

59. On a Collection of Batrachians and Reptiles made by
 Dr. H. G. F. Spurrell, F.Z.S., in the Choco, Colombia.
 By G. A. BOULENGER, F.R.S., F.Z.S.*

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(Plates CII.-CVIII.† and Text-figures 174-178.)

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Dr. Spurrell, to whom the Zoological Society is indebted for so many interesting additions to its collection of Reptiles, has now transferred his activity as a collector from West Africa to South America. The series of beautifully preserved Batrachians and Reptiles brought together by him during the first few months of his stay in the Choco, Colombia, and presented by him to the British Museum, is one of great interest and shows how much remains to be done in the exploration of that part of South America. Unless otherwise stated, the specimens are from Peña Lisa, Condoto, altitude 300 feet. Within the last few years, series of Batrachians and Reptiles brought together by Mr. M. G. Palmer in the same district had been acquired by the Trustees of the British Museum and furnished the types of several new species described by me ‡. They showed a close agreement with the fauna of N.W. Ecuador, for a knowledge of which we are indebted chiefly to Mr. Rosenberg §—an agreement which is further exemplified by Dr. Spurrell's collection.

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† For explanation of the Plates see p. 1038.

‡ Ann. & Mag. N. H. (8) ii. 1908, p. 515, and vii. 1911, p. 19.

§ Boulenger, P. Z. S. 1898, p. 107, and Ann. & Mag. N. H. (7) ix. 1902, p. 51.

BATRACHIA.

A P O D A.

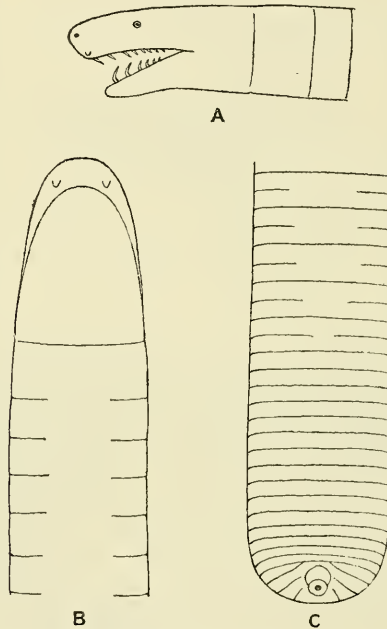
1. *CÆCILIA ISTHMICA* Cope.

Known from the Isthmus of Darien and Western Ecuador.

2. *CÆCILIA INTERMEDIA*, sp. n. (Text-fig. 174.)

Intermediate between *C. tentaculata* L. and *C. pachynema* Gthr. Snout as in the former, more strongly projecting than in the latter. Outer mandibular teeth larger than in the former and smaller than in the latter. Snout rounded, very prominent, as long as the distance between the eyes; tentacle on the lower surface of the snout, nearer the edge of the mouth than the

Text-fig. 174.



Cæcilia intermedia.

A. Side view of head. B. Lower view of head and anterior extremity of body.
C. Lower view of posterior extremity of body.

nostril. Body cylindrical, its diameter 43 to 56 times in the total length. 200 to 250 circular folds, mostly widely interrupted on the back and on the belly; from the posterior fourth of the body short intermediate folds appear and gradually extend across the back; the last 60 to 80 folds close together and complete on the back, the 15 to 30 hindermost completely encircling the body. Uniform blackish; head of young yellowish or pale brown.

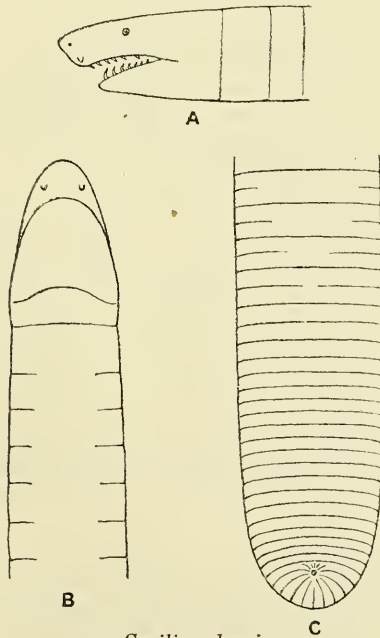
I have examined six specimens of this species, which was

first discovered in N.W. Ecuador by one of Mr. Rosenberg's collectors:—

1. S. Javier, N.W. Ecuador.—Total length 950 mm., diameter of body 17.
2. Paramba, N.W. Ecuador, 3500 ft.—Total length 820 mm., diameter of body 19.
3. Pambelar, N.W. Ecuador.—Total length 690 mm., diameter of body 12.
4. Peña Lisa, Condoto, Choco (had been swallowed by an *Elaps rosenbergii* 940mm. long).—Total length 690 mm.; diameter of body 13*.
5. Same locality (taken from the stomach of a *Streptophorus atratus* swallowed by an *Elaps corallinus*).—Total length 280 mm.; diameter of body 6.
6. Same locality.—Total length 270 mm.; diameter of body 5.

I avail myself of this opportunity to define a further species, from a collection made in the Choco by Mr. M. G. Palmer, recently acquired by the British Museum:—

Cæcilia palmeri, sp. n. (Text-fig. 175.)—Head and dentition as Text-fig. 175.



Cæcilia palmeri.
Lettering as in text-fig. 174.

* The copulatory organ of this specimen is extruded; it measures 10 mm. in length and terminates in a four-lobed "glans."

in *C. pachynema*. Diameter of body 58 times in total length; 200 circular folds, mostly interrupted on the back and belly; from the posterior fourth of the body short interrupted folds appear and gradually extend across the back; the last 95 folds close together and complete on the back, the 16 hindermost completely encircling the body. Uniform blackish. Total length 700 mm.; diameter of body 12.

A single specimen from Novita, Rio San Juan, 200 ft.

3. *CÆCILIA NIGRICANS* Blgr.

Described in 1902 from a single specimen from the Rio Lita, N.W. Ecuador.

The specimen in Dr. Spurrell's collection measures 395 mm., diameter of body 7.

ECAUDATA.

4. *BUFO HYPOMELAS*, sp. n. (Pl. CII. fig. 1.)

Crown without bony ridges; snout truncate, moderately prominent, with angular canthus and vertical loreal region; inter-orbital space as broad as the upper eyelid; tympanum moderately distinct, half diameter of eye. Fingers moderate, first not extending as far as second; toes short, barely half-webbed; subarticular tubercles feebly prominent, single; two small metatarsal tubercles; no tarsal fold. Tarso-metatarsal articulation reaching the tip of the snout. Skin smooth; parotoid gland narrow, shorter than the head. Black, elegantly marked with grey lines above, vermicular or ring-shaped; a whitish streak on each side in the lumbar region, and another on the arm; lower parts with small greyish-white spots.

From snout to vent 20 mm.

This small toad, represented by a single specimen from the upper waters of the Condo, altitude 1200 feet, differs from all its American congeners in the shortness of the inner finger.

