

RESULTS OF THE YALE PERUVIAN EXPEDITION OF 1911.— BATRACHIANS AND REPTILES.

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Thanks to the efforts of Prof. H. W. Foote, the Yale-Peruvian expedition of 1911, under the direction of Prof. Hiram Bingham, brought home a small, but highly interesting collection of batrachians and reptiles which have been placed in my hands for report. The first set of specimens has been generously donated to the United States National Museum.

Class AMPHIBIA.

BUFO MARINUS (Linnæus).

Whatever may be the status of Tschudi's *Bufo molitor*,¹ the half-grown toad, collected at Santa Ana, altitude 3,000 feet above sea level, on August 3, unquestionably belongs to the present species. I have compared it both with full-grown and with younger specimens from La Guaira, Venezuela, and find it to agree perfectly with them. The tympanum equals one-half the diameter of the eye; the outline of the snout is exactly like that of the young Venezuelan specimens; and the parotoids are proportionally as large as in the adults.

BUFO SPINULOSUS Wiegmann.

One young and two minute specimens, just transformed, from Cuzco, July 9, 1911.

BUFO INCA, new species.

Diagnosis.—Head with bony ridges, the supraorbital and postorbital ridges forming together a flat curve and with the parietal curve a Y-shaped figure; tympanum very distinct, oval, erect, its longest (vertical) diameter about two-thirds the horizontal diameter of the eye; no horn-like appendage on upper eyelid; snout projecting; no tarsal fold; interorbital space much broader than upper eyelid; parotoids large, descending on side of neck.

Habitat.—Peru.

Type-specimen.—Cat. No. 49557, U.S.N.M.; Huadquinia, Peru, about 5,000 feet altitude; August, 1911.

¹ See Roux. Rev. Suisse Zool., vol. 15, pt. 2, 1907, p. 303.

Description of the type-specimen.—Cranial ridges sharply defined but not high, consisting of canthal, preocular, supraocular, postocular, parietal, and supratympanic ridges, the supraocular ridge flatly curved and forming a Y with the parietal ridges which converge backwards; snout prominent, overhanging the lip; nostrils anterior to edge of lip; interorbital space nearly flat, much wider than the upper eyelid; tympanum very distinct, much higher than wide, its greatest diameter about two-thirds that of the eye; first finger not extending beyond second; toes about half webbed; three outer joints of fourth toe free; subarticular tubercles single; two metatarsal tubercles, inner one large, well developed; tarsal fold only indicated by a series of close-set spines; heels do not overlap; heel extending to anterior border of eye; upper surfaces, including top of head, evenly covered with small, subequal, spinose warts; underside covered with small, densely set, high tubercles; parotoids large, about two-thirds the length of the head, descending on the sides.

Dimensions.

	mm.
Tip of snout to vent.....	39
Tip of snout to posterior edge of tympanum.....	13
Width of head.....	14
Width of interorbital space.....	5
Length of tibia.....	20

Remarks.—This species, of which the expedition brought home only one specimen, resembles *Bufo coniferus* Cope, but has larger parotoids and shorter legs, especially fore legs; the upper surface of the body including head is evenly covered with small spinose warts, and there are no cone-shaped spines on sides of neck and body; the cranial crests are lower, those of the canthus rostralis more straight and distant; profile of snout much more projecting, the nostrils being situated anterior to the lip.

From *Bufo ockendonii* Boulenger¹ (type-locality Marcapata Valley, eastern Peru) the present species differs in the more projecting snout, the very distinct tympanum, the large inner metatarsal tubercle, the densely and uniformly spinose upper parts, and the larger parotoids.

ELEUTHERODACTYLUS BINGHAMI, new species.

Diagnosis.—Toes nearly free; belly granular; upper surface smooth; head moderate, without bony ridges; vomerine teeth in two small transverse series between or slightly behind the choanæ; tympanum distinct, about two-fifths or one-third the diameter of the eye.

Habitat.—Peru.

