

**Article XVIII.—LIST OF MAMMALS COLLECTED IN COLOMBIA
BY THE AMERICAN MUSEUM OF NATURAL HISTORY
EXPEDITIONS, 1910-1915.**

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INTRODUCTION.

The collections of mammals, of which the present paper is a summary account, were made at various localities in Colombia, but almost wholly in the Andean portion of the Republic, the Orinoco-Amazon drainage area being only slightly entered at a few points along the eastern base of the highlands. The expeditionary work was planned and directed by my colleague Dr. Frank M. Chapman, Curator of Ornithology, who also shared in the field work and thus gained personal knowledge of the topography and the physical conditions of the areas explored.

Ornithological research was the primary object of the expeditions, to which the collecting of mammals was subsidiary and incidental, nevertheless about 1370 mammals were obtained, representing about 186 species and subspecies. They were mainly collected by Leo E. Miller and William B. Richardson.¹

ITINERARIES.

Collecting was begun in southwestern Colombia by William B. Richardson, who reached Buenaventura November 9, 1910, and proceeded at once to Caldas (alt. 2560 ft.), and later to San José (alt. 600 ft.). On December

¹ A detailed account by Dr. Chapman of the personnel and the itineraries of the expeditions, with maps showing routes travelled, the topography and life zones of Colombia, will be found in Volume XXXVI of this Bulletin, now in press, and which will be issued probably early in 1917. It is therefore necessary in this connection to give only a brief outline of the field work as it relates to the mammals. The itineraries given below are based on Dr. Chapman's manuscripts.

18 he went to Cali (alt. 3500 ft.), at the eastern base of the Western Andes, where he collected till the end of December, and then moved on to the mouth of the pass (alt. 6600 ft.) known as Las Cruces, and also as San Antonio. Here he collected till the end of February, when he moved to Las Lomitas (alt. 5000 ft.), a ranch on the western slope some five miles northwest of San Antonio. After spending a week at this point he descended to Los Cisneros (or Juntas, alt. 900 ft.) where he collected till March 21. Two days later he reached Buenaventura, where he was joined by Dr. Chapman, Louis A. Fuertes and Leo E. Miller. The whole party then proceeded to Cali, which they reached April 8, and which became their principal base for the rest of the year. From Cali they went at once to La Manuelita, a sugar estate in the Cauca Valley some five miles north of Palmira, where they were the guests of Mr. Charles J. Eder till the 18th, when they proceeded with pack animals to Miraflores (alt. about 6000 ft. above sea level and 3000 ft. above the valley) on the western slope of the Central Andes. On May 1 they started on the return journey to Cali, via La Florida and Güengüe, where a few specimens were collected, Cali being reached May 7.

On May 13 Miller and Richardson left Cali with pack mules on an expedition to the region west of Popayán, about one degree of latitude south of San Antonio. They left Popayán (alt. 5700 ft.) for Cerro Munchiqui May 20, their first collecting station being at an elevation of 8325 ft. Here they remained from May 22 to June 4, when they went to Cocal (alt. 4000 ft.), and on June 16 returned to Popayán for supplies. They left again on June 24, collecting at Gallera (alt. 5700 ft.) from June 26 to July 4, at La Florida (alt. 7700 ft.) from July 5 to 9, and on the summit of the first ridge of the Western Andes (alt. 10,340 ft.) from July 10 to 23, returning on July 27 to Cali, via Popayán.

This terminated the collecting in the southern part of the Western Andes. Later Richardson resumed work in the southwestern coast region, beginning at Barbacoas (alt. 75 ft., on the Rio Patia), early in August, 1912, where he remained for about one month, when an attack of beri-beri forced him to seek higher altitudes. He then visited Buenavista (alt. 1200 ft.) and Ricuarte (alt. 5000 ft.), collecting for about two weeks at each of these localities, reaching Tumacos October 13, whence he sailed for Esmeraldas, Ecuador.¹

Mr. Miller left Cali with Dr. Arthur A. Allen, who had now joined the expedition, on a Cauca River steamer for Cartago on August 22, 1911, arriving at Cartago three days later, and reaching Laguneta, just below

¹ A general account of the Mammals collected by him in Ecuador has already appeared in this volume of the Bulletin (pp. 113-125).

the Quindio Pass, on the 28th, where they pitched their tent at an altitude of 10,300 feet, to begin their work in the Central Andes. They remained at this point until September 11, when they retraced their steps to Salento and then began the ascent to Santa Isabel through the Boquilla Valley, reaching the paramo (alt. 12,700 ft.) two days later. Here they collected until the 20th, when they moved to a point about 1000 feet lower, there collecting for three days before they returned to Salento. From Salento they began their trip over the Quindio Trail to Chicoral and the Magdalena Valley, making a cross-section over the Central Andes from the Rio Cauca to the Rio Magdalena. On their return they collected several days each at El Eden (alt. 8300 ft.) and Rio Toché (alt. 6800 ft.), reaching Salento on their return October 31. Here they collected till November 13, when they returned to Cartago en route to Rio Frio on the Rio Cauca. At this point they worked in the heavy forest until the 2nd of December, when they returned to Cartago, to cross the Western Andes to the coast. Few specimens were collected till Juntus de Tamaná was reached (alt. 400 ft., Dec. 14-20); other collections were made at Nóvita (alt. 1500 ft., Dec. 21-27). Both men were here taken severely ill from malaria and were obliged to return to Cali for recuperation and medical treatment.

