

## Article XVI.—NEW RODENTS FROM COLOMBIA AND VENEZUELA.

By J. A. ALLEN.

Through the liberality of Mr. Morris K. Jesup, President of the American Museum of Natural History, the Museum has been placed in possession of one of the most extensive and best prepared collections of mammals that has probably ever been brought together from a single limited locality in South America. This collection has been made mainly in the vicinity of Santa Marta, Colombia, in the coast region below an altitude of 500 feet; a part, however, was collected in the lower portion of the Sierra region, at altitudes varying from 4000 to 6000 feet. The collection was made under the direction of Mr. Herbert H. Smith, the well-known natural history explorer who has done so much excellent work, under various auspices, in Southern Brazil, in the West Indies, and in Mexico, by his wife, equally well known as an expert zoölogical collector, aided by a corps of assistants. Through the aid of Mr. Jesup, the Museum has purchased all except the duplicates of this collection, which latter, however, are still at the Museum, and, with Mr. Smith's generous consent, will be used as the basis of a later report on the mammals of the Santa Marta district. In the present paper only the Rodents receive treatment, and these only so far as to make known the forms that appear to be new. Mr. Jesup has also purchased for the Museum Mr. Smith's collection of birds thus far made in the same region, numbering upward of 3000 specimens.

The Venezuelan forms here described are from a small collection of mammals made by Mr. F. W. Urich, in the mountainous district situated about ninety miles from Cumana. This collection, numbering only about 75 specimens, proved of special interest, as, though not numerous in species, it contained several not previously described, as did also a small collection of birds made by Mr. Urich at the same localities and received with the mammals.<sup>1</sup>

The external measurements given, when not otherwise stated, are those made by the collector from the fresh specimens.

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<sup>1</sup> See *antea*, pp. 153-156.

***Lepus (Sylvilagus) superciliaris*, sp. nov.**

*Type*, No. 15428, ♂ ad., Bonda, Santa Marta District, Colombia, July 4, 1899; Coll. H. H. Smith.

Color above pale buff, strongly varied with black, which in some specimens is quite the predominant color of the dorsal area; sides rather paler with much less black; nape patch rich rufous; frontal region, from the nose to a point opposite the posterior canthus of the eyes, deep rusty chestnut, with, or wholly without (in different specimens), a slight admixture of black-tipped hairs; crown paler rufous varied with black; sides of the nose and cheeks buffy white, more strongly colored and varied with blackish on the latter; a broad very distinct grayish-white ocular stripe, very narrow below the eye, broader and clearer above the eye, and forming a broad whitish patch both in front of and behind the eye; an indistinct blackish area midway between the eye and base of the ear; eyelashes black, the upper very long, thick, and intense black; above the ocular stripe is a very distinct narrow black stripe, separating the broad gray ocular stripe from the rufous of the frontal region; ventral surface including inside of limbs, pure white to the base of the fur; broad chest band strong buff, the fur pale gray at the extreme base; whole throat and chin white, like the abdomen, but the pelage shorter; fore limbs anteriorly pale rufous, passing into white or buffy white on the feet; hind limbs clear rufous postero-externally, passing into buff on the antero-internal border; top of hind feet white, sides buff mixed with white, especially on the inner edge, more deeply buff or pale rufous on outer edge; soles dingy buff, the fur more grayish basally; tail pure white below, above dull rufous, the hairs blackish below the surface, thus often giving a dingy rufous general effect; ears large, thinly haired, whitish gray at extreme base posteriorly, passing gradually to blackish on the apical third, with a narrow edging of pure white; the antero-exterior third is more heavily clothed and grayish buff, the buffy tint strongest at the base of the ear and passing gradually into blackish apically.

Young in first pelage resemble the adults in all details of markings and color, except that the dorsal area is more strongly varied with black, with a tendency to a median blackish area, shown also in some of the adults.

*Measurements*.—Type, total length, 400 mm.; tail vertebrae, 25; hind foot, 75, with claws, 87; ear (in dry skin), from notch, 55, from top of head, 72. Five adults measure as follows: total length, 394 (375–410); tail vertebrae, 31 (25–33); hind foot (with claws), 93 (87–100); ear (in dry skin) from notch, 53, from top of head, 65.

*Skull*, total length, 79; basal length, 59; greatest (zygomatic) width, 35.5; mastoid width, 26; interorbital width, 18; intertemporal width, 24; length of nasals, 33; width of nasals at base, 16; palatal floor, 7.5; from henselion to posterior border of palatines, 28.5; palatine foramina, 20 x 5.5; upper tooth-row, crown surface, 12, at alveolar border, 14; lower jaw, condyle to incisor tips, 59; height at condyle, 32.

This species is based on 11 specimens, 5 adult and 6 young, the latter of various ages, but mostly less than one fourth grown,

all taken at or near Bonda. They vary but little in coloration, —the adults mainly in the buff tint of the upper parts, which ranges from strong buff to pale buffy white.

*Lepus superciliaris* belongs to the *Sylvilagus* group of *Lepus*, and to the section represented by *L. insolitus* Allen of Colima, Mexico, with which it agrees in the general conformation of the skull, and especially in the deep grooving of the external face of the malar. It hence has no close relation to the subgenus *Tapeti*. It should be compared with *Lepus cumanicus* Thomas, from Cumana, Venezuela, which is doubtless its nearest ally, and with which it closely agrees in size and in general features. *L. cumanicus*, judging from the description, is much paler, and if the conspicuous black superciliary stripe so characteristic of the Bonda form is present in *cumanensis* it is not mentioned in the detailed description of the species. Also the deep clear rufous of the frontal region of the head in *L. superciliaris* is not mentioned in the account of *cumanensis*. The geographical and faunal relations of Bonda and Cumana, as indicated by the representation of other groups of Rodents in the two regions, point to at least a subspecific differentiation in the Hares of the two localities.

### ***Isothrix rufodorsalis*, sp. nov.**

*Type*, No. 14606, ♂ ad., Onaca, Santa Marta District, Colombia, Dec. 24, 1898; Coll. H. H. Smith.

Pelage very soft, almost woolly, full and long. Color of dorsal area deep rufous, paler yellowish rufous on the sides, including sides of head to the nose; a few long black-tipped hairs on the top of the head and nape; below, including inner surface of limbs, fulvous, passing insensibly into the color of the sides; whiskers, a tuft of long bristles between the eye and ear, and a tuft of long hairs at the inner base of the ear, intense black; ears small, pale brown, naked externally, but with numerous long hairs from the inner surface; upper surface of fore and hind feet pale fulvous gray; tail heavily haired throughout, basal three-fifths black, terminal two-fifths pure white.

*Measurements*.—Type (and only specimen), total length, 457 mm.; tail vertebræ, 267; hind foot, without claws, 35, with claws, 40; ear, 12. (Foot and ear measured from dry skin.)

*Skull*, total length, 52.5; basal length, 40; zygomatic width, 24.5; mastoid width, 21; interorbital width, 24; length of nasals, 15; width of nasals at middle, 5; crown length of upper toothrow, 5.8; palatal length, 5.3; length of lower toothrow, 5.3.