Type-specimen.—Cat. No. 49559, U.S.N.M.; Cuzco, Peru, about 11,500 feet altitude; July 9, 1911.

Description of type-specimen.—Tongue large, rounded, entire behind; vomerine teeth in two small transverse series between, or

¹ Ann. Mag. Nat. Hist. (7), vol. 10, 1902, p. 396.

slightly behind choanæ; snout longer than orbital diameter; canthus rostralis distinct, rounded; nostril nearer the tip of the snout than the eye; interorbital space very slightly convex, somewhat wider than eyelid; tympanum distinct, about one-third the diameter of the eye; fingers moderate, first shorter than second; toes moderate, nearly free; disks medium, rounded; large inner metatarsal tubercle, no outer; tibiotarsal articulation of extended hind limb reaches center of eye; skin of upper surfaces smooth, with no tubercles; underside, including throat, granular; a strong pectoral fold; a slightly raised smooth dermal ridge from eye over tympanum. Color (in alcohol) above olive gray; a blackish brown hammer-shaped spot on top of head between eyes; a blackish brown loreal band edged above with a very distinct whitish line from tip of snout through eye, the whitish line occupying the edge of the upper eyelid, and over ear to shoulder; an indistinct whitish line on upper lip; back with three longitudinal series of blackish brown spots, the outer ones fused into more or less continuous bands; legs cross-barred; underside pale, posterior aspect of femur with indications of small whitish spots.

Dimensions.

	<i>mm.</i>
Tip of snout to vent.....	22
Width of head.....	8
Diameter of eye.....	3
Diameter of tympanum.....	1
Fore leg from axilla.....	12
Hind leg from vent.....	32
Vent to heel.....	18

Remarks.—In the younger specimens the tympanum appears smallest. In the youngest it is rather indistinct, the vomerine teeth are absent and the color pattern, including the light canthal line, more obscure.

Named in honor of Prof. Hiram Bingham, the leader of the Yale Peruvian Expedition.

ELEUTHERODACTYLUS FOOTEL, new species.

Diagnosis.—Toes free; upper and lower surfaces strongly tubercular; head moderate without bony ridges; vomerine teeth in two small patches inside of and on a level with posterior border of choanæ; tympanum indistinct, less than one-third the diameter of the eye.

Habitat.—Peru.

Type-specimen.—Cat. No. 49562, U.S.N.M.; Tincochchaca, Peru, 7,000 feet altitude; August 8, 1911.

Description of type-specimen.—Tongue rather large, somewhat heart-shaped behind; vomerine teeth in two small patches inside of and on a level with the posterior border of the choanæ; snout short, not longer than the orbital diameter; canthus rostralis angular; interorbital space flat, very wide, one and one-half times as wide as upper

eyelid; tympanum rather obscure, small, less than one-fourth the diameter of eye; fingers moderate, first shorter than second; toes moderate, free; disks rather large, rounded; large inner metatarsal tubercle, no outer; tibio-tarsal articulation of extended hind limb reaches center of eye; skin of entire animal above and below, including soles of feet, strongly granular, the granules or rounded tubercles of the upper surface about the same size as those of the lower, but not so close together; a weak pectoral fold; a strong, tubercular supratympanic fold from eye backward to above shoulder. Color (in alcohol) above dark drab, sprinkled with minute dark dots; a large irregular, X-shaped dark brown mark beginning on the eyelids and extending to the sacrum, the lines crossing behind the head; a dark band, light-edged above, from nostrils through eye and ear to sides of body where it dissolves into numerous minute dark spots; limbs cross-barred; hind aspect of femur marbled with dusky and with the indication of a pale longitudinal whitish line, more or less interrupted.

Dimensions.

	<i>mm.</i>
Tip of snout to vent.....	19
Width of head.....	8.5
Diameter of eye.....	2.5
Diameter of tympanum.....	0.5
Fore leg from axilla.....	12
Hind leg from vent.....	29
Vent to heel.....	17

Remarks.—In a second specimen, about the same size as the type, the ground color is paler and the dark color pattern consequently better contrasted. A slightly younger specimen, from the same locality, has this pattern less conspicuous, the X mark not being solid dark, but only its edges outlined by dusky lines.

