STUDIES ON THE FAUNA OF CURAÇAO, ARUBA, BONAIRE AND THE VENEZUELAN ISLANDS: No. 8.

SNAKES FROM THE LEEWARD GROUP, VENEZUELA AND EASTERN COLOMBIA

by

Dr. L. D. BRONGERSMA

(Rijksmuseum van Natuurlijke Historie, Leiden)

Dr. P. Wagenaar Hummelinck entrusted me with the study of the snakes, which he collected during his trips to the islands off the north coast of Venezuela, to the Venezuelan mainland, and to eastern Colombia. In the present paper the species collected by Dr. Hummelinck are listed with data on scale counts, coloration and with notes on nomenclature. In a few cases specimens from other collections were used for comparison, and for these the provenance is indicated in the lists of specimens. Dr. Hummelinck made notes on the names given to the different species of snakes by the inhabitants, and by his kind permission these notes are included in the present paper. These local names form an addition to those published by Roca (1932, pp. 387—388).

Unless otherwise stated the specimens are in the collections of the Rijksmuseum van Natuurlijke Historie, Leiden. The numbers cited for the different specimens, Oph. 1—60, are the numbers used by the collector; they are mentioned in parentheses, the first of each list of specimens with the indication Oph., the following without this indication.

The localities in which the collections were made are the following. Dutch Leeward Islands. Aruba: Oranjestad; Rooi Tamboe, near Prins; in front of the Fontein cave. Curaçao: St. Kruis; Seroe Djerimi, Knip; Savonet; Dokterstuin; Hato cave; Groot St. Joris. Bonaire: Kralendijk; Lima. Venezuelan Islands. Margarita: Macanao; Guatamare, near El Valle; Porlamar. Los Testigos: Morro de la Iguana; Tamarindo. Vene-

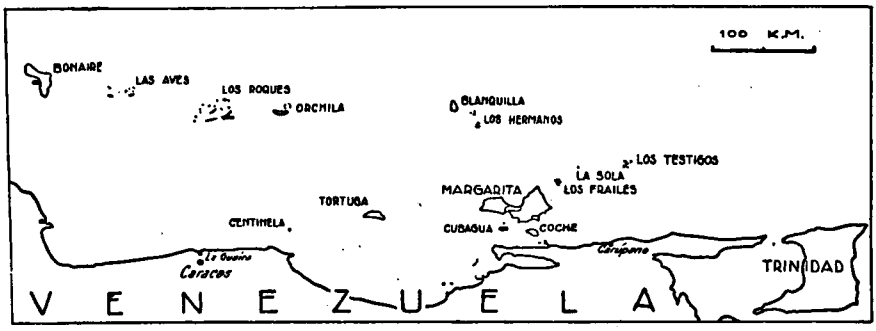

Fig. 15. Venezuelan islands, between Trinidad and Bonaire.

zuelan mainland. Puerto Santo, near Carúpano; Blandín, Caracas; El Guayabo, state of Zulia, near the Colombian frontier. Colombia. Rio Hacha, near the Goajira peninsula.

Most of the localities are mentioned in the lists given by Hummelinck (1940a, pp. 32—37; 1940b, pp. 22—42), and are indicated on the maps published by that author (1933, 1940a). For some specimens the number of the collecting station, e.g., Stat. 185, is given; these numbers occur in the lists and on the maps published by Hummelinck (1940a).

In the present paper the sexes are indicated by m. (male), fem. or f. (female).

Helminthophis albirostris (Ptrs.)

Rhinotyphlops albirostris Peters, Monatsber. Ak. Berl., 1857, p. 402.

Helminthophis albirostris, Boulenger, Cat. Sn. Brit. Mus., vol. 1, 1893, p. 6; Werner, Arch. Natg., Jahrg. 87, 1921, Abt. A, H. 7, p. 270; Amaral, Proc. New Engl. Zoöl. Cl., vol. 9, 1924, p. 26; Amaral, Mem. Inst. But., vol. 4, 1929, pp. 7, 135.

Liotyphlops albirostris, Peters, Sitz.Ber. Ges. natf. Fr. Berl., 1881, p. 69; Dunn, Proc. Biol. Soc. Wash., vol. 45, 1932, p. 175.

Typhlops (Idiotyphlops) emunctus Garman, Mem. Mus. Comp. Zoöl., vol. 8, no. 3, 1883, p. 3.

Helminthophis emunctus, Cope, Bull. U.S. Nat. Mus., no. 32, 1887, p. 91; Amaral, Proc. New Engl. Zoöl. Cl., vol. 9, 1924, p. 27; Amaral, Mem. Inst. But., vol. 4, 1929, pp. 8, 135.

Helminthophis canellei Mocquard, Bull. Mus. Hist. Nat. Paris, vol. 9, 1903, p. 202; Werner, Arch. Natg., Jahrg. 87, 1921, Abt. A, H. 7, p. 270; Amaral, Proc. New Engl. Zoöl. Cl., vol. 9, 1924, p. 27; Amaral, Mem. Inst. But., vol. 4, 1929, pp. 8, 135.

Helminthophis bondensis Griffin, Mem. Carnegie Mus., vol. 7, 1916, p. 165; Werner, Arch. Natg., Jahrg. 87, 1921, Abt. A, H. 7, p. 271; Amaral, Proc. New Engl. Zoöl. Cl., vol. 9, 1924, p. 28; Amaral, Mem. Inst. But., vol. 4, 1929, pp. 8, 135.

CURAÇAO, 1 specimen, received by Dr. Hummelinck from the Museum of the St. Thomas College, Curaçao.

Dunn (1932, pp. 174—175) has shown that *Helminthophis emunctus* (Garman), *H. canellei* Mocquard, and *H. bondensis* Griffin are synonyms of *H. albirostris* (Peters). The evidence given by Dunn indeed points to the fact that the differences, which were used to separate these forms are individual variations only. However, I cannot follow Dunn in placing *albirostris* in a separate genus *Liotyphlops* Peters.

Helminthophis albirostris had not yet been recorded from Curaçao, and further evidence is necessary to prove that this species really is an inhabitant of the island. Its known distribution was: Panamá, Ecuador, and Colombia. The record may be doubted as other records from the same source, e.g., *Liophis cobella* (L.) labelled "Curaçao", are certainly incorrect. However, it is not impossible that the species occurs in Curaçao; it may have been imported there, like *Helminthophis flavoterminatus* (Ptrs.) has been imported in Mauritius (Boulenger, 1893, p. 5). For the present it is best to let the specimen have the benefit of the doubt.

The specimen, which is in a rather bad condition (body broken) has 24 scale rows on the anterior part of the body, and 22 rows on the posterior part. The prefrontal is separated from the labials by the nasal and the lower preocular. Four upper labials; first and second in contact with the nasal; second and third in contact with the lower preocular; third upper labial narrowly in contact with the ocular, which is separated from the fourth labial by a subocular. Two preoculars; the upper in contact with the frontal, prefrontal, lower preocular, ocular, and supraocular. Lower preocular in contact with the prefontal, nasal, second and third labials, ocular, and upper preocular. The eye is visible through the shields; it is situated partly under the preoculars and partly under the ocular, at the point, where the posterior borders of the preoculars meet. One large frontal, about 3½ times as wide as long. The frontal is followed by five scales, viz., a supraocular on each side, and three postfrontals.

Leptotyphlops albifrons (Wagl.)

Glauconia albifrons, Boulenger, Cat. Sn. Brit. Mus., vol. 1, 1893, p. 63; Werner, Mitt. Zool. Mus. Hamb., vol. 34 (2. Beih. Jahrb. Hamb. wiss. Anst., vol. 34), 1917, p. 203; Werner, Zeitschr. wiss. Zool., vol. 125, 1925, pp. 542, 546.

Glauconia (Leptotyphlops) albifrons, Werner, Zeitschr. wiss. Zool., vol. 125, 1925, p. 540.

Leptotyphlops albifrons, Amaral, Mem. Inst. But., vol. 4, 1929, p. 138; Hummelinck, Studies Fauna Curaçao, vol. 1, 1940, p. 114, pl. XIII lower figure.

BONAIRE, Kralendijk, 19.IX.1930 (Oph. 36); Kralendijk, 30.X.1930 (37), both captured in house; Lima, 14.XI.1936, Stat. 185 (38).

Nom. ind.: Culebra di plata (= silversnake).