This very interesting species is based on a single specimen from Onaca. The pelage is very soft and full, the tail heavily

clothed, black for the greater part of its length and pure white for the terminal two-fifths. The ears are very small, tufted with long hairs on the inner surface; hind feet very short and broad. The skull is short and broad, the zygoma heavy and broad but not arched laterally, and the supraorbital edges of the skull are greatly developed, with straight external borders, the interorbital region being thus very broad with nearly parallel edges. The facial portion of the skull is extremely short, the distance between the incisors and the molar series being a little less than the length of the crown surface of the upper toothrow. The teeth are much worn, but indicate a tooth pattern closely like that figured by Günther for his *Lasiuromys villosus* (Deville), with which the general character of the skull agrees (*cf.* P. Z. S., 1876, 744, fig. 5). *Isothrix rufodorsalis*, however, appears on the whole to be very distinct from any of the other described members of the *Isothrix* group.

***Echimys mincæ*, sp. nov.**

*Type*, No. 15389, ♂ ad., Minca, Santa Marta District, Colombia, July 19, 1899; Coll. H. H. Smith.

General color above strong golden brown, lined with black, the pelage of the dorsal area consisting of yellowish brown hairs abundantly intermixed with grooved, black-tipped spines, which appear at the surface as blackish points; sides lighter and less varied with black, the yellowish brown hairs composing most of the pelage, with a few black-tipped bristly hairs intermixed; beneath, pure white, including inside of limbs, the pelage rather soft and wholly without spines; sides of the head lighter and more grayish than the sides of the body; top of head darker than the back, being more mixed with blackish; outer surface of the fore limbs gray tinged with yellowish, becoming whitish on the upper surface of the feet; hind limbs externally like the sides of the body, but upper surface of the feet whitish, varying from grayish white to nearly pure white; ears of medium size, oval, rounded at top, and covered externally with very fine short hairs, more sparsely clothed within; tail sharply bicolor, blackish above, nearly white below, clothed for an inch at the base with soft hairs like those of the adjoining parts of the body, the rest of the tail sparsely covered with very short hairs, imperfectly concealing the annulations.

Young in first pelage, uniform blackish brown above, pure white below. The pelage of the median area of the back is stiff and bristly, the spines in part grooved, but thinner and weaker than in the adult pelage.

*Measurements*.—*Type*, total length, 456 mm.; tail vertebræ, 210; hind foot, without claws, 50, with claws, 57. Twenty adult males and 14 adult females measure as follows: 20 males, total length, 437 (400–490); tail vertebræ, 202 (186–224); hind foot (with claws), 51 (46–57); 14 females, total length, 413 (380–440); tail vertebræ, 194 (170–210); hind foot (with claws), 46 (42–50).

*Skull* (of type), total length, 60; basal length, 47; zygomatic width, 27; mastoid width, 21; interorbital width, 13; length of nasals, 23; width of nasals at middle, 6.3; crown length of upper tooththrow, 8.5; palatal length, 8.5; length of lower tooththrow, 9.2.

This species is based on 102 specimens, of which 87 were taken at Minca and 15 at Bonda; the series includes quite a number of young of various ages, ranging from those in first pelage to young adults.

*Echimys mincæ* belongs to the same group as *E. trinitatis*, having the same pure white belly, the same general proportions, and practically the same dentition. It is, however, very much smaller and very different in coloration, being golden brown above instead of dark chestnut brown.

### ***Echimys urichi*, sp. nov.**

*Type*, No. 14798, ♂ ad., Quebrada Secca, Venezuela, Nov. 23, 1898; F. W. Urich.

Similar in color and proportions to *E. trinitatis*, but much smaller.

*Measurements*.—*Type*, total length, 370 mm.; tail vertebrae, 171; hind foot, 43, with claws, 46; ear, 25. Ten adult males measure as follows: total length, 390 (344-409); tail vertebrae, 162 (140-186); hind foot, 44 (42-46); ear, 25 (24-27). Two adult females average slightly less.

*Skull*, type, total length, 48; basal length, 33; zygomatic width, 23; mastoid width, 20; interorbital width, 10.3; length of nasals, 16; width of nasals at middle, 4.5; crown length of upper tooththrow, 8; palatal length, 8; length of lower tooththrow, 8.6.

Named in honor of Mr. F. W. Urich, so well known through his natural history work in Venezuela and Trinidad.

This is an almost exact miniature of *E. trinitatis*, but the difference in size is so great that the separation seems unquestionably necessary, *E. urichi* being nearly one third smaller than *E. trinitatis*. The comparative measurements of *E. trinitatis*, *E. mincæ*, and *E. urichi* are shown in the following table, based on adult male specimens, from which it appears that the largest specimens of *E. urichi* do not very closely approach even the smallest specimens of *E. trinitatis*.

	No. of Specimens.	Total Length.	Tail Vertebrae.	Hind Foot.	Ear.
<i>E. trinitatis</i> ....	10	469 (440-510)	211 (185-230)	53.3 (51-55)	27 (21-31)
<i>E. mincæ</i> .....	20	437 (400-490)	202 (186-224)	51 (46-57)	—
<i>E. urichi</i> .....	10	390 (344-409)	162 (140-186)	44 (42-46)	25 (24-27)

In *E. urichi* the spines are weaker than in *E. trinitatis*, and are confined to a much narrower tract of the median dorsal area.

*E. urichi* is based on a series of 21 specimens collected at Los Palmales and Quebrada Secca, near the northern coast of Venezuela, 90 miles south of Cumana, at elevations of 2000 to 4000 feet, in November and December, 1898. About one half the specimens are fully adult, and the remainder 'young adults,' there being no very young specimens in the series.

### *Echimys canicollis*, sp. nov.

*Type*, No. 15397, ♂ ad., Bonda, Santa Marta District, Colombia, April 20, 1899; Coll. H. H. Smith.

Pelage of the dorsal region hispid, sparsely intermixed with weak slightly grooved spines; pelage of the sides and underparts softer but hairy and not furry. Color of the upper parts, from the nape posteriorly to the rump, rather pale yellowish brown, or pale golden brown, varied over the back with black-tipped spines or spiny hairs, paler and grayer on the sides, including the region at the base of the tail; top of head and nape grayish, varied with black; sides of head and sides of neck rather clear gray, becoming paler on the cheeks; lower parts and inside of limbs white, the gray of the sides of the neck extending on to the sides of the throat, and sometimes (especially in immature specimens) meeting to form a brownish gray throat band; upper surface of fore and hind feet gray, often approaching whitish on the hind feet; ears rather broad and low, brown, practically naked (short, grayish hairs are visible under a lens); tail rather indistinctly bicolor, blackish above, the lower surface (about one third of the circumference) dull flesh-color; the tail is scantily haired, the hairs partly (in some specimens wholly) concealing the annulations.

The young in first pelage are dusky gray above, the hairs faintly tipped with yellowish, darker along the middle of the back, grayer on the sides; below white, with sometimes a broad pectoral band of gray.