At the end of February, 1912, Miller and Allen set out from Cali, via the route of Miller and Richardson in May, 1911, for Popayán, and thence continued on foot to La Sierra (alt. 6800 ft., Feb. 29-March 4) and Almaguer (alt. 10,300 ft., March 9-18), here turning east to cross the Magdalena Valley, stopping at Valle de las Papas (alt. 10,000 ft., March 22-April 4), and reaching San Agustin (alt. 5000 ft., April 7-25). Here Dr. Allen suffered so severely from a recurrence of the fever acquired in the Chocó that he was compelled to seek medical treatment at Bogotá, and finally to return home. Miller continued on to La Palma (alt. 5500 ft., April 27-May 5) and to La Candela (alt. 6000 ft., May 7-19), returning to San Agustin May 20. From this point he made an expedition over the Eastern Andes to the Caquetá region, crossing at Andalusia (alt. 7000 ft.), collecting at Florencia (alt. 1000 ft., June 24-July 6), and Muralla (La Murelia of earlier papers; alt. 500 ft., July 8-26). The two last named localities are in the Amazonian drainage, and the mammals collected there were different from those collected elsewhere in Colombia.

In August, 1912, Miller returned to New York, after an absence of nearly two years on collecting expeditions in Colombia. Some months later he returned to South America, collecting in Venezuela and Guiana till he joined the Roosevelt Expedition to southern Brazil late in 1913. Returning safely from this eventful journey he again resumed his explorations in Colombia, this time in Antioquia, extending his field of research much to the north-

ward in the Western Andes of Colombia. On this expedition he was accompanied by Howarth S. Boyle, of the American Museum, as assistant. They collected here from November, 1914, to March, 1915, when they were transferred to Bolivia and have now (April, 1916) worked southward to southern Argentina.

In the early part of 1913 (Jan. 19–April 16) Dr. Chapman again visited Colombia, with a corps of assistants which included George K. Cherrie and G. M. O'Connell, with Louis A. Fuertes as artist. The party ascended the Rio Magdalena as far as Honda (alt. 600 ft.), collecting very little on the river journey but making a zoölogical reconnaissance from the Rio Magdalena across the Andes to the Orinoco drainage. On this journey Mr. O'Connell made a small collection of mammals, assisted to some extent by other members of the expedition.

In the meantime small collections of mammals from Colombia were received from other sources, as noted below in the list of localities, making a total, as stated above, of about 1370 specimens, of which about 260 were collected by Mr. Richardson and about 950 by Mr. Miller (including jointly the work of his assistant Mr. Boyle), about 150 having been derived from other sources.

List of Localities.

The following list of localities, most of which are shown on the accompanying sketch map, prepared by Dr. Chapman for use in his preliminary papers on the birds collected on these expeditions, indicate the geographical sources of the mammal collections here summarized, with the approximate altitudes of the localities, the dates of collecting, and the number of specimens obtained at each.

William B. Richardson, southwestern Colombia, November 9, 1910, to July 30, 1911, and August 6–Oct. 10, 1912.

- Caldas**, Nov. 18–29. Altitude 1800 feet. 8 specimens.
San José, Nov. 29–Dec. 11. Alt. 200 ft. 38 specimens.
Cali, Dec. 22. Alt. 3500 ft. 3 specimens.
San Antonio and vicinity, Jan. 18–March 31. Alt. 6800 ft. 62 specimens.
Las Lomitas, Feb. 26–March 4. Alt. 5000 ft. 22 specimens.
Los Cisneros (or Juntas), March 19–21. Alt. 600 ft. 2 specimens.
Miraflores, April 13–May 1. Alt. 6200 ft. 29 specimens.
Guengüe, May 5. Alt. 3500 ft. 3 specimens.
Juanchito (the port of Cali), May 9. Alt. 3500 ft. 2 specimens.
Barbacoas, Aug. 10–15, and Oct. 5. Alt. 75 ft. 71 specimens.
Ricuarte, Sept. 18–20. Alt. 5000 ft. 11 specimens.
Buenavista. Alt. 1200 ft. 15 specimens. Total, 263 specimens.