Boa enydris cookii (Gray)

Corallus cookii, Boulenger, Cat. Sn. Brit. Mus., vol. 1, 1893, p. 99, pl. IV fig. 3; Werner, Arch. Natg., Jahrg. 87, 1921, Abt. A, H. 7, p. 246.
Boa hortulana cookii, Amaral, Mem. Inst. But., vol. 4, 1929, p. 143.
Boa enydris cookii, Stull, Proc. Bost. Soc. Nat. Hist., vol. 40, no. 8, 1935, p. 398.

TESTIGOS, Tamarindo, 16.VI.1936 (Oph. 17, male).
Nom. ind.: Guaima piña.

Sq. 45, v. 261, a. 1, sc. 113. Nasals separated by the prefrontals.

Constrictor constrictor constrictor (L.)

Boa constrictor, Boulenger, Cat. Sn. Brit. Mus., vol. 1, 1893, p. 117; Werner, Arch. Natg., Jahrg. 87, 1921, Abt. A, H. 7, p. 252.
Constrictor constrictor constrictor, Amaral, Mem. Inst. But., vol. 4, 1929, p. 141; Stull, Proc. Bost. Soc. Nat. Hist., vol. 40, no. 8, 1935, p. 403.

GOAJIRA, Rio Hacha, 20.I.1937 (Oph. 10, male juv.). MARGARITA, 1936 (11, skin); Macanao, 1936 (12, skin).
Nom. ind.: Alfombra (= carpet) (R. Hacha); macaurel (Marg.).

Oph. 10, sq. 83, v. 244, a. 1, sc. 56.

Ninia atrata (Hall.)

Ninia atrata atrata, Amaral, Mem. Inst. But., vol. 4, 1929, p. 151.
Ninia atrata, Dunn, Proc. Nat. Ac. Sci. Wash., vol. 21, 1935, p. 11.

CARACAS, Blandin, 1935 (female; don.).

Sq. 19, 19, 19, v. 153, a. 1/1, sc. 51/51 + 1; 7 upper labials, third and fourth bordering the orbit; four lower labials in contact with the anterior chinshields; temporals 1 + 2.

Coluber L.

With Stejneger & Barbour (1933, p. 93), and Mertens (1936, p. 190) I agree that *Coluber* L. and *Masticophis* Baird & Girard cannot be separated as distinct genera. The remarks by Stuart (1934, pp. 2—30), who accepts these genera as distinct, in my opinion offer convincing evidence that the genera must be fused. They are connected to each other by a species (*Coluber ortenburgeri* Stuart), which has the hemipenial characters of *Coluber,* while the scale rows are reduced posteriorly as in *Masticophis.* The differences in the structure of the hemipenis, and in the reduction of the number of scale rows are (in the case of these "genera") not sufficient to warrant their separation.

Coluber mentovarius (Dum., Bibr. & Dum.)

C(oryphodon) Mento-varius Duméril, Bibron & Duméril, Erp. gén., vol. 7, pt. 1, 1854, p. 187.

C(oryphodon) mentovarius, Jan, Elenco sistem. Ofidi, 1863, p. 64.

Zamenis mentovarius, Boulenger, Cat. Sn. Brit. Mus., vol. 1, 1893, p. 389; Meek, Field Mus. Nat. Hist., Publ. 148, Zoöl. Ser., vol. 7, no. 12, 1910, p. 415.

Z(amenis) mentovarius, Werner, Zool. Jahrb., Syst., vol. 57, 1929, p. 73.

Masticophis mentovarius, Ortenburger, Occ. Pprs. Mus. Zool., Univ. Mich., nr. 139, 1923, p. 2; Ortenburger, Univ. Mich. Studies, Mem. Mich. Mus., vol. 1, 1928, p. 138, pl. XXV figs. 1, 2, textfig. 28 (map); Dunn, Copeia, 1933, nr. 4, p. 214.

GOAJIRA, Rio Hacha, 23.I.1937 (Oph. 7, male). MARGARITA, Porlamar, 26.V.1936 (19, female); Porlamar, 31.V. 1936 (20—21, m. and fem.); Porlamar, 8.VI. 1936 (22, fem.).

Nom. ind.: Conejerera (because it feeds on young "rabbits"; conejo rabbit).

Four snakes from Margarita island, Venezuela, and one from Rio Hacha, La Goajira peninsula, Colombia, must be referred to this species. The distribution of this species generally is given as Mexico to Guatamala, and as such it is given by Ortenburger (1928, p. 140, fig. 28) in his monograph of *Masticophis.* This distribution is also mentioned by Amaral (1929, p. 153) in his check list of neotropical snakes, and by Werner (1929, p. 73) in his survey of the *Colubrinae.* Dunn (1933, p. 214) states that this species also occurs in Nicaragua, Costa Rica, and Panamá. Two other records seem to have been overlooked by these authors, viz., the record from Venezuela by Jan (1863, p. 64) and that from Margarita island by Meek (1910, p. 415). This is the more remarkable as Ortenburger (1928, p. 138) includes both references in the synonymy of this species. The specimens collected by Dr. Wagenaar Hummelinck on Margarita and at Rio Hacha, definitely prove that *Coluber mentovarius* occurs on the South American continent, and on the neighbouring Venezuelan islands. The species had not yet been reported from Colombia.

The identification of these snakes puzzled me a good deal, as the differences between *Coluber* L. and the genera related to it, e.g., *Drymoluber* Amaral, *Dryadophis* Stuart, *Drymobius* Fitz., are rather small. The examination of the hemipenis proved that only *Coluber* L. had to be considered.

The hemipenis may be described as follows from one extracted from a spirit specimen, and which I cut open close to the sulcus spermaticus. The hemipenis is slightly bilobed, with a single, unforked sulcus spermaticus. The basal $^1/_3$ is covered with longitudinal folds, which probably would disappear if the hemipenis were everted by injection; this part is covered with numerous spinules. Distally from this basal part follow three large hooks ("basal hooks" of Ortenburger). Over $^1/_4$ of its length, following the large hooks, the hemipenis is covered with small spines, curved at the top, and arranged in about 12 longitudinal and ca. 5 transverse rows; the total number of spines slightly exceeds 60. The distal $^1/_3$ part is covered with calyces in about 14 longitudinal rows. The

number of spines is somewhat higher than that mentioned by Ortenburger (1928, p. 140: 46—48, in 2—3 rows), but I do not believe that this is sufficient reason to separate the South American specimens from those from Central America. It is possible that the South American specimens represent a distinct subspecies, as the subcaudal counts are lower than those recorded by Ortenburger.

In addition to the description of the hemipenis, the following characters of these specimens may be given. Maxillary teeth 20, the posterior very slightly larger and stouter than the anterior. Palatine teeth 14, subequal; pterygoid teeth about 26, the posterior smaller. Dentary with 22 teeth, the anterior largest. I do not find that the anterior dentary teeth are smaller than those following them; the dentary teeth may, therefore, be described as scaphiodont, rather than kumatodont (Ortenburger, 1928, p. 140).

Rostral broader than high, visible from above. Frontal about as long as parietals, somewhat longer than its distance from the tip of the snout, from $1^3/_5$ to nearly 2 times as long as wide, broader than a supraocular. Prefrontals longer than the internasals. Nasal divided in most specimens; in one specimen, however, the nasal is single. The nostril is bordered above by the internasal. Loreal nearly twice as long as high. One large preocular with a small subocular below it. Preocular separated from the frontal, or narrowly in contact with this shield. All specimens have 7 upper labials; the fourth labial alone borders the orbit. 10 lower labials of which the anterior four border the anterior chinshields. Posterior chinshields separated by scales.

Oph. 7, male, sq. 17,17,13, v.190, a.1/1, sc. 33/33+..., temp. r. $2+_1+3$, l. $2+_1+2$.
Oph. 20, male, sq. 18,17,13, v.195, a.1/1, sc. 100/100+1 , temp. r. 2+2 , l. 3+2.
Oph. 21, fem., sq. 19,17,13, v.191, a.1/1, sc. 96/96+..., temp. r. 2+2 , l. 3+2.
Oph. 19, fem., sq. 17,17,13, v.193, a.1/1, sc. 38/38+..., temp. r. 2+2 , l. 2+2.
Oph. 22, fem., sq. 17,17,13, v.192, a.1/1, sc. 100/100+1 , temp. r. 2+2 , l. 2+2.