*Measurements*.—*Type*, total length, 425 mm.; tail vertebræ, 178; hind foot, 43, with claws, 50. Seventeen adult males and 18 adult females present the following measurements: 17 males, total length, 396 (372–440); tail vertebræ, 162 (155–185); hind foot (with claws), 50.5; 18 females, total length, 366 (352–408); tail vertebræ, 154 (134–175); hind foot, 47 (45–50).

*Skull* (of type), total length, 54; basal length, 38; zygomatic width, 25; mastoid width, 20.3; interorbital width, 12; length of nasals, 20; width of nasals at middle, 6; crown length of upper tooththrow, 8; palatal length, 9; length of lower tooththrow, 9.

This species is based on a series of 90 specimens, of which 45 are from Bonda, and the remainder about equally from Santa Marta, Mamatoca, and other nearby points, ranging in altitude

from sea level to 500 feet. As usual in doubtless all the species of *Echimy*s, about one in four to six, in the adults, is tailless.

In coloration *Echimy*s *canicollis* appears to greatly resemble *Loncheres caniceps* Günther (P. Z. S., 1876, 745), from Medellín, but here the resemblance ceases, the two forms being not even congeneric.

It is very different in color from either of the three other species mentioned in the present paper, and differs likewise in cranial characters. In dentition it is quite similar to *E. trinitatis*, *E. mincæ*, and *E. urichi*, but the skull is relatively shorter and broader, the audital bullæ are very much larger, and the pterygoids much slenderer and very differently shaped, while the basioccipital region is greatly narrowed, in consequence of the unusual size of the audital bullæ. It seems not to need comparison with any of the other described species of the genus.

### ***Heteromys jesupi*, sp. nov.**

*Type*, No. 15347, near Minca (at an alt. of 1000 ft.), Santa Marta District, Colombia, July 30, 1899; Coll. H. H. Smith.

Slightly larger than *Heteromys anomalus* of Trinidad, and much paler. General color above grayish brown slightly varied with yellowish; beneath pure white, including the inner surface of the limbs, the white extending well up on the sides and running forward along edge of the cheek pouches to the nose, as in the allied forms, *H. anomalus*, *H. melanoleucus*, and *H. longicaudatus*; upper surface of hind feet dull white; of fore feet grayish white; forearm grayish brown, instead of blackish brown, as in the other forms; tail and ears scantily haired. Mammæ,  $\frac{1}{2} + \frac{2}{2} = 6$ ,—two pectoral and four inguinal. Soles naked, 6-tuberculate.

*Measurements*.—Type, total length, 330 mm.; tail vertebræ, 163; hind foot, 33; ear (in skin), 16.3.

*Skull*, total length, 31.5; basal length, 26; zygomatic width, 16; mastoid width, 16; interorbital width, 8.6; crown length of upper toothrow, 4.5; length of lower toothrow, 4.6.

Named in honor of Morris K. Jesup, President of the American Museum of Natural History, through whose liberality the Museum has been placed in possession of the extensive collection of Colombian mammals which forms the basis of the present paper.

*Heteromys jesupi* is based on a series of 13 specimens, from six different localities in the Santa Marta District, varying in elevation from sea level to 2000 feet, as follows: Bonda and Mamatoca,

each 1; Bonda 3; Masinga Veija (500 feet), 3; Minca, (1000–2000 feet), 5. It is readily distinguishable from either *H. anomalus* or *H. melanoleucus* by its decidedly paler coloration, which is even more strongly shown by the young in first pelage than in the adults. The young of *H. jesupi* is grayish brown; of *H. anomalus* blackish brown. The similarity in size between the three South American species is shown in the following table of measurements. It should be noted that measurements of *H. jesupi* are all from females, and should be compared with those of the females of the other two species. From this comparison it is evident that *H. jesupi* is rather larger than either *H. anomalus* or *H. melanoleucus*.

	No. of Speci.	Sex.	Total Length.	Tail Vertebrae.	Hind Foot.
<i>Heteromys anomalus</i>	7	♂	290 (273–307)	160 (146–178)	35 (33–37)
“ “	14	♀	277.5 (265–290)	151 (132–160)	34 (33–36)
“ <i>melanoleucus</i>	11	♂	281 (276–300)	164 (151–180)	34.3 (33–36)
“ “	15	♀	264 (246–287)	149 (136–167)	34 (30–35)
“ <i>jesupi</i>	6	♀	292 (272–330)	160 (146–185)	34 (30–36)

NOTE ON *Heteromys melanoleucus* GRAY.—The small collection of mammals recently received from Mr. F. W. Urich, of Port-of-Spain, Trinidad, contained, among others of much interest, 31 specimens of *Heteromys melanoleucus* Gray (Proc. Zool. Soc. London, 1868, 204). Of these 23 were collected at Los Palmales, and the others at the nearby locality Quebrada Secca, in the mountains about 90 miles south of Cumana, at an altitude of about 3000 feet, in December, 1898.

Gray gave the habitat of his *H. melanoleucus* as “Honduras,” but, as shown by Mr. E. R. Alston, incorrectly, the specimen on which it was based having been sent by Dyson from Venezuela.<sup>1</sup> The exact locality of the specimen is not known, but is presumably near the coast in northern Venezuela.

As shown by the measurements given above, the external dimensions agree very closely with those of *H. anomalus* from Trinidad. There is practically also no difference in color, but the well made skins give the impression of a much stouter animal. This is well substantiated by the skulls, which are very

<sup>1</sup> Ann. and Mag. Nat. Hist. (5) VI, 1880, 118; Biol. Centr.-Am., Mamm., 167.

much larger, there being an average difference of about 3 mm. in total length, and very nearly a full millimetre in mastoid breadth. This difference is shown somewhat by the external measurements, inasmuch as the maximum size is greater in both sexes in *H. melanoleucus* than in *H. anomalus*. The skull is also not only larger in its linear dimensions, but is much more heavily built. The two forms, though closely related, are thus readily separable.

***Akodon venezuelensis*, sp. nov.**

*Type*, No. 14724, ♂ ad., Quebrada Secca, near Cumana, Venezuela. Collected Dec. 10, 1898, by Mr. F. W. Urich.

Color above yellowish brown with a slight olivaceous shade, varied with blackish, the hairs being plumbeous nearly their whole length, and tipped slightly with yellowish brown, producing a minutely grizzled effect, shading on olive; lower surface lighter, in general effect grayish washed with pale ochraceous, the color of the lower parts passing insensibly on the sides into the color of the upper surface; head concolor with the body; ears medium, dark brown, nearly naked on both surfaces; tail blackish above, grayish below, covered with very short hairs, through which the annulations are distinctly visible; feet dusky above, the soles of the hind feet black.

*Measurements*.—Type, total length, 161 mm.; tail vertebræ, 60; hind foot, 21.5, with claws, 24; ear, 16. The tail in this specimen is apparently abnormally short, due probably to injury in life, as in a series of five other specimens the tail ranges in length from 70 to 77 mm. A series of 6 specimens, 3 males and 3 females, all adult, measures as follows: Total length, 176 (166–189); tail vertebræ, 71 (60–77); hind foot (with claws), 22.3 (20–24); ear, 16 (15–17).