Leo E. Miller, Western and Central Andes, March 23, 1911, to July 24, 1912.

Western Andes.

Munchique (or Cerro Munchique), May 27–June 8. Alt. 7000–8325 ft. 102 specimens.

Cocal, June 10–17. Alt. 4000 ft. 42 specimens.

Gallera, June 28–July 15. Alt. 5000–5700 ft. 42 specimens.

La Florida, July 6–9. Alt. 7700 ft. 12 specimens.

Crest of Western Andes (west of Popayán), July 13–22. Alt. 10,340 ft. 70 specimens.

Belen, July 28. Alt. 6000 ft. 1 specimen.

Central Andes.

La Guneta, Aug. 28–Sept. 8. Alt. 10,300 ft. 31 specimens.

Paramo de Santa Isabel, Sept. 16–24. Alt. 12,600 ft. 7 specimens.

Salento, Sept. 25–Oct. 8. Alt. 7000–9000 ft. 65 specimens.

Chicoral, Oct. 8–12. Alt. 1800 ft. 5 specimens.

El Eden, Oct. 18–20. Alt. 8300 ft. 6 specimens.

Rio Toché, Oct. 24–27. Alt. 6800 ft. 44 specimens.

West Quindio Andes, Nov. 3–7. Alt. 9000 ft. 6 specimens.

El Roble, Nov. 9–11. Alt. 7000 ft. 35 specimens.

Rio Frio, Nov. 24–Dec. 1. Alt. 3500 ft. 87 specimens.

Western Andes.

Salencio, Dec. 8–12. Alt. 6000 ft. 6 specimens.

Juntas de Tamaná, Dec. 15–18. Alt. 4000 ft. 10 specimens.

Chocó, Upper Rio San Juan.

Novita, Dec. 25–27. Alt. 150 ft. 19 specimens.

Nouanama, Dec. 31–Jan. 1. Alt. 100 ft. 3 specimens.

Southern Eastern Andes.

La Sierra, March 1–3. Alt. 6800 ft. 9 specimens.

Almaguer, March 8–11. Alt. 10,300 ft. 10 specimens.

Valle de las Papas, March 25. Alt. 10,000 ft. 14 specimens.

San Agustín, April 27–May 5. Alt. 5500 ft. 21 specimens.

La Candela, May 11–16. Alt. 6000 ft. 22 specimens.

Andalusia, June 6–8. Alt. 5000 ft. 33 specimens.

Rio Caquetá drainage.

Florencia, June 27–July 3. Alt. 675 ft. 56 specimens.

Muralla (wrongly given as La Murelia in the preliminary papers), July 7–24. Alt. 600 ft. 68 specimens.

Total, 725 specimens, plus about 50, of which the labels were lost or illegible.

Leo E. Miller and Howarth S. Boyle, Province of Antioquia, northern part of Western Andes, November 25, 1914–March 25, 1915.

Barro Blanco, Nov. 25–28. Alt. 7200 ft. 9 specimens.

Santa Elena, Dec. 1–4. Alt. 9000 ft. 30 specimens.

- Puerto Valdivia**, Dec. 14-26. Alt. 360 ft. 38 specimens.
La Frijolera, Dec. 30-Jan. 4. Alt. 5000 ft. 60 specimens.
Paramillo, Jan. 29-31. Alt. 12,500 ft. 12 specimens.
Dabeiba, Feb. 13. Alt. 300 ft. 17 specimens.
Alto Benito, Feb. 17-23. Alt. 1000 ft. 3 specimens.
Malera, March 9-11. Alt. 1000 ft. 3 specimens.
La Playa (near Baranquilla), March 23-25. Alt. 150 ft. 3 specimens.
 Total, 175 specimens.

G. M. O'Connell, Eastern Andes, from the Rio Magdalena east to Buenavista, January 19-April 16, 1913.

- Rio Magdalena**, Jan. 24-29. 4 specimens.
El Triunfo, Feb. 7-9. Alt. 600 ft. 8 specimens.
Chipaue, Feb. 22-24. Alt. 9000 ft. 6 specimens.
Buenavista, March 2-12. Alt. 4500 ft. 30 specimens.
Villavicencio, March 10-15. Alt. 1500 ft. 13 specimens.
Fusugasugá, March 24-30. Alt. 6000 ft. 17 specimens.
El Roble, April 1-4. Alt. 8000 ft. 6 specimens. Total, 84 specimens.

Other Sources.

About 50 specimens were purchased of Manuel Gonzales, a native collector, obtained within a radius of 15 to 20 miles of Bogotá, chiefly at Panama Largo, Subia, Quetame, and Anolaima.

About 40 specimens were purchased of Mrs. E. L. Kerr, collected chiefly at Baudo and Bogado, on the upper Rio Atrato.