Dryadophis quinquelineatus (Steind.)

Herpetodryas quinquelineatus Steindachner, Sitz.Ber. Ak. Wiss. Wien, Math. Naturw. Cl., vol. 62, Abth. 1, 1870, p. 346.

Drymobius boddaertii, Boulenger, Cat. Sn. Brit. Mus., vol. 2, 1894, p. 11 (part.); Amaral, Mem. Inst. But., vol. 4, 1929, p. 154 (part.).

Eudryas boddaertii, Stuart, Occ. Pprs. Mus. Zool., Univ. Mich., nr. 236, 1932, p. 5 (part.).

Eudryas quinquelineatus, Stuart, Occ. Pprs. Mus. Zool., Univ. Mich., nr. 254, 1933, p. 2, fig. 1; Stuart, Copeia, 1938, nr. 1, p. 7.

GOAJIRA, Rio Hacha, 19.I.1937 (Oph. 3, female). CARÚPANO, Puerto Santo, 12.VI.1936, Stat. 125 (14, male). TESTIGOS, Morro de la Iguana, 14.VI.1936, Stat. 157 (16, fem.); Tamarindo, 16.VI.1936 (18, m.). MARGARITA, Porlamar, 30.V.1936 (23, fem., 24, m.); Porlamar, 1.VI.1936 (25, 26, m., 27, fem.).

Nom. ind.: Lagartijera (E. Venez.) (because it feeds on lizards; lagartija = lizard); taya (R. Hacha).

Stuart (1933, p. 2) revives *quinquelineatus* as a species distinct from *boddaertii*. However, no characters are given; the range is stated to be southern and western Venezuela, eastern and parts of northern Colombia, and northwestern Brazil. In a later paper containing the description of *Dryadophis amarali* (Stuart) from Margarita island, Tobago island, and from the Venezuelan mainland, Stuart (1938, p. 7) mentions the characters by which *amarali* can be separated from *quinquelineatus*. On the base of this rather scanty information, and on a comparison made with the specimens of *Dryadophis boddaertii boddaertii* (Sentzen) from Surinam, I refer the present specimens to *Dryadophis quinquelineatus* (Steind.). As already mentioned by Stuart (1938, p. 8), the range of this species extends into northern and eastern Venezuela, to Margarita, and to Los Testigos.

The specimens all have the scales in 17, 17, 15 rows, a divided anal, one preocular, and two postoculars.

The temporals show considerable variation as shown in table 16. Still their formulae may be derived from one which shows two anterior temporals both in contact with the postoculars, and each of the anterior temporals in contact with the corresponding posterior temporal: 2 + 2. The variation occurring most is that in which the upper anterior temporal is divided into two small shields, one behind the other, and having a common suture; the anterior small shield in contact with the upper postocular, the posterior in contact with the upper posterior temporal: $\frac{1+1}{1}+2$. Other specimens too have the two small upper anterior temporals, but these are separated from each other by the lower anterior temporal and the parietal being in contact between them: $\frac{1-1}{1}+2$. The posterior small shield may have fused with the lower anterior temporal, or may have been suppressed, so that the upper anterior temporal is a small shield, which is in contact with the postocular, but separated from the upper posterior temporal: $\frac{1--}{1}+2$. In a similar way the anterior small shield may be lacking, and thus the anterior upper temporal is a small shield separated from the postocular: $\frac{--1}{1}+2$. In one specimen only, the lower anterior temporal is subdivided giving the formula: $\frac{1}{1+1}+2$.

The coloration shows individual variations, but in all specimens three dark longitudinal stripes are more or less distinct on the neck and anterior part of the back. The throat is not uniformly whitish as in *amarali*, but it is dark with light spots.

The colour pattern of some of the specimens (in spirit) may be described separately.

Male from Tamarindo (Oph. 18). Head dark brown, a black line along the upper border of the supralabials. Upper labials whitish with a grey lower border, this grey colour extending to the orbit across the sixth upper labial. Throat greyish; a white interspace separating the dark sides of the head from the grey throat.

TABLE 16.

Dryadophis quinquelineatus

Oph.	sex	v.	sc.	upper labials r.	upper labials l.	upper temporals r.	upper temporals l.
3	female	187	29/29+...	9 (5.6.)	9 (4.5.6.)	2 + 2	$\frac{1--}{1}$ + 2
14	male	169	42/42+...	9 (4.5.6.)	9 (4.5.6.)	$\frac{1+1}{1}$ + 2	$\frac{1--}{1}$ + 2
18	male	175	105/105+1	9 (4.5.6.)	9 (4.5.6.)	$\frac{--1}{1}$ + 2	$\frac{--1}{1}$ + 2
16	female	189	91/91+1	9 (4.5.6.)	9 (4.5.6.)	$\frac{1+1}{1}$ + 2	$\frac{1}{1+1}$ + 2
24	male	170	65/65+...	9 (4.5.6.)	9 (4.5.6.)	$\frac{1--}{1}$ + 2	$\frac{1-1}{1}$ + 2
25	male	176	98/98+1	9 (4.5.6.)	9 (4.5.6.)	2 + 2	$\frac{--1}{1}$ + 2
26	male	169	97/97+1	9 (5.6.)	9 (4.5.6.)	$\frac{1+1}{1}$ + 2	$\frac{1+1}{1}$ + 2
23	female	184	1/1+2+29/29+...	9 (4.5.6.)	9 (4.5.6.)	2 + 2	$\frac{1+1}{1}$ + 2
27	female	186	88/88+1	9 (4.5.6.)	9 (5.6.)	$\frac{1+1}{1}$ + 2	$\frac{1+1}{1}$ + 2

The pattern of the neck, and of the back is combined of crossbands and of longitudinal stripes. Just behind the head the crossbands are prevalent, but the longitudinal stripes are indicated. Following three crossbands, the neck shows three distinct longitudinal stripes, formed by the black borders of two adjoining scale rows; the crossbands are still discernible. On the remaining part of the back one broad brown band is present, bordered on the sides by a blackish line. If this brown band is examined closely, traces of crossbands can be found, they are indicated by transverse series of dark dots, formed by black scale borders, and by transverse (or more or less oblique) light lines, formed by whitish scale borders. These indications of crossbands fade posteriorly. The sides are greyish brown with black dots; on the posterior part of the body the sides show a light longitudinal band, bordered above by the broad vertebral band, and bordered below by a blackish brown line on the lower half of the third scale row.

In the female from Morro de la Iguana (Oph. 16), the lateral black stripes on the neck are interrupted, and these stripes are formed by longitudinal series of oblong black spots. The broad dark band on the anterior part of the back shows the same division into crossbars. The ventrals are whitish; laterally their posterior borders are black.

In the male from Puerto Santo (Oph. 14), the median longitudinal band on the back is bordered laterally by a dark line, which is followed by a light band of ½ + 1 + ½ scale rows wide. Below this light band a dark line. Outer 2½ scale rows slightly darker than the lateral light band. Belly white, the ventrals greyish laterally.

A female from Margarita (Oph. 23) has three distinct black longitudinal lines on the neck. They are separated by series of whitish scales. Posteriorly these three stripes fuse into one broad black band, but the whitish scales remain. These latter do no longer form regular series, but with the black of the band they form a reticulation.

Stomach contents:
Female from Morro de la Iguana (Oph. 16): remains of an *Ameiva*.
Male from Margarita (Oph. 24): remains of an *Ameiva*.
Female from Margarita (Oph. 26): one *Ameiva bifrontata* Cope.
Female from Margarita (Oph. 27): remains of three *Gonatodes* specimens.

Drymarchon corais corais (Boie)

Coluber corais, var. A, Boulenger, Cat. Sn. Brit. Mus., vol. 2, 1894, pp. 31, 32.

Drymarchon corais corais, Amaral, Mem. Inst. But., vol. 4, 1929, pp. 158, 325, fig. 1.

GOAJIRA, Rio Hacha, 19. I. 1937 (Oph. 5, female); Rio Hacha, 20. I. 1937 (Oph. 6, male, skin in spirit).

Nom. ind.: Cazadora. — According to Roca (1932, p. 387) this name is also used for rattlesnakes, and for *Coluber variabilis* (= *Spilotes pullatus* (L.)).

TABLE 17.