*Skull*, total length, 34.5; basal length, 23; zygomatic width, 19.6; mastoid width, 13; interorbital breadth, 6; length of nasals, 10; length of palatal foramina, 6.5; length of upper molar series, 5; length of lower jaw (condyle to tip of incisors), 20; height (coronoid to angle), 8.

*Akodon venezuelensis* is based on six specimens taken by Mr. F. W. Urich at Quebrada Secca, in the mountains 90 miles south of Cumana, Venezuela. They are all adult, and are very uniform in coloration and size. Compared with *A. urichi*, from Trinidad, it is smaller, with larger ears and a relatively longer tail, and is very strikingly different in coloration, the general color above being much paler and lacking the ruddy general effect seen in *A. urichi*.

***Akodon columbianus*, sp. nov.**

*Type*, No. 15336, ♂ ad., Manzanares (alt. 3000 ft.), Santa Marta District, Colombia, Sept. 6, 1899; Coll. H. H. Smith.

Above dark brown minutely grizzled with strong yellowish brown, varied

with black, with a tendency to a blackish median dorsal area; below uniform rusty brown, the rusty tips of the hairs often quite concealing the grayish under color; ears blackish, nearly naked; tail dusky, unicolor, entirely naked, the scanty very short hairs in no degree concealing the annulations; feet dusky (hind feet blackish), thinly haired.

*Measurements*.—Type, total length, 230 mm.; tail vertebræ, 102; hind foot, 27, without claws, 24.5; ear (in dry skin), 14. Four adult specimens (3 males and 1 female) measure as follows: Total length, 222 (207–230); tail vertebræ, 97 (94–102); hind foot, 26.5 (25–27).

*Skull*, total length, 30; basal length, 23; zygomatic width, 16; mastoid width, 13; interorbital width, 6.5; length of nasals, 7; length of palatal foramina, 4.6; length of upper toothrow, 4.8; length of lower jaw (condyle to tip of incisors), 17.5, height of lower jaw (coronoid to angle), 7.5.

*Akodon columbianus* differs from its nearest geographical ally, *A. venezuelensis*, by its much darker color, and very long, wholly naked tail, and by the unusual shortness of the rostral portion of the skull, and the corresponding shortness of the palatal foramina, which also terminate posteriorly considerably in advance of the first molar. While apparently as dark in color as *A. bogotensis*, it differs from that species in its larger size, very long tail, and in important cranial characters, the proportions of the skull being quite different, with the usual resulting differences in details.

This species is based on 4 specimens, 3 of which were taken at Manzanares (altitude 3000 feet), September 6, 1899, and the other at Minca (altitude 2000 feet), July 17, 1899. They are all adult, and very uniform in coloration.

### ***Oryzomys maculiventer*, sp. nov.**

*Type*, No. 15306, ♂ ad., Sierra El Libano (alt. 6000 ft.), Santa Marta District, Colombia, May 17, 1899; Coll. H. H. Smith.

Pelage full, long, and soft. Color above tawny rufous varied with black-tipped hairs, brighter and clearer tawny on the sides; top of head darker and less tawny than the back, nose and sides of face to the eyes gray; beneath pure white, in adults the hairs are clear white to the base all over the ventral surface, which is sharply defined against the sides; forearm and manus pure white to above the elbow; hind limbs externally like the sides of the body, less rufous on the inner face; hind feet gray with a tinge of fulvous, especially proximally; ears rather large, brown, nearly naked on both surfaces except on the anterior base externally; tail naked, bicolor, brown above, flesh-color below.

*Measurements*.—Type, total length, 335 mm.; tail, 170; hind foot, 32 (without claws, 29); ear (in dry skin), 19. Twenty-eight adults, 18 males and 10

females, measure as follows: Males, total length, 329 (307-345); tail, 176 (162-194); hind foot, 32.7 (29-36). Females, total length, 312 (302-333); tail, 172 (163-182); hind foot, 32 (28-34).

*Skull*, type, total length, 34.4; basal length, 27; zygomatic width, 18; mastoid width, 13; interorbital width, 5; length of nasals, 7.6; palatal length, 7.8; length of palatine foramina, 5.5; length of upper toothrow, 5.5; length of lower jaw (condyle to incisor tips), 20; height (condyle to angle), 8.5; at coronoid process, 8.5.

*Young in first pelage*.—Above dark, many of the hairs rufous tipped; sides of the nose paler and more tinged with rufous; below dark gray, with irregular patches of white, the general color of the ventral surface passing gradually on the sides into that of the upper surface; ears, tail, and feet nearly as in the adult, except that the fore limbs are externally like the sides of the body. The ventral patches of white are variable in size and consist usually of a small anal patch and a very large pectoral patch, in which the hairs are white to the base, as in the adults.

From this early phase there is every gradation to the pelage of the adult. This change is most noteworthy and interesting in respect to the ventral surface, where the original white patches gradually extend till the whole ventral area becomes entirely pure white to the base of the hairs. Not only do the original white patches increase in extent, but white hairs also become intermixed with the gray of the general surface, so that the original gray becomes veiled with white long before the gray disappears from the basal portion of the pelage. In advanced stages of the change the pectoral patch extends forward to the throat, and backward along the median line of the belly, meeting the enlarging anal patch, at this stage only the lateral portions of the ventral surface remaining gray, more or less strongly veiled with white. The wholly pure white ventral surface seems to be acquired slowly, and may never be obtained by all individuals, as the percentage of such specimens is small in the present large series, being not over one in seven. The particolored condition of the majority of even the practically adult specimens has suggested the specific name here imposed.

*Oryzomys maculiventer* seems to be a common species in the Sierra El Libano district, the present series numbering 47 specimens, collected as follows: Valparaiso, altitude 4500 feet, 13 specimens, April 14-June 16, 1899; Sierra El Libano, elevation 6000 feet, 34 specimens, May, 1899.

This is one of the largest members of the genus known to me, being considerably larger than any species thus far described from northeastern South America. In cranial characters it resembles *O. meridensis* Thomas, from Merida, Venezuela, and it seems also related to *O. albigularis* (Tomes), from Pallatanga, Ecuador, but is much larger than either, and apparently differs

in coloration. A peculiar feature of the skull is the shortness of the palatine foramina.

***Oryzomys trichurus*, sp. nov.**

*Type*, No. 15328, ♂ ad., El Libano plantation, near Bonda (alt. 500 ft.), Santa Marta District, June 29, 1899; Coll. H. H. Smith.

Pelage ordinary. Color above strong yellowish brown, approaching ochraceous, conspicuously lined with black; sides, and especially the sides of the face, ochraceous; below uniform pure white to the base of the fur; ears rather small, brown, well covered externally with short yellowish brown hairs; tail considerably longer than head and body, heavily clothed with pale yellowish brown bristly hairs, completely concealing the annulations; fore feet whitish, hind feet yellowish buff.

