado de Mao, the Rio Amina, Monte Cristi, and Barahona. Juvenile specimens, apparently recently transformed, were collected at Cercado de Mao, May 20 and at Monte Cristi, June 10, 1916. The measurements of the largest specimen (A. M. N. H. No. 5919, Barahona) are as follows:

Snout to vent	92 mm.
Snout to posterior border of tympanum	24 mm.
Greatest breadth of head	28 mm.
Length of forelimb from axilla	46 mm.
Length of hind limb from vent	94 mm.

To the differences pointed out by Stejneger (1904, Rept. U. S. Nat. Mus., 1902, p. 570) between *Bufo gutturosus* and *Bufo lemur* of Porto Rico, the wide divergence in proportions must be added, the Hispaniolan species being much shorter limbed and probably larger.

***Hyla dominicensis* (Tschudi)**

Thirty-three specimens from Cercado de Mao, San Pedro de Macoris, Sanchez, and Cano Hondo (San Lorenzo) are referred to this species. The specimen from Cercado de Mao is a tadpole nearly ready to transform, measuring 45 mm. from snout to tip of tail and 16 mm. from snout to vent, and was collected May 20, 1916.

***Hyla pulchrilineata* Cope**

Forty-two specimens from Sanchez and Cano Hondo (San Lorenzo). This species was breeding in swamps near Sanchez during the latter half of May 1915. The eggs are deposited directly in the water and there is apparently no abbreviation of the larval stage, thus forming an exception to the general rule among tropical *Hylas*. As in the preceding species, the males are provided with a horny patch on the outer face of the first joint of the thumb. The light stripes, which are white in alcohol, are golden yellow in life.



Fig. 1. *Hyla pulchrilineata* Cope. A. M. N. H. No. 3247, natural size.

***Eleutherodactylus weinlandi* Barbour**

Six specimens from Cano Hondo (San Lorenzo), June 24, 1915. These specimens were collected beneath stones on a dry, sunny hillside. The measurements of the largest (A. M. N. H. No. 3299) are as follows:

Snout to vent	38 mm.
Snout to posterior border of tympanum	13 mm.
Greatest breadth of head	13 mm.
Forelimb from axilla	22 mm.
Hind limb from vent	55 mm.



Fig. 2. *Eleutherodactylus weinlandi* Barbour. A. M. N. H. No. 3296, natural size.

***Eleutherodactylus inoptatus* (Barbour)**

A single specimen, apparently the second to be recorded, from Villa Rivas, June 19, 1915. The type locality is Diquini, Haiti, at the opposite end of the island. Measurements as follows:

Snout to vent	54 mm.
Snout to posterior border of tympanum	21 mm.
Greatest breadth of head	23 mm.
Forelimb from axilla	36 mm.
Hind limb from vent	103 mm.

***Eleutherodactylus montanus* Schmidt**

This species appears to be confined to the mountains of the Cibao. It does not appear to be closely related to any other Hispaniolan species but may be derived from *E. auriculatus*, to which it is related in the disposition of its vomerine teeth.

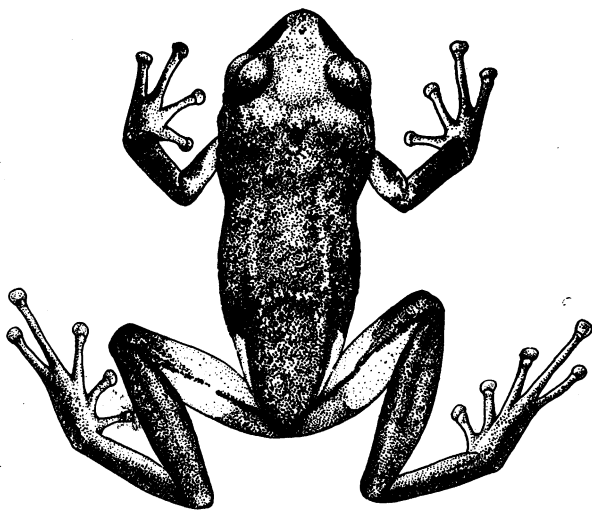


Fig. 3. *Eleutherodactylus montanus* Schmidt. Type, A. M. N. H. No. 6435, twice natural size.