5. *BUFO ILEMATITICUS* Cope.

6. *BUFO MARINUS* L.

7. *BUFO TYPHONIUS* L.

Dr. Spurrell, in his notes, remarks: "Said to be the toad from which Indians extract arrow-poison." See further on, p. 1028.

8. *HYLA MAXIMA* Laur.

"Apparently strictly nocturnal. Pupil of eye at night large and round, in daylight diamond-shaped. One caught at night on top of partition between two rooms in bungalow was almost uniform chocolate-brown with a dark median streak from snout to middle of back. By daylight it turned to a light yellowish brown, with very pronounced markings of warm darker brown on

the body and limbs, greyer to sepia-brown on the head; a patch of lighter yellow across loins. Iris golden brown; lower eyelid veined with gold."

It is characteristic of this species to possess a rudiment of pollex appearing as a small tubercle in females and a larger tubercle in males. In the male sent by Dr. Spurrell, this pollex projects externally as a long sharp bony spine at right angles to the metacarpal of the inner finger and piercing the skin; whether this is due to the desiccation of the specimen, or occasionally happens during life as in the case of the pollex of *Rana holsti* or of the ends of the ribs in the Pleurodele Newt, I cannot say.

Text-fig. 176.



Hyla maxima. Inner fingers of male.

9. *HYLA BAUDINI* Daud.

When taken out of a dark hole these frogs are brown above, usually with a metallic-green streak along the upper lip. After exposure to light the colour changes to light yellowish grey, with small green spots on the back and bars on the hind limbs. One of the specimens, a female, is remarkable for the longer hind limbs, the tibio-tarsal articulation reaching beyond the tip of the snout.

These frogs were pairing on the 31st May.

Larvæ, at different stages of development, agree in essential characters with those of *H. arborea*: position of eyes, spiraculum and vent, shape of tail, structure of the mouth and lips. Three long series of teeth in each lip, the third of the upper lip interrupted, the others continuous; beak broadly edged with black. Total length 60 mm.; body 21; width of body 13; tail 39; depth of tail 16.

10. *AGALYCHNIS CALCARIFER* Blgr. (Pl. CII. fig. 2.)

Described in 1902 from a single specimen from the Rio Durango, N.W. Ecuador, 350 feet.

The only example obtained by Dr. Spurrell is described in his notes as brilliant sage-green above, flanks and upper surface of thighs (with the exception of a narrow green streak) rich orange-yellow with black bars; hands and feet and lower parts orange-

yellow; iris grey, bordered with orange-yellow; lower eyelid transparent, edged with turquoise-blue.

11. AGALYCHNIS SPURRELLI, sp. n. (Pl. CIII.)

Tongue oval, feebly emarginate behind. Vomerine teeth in two strong, transverse or slightly oblique series on a level with the front edge of the rather large choanae. Head moderately depressed, as long as broad or slightly broader than long; snout rounded, not projecting beyond the lower jaw; canthus rostralis feeble; loreal region concave and very oblique; interorbital space broader than the upper eyelid; tympanum close to the eye and two-thirds to three-fourths its diameter. Fingers much flattened and nearly entirely webbed, the disks nearly as large as the eye or about two-thirds its size; toes rather short, much flattened, entirely webbed (three-fourths webbed in the young), the disks a little smaller than those of the fingers; subarticular tubercles very prominent. The tibio-tarsal articulation reaches between the eye and the tip of the snout. Skin smooth, granular on the belly and on the basal half of the lower surface of the thigh; a regular series of granules extends along the whole length of the lower surface of the thigh; a narrow dermal fold along the outer edge of the forearm, the inner edge of the tarsus, and across the heel; a few scattered (white) flat warts on the back. Green above, the dorsal warts, two to nine in number and irregularly disposed, white, edged with violet-black; belly yellowish white; iris ruby-red; lower eyelid with an open meshwork of golden lines. Male without vocal sac, with a patch of black nuptial asperities on the upper surface of the inner finger.

From snout to vent 95 mm.

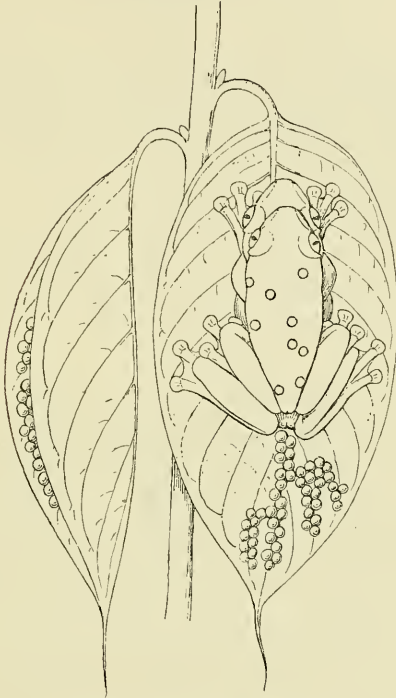
Very closely allied to the Central American *A. moreletii* A. Dum., this handsome frog differs in the more extensively webbed digits, the presence of white warts on the back, and the absence of vocal sac in the male.

Four specimens are in the collection. The first was reported to Dr. Spurrell to have been found at the top of a high tree that had been felled, on March 30th. On April 2nd Dr. Spurrell took a pair in embrace on a leaf overhanging a pool of water two feet below; from the sketch accompanying his notes, the amplexus is similar to that of *Hyla arborea*. The pair were in the act of breeding, and the eggs, as they were extruded, were being fixed to the upper surface of the terminal third of the leaf, in double rows following more or less regularly the venation, the very prominent ribs affording a support for their attachment. On the leaf sent with the specimens, the breeding operations of which were suddenly interrupted, 59 eggs are attached, and 7 more adhere to the right foot of the female, showing that she uses her feet for the purpose of fixing the eggs.

According to a sketch by Dr. Spurrell, which is here reproduced (text-fig. 177), another leaf on the same stalk was already entirely beset with eggs (laid by the same female?)

and folded over to form a nest as in *Phyllomedusa hypochondrialis**. The eggs resemble those of *Alytes obstetricans* in size (diameter 3 to 4 mm.) and in the tough gelatinous capsule, but differ in the upper pole being brown and in not being strung together.

Text-fig. 177.

*Agalychnis spurrelli* spawning.

The leaf, which I have not been able to get identified, probably belongs to the family Anonaceæ.

12. LEPTODACTYLUS PENTADACTYLUS Laur.

13. HYLODES PALMATUS Blgr.

14. HYLODES CONSPICILLATUS Gthr.

15. GLOSSOSTOMA ATERRIMUM Gthr.

Originally described from Costa Rica, this Engystomatid has since been found on the Rio Durango, N.W. Ecuador.

* Budgett, Q. J. Micr. Sci. xlii. (1899) p. 313, pl. xxviii.