Leimadophis triscalis

specimens	sex	ventrals	subcaudals	upper labials r.	upper labials l.	lower labials r.	lower labials l.	postoculars r.	postoculars l.
Oph. 40	m.	190	82/82+1	8 (4.5.)	8 (4.5.)	10	9	2	2
Oph. 41	m.	187	2/2+1+80/80+1	8 (4.5.)	8 (4.5.)	10	10	2	2
Oph. 42	m.	?	2/2+1+50/50+1+22/22+1	8 (4.5.)	8 (4.5.)	10	10	2	2
Oph. 44	m.	189	80/80+1	8 (4.5.)	8 (4.5.) [1]	10	10	2	3
Oph. 45	m.	186+1/1	83/83+1	8 (4.5.)	8 (4.5.)	10	10	2	2
Oph. 60	m.	—	80/80+1	8 (4.5.)	8 (4.5.)	—	—	2	—
Leiden 4816	m.	195	83/83+1	8 (4.5.)	8 (4.5.)	10	10	2	2
Oph. 46	m.	195	86/86+1	9 (5.6.)	8 (4.5.) [1]	10	10	2	3
Oph. 43	fem.	191	83/83+1	8 (4.5.)	8 (4.5.6.)	10	10	2	2
Oph. 47	fem.	184	82/82+1	8 (4.5.)	8 (4.5.)	10	10	2	3
Oph. 48	fem. juv.	187	85/85+1	8 (4.5.)	8 (4.5.)	10	10	3	2
Oph. 49	fem. juv.	186	83/83+1	9 (4.5.)	8 (4.5.6.)	10	10	3	3

[1] Small shield between 4th and 5th labial, not reaching border of lip.

Oph. 5, f., sq. 17;17,15, v. 202, a. 1, sc. 57/57+..., upper labials r. 8 (4.5.), l. 9 (5.6.), lower labials r. 10, l. 10, temporals r. 2+2, l. 2+2.

Oph. 6, m., sq. —,17,15, v. 197, a. 1, sc. 67/67+1+?, upper labials r. 9 (5.6.), l. 9 (5.6.), lower labials r. 9, l. 9, temporals r. 2+3, l. 2+2.

In both specimens, as well as in others from Surinam, the scales on the anterior part of the back have two apical pits, while those on the posterior part of the back have about seven of these pits along their free border. From the oviducts of the female ten eggs were extracted.

Leimadophis triscalis (L.) [Tab. XIa]

Liophis triscalis, Boulenger, Cat. Sn. Brit. Mus., vol. 2, 1894, p. 129; Hartert, Nov. Zool., vol. 9, 1902, p. 294; De Rooij, Bijdr. Dierk., nr. 22 (feestnummer Max Weber), 1922, pp. 249, 252.

Leimadophis triscalis, Ruthven, Occ. Pprs. Mus. Zool., Univ. Mich., nr. 143, 1923, p. 9; Werner, Zeitschr. wiss. Zool., vol. 125, 1925, pp. 539, 542, 549; Amaral, Mem. Inst. But., vol. 4, 1929, p. 168; Stejneger, Nyt Mag. Naturv., vol. 74, 1934, p. 50; Hummelinck, Studies Fauna Curaçao, vol. 1, 1940, p. 114.

Dromicus antillensis, Van Lidth de Jeude, Notes Leyden Mus., vol. 9, 1887, p. 133; Martin, Ber. Reise Niederl. West-Indien, vol. 1, 1888, p. 141; De Rooij, Bijdr. Dierk., nr. 22 (feestnummer Max Weber), 1922, p. 249; Ruthven, Occ. Pprs. Mus. Zool., Univ. Mich., nr. 143, 1923, p. 9; Werner, Zeitschr. wiss. Zool., vol. 125, 1925, pp. 539, 543, 544 (part.); Hummelinck, Studies Fauna Curaçao, vol. 1, 1940, p. 114 (part.).

CURAÇAO, St. Kruis, 21.IV.1930 (Oph. 40 male); St. Kruis, 24.IV.1930 (41, m.); Groot St. Joris, IX.1930 (42, m.; V. H. van den Bergh coll.); Cave of Hato, 21.IX.1936, Stat. 218 (43, female, tab. XIa); Dokterstuin, 27.X.1936 (44, m.); Seroe Djerimi, 6.XI.1936, Stat. 242A (45, m.); Curaçao, 1885 (m.; Mus. Leiden, reg. no. 4816, J. R. H. Neervoort van de Poll coll.); Curaçao? (46—49, m., fem., 2 fem. juv.; St. Thomas College Curaçao don.); Savonet, 1.V.1930 (60, m., Zool. Mus. Amsterdam).

Nom. ind.: Known by a few as zweepslang (= whipsnake).

All specimens have the scales in 17, 17, 15 rows, the temporals 1 + 2, and one preocular. The anal is divided, but in specimen 40 the anal shields have completely fused; in specimen 41 they are partly fused. The variations of the other counts are shown in table 17.

The specimen, which Van Lidth de Jeude (1887, p. 133) referred to *Dromicus antillensis* in reality is a *Leimadophis triscalis* (L.). The supposition by Werner (1925, pp. 543, 544) that *Dromicus antillensis* has been imported in Curaçao is, therefore, superfluous.

The coloration is rather variable. Some specimens, e.g., the female figured on tab. XIa, have three dark lines on the back; the vertebral line has on each side a series of small spots pointing obliquely forwards, and nearly connecting

TABLE 18.

Leptodeira annulata

	sex	scale rows	ventral	anal	subcaudals	upper labials r.	upper labials l.	temporals	preocular r.	preocular l.	subocular r.	subocular l.	postocular r.	postocular l.	blotches
L. annulata annulata															
El Guayabo	m.	19 19 15	186	1/1	100/100+1	8 (3.4.5.)	8 (4.5.)	1+2	1	1	—	1	2	2	63
Caracas	m.	19 21 15	191	1/1	91/91+1	8 (4.5.)	8 (4.5.)	1+2	1	1	1	1	2	2	46
Margarita, Oph. 30 .	m.	— 19 15	177	1/1	51/51+...	8 (3.4.5.)	8 (3.4.5.)	1+2	1	1	—	—	2	2	28
Margarita, Oph. 31 .	fem.	21 21 17	181	1/1	44/44+...	7 (4.5.)	7 (4.5.)	1+2	1	1	1	1	2	2	32
L. annulata bakeri															
Leid. 4819, Neervoort	m.	19 19 15	171	1/1	75/75+1	8 (4.5.)	8 (4.5.)	1+2	1	1	1	—	2	2	22
Leid. 4819, Gravenh. .	fem.	19 19 17	171½	1/1	63/63+1	8 (3.4.5.)	8 (3.4.5.)	1+2	1	1	—	—	2	2	19
Leid. 4819, Koolwijk .	fem.	19 19 15	169	1/1	64/64+1	8 (4.5.)	8 (4.5.)	1+2	1	1	—	1	2	2	17
Oph. 52	fem.	19 19 15	±178	1/1	68/68+1	8 (4.5.)	8 (4.5.)	1+2	1	1	1	1	2	2	23
Oph. 53	fem.	19 19 15	175	1/1	69/69+1	8 (4.5.)	8 (4.5.)	1+2	1	1	1	1	2	2	26
Aruba ?	fem.	19 19 16	172	1/1	72/72+1	8 (4.5.)	8 (4.5.)	1+2	1	1	1	1	2	2	17
Aruba ?	fem.	19 19 15	174	1/1	62/62+1	8 (4.5.)	8 (4.5.)	1+2	1	1	1	1	2	2	15

it with the lateral lines. Only on the posterior part of the body the vertebral line lacks these "branches". The striped area of the back is bordered on the sides by a light longitudinal band, which at its turn is bordered below by a darker band. This latter consists of numerous brownish dots, which form more or less distinct longitudinal lines. In other specimens there are three dorsal lines, and one indistinct lateral line on each side. The coloration may be reduced to three dorsal lines, or the vertebral line may be lacking. In other specimens the colour pattern has nearly faded altogether.

Stomach contents: Remains of a small rodent were found in the stomach of the male from Dokterstuin (Oph. 44).

Leptodeira annulata annulata (L.)