Young in first pelage are yellowish gray-brown above, rather clearer fulvous on the cheeks and sides, and pure white below to the roots of the hairs, as in the adult. Tail hairy.

*Measurements*.—Type, total length, 281 mm.; tail vertebræ, 160; hind foot, 23, with claws, 25; ear (in dry skin), 13.

*Skull*, total length, 30; basal length, 22; zygomatic width, 15; mastoid width, 11; interorbital width, 5; length of nasals, 10.5; palatal length, 5.3; palatine foramina, 5; upper toothrow, 4; lower jaw, length (condyle to incisor tips), 18; height (condyle to angle), 6.7; height at coronoid, 6.5.

*Oryzomys trichurus* is based on an adult male and two young (as skins, other young in alcohol), all from near Bonda. An adult nursing female, also from Bonda, resembles the type in measurements and coloration, and is indistinguishable also in cranial characters, but has the tail nearly naked, possibly from the wearing off of the hair.

This species is at once recognizable by its heavily clothed tail, pure white underparts, and strong fulvous coloration above. It evidently belongs to the *O. flavicans* group, from which it differs in its heavily clothed tail and pure white underparts. The tail is as hairy as in *Rhipodomys sumichrasti*. *O. flavicans illectus* Bangs, from Pueblo Viejo, Colombia, from an altitude of 8000 feet (*O. trichurus* is from near sea level), is similar in most respects, but has the underparts "a beautiful rich orange-buff to base of hairs." A specimen in the Smith collection from Minca, altitude 2000 feet, is apparently intermediate between *illectus* and *trichurus*, it having larger ears than *trichurus*, and being much deeper colored above, with an orange ochraceous lateral band, the lower parts strongly tinged with ochraceous, and the tail naked. This

specimen I refer provisionally to *O. f. illectus*, though evidently it is not typical.

In notes on the labels the collector states that in one case the young specimens were found in a nest in a hollow tree, and in the other in a bird's nest.

***Oryzomys sanctæmartæ*, sp. nov.**

*Type*, No. 15312, ♀ ad., Bonda, Santa Marta District, Colombia, June 5, 1899; Coll. H. H. Smith.

Pelage full, long, and rather coarse. Color above pale yellowish brown, lined with black, through the admixture of many black-tipped hairs; sides, including cheeks, paler and grayer; ventral surface entirely clear whitish gray, the fur plumbeous at base; ears rather small, pale brown, nearly naked; tail short, indistinctly bicolor, blackish brown above, a little lighter (in some specimens fulvous gray) below, nearly naked, except apically, where the short hairs are more numerous and longer; feet grayish flesh-color; hind feet stout and broad, the lateral toes relatively rather shorter than usual in species of *Oryzomys*.

*Measurements*.—Type, total length, 229 mm.; tail vertebræ, 100; hind foot, 24.5 (with claws, 27); ear (in dry skin), 15.

*Skull*, total length, 31; basal length, 24; zygomatic width, 16; mastoid width, 12; interorbital width, 5; length of nasals, 13; palatal length, 5.2; length of palatine foramina, 6.2; length of upper tooththrow, 4.4; length of lower jaw (condyle to incisor tips), 20; height at condyle, 7; height at coronoid, 8.

*Oryzomys sanctæmartæ* is based on 8 fully adult specimens—5 males and 3 females—collected in the low coast district (sea level to 500 feet) near Santa Marta (Santa Marta, 1 specimen; Bonda, 4; Mamatoca, 2; Masinga Veija, 1), April 15 to June 12, 1899. They are very uniform in coloration; a single 'young adult' female differs from the others in being somewhat darker above.

This form belongs to the same short-tailed group of the genus as *O. brevicauda* Allen & Chapman, from Trinidad, and *O. phæopus* and *O. phæopus obscurior* Thomas, respectively from Pallatanga, Ecuador, and Concordia, Medellín, Colombia, all these localities being in very different faunal areas from that about Santa Marta. It is, however, much smaller than *O. brevicauda*, and very different in coloration, the pale yellowish-brown of the upper parts of *O. sanctæmartæ* contrasting strongly with the rufous brown of *O. brevicauda*. On the other hand, *O. sanctæmartæ* is evidently

very much paler than *O. phæopus*, which is described as nearly agreeing in the color of the upper parts with the "vandyke-brown" of Ridgway's 'Nomenclature of Colors,' and as "dirty-buff" below; while *O. sanctæmartæ* agrees, above, quite nearly with Ridgway's "tawny-olive," and is clear light-gray below. It is also rather larger than *O. phæopus*, while *O. phæopus obscurior* is described as still smaller and darker than *O. phæopus*. The following table shows the comparative measurements of these four forms.

	No. of Spec. and Sex.	Total Length.	Tail Vertebrae.	Hind Foot.
<i>O. sanctæmartæ</i>	5 ♂	230 (216-241)	97.6 (90-103)	26.5 (25-29)
" "	3 ♀	220 (210-235)	92 (85-100)	25.7 (23-27)
<i>O. brevicauda</i>	13 ♂	253 (230-272)	103 (83-115)	28 (26-30)
" "	5 ♀	233 (220-238)	89 (88-93)	27 (25-30)
<i>O. phæopus</i>	1	210	98	24 (without claw)
<i>O. p. obscurior</i>	1	200?	89? (tail defective)	22.4 (without claw)

### *Oryzomys mollipilosus*, sp. nov.

*Type*, No. 15323, ♀ ad., Valparaiso (alt. 4500 ft.), Santa Marta District, May 10, 1899; Coll. H. H. Smith, "Mother of four young"—collector's note on label.

Pelage soft and velvety, especially soft and downy on the ventral surface. Color above, yellowish gray-brown, strongly varied with black-tipped hairs, tending to a blackish median dorsal area; sides paler, gray-brown faintly tinged with pale buff; below clear uniform ashy gray, the basal half of the hairs pale plumbeous; ears medium, blackish brown, almost naked; tail dark brown above, a little paler below, very finely scaled and nearly naked; feet flesh color.

The young in first pelage are blackish brown, the hairs, more especially on the sides, slightly tipped with pale yellowish-brown; lower parts as in adult.

*Measurements*.—Type, total length, 233 mm.; tail, 110; hind foot, 25.5, with claw, 28; ear (in dry skin), 14. A series of 3 adults measures as follows: Total length, 330 (225-333); tail, 110 (108-113); hind foot, 29 (27-30).

*Skull*, total length, 30; basal length, 21.5; zygomatic width, 14; mastoid width, 12; interorbital width, 5; length of nasals, 10; palatal length, 6; length of palatal foramina, 3.8; length of upper toothrow, 4.3; length of lower jaw, 18; height at condyle, 7; height at coronoid, 6.5; length of lower toothrow, 4.5. Supraorbital bead well developed.

*Oryzomys mollipilosus* is based on four adults and three young,

all from Valparaiso (altitude 4500 feet), except one, which is from Minca (altitude 2000 feet). The adults vary a little in the amount of black intermixture in the dorsal area, the Minca specimen, referred here doubtfully, having quite a distinct median blackish area.