The specimen in Dr. Spurrell's collection measures 55 mm. from snout to vent. It was shining jet-black in life, with the belly grey. The thick skin of the ventral region forms a strong fold on each side, which extends across the pubic region.

16. RANA PALMIPES Spix.

A single female specimen, measuring 95 mm. from snout to vent.

Tympanum three-fourths the diameter of the eye. First finger extending well beyond second. Skin of back finely granulate; upper surface of tibia with longitudinal ridges formed by confluent granules. Tibio-tarsal articulation reaching half-way between the eye and the tip of the snout. Back pale olive-grey (appears to have been green in life), without spots; belly uniform white.

I have examined smaller specimens (40 to 70 mm.) from the same locality (Condoto) from Mr. M. G. Palmer's collection. In the smallest the tympanum measures barely two-thirds the diameter of the eye, the upper parts are blackish brown and the lower parts profusely spotted with black.

17. PHYLLOBATES PRATTI Blgr.

A single specimen, 15 mm. long from snout to vent.

This species was described in 1899 (Ann. & Mag. N. H. [7] iii. p. 274, pl. xi. fig. 3) from two specimens obtained by Mr. A. E. Pratt at Santa Ines, north of Medellin, at an altitude of 3800 feet. Other specimens have since been found in the Choco, at Novita, altitude 150 feet, by Mr. M. G. Palmer. In Dr. Spurrell's specimen, the white line in front of the thigh is produced forward to the upper eyelid, dividing obliquely the black lateral band.

18. DENDROBATES TINCTORIUS Schneid. (Pl. CIV. figs. 2-6.)

The extraordinary colour variations to which this species is subjected are only paralleled by those of the African frogs of the genus *Rappia*, and afford the same difficulties to the systematist. Some of these variations are local, others are merely individual; great is the perplexity in having to decide which deserve to be recognised by a special varietal name. In the collection made by Dr. Spurrell the specimens fall under two principal categories which I will designate as vars. *coctavi* and *chocoensis* respectively. It is not an easy matter to fix the typical form of *D. tinctorius*; the following remarks will not be superfluous, to justify the course followed by me.

Schneider (Hist. Amph. i. p. 175, 1799) is the author of the name *tinctorius*, but the frog itself was unknown to him. He refers us to Lacepède (Quadr. Ovip. p. 566, pl. xxxix., 1788), who regards the "Raine à tapirer" as a variety of *Hyla rubra* Laurenti, and describes it as reddish with two irregular yellowish white longitudinal bands; the figure is hopeless for the purpose

of identification. But as the name "Raine à tapirer" is based on an observation recorded by Buffon (Hist. Nat. Oiseaux, vi. p. 235, 1779) to the effect that the frog is used by the savages of Guiana and the Amazon to dye parrots, and is small, azure blue with longitudinal golden yellow bands, and is to be found preserved in the "Cabinet du Roi," the best thing to do is to go straight to the description of the first author after Lacepède who had access to the specimens alluded to by Buffon, and this author is Daudin (Hist. Rain. etc., 1802). The larger of the three specimens from Guiana in the Paris Museum, presumably those alluded to by Buffon and Lacepède, is figured in a perfectly recognisable manner on Daudin's pl. viii. fig. 1, and corresponds very nearly with one from Cayenne in the British Museum, which I therefore regard as the typical form of *Dendrobates tinctorius*. Upper parts blackish brown with symmetrical white (yellow) markings forming two bands on the back, meeting on the coccygeal region and extending, above the canthus rostralis, to the end of the snout after expanding on the upper eyelid; a transverse bar connects these bands across the middle of the back, and another branch extends to the shoulder; white markings on the flanks; belly paler brown, with black spots. This is the var. *daudini* Steindachner, Verh. zool.-bot. Ges. Wien, xiv. 1864, p. 262.

VAR. *coctei*.—Hylaplésie de Cocteau, Dum. & Bibr. Erp. Gén. pl. xc. fig. 1; *Dendrobates tinctorius*, var. B, Dum. & Bibr. op. cit. viii. p. 654 (1841); *D. tinctorius*, var. *cocteani* Steind. Verh. zool.-bot. Ges. Wien, xiv. 1864, p. 260.

"D'un brun marron ou d'une teinte lie de vin, . . . une tache d'un blanc jaunâtre sur le museau, une autre beaucoup plus grande et de forme ovulaire sur chaque flanc, . . . un large bracelet de la même couleur autour de chaque bras et de chaque jambe. Assez souvent les taches des flancs se confondent sur la région abdominale." Dum. & Bibr. Locality not stated.

Six specimens, all from the Choco, in the British Museum, are referable to this variety:—

a. Tado, Rio San Juan, 230 ft. (M. G. Palmer). Dark reddish brown above, with black spots, black beneath. An oval yellow spot on the top of the head, another occupying the whole flank, widely separated from its fellow on the other side; other large spots are present, one on the forearm, one on the thigh, one on the tibia, and one on the throat.

b. Same locality, same collector. Similar to the preceding, but the spots on the head, throat, and femur absent; the large spot on the flank extends to the shoulder, and those on the forearm and tibia completely encircle the limbs.

c. Upper waters of Condoto River, 1200 ft. (Spurrell). Dark brown above, with bright vermilion-red, sharply defined spots, black beneath. The bright spots are as in *a*, except that the one on the top of the head is situated further back; those on the throat and forearm are absent, but others are present on the left

side of the snout and on the left foot; the forearm is completely encircled by the yellow spot.

d. Same locality as *c.* Differs from *c* in the lateral spot being produced as far as the eye on the left side, where it is confluent with the oval spot situated on the upper surface of the head as in *a*; the spot on the tibia surrounds the limb; a yellow spot on the right foot instead of the left.

e, f. Same locality as *c* and *d*, and very similar in the markings, which, however, were noted by Dr. Spurrell as of a vivid yellow instead of red. *e* has the lateral spots very large and narrowly separated from each other on the belly, that on the left side extending to the temple; a spot on the right foot; forearm encircled by the red spot. *f* has the spot on the right foot instead of the left.

A further Colombian specimen, from Noanama, S. Juan (M. G. Palmer), is not unlike the preceding, but the spots are smaller and less regular and of a vivid magenta-red. A figure is given to show the disposition of the markings on the black body.

VAR. *chocoensis*.—*Phyllobates chocoensis* Posada Arango, Mémoire sur le poison de Rainette des sauvages du Choco (Paris, 1869); Deyrolle, Rev. et Mag. de Zool. 1872, p. 465, pl. xxvii.

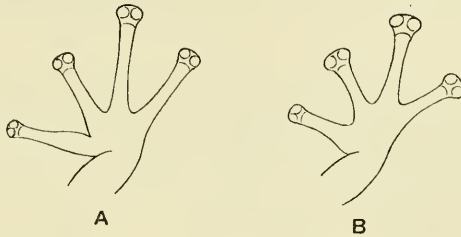
The frog noticed by Posada Arango as furnishing the Choco Indians with a deadly poison for their arrows is described as bright yellow on the head and back and bluish black on the limbs and lower parts. A specimen answering to this description is preserved in the British Museum, from Juntas, Rio San Juan, Choco, 320 ft. (M. G. Palmer).