About 25 specimens have been kindly presented by Hermano Apolinar Maria, Director of the Instituto de la Salle, Bogotá, collected also near Bogotá. They include several species not otherwise obtained, among them two (*Thrinacodus apolinari* and *Glossophaga apolinari*) not previously described, and two specimens of the rare Bogotá shrew (*Cryptotis thomasi*).

BIBLIOGRAPHY.

The following 13 papers, published in this Bulletin (Vols. XXXI-XXXV), have been based, in whole or in large part, on the collections of mammals from Colombia here under consideration:

1912. Mammals from Western Colombia. Vol. XXXI, pp. 71-95, April 19, 1912.
 Fifty-five species and subspecies, based on about 400 specimens from the Cauca district, collected by Richardson (Nov. 29, 1910-March 13, 1911) and Miller (April 18-July 24, 1911). Eighteen forms described as new.
1913. New Mammals from Colombia and Ecuador. Vol. XXXII, pp. 469-484, figs. 1-18, Sept. 25, 1913.
 Thirteen species, of which 9 are from Colombia and 4 from Ecuador.
1913. Revision of the *Melanomys* Group of American Muridæ. Vol. XXXII, pp. 535-555, pl. lxviii, Nov. 17, 1913.
 Fourteen species and subspecies, of which 6 are described as new,—5 from Colombia, 1 from Ecuador.

1913. New South American Muridæ. Vol. XXXII, pp. 597-604, Dec. 3, 1913.
Thirteen species and subspecies, of which 9 are from western Colombia, 1 from the Santa Marta region, 1 from Guiana, 2 from Venezuela.
1914. Review of the Genus *Microsciurus*. Vol. XXXIII, pp. 145-165, Feb. 26, 1914.
Nineteen forms recognized, 2 of which are described as new,—1 from Colombia and 1 from Peru.
1914. New South American Bats and a New Octodont. Vol. XXXIII, pp. 381-389, pl. xxviii, July 9, 1914.
Twelve species, of which only 3 were from western Colombia.
1914. New South American Sciuridæ. Vol. XXXIII, pp. 585-597, Oct. 8, 1914.
One new genus and 12 new species and subspecies, of which 7 were based on specimens from western Colombia.
1914. New South American Monkeys. Vol. XXXIII, pp. 647-655, Dec. 14, 1914.
Nine species and subspecies, of which 3 were from western Colombia.
1915. Review of the South American Sciuridæ. Vol. XXXIV, pp. 147-309, pll. i-xiv, text figs. 1-25, May 17, 1915.
Five new genera and 1 new subgenus proposed, and 76 species and subspecies recognized, 3 of the latter described as new (2 of them from Colombia).
1915. Notes on American Deer of the Genus *Mazama*. Vol. XXXIV, pp. 521-553, Nov. 2, 1915.
Twenty-four species and subspecies recognized, of which 7 are described as new, only 1 of them based on the present collections from Colombia.
1915. New South American Mammals. Vol. XXXIV, pp. 625-634, Dec. 30, 1915.
Ten forms described as new, 3 of them from Colombia.
1916. New South American Mammals. Vol. XXXV, pp. 83-87, April 28, 1916.
Seven species and subspecies, of which 6 are based on western Colombia specimens.
1916. The Neotropical Weasels. Vol. XXXV, pp. 89-111, April 28, 1916.
Eight species and subspecies (1 of the latter new), of which only 2 are recognized as occurring in Colombia.

LIST OF SPECIES AND SUBSPECIES BASED ON THE COLOMBIA COLLECTIONS.

Following is a list of the species and subspecies based on the present Colombia collections, with their type localities and date and place of publication.

1. *Metachirus nudicaudatus antioquiæ*, XXXV,¹ p. 83, April 28, 1916. La Frijolera, Antioquia.
2. *Cholæpus florenciæ*, XXXII, Sept. 25, 1913. Florencia.
3. *Cholæpus agustinus*, *ibid.*, p. 470. San Agustin.
4. *Cholæpus andinus*, *ibid.*, p. 472. Salento.
5. *Cholæpus capitalis*, *ibid.*, p. 472. Barbacoas.
6. *Mazama murelia*, XXXIV, p. 547, Nov. 2, 1915. La Murelia (*lege* Muralla).
7. *Sylvilagus (Tapeti) fulvescens*, XXXI, p. 75, April 19, 1912. Belen, Western Andes.

¹ Reference is in all cases to Bull. Amer. Mus. Nat. Hist.