Five additional juvenile specimens of *Eleutherodactylus* probably represent another mountain species of this genus. It seems preferable to postpone its description for further and better material.

***Sphærodactylus difficilis* Barbour**

Thirty-one specimens of this highly variable species from Cercado de Mao, Los Quemados, San Pedro de Macoris, Sanchez, and Cano

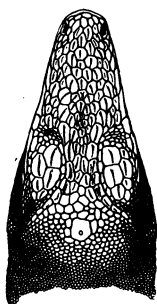
Hondo (San Lorenzo). I found this little gecko chiefly under the loose bark of such trees as the "almacigo" in the western part of the island. At Sanchez it was the commonest house gecko.

This species appears to be fully as variable as *S. macrolepis*, which ranges from the Virgin Islands to Mona Island, and parallels it in color variation. Barbour (1914, Mem. Mus. Comp. Zool., XLIV, p. 265) in describing the species calls attention to the variation in size of dorsal scales. In the present series the number of scales around the body ranges from 42 to 64. The spectacle mark on the shoulder is present in only two specimens.

***Anolis ricordii* Duméril and Bibron**

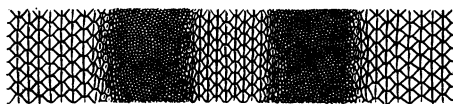
Four specimens from Sanchez and Villa Rivas, shot in trees.

In addition to the characters pointed out by Stejneger (1904, Rept. U. S. Nat. Mus., 1902, p. 629) as distinguishing this species from the Porto Rican *Anolis cuvieri*, the difference in coloration may be mentioned. The Porto Rican species is usually a vivid green in life, changing to a mottled phase, gray, green, and black, and to a dark bluish black. The Hispaniolan species appears to be usually green with dark-edged transverse bands of light greenish yellow.



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Fig. 4. *Anolis semilineatus* Cope. A. M. N. H. No. 6262, four times natural size.



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Fig. 5. *Anolis semilineatus* Cope. Scales around the middle of the body. A. M. N. H. No. 6262, four times natural size.

***Anolis semilineatus* Cope**

Five specimens from Samana, Sanchez, and Villa Rivas. It was found on low weeds. This species represents the slender-bodied group of *Anolis* with heterogeneous dorsal scales in Hispaniola. It is widely distinct from the Porto Rican representatives of the same group.

Anolis olssoni Schmidt

Two specimens from Monte Cristi.

This species replaces *Anolis semilineatus* in the arid parts of the northern valley. The first specimen taken by the writer was ruined on the horse-back journey into the interior, and careful search on our return to Monte Cristi resulted in the discovery of only one more specimen, on the last day of our stay.

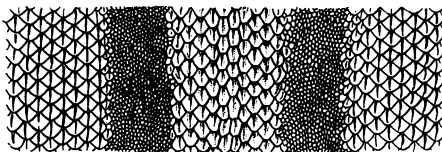
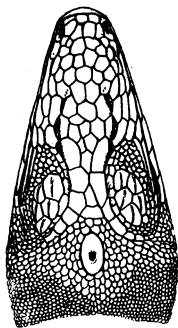


Fig. 6. *Anolis olssoni* Schmidt. Type, A. M. N. H. No. 13400, four times natural size.
Fig. 7. *Anolis olssoni* Schmidt. Scales around the middle of the body. A. M. N. H. No. 13400, four times natural size.