Nine specimens, obtained by Dr. Spurrell at Peña Lisa, Condoto, 300 feet, may be referred to this form, and show considerable variation in coloration. A snake which started eating one of these frogs was observed to drop it hurriedly. "Ground colour of upper parts a rich orange-yellow, belly dark brown; markings on back and limbs varying from dark reddish orange to chocolate-brown, not sharply defined nor regularly symmetrical; much variation in colour and arrangement of markings; ground colour of upper parts sometimes lemon-yellow or brownish yellow." The specimens which most nearly approach Posada Arango's description have the head and back uniform yellow or with only one dark spot, on the middle of the back, just behind the head; the sides are blackish brown, and the upper surface of the limbs yellow.

The numerous varieties of *Dendrobates tinctorius* are much in want of revision. Among those already described there is one which is unquestionably entitled to specific rank and for which I wish to propose the name *Dendrobates paraensis*. Disks of fingers and toes much larger than in *D. tinctorius*; a small but very distinct tubercle on the inner side of the tarsus, nearer the metatarsal tubercles than the tibio-tarsal articulation. In some

specimens the upper parts, with the exception of fore limbs and feet, are uniform greyish or yellowish white (yellow in life ?), the rest of the animal deep black; in others the black predominates, the white being restricted to the upper surface of the head and to

Text-fig. 178.



Dendrobates tinctorius (A) and *D. paraensis* (B).

Upper view of hand.

more or less confluent blotches on the back; further specimens are intermediate between the two extremes. From snout to vent 38 mm. Eight specimens, from Para, are preserved in the British Museum, three of which are mentioned in the Catalogue of Batrachians, p. 143 (var. B, *h*, *i*, *k*).

19. *DENDROBATES AUROTENIA*, sp. n. (Pl. CIV. fig. 1.)

Snout truncate, barely as long as the eye; loreal region vertical; interorbital space as broad as the upper eyelid; tympanum not very distinct, three-fifths the diameter of the eye. Fingers slender, first extending beyond second, with rather small disks; toes slender, disks as large as those of the fingers; sub-articular tubercles very feeble; two scarcely prominent metatarsal tubercles and a very feeble fold on the inner side of the tarsus terminating club-shaped half-way between the metatarsal tubercles and the tibio-tarsal articulation. The tarso-metatarsal articulation reaches far beyond the tip of the snout, the tibio-tarsal falling between the eye and the end of the snout; tibia half as long as head and body. Skin smooth, of dorsal region very porous. "Jet-black, with a metallic orange-yellow streak" from the end of the snout along the canthus rostralis and the upper eyelid to the loin; "a few fine gold freckles on thighs and arms."

From snout to vent 30 mm.

A single specimen from Peña Lisa, Condoto, 300 feet.

This frog approaches very closely *D. trivittatus* Spix, differing only in the shorter snout and the absence of tubercles on the back.

REPTILIA.

CHELONIA.

1. CINOSTERNUM SPURRELLI, sp. n. (Pls. CV. & CVI.)

Jaws strong; beak strongly hooked. Carapace smooth and without keels, flattened on the vertebral region, profile descending very abruptly behind; deep grooves between the shields; posterior border serrated. Plastron smaller than the opening of the shell, not emarginate posteriorly; lobes well movable, front one longer than the fixed portion and slightly shorter than the hind one; gular shield not half the length of the front lobe; suture between the pectoral shields much shorter than that between the humerals; axillary and inguinal shields elongate and in contact with each other. A patch of small horny keeled tubercles on the back of the leg, opposed to one on the thigh. Tail ending in a claw-like scute. Carapace blackish brown, plastron yellow with blackish blotches; head, neck, and limbs blackish above, whitish below; a broad oblique yellowish band on each side of the head, from behind the eye to the neck, passing above the tympanum; jaws yellowish horn-colour.

This very distinct species is represented by a single male specimen, the shell of which measures 115 mm. The curious shape of the first vertebral shield, depicted on Pl. CV., is probably an individual peculiarity and has therefore not been alluded to in the description.

The position of *C. spurrelli* in the system is in group II. A of my Synopsis (Cat. Chelon. p. 38), which group, up to the present, was unrepresented south of Mexico.

2. NICORIA NASUTA Blgr.

Described in 1902 from specimens obtained at Bulun and on the Rio Durango, N.W. Ecuador.

The specimen in the present collection is quite young. Shell-length 70 mm. The digits are fully webbed.

EMYDOSAURIA.

3. CAIMAN SCLEROPS Schn.

LACERTILIA.

4. ANOLIS FASCIATUS Blgr.

Only known from Guayaquil and N.W. Ecuador (*A. elegans* Blgr.) "Green above, with darker green markings, yellow on belly; crown of head and neck with faint orange markings. Gular appendage white with six broad orange bands."

5. ANOLIS MACULIVENTRIS Blgr.

First described from N.W. Ecuador.

"Gular appendage crimson."

6. *ANOLIS PRINCEPS* Blgr.

This handsome lizard, one of the largest of the genus, was originally described from specimens from N.W. Ecuador. It has since been found in Choco, at Condoto and Tadó, by Mr. M. G. Palmer.

"Yellowish grass-green, brighter about head and neck, with yellow blotches round eyes; diagonal markings brownish black; gular appendage white."

7. *ANOLIS BREVICEPS*, sp. n. (Pl. CVII. fig. 1.)

Head once and two-thirds as long as broad, slightly shorter than the tibia; snout obtuse; forehead and interorbital region concave; frontal ridges short and divergent; upper head-scales very small, keeled; scales of the supraorbital semicircles enlarged, separated by four or five series of scales; enlarged, strongly keeled supraocular scales; occipital as large as or larger than the ear-opening, separated from the supraorbital by three or four series of scales; canthus rostralis sharp, canthal scales three or four; loreal rows seven or eight; seven upper labials to below the centre of the eye; ear-opening moderate, vertically oval. Gular appendage very small in males, barely indicated in females; gular scales keeled. Body not compressed; no dorso-nuchal fold. Dorsal scales very small, keeled, gradually merging into the minute granules of the sides; ventrals larger, roundish-hexagonal, keeled. Limbs slender; the adpressed hind limb reaches the tip of the snout, or between the eye and the tip of the snout; digits feebly dilated; 13 to 15 lamellæ under phalanges II and III of the fourth toe. Tail cylindrical, once and a half to once and two-thirds as long as head and body, without vertebral series of enlarged scales. Male with enlarged postanal scales. Grey-brown to dark brown above, with a ventral series of blackish dots or small V-shaped markings; a dark brown, black-edged cross-band between the eyes and another band from the end of the snout, through the eye, to the side of the neck, very broad and sharply defined on the temple; a more or less distinct whitish streak may be present below this band.