This species appears to be related to *O. gracilis* Thomas, from Concordia, Medellin, Colombia, resembling it in proportions, in its soft velvety pelage, and in the general coloration of the upper parts. It is, however, not white on the under surface, and is very much larger. It also greatly resembles *O. magdalenæ* of the present paper, but is much paler above, and also very much larger. That the specimens of *O. mollipilosus* are adult is evinced by the fact that two of the females were nursing young.

### *Oryzomys magdalenæ*, sp. nov.

*Type*, No. 15318, ♀ ad., Minca (alt. 2000 ft.), Santa Marta District of Magdalena Province, Colombia, August 3, 1899; Coll. H. H. Smith.

*Pelage*, short, very soft, and velvety. Above strong yellowish brown, much varied with black, especially along the median area, paler, uniform yellowish brown on the sides; below uniform whitish gray, the hairs plumbeous at base, and the pelage very thick, short, and velvety; ears blackish brown, of medium size, naked; tail brown, scarcely lighter below, naked, very finely scaled; feet flesh color.

*Measurements*.—Type, total length, 244 mm.; tail, 144; hind foot, 33; ear (in dry skin), 15. Another specimen, ♂ ad., from Valparaiso, measures as follows: Total length, 234; tail, 135; hind foot, 29, with claws, 32.

*Skull*, total length, 31.5; basal length, 25; zygomatic width, 15; mastoid width, 12.2; interorbital width, 5.3; length of nasals, 12; palatal length, 7; length of palatal foramina, 3.4; length of upper toothrow, 4.3; length of lower jaw, 19.2; height at condyle, 7; height at coronoid, 7; length of lower toothrow, 4.8.

*Oryzomys magdalenæ* is based on two specimens, one of which, a female, is from Minca and the other, a male, from Valparaiso.

This species belongs to the same group as *Oryzomys gracilis* Thomas, and *O. mollipilosus* of the present paper, and perhaps *O. velutinus* Allen & Chapman from Trinidad. The latter, however, is larger and much redder, and has much larger ears. *O. mollipilosus* is, as regards general features, a miniature of *O. magdalenæ*, but is paler, as well as much smaller, and has a relatively much shorter tail.

[November, 1899.]

***Oryzomys villosus*, sp. nov.**

*Type*, No. 15321, ♀ ad., Valparaiso (alt. 4500 ft.), Santa Marta District, Colombia, April 15, 1899; Coll. H. H. Smith.

Pelage soft, fine, and velvety throughout. Color above yellowish brown, mixed with black, paler and more yellowish on the sides; below uniform whitish gray, fur plumbeous at base; ears light brown, large, naked; tail long, brown, a little lighter below than above, more especially on the proximal half; feet buffy gray.

*Measurements*.—Type, and only specimen: total length, 275 mm.; tail, 148; hind foot, 26, with claws, 28.5; ear (in dry skin), 17.

*Skull*, total length, 32.6; basal length, 26; zygomatic width, 17.5; mastoid width, 12.4; interorbital width, 5.5; length of nasals, 11; palatal length, 7; length of palatal foramina, 5; length of upper toothrow, 5.4; length of lower jaw (condyle to incisor tips), 21; height, condyle to angle, 8.3; height at coronoid, 8; length of lower toothrow, 6. Skull short, broad, especially the rostral portion; coronoid low, broad, angular, without the usual prominent backwardly directed point.

*Oryzomys villosus* is based on a single adult nursing female, from Valparaiso. Apparently only four mammae were functionally developed, of which one pair is inguinal and one pair axillar. This is a long-tailed, rather large species, with rather large ears and a remarkably soft, short, velvety pelage throughout. (The pelage, however, seems rather worn.) The skull is short, broad, and massive, with the coronoid very low and broad, forming merely an obtuse angle without a sharp point; yet the two sides are alike and the structure seems normal. It is apparently nearly related to *O. meridensis* Thomas, but is smaller, with a relatively longer tail, very much smaller ears, and a quite different coloration. It is perhaps still nearer *O. vestitus* Thomas, also from Merida, from which its smaller size and dissimilar coloration should distinguish it.

***Oryzomys palmarius*, sp. nov.**

*Type*, No. 14733, ♂ ad., Quebrada Secca, Venezuela, Dec. 10, 1898; F. W. Ulrich.

Pelage full, long, and soft. Color above yellowish gray-brown, varied with blackish-tipped hairs, passing into pale fawn on the sides; head and face much grayer than the body; below dull grayish white, the plumbeous underfur well concealed by the whitish tips; ears of medium size, brown, thinly-haired; forearm and manus dingy gray, the toes lighter, whitish; hind foot short for the size of the animal, thinly haired, varying in different specimens from dingy

gray to flesh color; tail long, dark brown, nearly unicolor, naked except towards the tip, where it is scantily clothed but not penicillate.

*Measurements*.—Type, total length, 269 mm.; head and body, 119; tail vertebræ, 150; hind foot, 21.5, with claws, 24; ear, 19. Four adults measure as follows: Total length, 260 (238–281); tail vertebræ, 146 (135–162); hind foot, 25 (24–26); ear, 17 (16–19).

*Skull* (of type), total length, 31; basal length, 24; zygomatic width, 16.6; mastoid width, 12.4; interorbital width, 5.3; nasals, 11; palatal length, 7.2; palatal foramina, 6.5; upper toothrow, 5; lower jaw, length (condyle to incisor tips), 20; height, angle to condyle, 7.8.

*Oryzomys palmarius* is based on five adult specimens, four of which are from Quebrada Secca, and one from Los Palmales, taken Nov. 26 to Dec. 10, 1898, by Mr. F. W. Ulrich. One, a young adult, differs a little from the others in being darker and less fulvous.

This species is a very near ally of *Oryzomys trinitatis* Allen & Chapman, from Trinidad. It differs from it in being decidedly smaller and paler, and in having a grayer head and face. In proportions, in the texture of the pelage, and in cranial characters (except in the much smaller size of the skull), there is a close similarity. The tail, however, is slightly villous, especially toward the tip, and not naked, as in *O. trinitatis*. It is very much smaller and otherwise very different from either *O. meridensis* Thomas, or *O. vestitus* Thomas, both from the vicinity of Merida.

### ***Oryzomys tenuicauda*, sp. nov.**

*Type*, No. 14737, ♂ ad., Los Palmales, Venezuela, Dec. 5, 1898; F. W. Ulrich.

Pelage long and soft. Ears of medium size. Color above dark fawn brown, shaded on the back with dusky, and passing into bright fulvous on the sides; below clear white, basal half of fur plumbeous; ears brown, slightly hairy; tail dark brown, unicolor, basal third nearly naked, middle portion well haired, the hairs increasing in length and thickness on the apical half, hiding the scales, and at the tip forming a thick pencil 10 mm. long; fore feet buff; hind feet short, the edges and toes buff, with a dusky median band to the base of the toes.