It lives in the bunches of tall grass which form the chief vegetation on the dry hillsides of the Monte Cristi area. About half of the grass stems are dry and white, and the gray and white coloration of this species with its longitudinal lines makes an extremely effective protective resemblance. This resemblance is turned to the best account by the lizard, for when frightened it assumes a rigid posture, with the tail hanging straight down, and seems literally to disappear before one's eyes among the grayish green and white stems of grass.

Anolis chlorocyanus Cope

Seventy-five specimens of this brilliant green species in the collection from Puerto Plata, Samana, Sanchez, Villa Rivas, Cano Hondo, San Pedro de Macoris, Caimito on the Rio Cana, and Los Quemados on the Rio Gurabo. Mr. Olsson and I did not observe this species near Monte Cristi, and it probably does not inhabit the more arid parts of the island. The numbers of specimens secured in the Samana-Sanchez region indicate that it is very abundant, while in the western part of its range

(between Cano and Gurabo Rivers, affluents of the Yaqui), it was a rare species. We saw it on thatched roofs of native huts.

The most usual coloration is bright green with more or less black on the head. The range of color change is wide, a bluish green phase and one variously marked with black being the most common. The throat-fan is brownish black.

In the characters of its head shields, especially in the slight development of the supra-orbital semicircles, *A. chlorocyanus* appears to be allied to *A. iodurus* of Jamaica, perhaps more closely than to any other Hispaniolan or Cuban species, and it is certainly widely distinct from the green *Anolis evermanni* of Porto Rico.

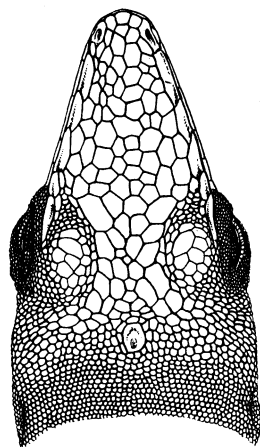


Fig. 8. *Anolis chlorocyanus* Cope. A. M. N. H. No. 13642, three times natural size.

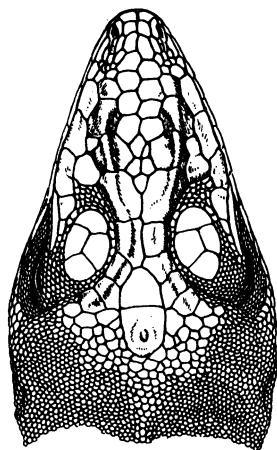


Fig. 9. *Anolis distichus* Cope. A. M. N. H. No. 7562, four times natural size.

***Anolis distichus* Cope**

Eighty-one specimens from Monte Cristi, Puerto Plata, Samana, Sanchez, Villa Rivas, Cano Hondo (San Lorenzo), San Pedro de Macoris, Azua Province, and Barahona.

This species is readily recognized by the large occipital shield, with usually a single large "preoccipital" between it and the supra-orbital semicircles. The coloration is extremely variable, green variously mottled or vermiculated with black being the most common phase. The throat-fan is bright orange.

***Anolis cybotes* Cope**

One hundred and fifty-seven specimens of this species represent the localities Monte Cristi, Puerto Plata, Sanchez, Samana, Villa Rivas, Cano Hondo (San Lorenzo), San Pedro de Macoris, and the interior of Azua Province.

The presence of numerous specimens of this species with more or less well-defined keels on the ventral scales indicates that *A. haetianus* Garman is probably a synonym of *A. cybotes*.

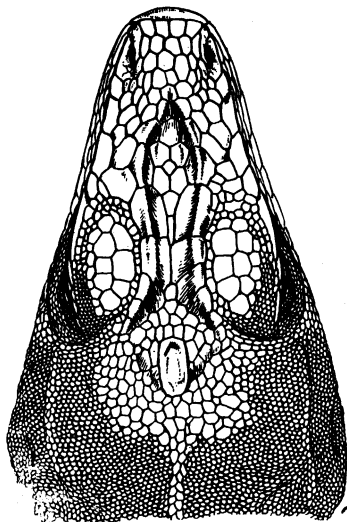


Fig. 10. *Anolis cybotes* Cope. A. M. N. H. No. 8586, three times natural size.