	♂	♀
Total length	108	124 mm.
Head	12	13
Width of head	8	9
Body	30	35
Fore limb	21	21
Hind limb	40	40
Tibia	13	13½
Tail	66	76

Three specimens.

Near the Central American *A. godmani* Blgr. Distinguished by the shorter head, the smaller gular appendage, and the shorter tail.

8. *ANOLIS NOTOPHOLIS* Blgr.

The gular appendage is red in both sexes.

9. *ANOLIS MACROLEPIS* Blgr.10. *POLYCHRUS GUTTUROSUS* Berthold.

Two specimens, male and female.

Male green above and on the belly, cream-colour on the sides; a vertebral series of cordiform pale reddish-brown black-edged spots pointing forwards, connected by a bright orange vertebral band. Female reddish brown above and beneath, with angular dark brown bands across the back; a few dull green blotches on the head, and on the sacral and anal regions.

11. *CORYTHOPHANES CRISTATUS* Gray.

This remarkable lizard was believed to be restricted to Central America (specimens from British Honduras, Guatemala, Nicaragua, and Costa Rica are preserved in the British Museum), but a specimen from the Rio Tamana, Choco, was in the collection made by Mr. Palmer, and two are in Dr. Spurrell's collection. "Shows rapid changes of colour when alive."

12. *BASILISCUS AMERICANUS* Laur.

Its habitat extends from Panama and Costa Rica to Venezuela and Southern Colombia.

13. *BASILISCUS GALERITUS* A. Dum.

Blackish above, dotted with yellow; upper surface of head and a band on each side of the belly reddish brown; throat white; belly and lower surface of limbs greenish white, speckled with black.

14. *ENYALIOIDES HETEROLEPIS* Bocourt.

Originally described from Veragua. Numerous examples from Colombia and N.W. Ecuador are preserved in the British Museum.

15. *DIPLOGLOSSUS MONOTROPIS* Wiegman.

The largest specimens are very strikingly coloured. Head lemon-yellow with greenish tinge; back chequered brownish black and lemon-green; throat, belly, and sides of body vermilion-red; tail lemon-yellow above, with dark bars, vermilion-red beneath.

16. *AMEIVA BRIDGESII* Cope.

Young black above, with seven whitish longitudinal lines; belly bluish grey; tail blue.

17. *AMEIVA FESTIVA* Licht.

A single, half-grown specimen. Blackish above, with a pale green vertebral band originating on the end of the snout and prolonged on the basal half of the tail; two interrupted white lines along each side of the body.

A specimen from Medellin, Andes of Colombia (Coll. A. E. Pratt), is in the British Museum.

18. *ANADIA VITTATA*, sp. n. (Pl. CVII. fig. 2.)

Head depressed, with long, acutely pointed snout; body much elongated. Nostril in the suture between two nasals. Frontonasal pentagonal, a little longer than broad, longer than the prefrontals, which form a long suture; frontal octagonal, narrow behind, in contact with three supraoculars; two large parietals on each side, both in contact with the interparietal, which is not twice as long as broad and followed by three subequal occipitals; four supraoculars, first smallest, second and third equal; four or five supraciliaries; a loreal, a freno-orbital, and a row of infraorbitals; temples with rather small shields; seven upper labials, first narrowly in contact with the frontonasal; six lower labials; chin-shields, one anterior and four pairs, three pairs forming a median suture; gular scales subequal, squarish, juxtaposed; collar-scales nine, feebly enlarged. Scales on body forming regular whorls, the dorsals quadrangular-subhexagonal, as long as broad, the laterals a little narrower, the ventrals quadrangular, those of the two median rows larger; 30 scales round the middle of the body, 58 from occiput to sacrum inclusively. Præanal plates in three rows, posterior median pair largest. Two præanal and one femoral pore on each side. Limbs and tail as in *A. ocellata*. Pale brownish white above, with three dark brown longitudinal stripes, the vertebral edged with black and breaking up into three black lines behind the nape; lower parts white; tail with three serrated or zigzag brown bands.

Total length (tail injured)	112 mm.
Head	10
Width of head	5
From end of snout to fore limb	15
" " " " " vent	40
Fore limb	10
Hind limb	12

A single specimen.

This species is closely allied to *A. ocellata* Gray.

19. *ALOPOGLOSSUS COPII* Blgr.

Originally described from Eastern Ecuador, this species has since been found in Western Ecuador, but had not been reported from Colombia.

20. AMPHISBENA FULIGINOSA L.

Received alive by the Zoological Society.

OPHIDIA.

21. TRACHYBOA BOULENGERI Peracca.

A single young specimen of this species, recently described by Peracca, Ann. Mus. Zool. Univ. Nap. iii. 1910, No. 12, was referred by me to *T. gularis* Peters, P. Z. S. 1898, p. 109, pointing out the characters in which it differed from Peters's description and Jan's figure. The spine-like raised scales on the snout and above the eyes, which are so striking in larger specimens, are merely indicated in this specimen.

The British Museum possesses two adult specimens from N.W. Ecuador, and two from the Choco are now added by Dr. Spurrell. I append particulars of these four specimens:—

1. ♀, St. Javier, N.W. Ecuador. Total length 430 mm.; tail 40. Sc. 27; V. 139; C. 24. Sixth labial entering the eye on the right side.
2. ♂, with claw-like anal spurs. Same locality. Total length 265 mm.; tail 30. Sc. 30; V. 133; C. 28. Fifth labial entering the eye.
3. ♂, with claw-like anal spurs. Peña Lisa, Choco. Total length 230 mm.; tail 27. Sc. 30; V. 131; C. 23. Labials all excluded from the eye.
4. ♀, same locality. Total length 270 mm.; tail 25. Sc. 33; V. 137; C. 20. Labials all excluded from the eye.

The type specimen described by Peracca, the habitat of which is unknown, has only 23 scales round the thickest part of the body. The number of scales in *Trachyboa* is probably as variable as it is in *Atheris*.

22. STREPTOPHORUS ATRATUS Hallow.

A specimen taken from the stomach of an *Elaps rosenbergii*, after having swallowed a *Cecilia intermedia*.

23. DRYMOBIUS DENDROPHIS Schleg.

24. PHRYNONAX FASCIATUS Peters.

25. HERPETODRYAS CARINATUS L.

26. LEPTOPHIS BILINEATUS Gthr.

One of the three specimens is bright green above, as in the type, the two others are of a metallic bronze on the back and sides, the head dark green, the sides of the neck green, the lower parts pale green.

The habitat of this species extends from the Isthmus of Tehuantepec to N.W. Ecuador.

27. *LEPTOPHIS OCCIDENTALIS* Gthr.

28. *LIOPHIS ALBIVENTRIS* Jan.

29. *ATRACTUS MULTICINCTUS* Jan.

In its coloration in the fresh condition (occipital blotch bright red) this harmless snake is not without resemblance to *Elaps mipartitus*.