Named in honor of Prof. H. W. Foote, the naturalist of the expedition.

LEPTODACTYLUS RUBIDO (Cope)?

A single specimen was collected at San Miguel, at an altitude of 6,000 feet. It is very much hardened and shrunken, hence there is some uncertainty as to the characters of the toes and the glandular ridges. The toes do not seem to be provided with a dermal margin and the upper surface appears to be smooth without folds on back or sides. The tongue is entire behind; the vomerine teeth are arranged in two straight series behind and not extending outward beyond the center of the large choanæ. The color (in alcohol) above is a kind of bluish gray; on each side of the back as far as the sacrum is a narrow blackish dorso-lateral line, and on the sacrum numerous small rounded blackish spots; there is a broken blackish line on the upper lip; the underside of the body is dark brown with numerous whitish dots, that of the hind legs whitish marbled with small dark brown spots.

Class REPTILIA.

Suborder SAURIA.

STENOCERCUS ERVINGI, new species.

Diagnosis.—Posterior dorsal scales considerably smaller than ventrals; caudal scales much longer than ventrals, not spinose; anterior border of ear without spines or lobules.

Habitat.—Peru.

Type-specimen.—Cat. No. 49550 U.S.N.M.; Huadquinia, Peru, 5,000 feet altitude; wet season, 1911.

Description of type-specimen.—No pterygoid teeth; scales on top of head small, flat, pitted; two rows of scales on interorbital space; two rows of large, supraocular scales, those of the inner row broader than long; occipital smaller than those surrounding it; anterior border of ear smooth, without projecting spines, the scales forming the margin not differentiated in any way; sides of neck longitudinally folded; underside of neck smooth; a strong vertical fold in front of the humerus; body rather depressed; dorsal scales small, obtusely keeled, not mucronate, those on median line slightly larger but forming no denticulation, the lateral ones anteriorly granular, increasing in size toward the median line and posteriorly, the largest ones considerably smaller than the ventrals and much smaller than the caudals; sides of neck and body finely granular; gular scales small, but much larger than lateral granules; ventrals considerably larger than largest dorsals, rounded, imbricate, smooth; adpressed hind leg reaches the eye; fifth toe nearly as long as second; legs above with keeled scales larger than largest dorsals; tail about one-third longer than head and body, cylindrical, covered with distinct rings of strongly keeled, blunt scales almost twice as large as ventrals. Color (in alcohol) above greenish gray, marbled with dusky and speckled with whitish rounded dots; a narrow, blackish, transverse band, edged behind with larger nearly continuous whitish spots from one humeral fold to the other, barely interrupted on the dorso-median line; legs and tail above cross barred with dusky; throat greenish white with darker bluish-green marblings on the side of neck; underside whitish.

Dimensions.

	mm.
Total length.....	84
Tip of snout to vent.....	35
Vent to tip of tail.....	49
Tip of snout to ear.....	10
Width of head.....	7
Fore leg.....	17
Hind leg.....	26

Remarks.—This species is easily distinguished from the other Peruvian species of this genus by the smallness of its dorsal scales. In many respects it resembles *Stenocercus humeralis* from Ecuador, but differs materially in the absence of a trace of denticulation in front of the ear and in the much larger caudal scales.

Named for Dr. William G. Erving, the surgeon of the Yale Peruvian expedition of 1911.

LIOLÆMUS ANNECTENS Boulenger.

Eleven specimens collected between Cotuhuasi and Chuquibamba, at an altitude of 15,500 feet above the sea, agree substantially with Doctor Boulenger's description.¹ He indicates "two longitudinal series of scales on the frontal region," but the specimens before me show considerable variation in this respect, six having one row and five, two rows. The scale rows around the middle of the body vary between 56 and 70, two having 56, one 58, three 60, two 62, two 68, and one 70. The anal pores of the males vary between 4 and 7, one having 4, two 6, and three 7.