Leptodira annulata, Boulenger, Cat. Sn. Brit. Mus., vol. 3, 1896, p. 97.
Leptodeira annulata, Griffin, Ann. Carnegie Mus., vol. 11, 1917, p. 321 (part.).
L(eptodeira) annulata, Ruthven, Occ. Pprs. Mus. Zool., Univ. Mich., nr. 330, p. 2.
Leptodeira annulata annulata, Amaral, Mem. Inst. But., vol. 4, 1929, pp. 35, 204.
Leptodira albofusca, Boulenger, Cat. Sn. Brit. Mus., vol. 3, 1896, p. 95 (part.); Meek, Field Mus. Nat. Hist., Publ. 148, Zoöl. Ser., vol. 7, no. 12, 1910, p. 415.

MARGARITA, Porlamar, 31.V.1936 (Oph. 30, male); Porlamar, 29.V.1936 (31, female). CARACAS, Blandín, 1935 (m.; don.). ZULIA, El Guayabo, on the Táchira railway, 18.VII.1930 (m.).

The variations in the scale counts are given in table 18 together with those of the next form. The number of blotches is greatly variable (28—63), but all specimens agree in that the blotches reach downward on the sides no farther than the fifth or sixth scale row.

Leptodeira annulata bakeri Ruthven

Dipsas annulata, Van Lidth de Jeude, Notes Leyden Mus., vol. 9, 1887, p. 133; Martin, Ber. Reise Niederl. West-Indien, vol. 1, 1888, p. 141.
Leptodeira annulata, Ruthven, Occ. Pprs Mus. Zool., Univ. Mich., nr. 143, 1923, p. 9; Werner, Zeitschr. wiss. Zool., vol. 125, 1925, p. 539 (part.); Hummelinck, Studies Fauna Curaçao, 1940, p. 114 (part.).
Leptodeira bakeri Ruthven, Occ. Pprs. Mus. Zool., Univ. Mich., nr. 330, 1936, p. 1.

ARUBA, in front of the Fontein cave, 29.VI.1930 (Oph. 52, female); Oranjestad, 21.XII.1936 (53, fem.); Aruba, 1885 (m., Mus. Leiden, reg. no. 4819; J. R. H. Neervoort van de Poll coll.); Aruba (2 fem., Mus. Leiden, reg. no. 4819; Gravenhorst and Van Koolwijk coll.); Locality? (2 fem.; St. Thomas College Curaçao don.).
Nom. ind.: Sentinero.

The variation of the scale counts is given in table 18. Ruthven (1936, p. 1) gives the number of scale rows as 19, 17, 15. In the specimens examined by me the number of rows at midbody is always 19, the reduction to 17 being found at some distance behind the middle of the body. The median row is not noticeably enlarged. The blotches reach downward to the first scale row in the Fontein specimen, to the third row in the specimen collected by Mr. Gravenhorst, and to the second scale row in all the other specimens.

The number of ventrals varies from 169 — ± 178 in six females, while the single male has 176 ventrals. This is indeed lower than in *Leptodeira annulata annulata* (L.), which has the ventrals 177—199 in five males, 181—195 in eight females from Venezuela and Surinam. [The counts from the Surinam specimens were taken by Mr. H. J. Verhagen, to whom I am indebted for his permission to use his notes.]

Ruthven (1936) gives specific rank to this form, but I see no reason to give it more than subspecific status.

Stomach contents: The female from the cave of Fontein (Oph. 52) had swallowed an *Anolis*.

Rhinostoma guianense (Troschel)

Rhinostoma guianense, Boulenger, Cat. Sn. Brit. Mus., vol. 3, 1896, p. 114; Amaral, Mem. Inst. But., vol. 4, 1929, p. 209.

CARÚPANO, Puerto Santo, 11.VI.1936, St. 125 (Oph. 15, female, 15a, fem. juv.). MARGARITA, Porlamar, 29.V.1936 (28, fem.); Porlamar, 1.VI.1936 (29, fem.).

Nom. ind.: Dormilado (Marg.).

Oph. 15 , female,	sq.	21,	19,	17,	v. 191,	a. 1,	sc. 57/57+1
Oph. 15a, female juv.,	sq.	21,	19,	17,	v. 193,	a. 1,	sc. 59/59+1
Oph. 28 , female,	sq.	21,	19,	17,	v. 190,	a. 1,	sc. 55/55+ ...
Oph. 29 , female,	sq.	21,	19,	17,	v. 190,	a. 1,	sc. 49/49+1

All specimens have 8 upper labials of which the fourth and fifth enter the orbit; four lower labials in contact with the anterior chinshields; temporals 2 + 3; one preocular, and two postoculars. In specimen 28 the supraocular is divided into two shields; this female contained six eggs, which were about ready to be laid; they measure about 31 to 32 mm in greatest length.

Stomach contents: The tail of a lizard (probably a middle sized *Ameiva*) was found in the stomach of the female from Puerto Santo (Oph. 15).

Dryophylax strigilis (Thunberg)

Coluber strigilis Thunberg, Mus. Acad. Upsal., vol. 1, 1787, p. 22.

Thamnodynastes nattereri, Boulenger, Cat. Sn. Brit. Mus., vol. 3, 1896, p. 116.

Thamnodynastes pallidus, Amaral, Rev. Mus. Paulista, vol. 14, 1926, p. 27 (part.).

Dryophylax pallidus strigilis, Amaral, Mem. Inst. But., vol. 4, 1929, p. 210.

GOAJIRA, Rio Hacha, 20.I.1937 (female).

Nom. ind.: Patoquilla.

Amaral (1926, p. 27) arrived at the conclusion that *Coluber strigilis* Thunberg, 1787, *Coluber nattereri* Mikan, 1820, and *Natrix punctatissima* Wagler, 1824, all were synonyms of *Coluber pallidus* Linnaeus, 1758, as the characters used by Boulenger (1896, pp. 116—117) to separate *Thamnodynastes nattereri* (Mikan) (= *Coluber strigilis* Thunb.) from *Thamnodynastes punctatissimus* (Wagler) (= *Coluber pallidus* L.) were to be considered as individual variations only. In his checklist of neotropical snakes. Amaral (1929, p. 210) recognizes two subspecies, viz., *Dryophylax pallidus pallidus* (L.) (synonym: *Thamnodynastes punctatisssimus*, Boulenger, 1896, p. 117), and *Dryophylax pallidus strigilis* (Thunb.) (synonym: *Thamnodynastes nattereri*, Boulenger, 1896, p. 116). Amaral (1929, p. 210) refers to his earlier paper (1926, p. 27), but he does not give his reasons for attributing subspecific rank to the two forms previously considered to be synonymous. *Dryophylax pallidus pallidus* is stated to occur in eastern and northern Brazil, the Guyanas, and eastern Colombia, while *Dryophylax pallidus strigilis* is mentioned from the middle west and south of Brazil, Paraguay, Uruguay, and from the Argentine. Specimens from Matto Grosso are said generally to be intermediate between these subspecies.

From the references to the two species recognized by Boulenger (1896, pp. 116, 117) we may conclude that the characters used by that author are of some value to separate these forms. The specimen in the present collection is from Rio Hacha in eastern Colombia, and, therefore, it comes within the range of *Dryophylax pallidus pallidus* as recognized by Amaral. However, it agrees better with the form named *Thamnodynastes nattereri* by Boulenger, and which Amaral mentions as a synonym of *Dryophylax pallidus strigilis*. Our Museum does not contain sufficient material to settle the question whether *pallidus* and *strigilis* are distinct species with overlapping ranges or whether they are subspecies only. For the present I recognize *strigilis* as a separate species, awaiting further evidence to be published by Amaral in favour of his views.

The specimen from Rio Hacha may be described as follows. Twelve solid maxillary teeth, followed after an interspace by two enlarged grooved teeth. With these characters it comes within the range of variation of *Tachymenis* Wiegm., and it has one solid tooth less than *Dryophylax* Wagl. (Amaral, 1935, p. 204: *Dryophylar*, err. typ.). The difference from *Dryophylax* is, however, very small, and all other characters point to this genus. The mandibular teeth are subequal, the anterior perhaps slightly longer than the posterior. Scales in 19, 19, 15 rows, keeled, and with one very indistinct apical pit. Ventrals 141, anal divided, subcaudals 56/56 + 1; 8 upper labials, fourth and fifth bordering the orbit; 10 lower labials, the anterior five in contact with the anterior chinshields. Temporals: left 2 + 3, right $\frac{1+1}{1}$ + 2; one preocular, two postoculars. Loreal higher than long. — Head with darker and lighter variegations; these variegations rather indistinct, however. A dark brown band from eye to rostral. A brown, black bordered bar from the eye to the corner of the mouth; an oblique bar below the eye to the border of the lip, crossing the fourth to sixth labials. Other dark bars on labials 1, 2, and 3. Upper and lower labials with dark bars, and yellowish spots; the latter dotted with black. Nape with two oblong dark spots, separated by a whitish spot. Neck with two

series of blackish spots with whitish median spots between them. Back with a light vertebral band, interrupted by rather indistinct crossbands. These crossbands consist of an x-shaped spot, formed by the black borders of the scales of the sixth to eighth scale rows, and of the black borders of the vertebral row of scales. These latter black borders form a kind of reticulation. Posteriorly the lateral series of spots fades away, and the median reticulation is reduced to a series of x-shaped crosses. All scales of the sides are powdered with grey. A dark median band across the symphysial and anterior chinshields, bifurcating on the posterior chinshields. The two branches are continued on the anterior ventrals as a pair of narrow greyish lines. Laterally of these a pair of more distinct dark lines originate on the lower labials, and are continued along the belly. A few short indistinct lines on the outer scale rows, originating on the lower labials.