A. cybotes is evidently the most abundant *Anolis*, possibly the most abundant lizard, in Santo Domingo, equally represented in the arid and humid areas and extending high into the mountains. In this respect and in coloration and color change, it resembles *Anolis cristatellus* of Porto Rico, from which it is distinguished chiefly by the absence of a tail-fin.

***Anolis citrinellus* Cope**

A single specimen from Samana is referable to this species. The supraorbital semicircles are considerably in contact, enclosing a small scale, but the specimen in other respects accords with the description of *citrinellus*.

Key to the Species of *Anolis* in Santo Domingo

1. Dorsal scales entirely or in part surrounded by granules; tail of male with high fin-like crest. *A. ricordii*.
Dorsal scales granular or enlarged, not as above; tail without "fin" 2.
2. Dorsal scales large, flat, keeled, imbricate, ventrals strongly keeled, laterals small, granular; tail very long. 3.
- Dorsal scales small, granular, smooth or feebly keeled. 4.

3. Supraorbital semicircles separated by two rows of scales.....*A. semilineatus*.
Supraorbital semicircles in contact or separated by a single row of scales.
A. olssoni.
4. Dorsal scales not or only very slightly enlarged on vertebral line; occipital separated from supraorbital semicircles by a single scale nearly as large as the occipital.....*A. distichus*.
Dorsal scales enlarged, often feebly keeled on vertebral line; no large pre-occipital scale.....5.
5. Scales of supraorbital semicircles not much enlarged, widely separated.
A. chlorocyanus.
Supraorbital semicircles in contact or narrowly separated.....6.
6. A dorsonuchal fold.....*A. cybotes*.
No dorsonuchal fold.....*A. citrinellus*.

(I have omitted *Anolis pulchellus*, *A. cristatellus*, and *A. stratulus* from the Santo Domingan Anoles as probably erroneously recorded.)

***Leiocephalus schreibersii* (Gravenhorst)**

Mr. Olsson and I collected twenty-five specimens of this species at Monte Cristi, where it is the most abundant species on the sandy beach.

The larger and more brilliantly colored males are found only along the beach, while the females and young are found on the arid hillsides farther back, as well as on the beach. The females are characterized by the presence of a black spot on each side just above the axilla.

***Leiocephalus personatus* Cope**

The collection contains fifty-nine specimens from Monte Cristi, Puerto Plata, and Sanchez, and I observed it also at Sabaneta in the interior.

As in the preceding species, the adult males are much more brightly colored than the juvenile and female specimens. In the largest males the back is gray and the sides are bright red and green, the red predominating; the belly is light green, the upper surface of the hind legs bright green. The vivid black spots of the throat and the lateral light stripes of the young disappear almost entirely in the largest specimens.

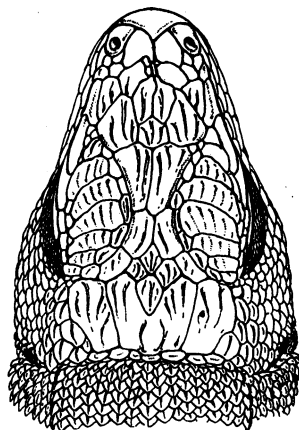


Fig. 11. *Leiocephalus personatus* Cope. A. M. N. H. No. 16155, three times natural size.

***Leiocephalus barahonensis*, new species**

Diagnostic Characters.—Parietals and transverse supraoculars distinct. Scales behind ear keeled and imbricate, not granular; three scales between the rostral and the first supraorbital; frontal and prefrontal scales entirely smooth, separated from the canthal scales by an elongate narrow scale; forty scales around the body; dorsal and caudal crests low. No dorsolateral light line in the adult; throat heavily spotted or vermiculated with brown in both young and adult.