OREOSAURUS LACERTUS, new species.

Diagnosis.—No loreal; three supraoculars; two submental pairs in contact; twelve longitudinal series of ventrals; anterior row of pre-anals two, posterior four to six.

Habitat.—Peru.

Type-specimen.—Cat. No. 49551, U.S.N.M.; Tincochchaca, 7,000 feet altitude; August 10, 1911.

Description of type-specimen.—Adult male. Fronto-nasal quadrangular, as broad as long; frontal pentagonal, narrower behind; fronto-parietals as long as frontal, but narrower; parietals and interparietal subequal, the latter seven-sided; three occipitals, the lateral ones as large as the large supraoculars, the median one smaller pentagonal; three supraoculars, the anterior smaller, descending in front of eye; no loreal; a row of scales between eye and supralabials; temporals large, especially upper row; six upper and six lower labials; one anterior unpaired chin-shield followed by two pairs in contact; eleven transverse rows of scales between chin-shields and collar, a series of granules between fourth and fifth rows, collar-shields ten; dorsal scales elongate quadrangular in transverse rows weakly keeled, the median row often consisting of subdivided or incomplete shields, twenty-one in a row across the back, and separated on each side from the ventrals by about two rows of coarse granules; forty scale rows from occiput to base of tail; ventrals large, quadrangular in twelve longitudinal and twenty-one transverse series; six large preanal scales, two in the anterior row, four in the posterior; six femoral pores on each side; tail about one-fourth longer than head and body, the scales

¹ Ann. Mag. Nat. Hist. (7), vol. 7, 1901, p. 546.

like those of the body, except the median pair on the underside which are relatively broader, being nearly square. Color (in alcohol) above dark brownish gray with three blackish stripes continued on the tail, one median and one on each side of the back, five scales from the median stripe; underside uniform dark plumbeous, paler on throat and chin.

Dimensions.

	<i>mm.</i>
Total length.....	113
Tip of snout to vent.....	50
Vent to tip of tail.....	63
Tip of snout to ear.....	11
Width of head.....	7
Fore leg.....	14
Hind leg.....	19

Remarks.—This species is most nearly related to Boettger's *Oreosaurus petersi*, but it has more longitudinal rows of ventral scales and fewer femoral pores. It also resembles *Oreosaurus ocellifer* Boulenger, but the latter has eight ventral rows and three pairs of submentals in contact. Boettger's species is said to have come from Para, but in view of its close relationship to the two Peruvian species, and the further fact that the other species of the genus are confined to Colombia, Ecuador, Peru, and Bogota, there is good reason for doubting its occurrence in Brazil, the more so since the unique type-specimen in Museum Senckenbergianum was obtained in 1849 from the museum in Mailand.

The Yale Peruvian expedition of 1911 obtained six specimens of this species, five from the type-locality and one from Ollantaytambo on July 20, 2,000 feet higher up.

There is considerable variation both in coloration and in number of scale rows. Thus the number of scales from occiput to base of tail varies between 38 and 46; that of scales across the back between 21 and 23; and that of the ventrals from collar to vent from 21 to 26. The preanals of the posterior row vary between 4 and 6. In the younger specimens the lateral dorsals diminish in size toward the lateral granules, the outermost ones being scarcely distinguishable from them. Variation in color consists chiefly in the lighter or darker ground color and the presence or absence of the median dorsal dark stripe; one specimen has the dorsal region irregularly sprinkled with dusky dots and in most of the specimens is there trace of a light upper edge to the dorso-lateral dusky stripe.

Suborder SERPENTES.

CLELIA CLOELIA (Daudin).

A single snake was collected by the expedition. It was taken at Huadquinia, altitude about 5,000 feet. Its scale-formula is as follows: *sc.* 19; *ventr.* 206; *an.* 1; *caud.* 91; *supralab.* 7; *oc.* 1+2; *temp.* 2+3.



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