Oxybelis acuminatus (Wied)

Oxybelis acuminatus, Boulenger, Cat. Sn. Brit. Mus., vol. 3, 1896, p. 192; Amaral, Mem. Inst. But., vol. 4, 1929, p. 215.
Oxbelis accuminatus, Meek, Field Mus. Nat. Hist., Publ. 148, Zoöl. Ser., vol. 7, no. 12, 1910, p. 416.

GOAJIRA, Rio Hacha, 18.I.1937 (Oph. 1, female); Rio Hacha, 19.I.1937 (2, fem.). MARGARITA, Porlamar, 1.VI.1936 (32, male); Guatamare, near El Valle, 1.VII.1936 (33, m.).
Nom. ind.: Bejuco (R. Hacha); bejuquera (Marg.).

All specimens have 17, 17, 13 scale rows, a divided anal, temporals 1 + 2, 1 preocular, and 2 postoculars.

Oph. 1, female,	v. 190,	sc. 137/137+...;	upper labials	r. 9 (4.5.6.),	l. 9 (4.5.6.).
Oph. 2, female,	v. 184,	sc. 158/158+1;	upper labials	r. 9 (4.5.6.),	l. 8 (4.5.).
Oph. 32, male,	v. 179,	sc. 167/167+...;	upper labials	r. 8 (4.5.),	l. 8 (4.5.).
Oph. 33, male,	v. 178,	sc. 134/135+...;	upper labials	r. 8 (4.5.),	l. 8 (4.5.).

Tantilla semicincta (Dum., Bibr. & Dum.)

Homalocranion semicinctum Duméril, Mém. Ac. Sci., Paris, vol. 23, 1853, p. 490, (nom. nud.).
Homalocranion semi-cinctum Duméril, Bibron & Duméril, Erp. gén., vol. 7, pt. 2, 1854, p. 862.
Homalocranium semicinctum, Boulenger, Cat. Sn. Brit. Mus., vol. 3, 1896, p. 219.
Tantilla semicincta, Amaral, Mem. Inst. But., vol. 4, 1929, p. 222.

GOAJIRA, Rio Hacha, 24.I.1937 (Oph. 13).
Nom. ind.: Coral.

Sq. 15, 15, 15, v. ± 180, a. 1/1, sc. 45/45 + 1; upper labials 7 (3.4.), 1 preocular, 2 postoculars, temporals 1 + 2, 4 lower labials in contact with the anterior chinshields.

Crotalus durissus unicolor Van Lidth de Jeude [Tab. XIb, XIIa]

Crotalus horridus var. *unicolor* Van Lidth de Jeude, Notes Leyden Mus., vol. 9, 1887, p. 133; Van Lidth de Jeude, Encycl. Ned. W. Ind., 1914, p. 415.

Crotalus unicolor, Klauber, Trans. San Diego Soc. Nat. Hist., vol. 8, 1936, pp. 245, 250, table 1, fig. 65; Klauber, Occ. Pprs. San Diego Soc. Nat. Hist., nr. 1, 1936, pp. 4, 9; Gloyd, Herpetologica, vol. 1, nr. 2, 1936, p. 65; Anonymous, News Bull. Staten Island Zool. Soc., vol. 4, no. 5, 1937, 3rd page, fig.; Klauber, Occ. Pprs. San Diego Soc. Nat. Hist., nr. 3, 1937, p. 28; Kauffeld & Gloyd, Herpetologica ,vol. 1, nr. 6, 1939, p. 156, pl. XV; Klauber, Occ. Pprs. San Diego Soc. Nat. Hist., nr. 5, 1939, pp. 45, 46, 48.

Crotalus terrificus, Boulenger, Cat. Sn. Brit. Mus., vol. 3, 1896, p. 573 (part.); Meek, Field Mus. Nat. Hist., Publ. 148, Zoöl. Ser., vol. 7, nr. 12, 1910, p. 416; De Rooij, Bijdr. Dierk., nr. 22 (Feestnummer Max Weber), 1922, pp. 249, 253; Ruthven, Occ. Pprs. Mus. Zool., Univ. Mich., nr. 143, 1923, p. 9; Werner, Zeitschr. wiss. Zool., vol. 125, 1925, pp. 539, 544, 548 (part.); Hummelinck, in: Realino, Nederl. Antillen, 1938, p. 209; Hummelinck, Studies Fauna Curaçao, vol. 1, 1940, p. 114.

Crotalus terrificus terrificus, Amaral, Mem. Inst. But., vol. 4, 1930, p. 242; Amaral, Mem. Inst. But., vol. 10, 1936, pp. 161, 162.

Crotalus spec., Martin, Ber. Reise Niederl. West-Indien, vol. 1, 1888, pp. 135, 141.

ARUBA, Rooi Tamboe, 22.XII.1936 (Oph. 54, female, tab XIb); Oranjestad, VI.1937 (55, male; rev. brothers don.); Aruba, XII.1935 (56, fem.; W. L. Harmsen don.); Aruba, abt. 1930 (57, juv., tab. XIIa; Mr. Meens don.; Aruba (58, m.; St. Thomas College Curaçao don.); Aruba, 1885 (fem., Mus. Leiden, reg. no. 613, cotype; J. R. H. Neervoort van de Poll coll.); Aruba? (59, juv.; St. Thomas College, Curaçao don.); Locality? (m., Mus. Leiden, reg. no. 1579, cotype). CURAÇAO?, 1885 (m., Zool. Mus. Amsterdam, probably a cotype (vide infra); J. R. H. Neervoort van de Poll coll.).

Nom. ind.: Cascabel; culebra (= snake); ratelslang (= rattlesnake).

Van Lidth de Jeude (1887, p. 133) based his description of *Crotalus horridus* var. *unicolor* on four specimens. One of these was captured on Aruba by Mr. Neervoort van de Poll, and was presented by him to the Leiden Museum (reg. no. 613). The second was a specimen already in the collections of the Leiden Museum; of this specimen Van Lidth de Jeude stated that the locality was unknown. Searching for this specimen I found a rattlesnake with a label attached to it mentioning the scale counts given by Van Lidth de Jeude, and which is undoubtedly the specimen described by that author. The bottle containing it, however, is labelled: *Sistrurus miliaris,* N. Am., N.A.M. [N.A.M. stands for Natura Artis Magistra, the device of the Amsterdam Zoological Gardens, which are mentioned by Van Lidth de Jeude as the donors of the specimen without locality record.] The third and fourth specimens mentioned by Van Lidth de Jeude, and which may be

considered as cotypes, were examined by him in the Zoological Gardens at Amsterdam, where they were kept alive. These two specimens had been collected on Aruba by Mr. Neervoort van de Poll, as stated by Van Lidth de Jeude. I suspected the rattlesnake, which De Rooij (1922, p. 253) described from Curaçao, to be one of these. In the files of the Amsterdam Zoological Museum it is entered as: *Crotalus terrificus* (Laur.), Curaçao 1885, Van de Poll. Probably at its death in the gardens the specimen was turned over to the Museum, and then was labelled Curaçao. Dr. A. L. J. Sunier, Director of the Amsterdam Zoological Gardens, and Miss W. Pelt, his assistant, kindly informed me that two "*Crotalus horridus*" were presented to the Gardens by Mr. Neervoort van de Poll on May 24th, 1885. Under this date they are mentioned in the register of donations to the gardens. The register mentions them as coming from the West Indies, which as usual in the Netherlands includes the islands as well as Surinam. Nothing is known about their further history. Although no definite proof can be given, I believe the Amsterdam specimen to be one of these specimens, and, therefore, one of the cotypes of *unicolor*.