Range.—Southeastern Santo Domingo, Barahona Province.

Type.—A. M. N. H. No. 2736; Barahona, Santo Domingo; J. L. Phillips; 1912.

Description of Type.—

Head scales well developed; three scales between the rostral and the first supraocular; a pair of frontals, a pair of prefrontals, and a pair of supranasals; each of these scales in contact with its fellow, but enclosing a series of three small median scales; frontals and prefrontals separated from the canthal scales by an elongate rhomboidal scale; three pairs of supraorbitals; seven supraoculars on each side; a small occipital, bordered by a pair of narrow parietals, followed on each side by a broad parietal twice as broad as the inner; anterior head shields smooth, supraoculars and parietals striate; five upper and five lower labials. Dorsal and lateral scales sharply keeled, slightly mucronate; ventral scales smooth; about forty scales around the middle of the body; scales of the sides of the neck like the dorsals; dorsal and caudal crests low.

Back greenish gray, nearly uniform; sides darker; venter lighter greenish gray, throat and chin heavily spotted with dark brown.

Notes on Paratypes.—The two paratypes agree in essential characters with the type. The smaller specimen has a faint dorsolateral line anteriorly. Both have only two scales in the median series, between the frontals and prefrontals.

This species is a very distinct one, allied to *L. personatus*, from which it is immediately distinguished by the smooth frontal and prefrontal shields and the much lower crests of the back and tail. *L. semilineatus* Dunn, recently described from Thomazeau, Haiti, appears to be more closely allied to *L. melanochlorus* than to *personatus*, if the number of shields between the rostral and supraorbitals may be relied upon as a group character. I have used a somewhat different terminology for the head-shields than that of Dunn (1920, Proc. New England Zool. Club, VII, pp. 33-34), his "preocular" and "loreal" corresponding to the two scales I refer to as canthals.

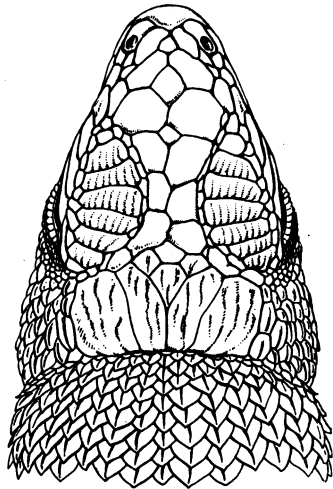


Fig. 12. *Leiocephalus barahonensis* Schmidt. Type, A. M. N. H. No. 2736, three times natural size.

Key to the Species of *Leiocephalus* in Santo Domingo and Haiti

1. Sides of neck behind ear covered with small sharp granular scales . . . *L. schreibersii*.
Sides of neck covered with keeled imbricated scales, like dorsals 2.
2. Four scales between rostral and first supraorbital 3.
Three scales between rostral and first supraorbital 4.
3. A long narrow scale between the large canthal and the frontal and prefrontal
scales on each side *L. melanochlorus*.
Frontal and prefrontals in contact with canthals *L. semilineatus*.
4. Frontals and prefrontals strongly keeled *L. personatus*.
Frontals and prefrontals smooth *L. barahonensis*.

***Celestus* (*Celestus*) *costatus* (Cope)**

Twenty-two specimens in the collection from Samana, Sanchez, Villa Rivas, and the interior of Azua Province.

Mr. Halter's field notes show that this species is distinctly arboreal. All but one of his specimens were shot on cocoanut palms or on stumps.

It is interesting that the native name for this species is "Lucia," applied in Porto Rico to the *Mabuya*. It is probably used for both the *Mabuya* and the *Celestus* in Santo Domingo.

***Celestus* (*Sauresia*) *sepsoides* Gray**

One specimen of this interesting species was collected by Mr. Halter at Sanchez, and a second comes from San Pedro de Macoris, collected by Mr. J. K. Noble.