8. *Sylvilagus (Tapeti) salentus*, XXXII, p. 476, Sept. 25, 1913. Salento.
9. *Sylvilagus boylei*, XXXV, p. 84, April 28, 1916. La Playa, near Baranquilla.
10. *Cavia anolaimæ*, XXXV, p. 85, April 28, 1916. Anolaima, Eastern Andes.
11. *Dasyprocta fuliginosa candelensis*, XXXIV, p. 625, Dec. 30, 1915. La Candela.
12. *Dasyprocta variegata chocoensis*, *ibid.*, p. 627. Los Cisneros, Chocó.
13. *Myoprocta milleri*, XXXII, p. 477, Sept. 25, 1913 (= *M. exilis milleri*, *postea*, p. 205). La Murelia (= Muralla).
14. *Proechimys o'connelli*, XXXII, p. 479, Sept. 25, 1913. Villavicencio.
15. *Thrinacodus apolinari*, XXXIII, p. 387, pl. xxviii, July 9, 1914. Tomaque, Eastern Andes.
16. *Heteromys lomitenis* (= *H. australis* Thomas), XXXI, p. 77, April 19, 1912.
17. *Reithrodontomys milleri*, *ibid.*, p. 77, Munchique.
18. *Rhipidomys mollissimus*, *ibid.*, p. 78. Palmira.
19. *Rhipidomys similis*, *ibid.*, p. 79. Cocal.
20. *Rhipidomys cocalensis*, *ibid.*, p. 79. Cocal.
21. *Rhipidomys quindianus*, XXXII, p. 600, Dec. 3, 1913. El Roble.
22. *Rhipidomys caucensis*, *ibid.*, p. 601, Munchique.
23. *Thomasomys cinereiventer*, XXXI, p. 80, April 19, 1912. Popayán.
24. *Thomasomys popayanus*, *ibid.*, p. 81. Popayán.
25. *Neacomys pusillus*, *ibid.*, p. 81. San José.
26. *Oryzomys helvolus*, XXXII, p. 597, Dec. 2, 1913. Villavicencio.
27. *Oryzomys o'connelli*, *ibid.*, p. 597. Buenavista, Eastern Andes.
28. *Oryzomys vicencianus*, *ibid.*, p. 598. Villavicencio.
29. *Oryzomys incertus*, *ibid.*, p. 598 (= *mureliæ*, XXXIV, p. 630, Dec. 30, 1915 — *incertus* preoccupied). La Murelia (= Muralla).
30. *Oryzomys barbaças*, XXXV, p. 85, April 28, 1916. Barbacoas.
31. *Oryzomys palmiræ*, XXXI, p. 83, April 19, 1912. Palmira.
32. *Oryzomys pectoralis*, *ibid.*, p. 83. Popayán.
33. *Oryzomys (Oligoryzomys) munchiquensis*, *ibid.*, p. 85. La Florida.
34. *Oryzomys (Oligoryzomys) fulvirostris*, *ibid.*, p. 86. Munchique.
35. *Oryzomys (Melanomys) obscurior affinis*, *ibid.*, p. 88. (= *Melanomys affinis affinis*, XXXII, p. 539). San José.
36. *Melanomys affinis monticola*, XXXII, p. 540, Nov. 17, 1913. Gallera.
37. *Melanomys phæopus vallicola*, *ibid.*, p. 544. Rio Frio.
38. *Melanomys phæopus tolimensis*, *ibid.*, p. 545. Rio Toché.
39. *Melanomys lomitenis*, *ibid.*, p. 545. Las Lomitas.
40. *Melanomys buenavistæ*, *ibid.*, p. 547. Buenavista, Eastern Andes.
41. *Æpeomys fuscatus*, XXXI, p. 89, April 19, 1912. San Antonio.
42. *Microtus affinis*, *ibid.*, p. 89. San Antonio.
43. *Akodon tolimæ*, XXXII, p. 480, Sept. 25, 1913. Rio Toché.
44. *Akodon chapmani*, XXXII, p. 600, Dec. 3, 1913. Eastern Andes.
45. *Zygodontomys griseus*, *ibid.*, p. 533. El Triunfo, near Honda, Magdalena Valley.
46. *Zygodontomys fraterculus*, *ibid.*, p. 599, Chicoral, Tolima.
47. *Microsciurus florenciæ*, XXXIII, p. 163, Feb. 26, 1914. Florencia.
48. *Sciurus milleri*, XXXI, p. 91, April, 1912 (= *Mesosciurus gerrardi milleri*, XXXIV, p. 241, May 17, 1915). Cocal.
49. *Sciurus gerrardi salaquensis*, *ibid.*, p. 592 (= *Mesosciurus g. salaquensis*, XXXIV, p. 245, May 17, 1915). Rio Salaqui.