*Measurements*.—Type, total length, 216 mm.; head and body, 88; tail vertebræ, 128; hind foot, 20.5, with nails, 23; ear, 19.

*Skull*, total length, 27; basal length, 20.5; zygomatic width, 15; mastoid width, 11; interorbital width, 5; length of nasals, 8; palatal length, 4;

palatine foramina, 4.3; upper tooththrow, 4.3; lower jaw, length (condyle to incisor tips), 17.5; height, angle to condyle, 7.

This species is based on a single specimen, an adult male, from Los Palmes, Venezuela, but I refer to it provisionally, also, a young adult from Quebrada Secca.

In the texture of the pelage and in color *O. tenuicauda* is a miniature of *O. velutinus* from Trinidad; it is, however, somewhat paler, and the tail is proportionately fully one third longer, and hairy in the apical half instead of entirely naked; the hind foot is also relatively very much shorter. It seems to possess no very near ally among the described species of northeastern South America. The skull presents nothing peculiar.

### ***Oryzomys modestus*, sp. nov.**

*Type*, No. 14734, ♀ ad., Campo Alegre (alt. about 3000 ft.), Venezuela; F. W. Urich.

Pelage very soft and close, of moderate length. Above dark rufous brown, darkened with an abundance of black-tipped hairs; sides clearer deep rufous; below gray, the hairs whitish-tipped, plumbeous at base, which tint enters into the surface color; forearms gray, feet flesh color; hind feet flesh color, thinly-haired; ears large, dark brown, covered with very short dark brown hairs; tail blackish brown, unicolor, nearly naked, one fifth shorter than head and body.

*Measurements*.—Type, total length, 220 mm.; head and body, 120; tail, 100; hind foot, 25, with claws, 28; ear, 20.

*Skull*, type (imperfect at base), total length,—; basal length,—; zygomatic width, 16; interorbital width, 5; length of nasals, 12; palatal length, 7; palatal foramina, 5; upper tooththrow, 4.5; lower jaw, condyle to incisor tips, 19; angle to condyle, 7; lower tooththrow, 5. The skull presents the usual characters of the genus.

*Oryzomys modestus* is based on a single adult female from Campo Alegre, near Quebrada Secca, Venezuela. It appears to be very distinct from any previously described species. It differs from *O. tenuicauda* in its much larger ears, very much darker coloration, and very short tail, the tail being much shorter than the head and body instead of one third longer, as in *O. tenuicauda*.

### ***Oryzomys fulviventer*, sp. nov.**

*Type*, No. 14735, ♀ ad., Quebrada Secca, Venezuela, Nov. 23, 1898; F. W. Urich.

Pelage full, soft, and long. Color above dark fulvous brown, finely grizzled with black-tipped hairs; nose and frontal region darker than back, grayish fulvous strongly mixed with black; below strongly washed with fulvous, the pelage basally plumbeous; chin and throat whitish, the hairs white to the base; upper surface of feet dingy gray; ears medium, thinly haired, many of the hairs slightly tipped with fulvous; tail blackish, unicolor, nearly naked except apically, where it is thinly clothed and slightly penicillate.

*Measurements*.—Type, total length, 270 mm.; head and body, 131; tail vertebræ, 139; hind foot, 25, with claws, 27; ear, 19.

*Skull*, total length, 32; basal length, 25; zygomatic width, 17; mastoid width, 12.3; interorbital width, 5.1; length of nasals, 11; palate, 6; palatal foramina, 5.7; upper toothrow, 5; lower jaw, condyle to incisor tips, 20.3; angle to condyle, 9; lower toothrow, 5.6. Supraorbital bead strongly developed.

*Oryzomys fulviventer* is based on a single adult female, from Quebrada Secca, Venezuela (altitude about 3000 feet). Its fulvous underparts, combined with its size and proportions, distinguish it from any other species described from either Venezuela or Colombia. It is certainly not *O. flavicans* Thomas, from Merida. What its relations may be to forms from Guiana and Brazil I am unable to say, but, on the basis of geographical considerations, it is not likely to prove identical with any species from these faunally very different regions.

### ***Sciurus saltuensis bondæ*, subsp. nov.**

*Sciurus variabilis* BANGS, Proc. Biol. Soc. Washington, XI, 1898, 184. (Not of I. Geoffroy.)

*Type*, No. 15234, ♀ ad., Bonda, Santa Marta District, Colombia, July 4, 1899; Coll. H. H. Smith.

*Winter or Breeding Pelage*.—General color (in the type) of the upper parts, limbs externally, and the tail, deep red; ventral surface, including the inner side of the fore limbs nearly to the wrist and of the hind limbs nearly to the ankle, pure white; sides of the head below the eyes, mouth parts, and throat, fulvous; top of the head, superficially red like the back, but with most of the hairs subapically annulated with black, giving a slight dingy cast in contrast with the body; also the hairs of the lower back and base of the tail are annulated below the surface with black; tail hairs entirely deep red from base to tip, without trace of black annulations. In other specimens the tail hairs are narrowly, or in some cases broadly, banded with black.

*Summer or Post-breeding Pelage*.—General color above yellowish red varied with black, resulting in a general olivaceous effect, the hairs individually being annulated near the tips with yellowish red and black; ventral surface and the tail as in the winter pelage. The fore limbs, a narrow lateral line, the inner

edge of the thighs, and the hind feet usually clear yellowish red, but frequently the front surface of the forearm and the proximal half of the hind feet show annulated hairs.

*Young*.—Young specimens in first pelage are usually yellowish red to dark red (the tail varying greatly in different specimens), the hairs individually annulated more or less strongly with black, thus resembling in a general way the post-breeding pelage of the adults.

*Measurements*.—Type, total length, 474 mm.; tail vertebræ, 230; hind foot, without claws, 50, with claws, 55. Adult breeding males and females from Bonda measure as follows: 13 males, total length, 472 (439–520); tail vertebræ, 227 (205–255); 16 females, total length, 477 (448–500); tail vertebræ, 223 (215–250).

*Skull*.—Premolars,  $\frac{1}{2}$ . Total length, 56; basal length, 42; zygomatic width, 31; postorbital width, 19; upper toothrow, 9.2; lower jaw (condyle to incisor tips), 32; height, angle to condyle, 20.

This variable species is represented by a series of 54 specimens, of which 50 were collected at Bonda (near sea level) and 4 at Minca (alt. 2000 ft.). The Minca specimens were taken July 24 to August 1; 36 of the Bonda specimens were taken in July, 5 in June, 4 in August (Aug. 2 and 3), 1 in each of the months May, April, and March, and 2 in November. The material is therefore insufficient to show satisfactorily the variations of color and character of pelage incident to season. The very large series of July specimens, however, shows various conditions of pelage, and indicates that a large part of the color variation is due to change of pelage by molt, while there is also evidently a wide range of individual variation.