Mr. Halter's field notes report that his specimen was dug out of the ground about six inches below the surface. The limbs are not used in progression, which is snake-like.

This is one of the forms for which the use of a subgeneric name is most useful. *Sauresia* represents a distinct section of the West Indian *Celestus*, but to give it the rank of a full genus would disguise its obvious relations.

***Ameiva* *chrysolaema* Cope**

Mr. Olsson and I collected nineteen specimens of this species in the western part of Santo Domingo at the mouth of the Cana River and at Monte Cristi. Another specimen comes from Barahona in the southwestern part of the republic. These are the first records, apparently, outside of Haitian territory. Its absence in collections from the eastern

end of the island is presumptive evidence that *A. chrysolaema* is confined to the more arid sections.

This species is extremely abundant on the river bottoms in western Santo Domingo. It was observed feeding on angleworms, grasshoppers, and scorpions.

***Ameiva vittipunctata* Cope**

A single specimen from Los Quemados on the Gurabo River is referable to this species.

***Ameiva tæniura* Cope**

Twelve specimens in the collection from the Gurabo River, the Cana River, San Pedro de Macoris, the interior of Azua Province, Sanchez, Samana, Villa Rivas, and Puerto Plata.

This species belongs distinctively to the more humid habitat conditions in Santo Domingo. Mr. Olsson and I found it only in shaded and moist localities as far west as the Cana River. In the territory visited by us it was very rare, while at Samana and Sanchez it appears to be the common *Ameiva* of the beach.

It is unfortunate that Barbour and Noble (1915, Bull. Mus. Comp. Zool., LIX, p. 435) confused this species with *Ameiva lineolata*, which belongs to a very distinct section of the genus. The present collection contains juvenile specimens of *A. tæniura*, much smaller than adult *A. lineolata*, with which there is no approach in coloration.

***Ameiva lineolata* Duméril and Bibron**

Eleven specimens of this interesting and distinct form were collected at Monte Cristi by Mr. Olsson and myself. It was absent on the beaches and low ground, inhabiting the dry hills immediately back of the town, as well as the slopes of the Moro or Grange Mountain.

Like *A. wetmorei* in Porto Rico, with which it is allied, this species is doubtless confined to the more arid districts of the island.

Key to the Species of *Ameiva* in Santo Domingo

1. Caudal scales smooth, oblique..... *A. lineolata*.
Caudal scales keeled, straight..... 2.
2. Back uniform in color or nearly so between dorsolateral light bands. . *A. tæniura*.
Back with light lines or spots..... 3.
3. Three supraoculars; frontonasal with an anterior angle..... *A. vittipunctata*.
Four supraoculars; frontonasal truncate or rounded anteriorly. . *A. chrysolaema*.

Amphisbæna manni Barbour

Four specimens from Sanchez, San Pedro de Macoris, and the province of Santo Domingo.

These specimens show little variation. The body-rings range from 222 to 228, the tail-rings from 21 to 24. Two have six preanal pores and two have eight.

Typhlops lumbricalis (Linné)

One specimen from San Pedro de Macoris, collected by Mr. J. K. Noble.

I have elsewhere endeavored to show (1920, Ann. N. Y. Acad. Sci., XXVIII, p. 195) that the Porto Rican *Typhlops* usually referred to *T. lumbricalis* is in reality so well distinguishable from the *Typhlops* of Cuba as to warrant its recognition as a separate species. The single specimen at hand from Hispaniola is insufficient material on which to base a conclusion as to its distinctness. The specimen has, however, only 245 scales from snout to vent, while in the Cuban series examined by me the minimum is 270. The status of the Hispaniolan, Cuban, and Jamaican *Typhlops lumbricalis* offers an interesting problem for investigation.