50. *Sciurus saltuensis magdalenæ*, *ibid.*, p. 593 (= *Mesosciurus s. magdalenæ*, XXXIV, p. 251, May 17, 1915). Banco, Rio Magdalena.
51. *Mesosciurus gerrardi baudensis*, XXXIV, p. 308, May 17, 1915. Baudo.
52. *Mesosciurus gerrardi valdiviæ*, *ibid.*, p. 309. Puerto Valdivia.
53. *Guerlinguetus pucheranii salentensis*, XXXIII, p. 587, Oct. 8, 1914 (= *Leptosciurus p. salentensis*, XXXIV, p. 203, May 17, 1915). Salento.
54. *Guerlinguetus hoffmanni quindianus*, *ibid.*, p. 587. (= *Mesosciurus h. quindianus*, p. 222, May 17, 1915). Rio Frio.
55. *Guerlinguetus griseimembra*, *ibid.*, p. 589 (= *Mesosciurus griseimembra*, XXXIV, p. 232, May, 1915). Buenavista, Eastern Andes.
56. *Guerlinguetus candelensis*, *ibid.*, p. 590 (= *Mesosciurus candelensis*, XXXIV, p. 235, May 17, 1915). La Candela.
57. *Guerlinguetus æstuanus venustus*, XXXIV, p. 260, May 17, 1915. Boca Sina, base of Mt. Duida.
58. *Nasua olivacea lagunetæ*, XXXII, p. 483, Sept. 25, 1913. La Guneta.
59. *Potos flavus tolimensis*, *ibid.*, p. 486, Sept. 25, 1913. Giradot.
60. *Margay tigrina elenæ*, XXXIV, p. 631, Dec. 30, 1915. Santa Elena, Antioquia.
61. *Margay caucensis*, *ibid.*, p. 631, Las Pavas, Western Andes.
62. *Blarina (Cryptotis) squamipes*, XXXI, p. 93, April 19, 1912. Popayán.
63. *Glossophaga apolinari*, XXXV, p. 86, April 28, 1916. Boqueron de San Francisco, Eastern Andes.
64. *Eptesicus andinus*, XXXIII, p. 382, July 9, 1914. Valle de las Papas, Central Andes.
65. *Myotis caucensis*, *ibid.*, p. 386. Rio Frio.
66. *Alouatta seniculus bogotensis*, XXXIII, p. 648, Dec. 14, 1914. Subia, Eastern Andes.
67. *Alouatta seniculus caquetensis*, *ibid.*, p. 650. La Murelia (= Muralla).
68. *Ateles robustus*, *ibid.*, p. 652. Gallera.
69. *Saimiri caquetensis*, XXXV, p. 87, April 28, 1916. Florencia.

No new forms are described in the present paper, but here and there technical comment is added to the field records, particularly in the parts treating of the Muridæ, Carnivores and Primates.

ACKNOWLEDGMENTS.

In April, 1913, I took with me to the British Museum several hundred specimens from Colombia for direct comparison with the extensive South American material in that museum, including the types and topotypes of all the species described by me in 1912 and 1913. I wish here to express again ¹ my sense of indebtedness to Oldfield Thomas, not only for the unrestricted use of the collections in his care, but also for valued assistance and advice, and for important information since conveyed through correspondence.

I wish also to record here my obligations to the leading museums in this

¹ Cf. this Bulletin, XXXIV, 1915, p. 150.

country for specimens loaned for use in the identification of the mammals not only of Colombia but also from other South American countries during the progress of my work in this field; namely, to the United States National Museum, through Gerrit S. Miller, in charge of mammals; to Henry W. Henshaw, E. W. Nelson and A. E. Goldman of the Biological Survey; to the Field Museum of Natural History, through W. H. Osgood; to the Museum of Comparative Zoölogy, through the Director, Samuel Henshaw and Dr. G. M. Allen, curator of mammals; to the Academy of Natural Sciences of Philadelphia, through Dr. Witmer Stone; to the Carnegie Museum of Pittsburgh, through W. E. C. Todd.

My colleague Dr. Chapman has kindly given me much helpful information respecting the situation of localities and their faunal relationships.

SYSTEMATIC LIST.

DIDELPHIIDÆ.

1. *Didelphis paraguayensis meridensis* Allen.

Two specimens: Fusugasugá, 1; El Roble, 1 (O'Connell).

2. *Didelphis paraguayensis andina* Allen.

Thirteen specimens: Munchique, 12 (Bull. XXXI, p. 74, 1912, Miller); Paramillo, Antioquia, 1 specimen (Miller and Boyle).

3. *Didelphis marsupialis etensis* Allen.

Twelve specimens: San José and Caldas, 3 (Richardson; Bull. XXXI, p. 74, 1912); Barbacoas, 6 (Richardson); Bagado, 3 (Kerr).

4. *Didelphis marsupialis caucæ* Allen.

Twenty-six specimens: Puerto Valdivia, 6; Barro Blanco, 1; La Frijolera, 3; Dabeiba, 2 (Miller and Boyle); Rio Frio, 2; Salento, 4; San Agustin and Andalucia, 1 each (Miller); Honda, 1 (O'Connell).

5. *Marmosa isthmica* Goldman.