30. *ATRACTUS IRIDESCENS* Peracca.

This species was described (Boll. Mus. Torin. xi. 1896, No. 252) from a single specimen, origin unknown. Three specimens in Dr. Spurrell's collection may, I think, be referred to it.

a. ♀. 255 mm.; tail 36. V. 144; C. 37.

b. ♀. 215 mm.; tail 32. V. 134; C. 32.

c. Yg. 102 mm.; tail 11. V. 143; C. 26.

The iridescence from which the species derives its name is strongly marked in these specimens. Dark brown above, with two dorsal series of transverse blackish spots, which may alternate or form cross-bars, and may be bordered by yellow dots or short streaks; in specimen *a* the belly is white spotted with black in front, uniform black behind; in specimen *b* it is white with a median series of black spots and a series of smaller spots on each side.

31. *PETALOGNATHUS NEBULATA* L.

32. *HIMANTODES CENCHOA* L.

33. *LEPTODIRA ALBOFUSCA* Lacep.

34. *OXYRHOPUS CLÆLIA* Daud.

A specimen two metres long.

35. *HOMALOCRANIUM MELANOCEPHALUM* L.

36. *HOMALOCRANIUM CORALLIVENTRE*, sp. n. (Pl. CVIII. fig. 1.)

Eye about half as long as the snout. Rostral a little broader than deep, the portion visible from above about half as long as its distance from the frontal; internasals about two thirds the length of the præfrontals; frontal hexagonal, obtuse-angled in front, acute-angled behind, nearly once and a half as long as broad, longer than its distance from the end of the snout, shorter than the parietals; nostril between two nasals, the posterior of which is in contact with the præocular; two postoculars; temporals 1 + 1; seven upper labials, third and fourth entering the eye, seventh largest; four lower labials in contact with the anterior chin-shields, which are a little shorter or a little longer than the

posterior and in contact with the symphysial. Scales in 15 rows. Ventrals 135-141; anal divided; subcaudals 56-59. Dark brown above, scales edged with black; a large yellowish spot on the upper lip behind the eye, and a yellowish occipital bar encroaching on the posterior part of the parietal shields; gular region white, rest of lower surfaces bright coral-red.

Total length 275 mm.

Two specimens, male (V. 135; C. 59) and female (V. 141; C. 56).

Very closely allied to *H. alticola* Blgr., from Santa Rita, north of Medellin, Colombia (9000 feet), but eye larger and frontal a little longer in proportion to its width.

37. *STENORHINA DEGENHARDTI* Berthold.

38. *ELAPS CORALLINUS* L.

39. *ELAPS ROSENBERGII* Blgr.

I have examined several specimens from various localities in N.W. Ecuador, and also one obtained by Mr. M. G. Palmer at Tado, Choco.

40. *ELAPS MICROPS*, sp. n. (Pl. CVIII. fig. 2.)

Eye extremely minute, barely one-fourth as long as its distance from the mouth. Rostral broader than deep; frontal a little broader than the supraocular, once and one-third as long as broad, as long as the præfrontals, half as long as the parietals, which are longer than their distance from the internasals; one præ- and two postoculars; temporals 1+1; seven upper labials, third much longer than fourth, third and fourth entering the eye, the latter very narrowly; four lower labials in contact with the anterior chin-shields, which are as long as the posterior. Scales in 15 rows. Ventrals 205; anal divided; subcaudals 20. Tail ending obtusely. Black above, with 46 narrow white, black-spotted cross-bars; these widen on the belly, which is barred black and white; an orange band across the head, from between the eyes to near the end of the parietal shields; tail orange-red, with a black ring and a black terminal spot surrounding a small white spot.

Total length 650 mm.; tail 25.

A single female specimen.

This new *Elaps* resembles strikingly *E. mipartitus* D. & B. in the coloration, but is well distinguished by the much smaller eye and by the proportions of the head-shields.

41. *LEPTOGNATHUS SPURRELLI*, sp. n. (Pl. CVIII. fig. 3.)

Body very slender, strongly compressed. Eye large. Rostral small, about once and a half as broad as deep, not visible from above; internasals one-third the length of the præfrontals;

frontal as long as broad, nearly as long as its distance from the end of the snout, much shorter than the parietals; nasal divided; loreal once and a half as long as deep, bordering the eye; no præocular; præfrontal entering the eye; two postoculars, lower very narrow; temporals 3 + 3; eight upper labials, fourth and fifth entering the eye; four pairs of chin-shields, the anterior very small and in contact with the symphysial, the second larger and a little longer than broad. Scales in 15 rows, vertebrals strongly enlarged, nearly as long as broad. Ventrals 208; anal entire; subcaudals 132. Reddish brown above, with very large blackish-brown blotches separated on the back by narrow interspaces of the ground colour, these interspaces gradually widening down the sides, where the blackish blotches are edged by small white spots: these blotches form nearly complete rings on the anterior part of the body, whilst further back they are gradually more widely interrupted by the yellowish-white colour of the belly; lower surface of tail brown, with a few small whitish spots; head uniform reddish brown above; lips white, with small black spots. "Iris golden."

Total length 680 mm.; tail 235.

A single male specimen.

Closely allied to *L. annulata* Gthr., from Costa Rica, and *L. temporalis* Werner, from Ecuador.

42. LACHESIS MUTUS L.

This is the *Bothrops acrochordus* of Garcia*. Grows to 2½ metres.

43. LACHESIS ATROX L.

44. LACHESIS MONTICELLI Peracca.

This Pit-Viper, easily distinguished from *L. lanceolatus* by the shape of the rostral shield, which is much deeper than broad, was described along with *Trachyboa boulengeri* from a specimen of unknown origin. It is interesting to find the two snakes associated in this collection.

Two female specimens:—

a. 920 mm.; tail 160. Sc. 29; V. 210; C. 86.

b. 570 mm.; ,, 100. ,, 27; ,, 212; ,, 87.

Lachesis punctatus Garcia, l. c. p. 31, pl. —, perhaps represents the same species.

45. LACHESIS BRACHYSTOMA Cope.

The range of this species is now known to extend from the Isthmus of Tehuantepec to N.W. Ecuador.

Described and figured by Garcia as *Thamatophis sutus*.

* Los Ofidios venenosos del Cauca (Cali, 1896), p. 23, pl. —.

EXPLANATION OF THE PLATES.

PLATE CII.

- Fig. 1. *Bufo hypomelas*, p. 1022, enlarged, and outline natural size.
 2. *Agalychnis calcarifer*, p. 1023.
 2 a. " " Side view.
 2 b. " " Open mouth.

PLATE CIII.

Agalychnis spurrelli, p. 1024. Female and eggs.

PLATE CIV.

- Fig. 1. *Dendrobates aurotaenia*, p. 1029.
 2-4. " *tinctorius*, var. *coctei*, p. 1027.
 5-6. " " var. *chocoensis*, p. 1028.

PLATE CV.