Typhlops pusillus Barbour

One specimen of this species was collected by me at Caimito, on the Cana River, and a second comes from Sanchez, collected by C. R. Halter.

Epicrates striatus Fischer

Three specimens: one from Los Quemados, one without further data than eastern Santo Domingo, and one from San Lorenzo.

The scale counts of these three specimens follow:

A. M. N. H. No.	Sex	Dorsal Scales	Ventrals	Subcaudals
9038	♀	41-55-27	292	65
6374	♀	39-55-27	289	48
16079	♀	43-53-31	285	73

The unusually low number of subcaudals in No. 6374 may be due to injury of the tail.

The specimen brought to us at Los Quemados by a boy measured two meters in length. It was about as thick as a man's wrist, due chiefly to the distention of the body by twenty-six eggs, measuring from 30 to 40 mm. by 25 mm.

Tropidophis maculata (Bibron)

A single specimen collected at Sanchez by C. R. Halter. The ventral plates number 181, the subcaudals 39, the dorsal rows 25-27-19.

This specimen was captured in a swamp with one *Hyla pulchrilineata* in its mouth while it was engaged in constricting another one. As numerous mated pairs of *Hyla pulchrilineata* were found at the same time, it is presumable that the snake attacked a pair in embrace.

Hypsirhynchus ferox Günther

One specimen from Los Quemados; another from Cercado de Mao. The one from Cercado was found coiled on the river-bank among loose rocks.

Uromacer catesbyi (Schlegel)

There are twenty-two specimens of this species in the collection, representing the following localities: Barahona, San Pedro de Macoris, San Lorenzo, Sanchez, Villa Rivas, the interior of Azua Province, Los Quemados, and Cercado de Mao.

Uromacer frenatus (Günther)

A single specimen from Los Quemados, collected by the writer.

This specimen is of interest in having only 171 ventral plates and 177 subcaudals; dorsal scales normal, 17-17-11. Boulenger gives ventrals 182-193 and subcaudals 201-205. Dunn (1920, Proc. New England Zool. Club, VII, p. 44) describes a specimen with 171 ventral plates and 194 subcaudals from Tortuga Island. It seems best to consider both these specimens as somewhat aberrant *U. frenatus*.

Uromacer oxyrhynchus Duméril and Bibron

Four specimens of this species from Sanchez and Samana. A specimen too badly injured for preservation was brought to our camp at Los Quemados, on the Gurabo River. This specimen was the largest I have seen, measuring nearly two meters.

Leimadophis parvifrons protenus (Jan)

I follow Dunn (*loc. cit.*, p. 38) in the use of this name for the majority of *Leimadophis* from Santo Domingo. There are thirteen specimens in the collection from Barahona, Azua Province, San Pedro de Macoris, and Los Quemados. One of the two specimens from Barahona is

colored exactly like the typical form from the southwestern peninsula but agrees with *protenus* in the higher ventral count. The juvenile specimen from Barahona is very light in color, the longitudinal striping being only distinguishable anteriorly. On the first sixth of the body, the first three scale-rows are colored like the venter; the fourth and half of the fifth is occupied by a black band continued through the eye to the snout; the upper half of the fifth row to the middle of the eighth row is light, and the three median scale-rows plus the borders of the eighth row are dark. This I regard as a juvenile coloration, which throws light on the shift in the position of the dorsolateral light stripe in *L. alleni* and *L. tortuganus* (Dunn, *loc. cit.*, p. 40).

***Leimadophis parvifrons niger* Dunn**

Two specimens collected by Mr. Halter at Sanchez agree exactly with Dunn's description in color (*loc. cit.*, p. 39). The ventral plates number 151 in both; the subcaudals 122 and 123.

***Pseudemys palustris* (Gmelin)**

Nine specimens of this species were taken in the Yuna River by Mr. Halter. At Monte Cristi this turtle was a staple article of food. The Monte Cristi specimens were much larger than any of the Porto Rican specimens I have seen.