Four specimens, San José and Las Lomitas (Richardson). (*Marmosa phæa* and *M. murina zeledoni*, Bull. XXXI, p. 73, 1912).

Of the four specimens thus recorded in 1912 (*l. c.*) only one was adult; the others were young and without skulls. Specimens of *M. phæa* since received (and compared with the type and topotypes of *phæa* in the British Museum) prove to be widely different from the San José and Las Lomitas

specimens, which are now provisionally referred to *M. isthmica*. Much more and better material is necessary for their final determination.

6. **Marmosa mitis** Bangs.

Three specimens, El Triunfo (alt. 600 ft.), and Rio Magdalena, each 1 (O'Connell).

These specimens probably represent *M. m. pallidiventris* Osgood.

7. **Marmosa phæa** Thomas.

Five specimens: Ricuarte, 1 (Richardson); La Candela, 4 (Miller).

8. **Thylamys caucæ** (Thomas).

Four specimens, San Antonio (Richardson; Bull. XXXI, p. 73, 1912); Ricuarte, 1 (Richardson); near Salento, 1 (Miller); El Roble (near Bogotá), 1 (O'Connell).

These specimens are quite similar to *T. keaysi* from Inca Mines, Peru; *Marmosa invicta* Goldman, from Panama, is a closely related form.

9. **Metachirus opossum melanurus** Thomas.

Eleven specimens: Cocal, 2 (Miller; Bull. XXXI, p. 73, 1912); Bagado, 6 (Kerr); Alto Bonito, 3 (Miller and Boyle).

On direct comparison with the type and topotypes in the British Museum, the first eight of these specimens proved to be indistinguishable from *melanurus*.

10. **Metachirus opossum griscescens** Allen.

Two specimens, Rio Frio (Allen and Miller).

This is the pale form of the Cauca Valley region, differing from the coast form (*melanurus*) in smaller size and much paler coloration.

11. **Metachirus opossum** (subsp. nov.?).

One specimen, Villavicencio (alt. 1600 ft.), March 14 (O'Connell). Nearer true *M. opossum* than to either *melanurus* or *griscescens*.

12. **Metachirus nudicaudatus columbianus** Allen.

Three adult specimens, Buena Vista, near Bogotá (O'Connell).

These specimens agree very closely with *columbianus*, to which they are provisionally referred.

13. **Metachirus nudicaudatus antioquiæ** *Allen*.

One specimen, the type, Frijolera, Antioquia (Miller and Boyle). (Bull. XXXV, p. 83, 1916.)

14. **Philander laniger cicus** (*Bangs*).

One specimen, Tolima, near Bogotá (A. Maria).

15. **Chironectes minimus** (*Zimmermann*).

Five specimens: Juanchito and Palmira, 1 each (Miller and Richardson); Bull. XXXI, p. 74, 1912); Barbacoas, 1 (Richardson); Bagado, 1 (Kerr); Rio Frio, 1 (Miller).

BRADYPODIDÆ.

16. **Bradypus ephippiger Philippi**.

Four specimens: Rio San Jorge, 2 (Kerr; Bull. XXXI, p. 74, 1912); Barbacoas, 2 (Richardson).

17. **Bradypus ignavus Goldman**.

One specimen, skin only, Dabeiba (Miller and Boyle).

18. **Bradypus griseus** (*Gray*).

One specimen, Dabeiba (Miller and Boyle).

19. **Cholæpus hoffmanni Peters**.

Three specimens, Puerto Valdivia (Miller and Boyle).

20. **Cholæpus florenciæ Allen**.

Two specimens, Florencia, Caquetá district (Miller). (Bull. XXXII, p. 469, figs. 3, 9, 15, Sept. 25, 1913.)

21. **Cholæpus agustinus Allen**.

Two specimens, near San Agustin (Miller). (Bull. XXXII, p. 472, p. 470, figs. 4, 10, 16, Sept. 25, 1913.)

22. **Cholæpus andinus Allen**.

Two specimens, Salento (Miller). (Bull. XXXII, p. 472, figs. 6, 12, 18, Sept. 25, 1913.)

23. ***Cholœpus capitalis* Allen.**

Four specimens, Barbacoas (Richardson). (Bull. XXXII, p. 472, figs. 5, 11, 17, Sept. 25, 1913.)

MYRMECOPHAGIDÆ.

24. ***Tamandua tetradactyla chiriquensis* Allen.**

Three specimens: Bagado, adult male; Baudo, adult male (Kerr); Chicoral, Coello River (alt. 1800 ft.), adult female (Miller). Practically indistinguishable from the types and topotypes of *chiriquensis*.

25. ***Cyclopes didactylus eva* Thomas.**

One specimen, Muralla, Caquetá district, July 8 (Miller). (Compared with the type.)