Cinosternum spurrelli, p. 1030. Upper view.

PLATE CVI.

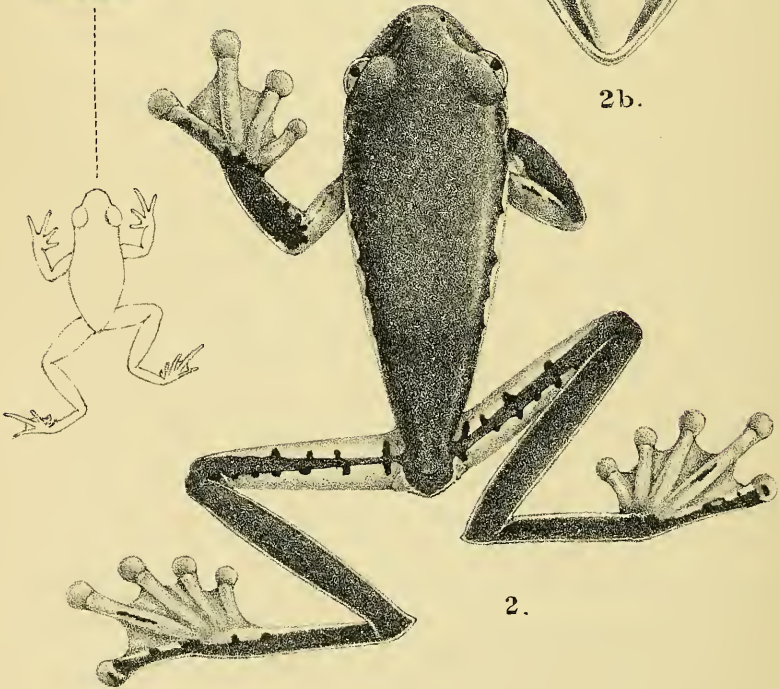
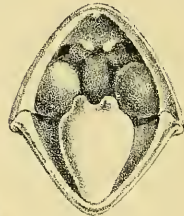
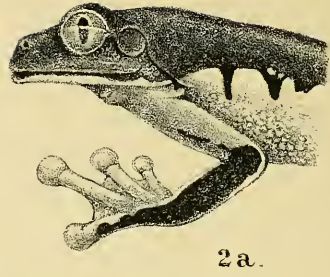
Cinosternum spurrelli, p. 1030. Lower view.

PLATE CVII.

- Fig. 1. *Anolis breviceps*, p. 1031.
 1 a. " " Side view of head.
 1 b. " " Upper view of head, enlarged.
 2. *Anadia vittata*, p. 1033.
 2 a. " " Upper view of head, enlarged.
 2 b. " " Side view of head, "
 2 c. " " Ventral and anal region, enlarged.
 2 d. " " Lower view of head, "

PLATE CVIII.

- Fig. 1. *Homalocranium coralliventre*, p. 1035.
 1 a. " " Upper view of head, enlarged.
 1 b. " " Side view of head, "
 2. *Elaps microps*, p. 1036.
 2 a. " " Upper view of head, enlarged.
 2 b. " " Side view of head, "
 3. *Leptognathus spurrelli*, p. 1036.
 3 a. " " Upper view of head, enlarged.
 3 b. " " Side view of head, "
 3 c. " " Lower view of head, "



J. Green del. et lith.

1. BUFO HYPOMELAS.

2. AGALYCHNIS CALCARIFER.



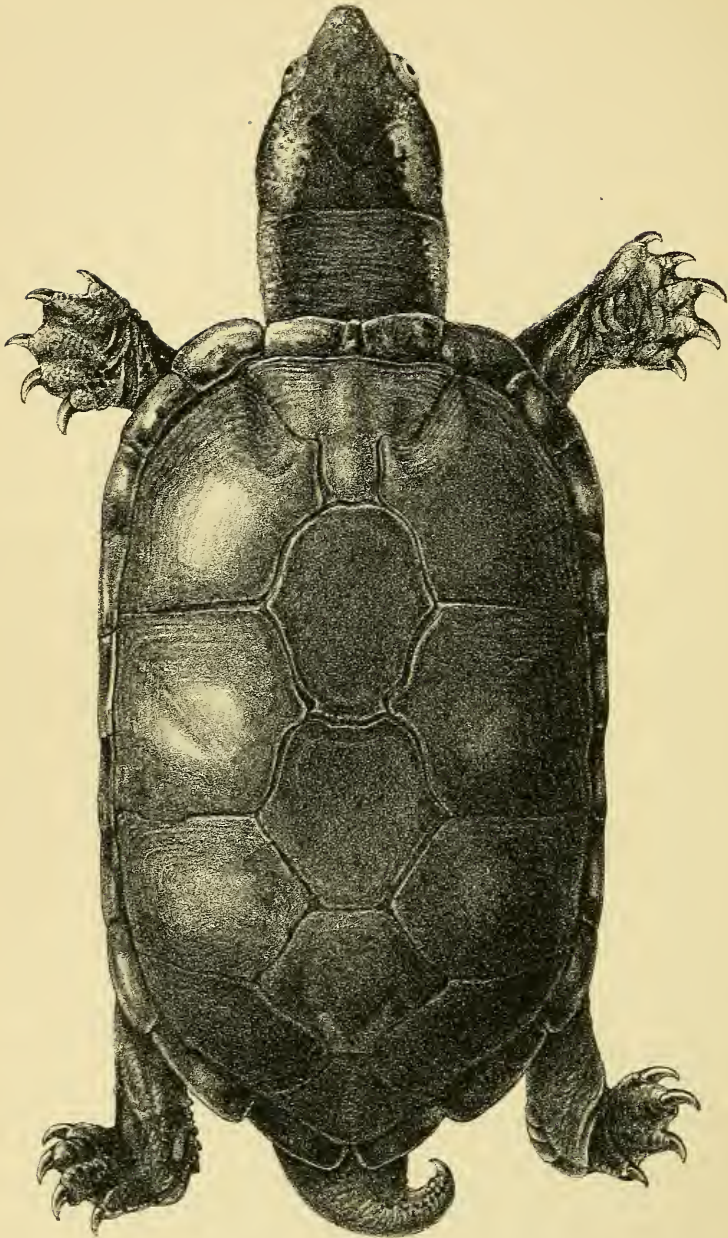
AGALYCHNIS SPURRELLI.