Boulenger (1896, p. 573), Meek (1910, p. 416), De Rooij (1922, p. 253), and Amaral (1936, pp. 161, 162) consider *unicolor* as a strict synonym of *terrificus*. Several recent authors, e.g., Klauber (1936a, pp. 4, 9; 1936b, p. 245; 1937, p. 28; 1939, pp. 45, 46, 48), Gloyd (1936, p. 65), Kauffeld & Gloyd (1939, p. 156), and Anonymous (1937, p. 3) consider *unicolor* as a valid species. From the study of the specimens at present available to me, I arrive at the conclusion that *unicolor* is closely related to *Crotalus durissus*, and that it must be considered as a subspecies of this species.

The rattlesnakes, which Dr. Wagenaar Hummelinck brought home from Aruba, prove very interesting as they include adults of both sexes, as well as young specimens.

Van Lidth de Jeude (1887, p. 133) wrote that the Aruba specimen in the Leiden Museum shows no markings on the back. This is not quite correct, as rhomboidal spots are faintly indicated by light borders.

Kauffeld & Gloyd (1939, p. 159), who examined twelve young specimens (5 probably stillborn, 7 extracted from the uteri) note that the coloration of the young is more distinct than that of adults. This is also evident from the young specimens in the present collection, one of which (Oph. 57; tab. XIIa) may be described more at length. The specimen (preserved in formalin) has a head + body length of 245 mm, tail 20 mm. The snout is dark, with a light crossbar across the prefrontals, continuing over the preoculars, and widening towards the upper labials it runs obliquely downwards below the orbit. The sutures between the prefrontals and the enlarged pair of frontal scales are dark. This is also the case with the inner borders of the supraoculars. A short dark stripe starts from the posterior border of the supraoculars, and runs posteriorly for a short distance. It is followed after a small interspace by a second pair of short dark stripes, which are connected with the longitudinal stripes on the neck. Neck with two brownish longitudinal stripes, each about two scale rows wide, their borders darker; they are separated by a lighter, greyish median stripe, three scale rows wide. Laterally the dark stripes are bordered by a light one of two scales wide, which is followed by a dark stripe of one scale row wide (here and there interrupted by one or a few light scales). The region below this narrow dark stripe is light greyish (2 scale rows),

while close to the ventrals a dark region of unequal width is present. Over a short distance this dark colour reaches the outer scales, while in other places the outer scales are greyish. On the back distinct rhomboid markings are present. They consist of a lighter brownish grey centre and a darker, brown border, while they are surrounded by one or two rows of whitish scales. Alternating with these rhomboid spots are smaller ones, less regular in shape. Between the large markings and the ventrals another series of small dark spots is present. On the posterior part of the body the markings of a transverse series fuse with one another, and form more or less regular transverse bands, separated by light greyish interspaces. On the tail six of these crossbands can be discerned. Lower surface light greyish to whitish, that of the tail darker. — Another juvenile (Oph. 59, head + body 265 mm, tail 23 mm) has a similar colour pattern.

A female from Aruba (Oph. 56, head + body 520 mm, tail 50 mm) too shows traces of the rhomboid markings, which are represented by dark chevrons with lighter borders. Another female (Oph. 54, head + body 635 mm, tail 55 mm) has two short whitish longitudinal stripes, one scale row wide, on the neck; on the back traces of dark rhomboid markings are visible (Table XIb). The head and the tail of this specimen have been figured by Realino (1938, p. 48) from a photograph made by Dr. P. Wagenaar Hummelinck. The male in the Amsterdam Zoological Museum has faint traces of the markings. In the other adult specimens no traces of markings are found. — It is clear that the juvenile Aruba rattlesnakes have a distinct colour pattern, which undergoes a reduction with age.

The largest specimen examined is a male (Oph. 58) with the following measurements: head + body 870 mm, tail 100 mm (exclusive of rattle).

As said above difference of opinion exists as to the status of the Aruba rattlesnake. In scalation, and in coloration of the young, it shows great resemblance to the rattlesnakes occurring on the South American continent. These are named *Crotalus durissus terrificus* (Laur.) by Klauber (1936b, pp. 190, 233), while Amaral (1936, p. 161) uses the name *Crotalus terrificus terrificus* (Laur.), the diversity of opinion arising from the question whether *Crotalus durissus* L., 1758 can be identified. This point I cannot settle, and, therefore I use the nomenclature of Klauber, who gave the latest revision of the genus at present available in the Netherlands. [While this paper was being written, I received the circular announcing Dr. Gloyd's revision of the genera *Crotalus* and *Sistrurus*. This work could not be consulted.]

The Aruba rattlesnakes differ from the continental specimens in their smaller size, and in the fading coloration. The keel on the scales does not show the posterior boss present in *Crotalus durissus durissus* L. and *Crotalus durissus terrificus* (Laur.). The processus spinosi of the vertebrae are of the same type in the Aruba specimens as in those in the subspecies mentioned. To the existing differences I can attribute subspecific value only; the Aruba rattlesnake, therefore, may be known as *Crotalus durissus unicolor* Van Lidth de Jeude.

Gloyd (1936, p. 66) refers *Crotalus pulvis* Ditmars, 1905, from Nicaragua to the synonymy of *unicolor*, and indeed his arguments are very much in favour of such a procedure. However, the coloration of rattlesnakes is rather variable, and several cases of aberrant specimens have been recorded (Amaral, 1927, pp. 56, 91; 1932, p. 82, fig. 5; 1934, p. 152), and unless further specimens of

TABLE 19.

Crotalus durissus unicolor

specimens	sex	scale rows	ventrals	subcaudals	supralabials r.	supralabials l.	infralabials r.	infralabials l.	scales between eye and labials r.	scales between eye and labials l.
Leiden 613, cotype . .	fem.	25. 27 21	166½	1/1+21	13	14	14	15	4	4
Leiden, 1579, cotype . .	m.	25 27 21	161	2/2+27	13	14	14	14	3—4	3—4
Amsterdam, cotype? . .	m.	25 27 21	160	27	13	13	13	15	3—4	3—4
Oph. 55	m.	25 25 21	162	3+2/1+25	13	13	13	13	3—4	3—4
Oph. 58	m.	27 27 21	159	28	13	14	13	13		
Oph. 54	fem.	25 27 21	169½	1/1+21	14	14	14	15	4	4
Oph. 56	fem.	25 27 21	167	2/2+21	13	14	14	14	4	4
Oph. 57	juv.	25 27 23	149+3/3+15+1/1	22+3/2	13	14	16	15	3—4	3—4
Oph. 59	juv.	25 27 21	142+4/4+13	$\frac{1}{2}+1+\frac{1}{2}+27$	13	13	14	15	3	3—4

similar coloration are collected in Nicaragua, I believe it to be a safer course to consider *Crotalus pulvis* as an aberrant specimen of *Crotalus durissus durissus* L.

Crotalus durissus terrificus (Laur.)

Crotalus durissus terrificus, Klauber, Trans. San Diego Soc. Nat. Hist., vol. 8, nr. 20, 1936, pp. 190, 233.

Crotalus terrificus durissus, Amaral, Mem. Inst. But., vol. 4, 1929, p. 243 (part.).

Crotalus terrificus copeanus Amaral, Mem. Inst. But., vol. 10, 1936, p. 162 (part.).

GOAJIRA, Rio Hacha, 19.I.1936 (Oph. 4, male).
Nom. ind.: Cascabel (= little bell).

Sq. 29, 27, 21, v. 169, sc. 29.

Stomach contents: a rodent.

Dr. Hummelinck made enquiries about the possible occurrence of snakes on some of the other Venezuelan Islands. Snakes seem to be lacking on Morro Pando and Morro Fondeadero (Los Hermanos), Blanquilla, and on Gran Roque (Los Roques). *Dryadophis quinquelineatus* (Steind.) or *Dryadophis amarali* (Stuart) seems to occur on Puerto Real (Los Frailes). A snake probably belonging to one of these species was observed, but not captured on Isla de Caribes.