In general terms, the July specimens vary from nearly uniform bright red (the pure white ventral surface of course always excepted) to a nearly uniform olivaceous effect (the limbs excepted, which are always red), due to a minute mixture of yellowish red and black, the individual hairs of the upper surface being yellowish red or red (the shade varying in different specimens from light to dark red), broadly annulated near the tip with black. Between these extremes there is every intermediate stage. A very common intermediate stage has a narrow band of red bordering the white of the ventral surface, which broadens upward at the shoulders, and often meets on the back.

On comparing the two extremes a marked difference in the character of the pelage in the two phases is strikingly evident. In the wholly red phase the coat is longer than in the olivaceous

phase, and the individual hairs of the dorsal region are lustrous red, entirely lacking the black annulations. In the next stage the long red hairs form a broad mantle, covering the shoulders and extending along the sides, while the head and back are mixed red and black, the hairs over these portions being shorter and conspicuously annulated with black. In the extreme olivaceous phase the pelage is much shorter, and the whole dorsal surface is covered with annulated red and black hairs, while the feet, the forearms, outer edge of the thighs, and a narrow line bordering the white of the ventral surface are red. About ten of the specimens are distinctly in the clear red phase, and about the same number are in the annulated olivaceous phase, the remaining one half to two thirds being in various stages of transition between the two. In all of these the color of the dorsal surface extends for a short distance on to the base of the tail; in the wholly red specimens the basal portion of the tail is red, like the back.

The individual variation consists mainly in intensity of the red of the general pelage, this varying from light yellowish red to dark or chestnut red. The tail is exceedingly variable in respect to the amount of black near the base of the hairs. The greater part of the specimens, irrespective of variations in the color of the body, have all the tail hairs entirely red to the base; in others a portion of the hairs are broadly annulated with black near the base, the number of these hairs and the width of the black band increasing from the base of the tail toward the tip. This development of black in the tail varies, in specimens where black is present, from a faint trace, most pronounced on the outer third of the tail, to a conspicuous broad band, visible at the surface without parting the hairs, or at least producing a clouded effect near the tip. As thus developed the black forms a broad concealed subbasal zone, occupying from one fifth to one third the length of the hairs, which are red at base and tip, the overlying hairs on both surfaces of the tail being intense deep red.

Individual variation in color is also well shown in a series of 6 one-fourth to one-third grown young. One of these was taken in June, four in July (July 7-14), and one Nov. 18. The June and July specimens resemble the red phase of the adults, while the November specimen resembles the mixed red and black phase.

The extent of white upon the inner surface of the limbs varies greatly, particularly on the hind limbs, where it is sometimes almost absent and sometimes extends nearly to the ankle.

The seasonal and also the individual variation is closely parallel to that of the *Sciurus hudsonicus* group of North America. The present series shows unmistakably two distinct pelages, but the seasonal change in color due to molt must extend over a considerable period. The June and July specimens present nearly every state of change. Also, as in *Sciurus hudsonicus*, not all of the specimens acquire the full red stage on completion of the post-breeding pelage, this condition, as in *S. hudsonicus*, being probably more or less influenced by the age of the individual.

The type locality of *Sciurus variabilis* has been currently considered to be Colombia, from Geoffroy's statement,<sup>1</sup> that the species was based on "trois individus envoyés au Muséum d'histoire naturelle par M. Plée, et sur lesquels je ne puis donner aucun renseignement, si ce n'est qu'ils venaient d'Amérique"; and further, that "plusieurs de ces objets [sent by M. Plée] appartenaient à la Colombie, plusieurs aux Antilles et quelques-uns aux Etats-Unis." Obviously the squirrels sent by M. Plée, forming the basis of *S. variabilis* Geoffroy, could not have come from either the Antilles or the United States. On the other hand, neither his description nor his figure agrees very well with any of the Colombian specimens in the present large series. He says, "le pelage est en dessus d'un noir tiqueté de roux ou d'un roux tiqueté de noir. La même remarque est applicable aux longs poils de la queue toujours noir à leur origine et roux à leur extrémité. Mais il résulte de la disposition distique de la queue qu'elle est toujours beaucoup plus noire à la face postérieure qu'à l'antérieure." The colored plate indicates the median area of the upper parts to be very dark from the nose to a little behind the middle of the back where the color changes abruptly to deep red over the posterior third of the dorsal region. The tail is represented as blackish for two thirds of its length from the base, the rest reddish, becoming yellowish at the tip. While the color of the anterior two thirds of the dorsal surface might agree well enough with specimens in the mixed red and black phase, the

<sup>1</sup> Guérin's *Magasin de Zoologie*, II, 1832, Classe I, pl. iv and accompanying (unpaged) text.

color of the posterior third of the back and the tail are wholly unlike any specimen in my series of upwards of fifty examples.

The description and figure, on the other hand, agree much better with the dark mountain form recently named *Sciurus variabilis saltuensis* by Mr. Bangs, especially in the dark upper parts and in the darkness of the basal portion of the tail, but the red lower back and rump are still discordant; and it is not probable, though possible, that M. Plée's specimens came from so far in the interior. They are much more likely to have come from western Colombia than from the coast district about Santa Marta.

***Sciurus (Guerlinguetus) æstuans quebradensis*, subsp. nov.**

*Type*, No. 14725, ♀ ad., Quebrada Secca, Venezuela, Dec. 2, 1898; F. W. Urich.

Color above finely punctated pale yellow and black, giving a pale olivaceous gray general effect, nearly uniform throughout the whole dorsal aspect, including the basal portion of the tail and the limbs externally; cheeks and nose grayer; eye-ring and upper surface of feet more strongly yellowish; ventral surface orange-buff, the inside of the limbs paler, and the chin and throat still paler, or buffy gray; ears externally like the back, but with the hair tips a little more rufous; tail above grizzled with black and pale fulvous, broadly edged for the terminal two thirds with deep orange, in some specimens deep reddish orange; below similar but rather paler; the tail pattern below consists of three narrow bands of black, two of fulvous and an outer broad band of red as follows: a narrow basal band of black, followed by a narrow band of pale fulvous, a second narrow band of black, a second narrow band of rather deeper fulvous, a third broader band of black, and a very broad edging of orange rufous.

*Measurements*.—Type, head and body, 192 mm.; tail vertebræ, 156; total length, 348; hind foot, 46, with claws, 51; ear, 22. Three specimens, including the type, measure as follows: Total length, 345; tail vertebræ, 160; hind foot, 44.5, with claws, 50; ear, 22.

*Skull*, total length, 47; basal length, 35.5; zygomatic width, 27; mastoid width, 20; postorbital width, 18; length of nasals, 15; width of nasals at base, 5, in front, 6.

*Sciurus æstuans quebradensis* is based on three adult specimens, —two males and one female,—two of which are from Quebrada Secca, and the other from Los Palmales. They differ in color only in the tail, the outer red border of which is somewhat lighter in one specimen than in the others.

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This form differs from *S. æstuans* (type locality, Surinam) in having all the tints very much stronger throughout. It differs also from its nearest geographical ally, *S. chapmani* from Trinidad, in being much lighter colored and less ruddy throughout, and consequently still more from *S. hoffmanni*.