J. Green del. et Chromo.



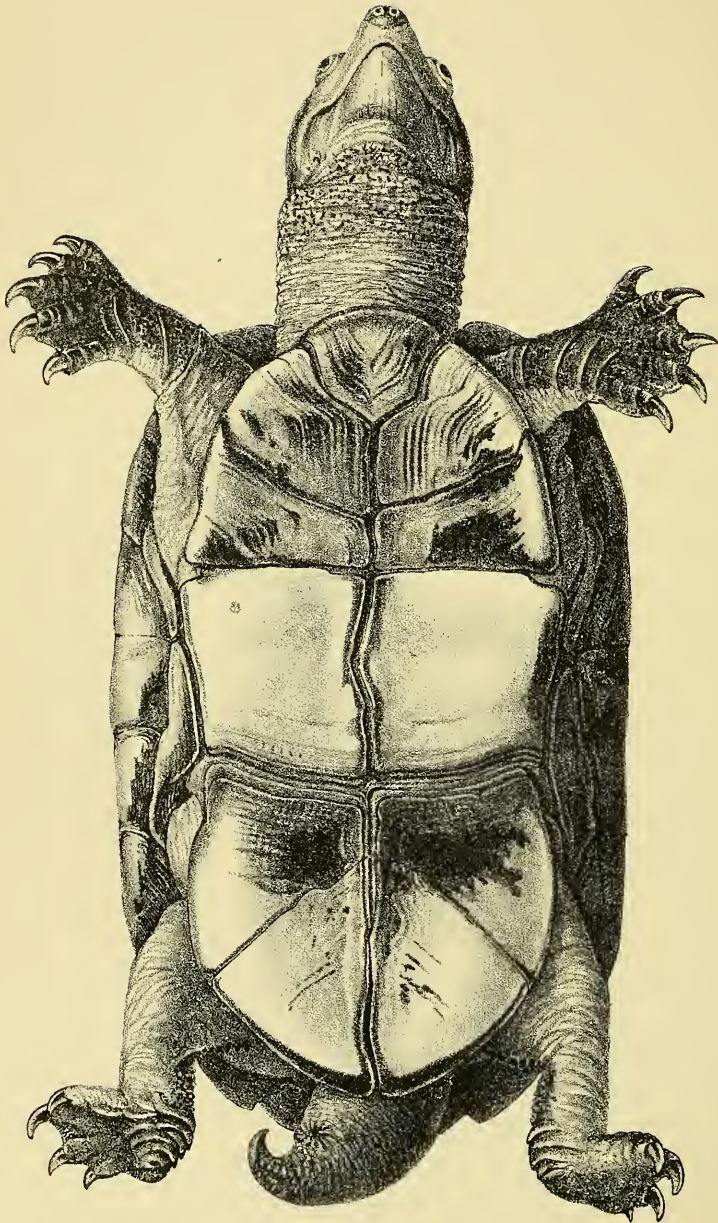
J. Green del. et Chromo.

1. DENDROBATES AUROTÆNIA
2-4. D. TINCTORIUS, VAR. COCTÆI. 5-6. D. TINCTORIUS, VAR. CHOCOENSIS.



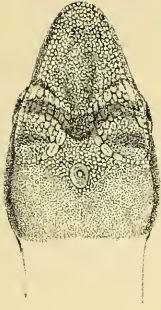
J. Green del et lith.

CINOSTERNUM SPURRELLI.

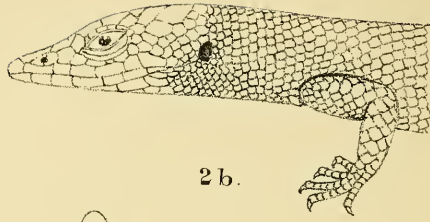


J. Green del. et lith.

CINOSTERNUM SPURRELLI.



1b.



2b.



2a.



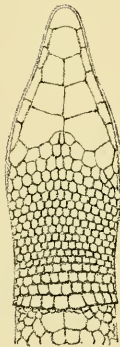
1.



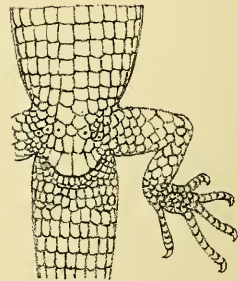
1a.



2.



2d.

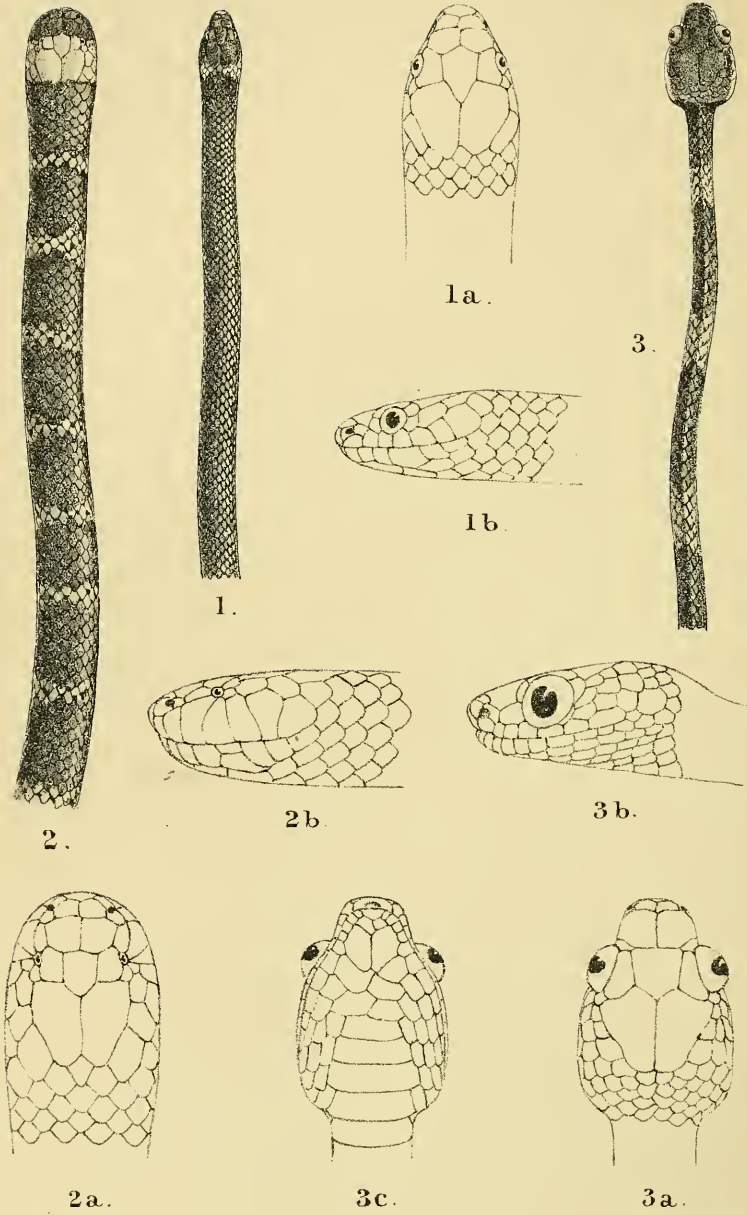


2c.

J. Green del. et lith.

1. ANOLIS BREVICEPS.

2. ANADIA VITTATA.



J. Green del. et lith.

1. HOMALOCRANIUM CORALLIVENTRE. 2. ELAPS MICRIPS
3. LEPTOGNATHUS SPURRELLI.