Meek (1910, p. 416) mentions *Drymobius boddaertii* from Margarita and from Las Aves; probably these specimens belong to *Dryadophis quinquelineatus* (Steind.). Stuart (1938, p. 7) has recorded *Dryadophis amarali* (Stuart) from Margarita, Tobago, and from the Venezuelan mainland; this author supposes that *D. amarali* probably occurs on Los Testigos too. The present collection does not contain specimens of *D. amarali*.

BIBLIOGRAPHY

Amaral, A. do, 1926. Nota de Ophiologia. Sobre a invalidez de um genero e algumas especies de Ophidios sul-americanos. *Revista Mus. Paulista*, vol. *14*, pp. 17—33.

Amaral, A. do, 1927. Da occorrencia de albinismo em Cascavel, Crotalus terrificus (Laur.). *Revista Mus. Paulista*, vol. *15*, pp. 55—57, 2 pls.

Amaral, A. do, 1929. Estudos sobre Ophidios neotropicos. XVIII — Lista remissiva dos Ophidios da Regiao neotropica. *Mem. Inst. Butantan*, vol. *4*, pp. i—viii + 129—271.

Amaral, A. do, 1932. Notas sobre chromatismo de Ophidios. II. Casos de variaçao de colorido de certas serpentes. *Mem. Inst. Butantan*, vol. *7*, pp. 81—87, 8 pls.

Amaral, A. do, 1934. Notas sobre chromatismo de Ophidios. III. Um caso de xanthismo e um novo de albinismo observados no Brasil. *Mem. Inst. Butantan*, vol. *8*, pp. 151—153, 1 pl.

Amaral, A. do, 1935. Contribuçao ao conhecimento dos Ophidios do Brasil. VII. Novos generos e especie de Colubrideos opisthoglyphos. *Mem. Inst. Butantan,* vol. *9,* pp. 203—206, 1 pl.

Amaral, A. do, 1936. Contribuçao ao conhecimento dos Ophidios do Brasil. VIII. Lista remissiva dos Ophidios do Brasil, 2.a ediçao. *Mem. Inst. Butantan,* vol. *10,* pp. 87—162 + i—xix.

Anonymous, 1937. Relative Rattlesnakes. *News Bulletin Staten Island Zool. Soc.,* vol. *4,* no. *5,* 3rd page, fig.

Boulenger, G. A., 1893. Catalogue of the Snakes in the British Museum (Natural History), vol. 1, London, xiii+448 pp., 28 pls., 26 textfigs.

Boulenger, G. A., 1893. Catalogue of the Snakes in the British Museum (Natural History), vol. 3. London, xiv+727 pp., 25 pls., 37 textfigs.

Dunn, E. R., 1932. Notes on Blind Snakes from Lower Central America. *Proc. Biol. Soc. Wash.,* vol. *45,* 1932, pp. 173—175.

Dunn, E. R., 1933. Notes on Coluber oaxaca, and Masticophis mentovarius. *Copeia,* nr. *4,* p. 214.

Gloyd, H. K., 1936. The status of Crotalus unicolor Van Lidth de Jeude and Crotalus pulvis Ditmars. *Herpetologica,* vol. *1,* nr. 2, pp. 65—68.

Hummelinck, P. Wagenaar, 1933. Zoologische Ergebnisse einer Reise nach Bonaire, Curaçao und Aruba im Jahre 1930. No. 1. Reisebericht. *Zool. Jahrb., Syst.,* vol. *64,* pp. 289—326, 14 figs., 2 maps.

Hummelinck, P. Wagenaar, 1938. De namen van de afgebeelde Planten en Dieren. Bijvoegsel No. 20, pp. 208—209, in: **Realino,** 1938 (q.v.).

Hummelinck, P. Wagenaar, 1940 a. Studies on the Fauna of Curaçao, Aruba, Bonaire and the Venezuelan Islands, vol. 1. Diss. Utrecht, (9) + 130 pp., 22 textfigs., 16 pls.

Hummelinck, P. Wagenaar, 1940 b. Description of the Localities. Studies on the Fauna of Curaçao, Aruba, Bonaire and the Venezuelan Islands, vol. 2, pp. 1—42, 7 textfigs., 4 pls.

Jan, G., 1863. Elenco sistematico degli Ofidi descritti e disegnati per l'Iconografia generale. Milano, viii+143 pp.

Kauffeld, C. F., et H. K. Gloyd, 1939. Notes on the Aruba Rattlesnake, Crotalus unicolor. *Herpetologica,* vol. *1,* nr. 6, pp. 156—160, pl. XV.

Klauber, L. M., 1936 a. A statistical Study of the Rattlesnakes. I. Introduction; II. Sex Ratio in Rattlesnake Populations; III. Birth Rate. *Occ. Papers San Diego Soc. Nat. Hist.,* nr. 1, pp. 1—24.

Klauber, L. M., 1936 b. A Key to the Rattlesnakes with summary of characteristics. *Trans. San Diego Soc. Nat. Hist.,* vol. 3, nr. 20, pp. 185—276, figs. 1—112.

Klauber, L. M., 1937. A statistical Study of the Rattlesnakes. IV. The Growth of the Rattlesnake. *Occ. Papers San Diego Soc. Nat. Hist.,* nr. 3, pp. 1—56.

Klauber, L. M., 1939. A statistical Study of the Rattlesnakes. VI. Fangs. *Occ. Papers San Diego Soc. Nat. Hist.,* nr. 5, pp. 1—61, figs.

Lidth de Jeude, Th. W. van, 1887. On a collection of Reptiles and Fishes from the West-Indies. *Notes Leyden Museum,* vol. *9,* pp. 129—139, pl. 2.

Meek, S. E., 1910. Notes on Batrachians and Reptiles from the Islands north of Venezuela. *Field Mus. Nat. Hist.,* Publ. *148,* Zoöl. Ser., vol. 7, nr. 12, pp. 415—418.

Mertens, R., 1934. Die Insel-Reptilien, ihre Ausbreitung, Variation und Artbildung. *Zoologica* (Original Abh. a. d. Gesammtgeb. d. Zool., *Stuttgart*), vol. *32*, pt. 6 (Heft 84), (10) + 1 — 209 + (6) pp., 6 pls.

Ortenburger, A. I., 1928. The Whip Snakes and Racers, Genera Masticophis and Coluber. *Univ. Michigan Studies, Mem. Univ. Mich. Museums*, vol. *1*, xviii + 247 pp., 36 pls., 64 textfigs.

Realino, M., 1938. De Nederlandsche Antillen en de overige eilanden van de Caraïbische Zee, Venezuela en Colombia. 3rd ed. Curaçao, 214 pp., figs., maps.

Roca, F. Milá de la, 1932. Introducción al estudio de los Ofidios de Venezuela. *Bol. Soc. Venez. Ciencias Naturales*, vol. *1*, nr. 10, pp. 383—392.

Rooij, N. de, 1922. Reptiles and Amphibians of Curaçao. *Bijdr. Dierk.*, nr. *22* (Feestnummer Max Weber), pp. 249—253.

Ruthven, A. G., 1936. Leptodeira bakeri new species. *Occ. Papers Mus. Zool., Univ. Mich.*, nr. *330*, pp. 1—2.

Stejneger, L., et Th. Barbour, 1933. A Check List of North American Amphibians and Reptiles. 3rd ed., Cambridge (Mass.), xiv + 185 pp.

Stuart, L. C., 1933. Studies on neotropical Colubrinae. II. Some new species and subspecies of Eudryas Fitzinger, with an annotated list of the forms of Eudryas boddaertii (Sentzen). *Occ. Papers Mus. Zool., Univ. Mich.*, nr. *254*, pp. 1—10, 1 fig.

Stuart, L. C., 1934. Studies on neotropical Colubrinae. IV. An apparently new species of Coluber from Guatamala. *Occ. Papers Mus. Zool., Univ. Mich.*, nr. *284*, pp. 1—4.

Stuart, L. C., 1938. Studies on neotropical Colubrinae. VI. A new species of Eudryas from South America. *Copeia*, nr. 1, pp. 7—8.

Werner, F., 1925. Zur Kenntnis der Fauna der Insel Bonaire (Niederländisch-Westindien). *Zeitschr. wiss. Zool.*, vol. *125*, pp. 533—556, 2 figs.

Werner, F., 1929. Übersicht der Gattungen und Arten der Schlangen aus der Familie Colubridae. III. Teil (Colubrinae). *Zool. Jahrb., Syst.*, vol. *57*, pp. 1—196, 48 figs.