26. ***Cyclopes didactylus dorsalis* (Gray).**

Two specimens, Puerto Valdivia (Miller and Boyle).

DASYPODIDÆ.

27. ***Dasypus novemcinctus* Linné.**

Seven specimens: Munchique, 1 (Bull. XXXI, p. 74, 1912); Salento, West Quindio Andes, 4 (Miller); Anolaima, 2 (Gonzales).

Perhaps referable to *Dasypus novemcinctus æquatorialis* Lönnberg (Arkiv för Zool., VIII, No. 16, p. 34, July 12, 1913), but the characters alleged as distinctive of *æquatorialis* are subject to so much individual variation that comparison of a single specimen from northern Ecuador with the type specimen of *D. novemcinctus*, as was made by Lönnberg, cannot be decisive.

TAYASSUIDÆ.

28. ***Pecari crusnigrum* (Bangs).**

One specimen, adult male, La Frijolera, Antioquia (Miller and Boyle).

The coloration above is deep rich tawny, with a strong median black dorsal stripe, extending from tip of nose to rump.

CERVIDÆ.

29. ***Mazama murelia* Allen.**

One specimen, adult female, Muralla, Rio Bodoquera, Caquetá, July 13, 1912 (Miller). (Bull. XXXIV, p. 547, 1915.)

30. **Mazama zetta** Thomas.

Mazama tschudii ALLEN (not of Wagner), Bull. XXXI, p. 74, 1912.

Mazama zetta ALLEN, Bull. XXXIV, p. 544, 1915.

Two specimens, Gallera, July 2 (Miller).

31. **Mazama sheila** Thomas.

A fawn from La Palma (Miller) is provisionally referred to this species. (Bull. XXXIV, pp. 539, 545, 1915.)

LEPORIDÆ.

32. **Sylvilagus salentus** Allen.

Sylvilagus (Tapeti) salentus ALLEN, Bull. XXXII, p. 476, Sept. 25, 1913.

One specimen, Salento (Miller).

33. **Sylvilagus fuscescens** Allen.

Sylvilagus (Tapeti) fuscescens ALLEN, Bull. XXXI, p. 75, 1912.

One specimen, Belen, Western Andes (Miller).

Sylvilagus fuscescens has now been compared with the material in the British Museum, and its nearest relationship is found to be with *S. andinus* (Thomas), but it differs from it widely (*cf.* this Bull., XXXII, p. 477, 1913).

34. **Sylvilagus boylei** Allen.

One specimen, La Playa, near Barranquilla. (Bull. XXXV, p. 84, 1916.)

HYDROCHÆRIDÆ.

35. **Hydrochærus hydrochærus** Linné.

One specimen, adult male, Rio Frio (Miller).

CAVIIDÆ.

36. **Cavia anolaimæ** Allen.

Two specimens, Anolaima (Gonzalez). (Bull. XXXV, p. 85, April 28, 1916.)

DASYPROCTIDÆ.

37. ***Dasyprocta variegata chocoensis* Allen.**

Dasyprocta variegata variegata ALLEN (not of Tschudi), Bull. XXXI, p. 76, 1912.

Dasyprocta variegata chocoensis ALLEN, Bull. XXXIV, p. 627, 1915.

Five specimens: Los Cisneros, 2 (Richardson); Rio Osculo (Batty), Baudo and Bagado (Kerr), 1 each.

38. ***Dasyprocta fuliginosa candelensis* Allen.**

Four specimens: La Candela, San Agustin, and Andalusia (Miller). (Bull. XXXIV, p. 625, 1915.)

39. ***Dasyprocta fuliginosa columbiana* Allen.**

Two specimens, Frijolera, Antioquia (Miller and Boyle). (Bull. XXXIV, p. 628, 1915.)

40. ***Dasyprocta* (*Myoprocta*) *exilis milleri* Allen.**

Myoprocta milleri ALLEN, Bull. XXXII, p. 477, Sept. 25, 1913.

Eleven specimens, Muralla (Miller).

Dasyprocta exilis Wagler ¹ was based on a specimen obtained by Spix on the Rio Amazon, presumably near the mouth of the Rio Negro, which may be designated as the type locality. The type of Pocock's *Myoprocta pratti* ² is said to have been brought "from the Amazons," and hence *M. pratti* has no definite type locality. It is doubtless referable to *D. exilis* of Wagler, which is represented in this Museum by a specimen collected by Leo E. Miller, on the Roosevelt Expedition, near the junction of the Rio Gy-Parana with the Rio Madeira.

41. ***Agouti paca virgata* Bangs.**

Two specimens: San José, 1 (Richardson; Bull. XXXI, p. 75, 1912); Baudo, 1, about one fourth grown (Kerr).

42. ***Agouti paca taczanowskii* (Stolzmann).**

Agouti paca (subs. indet.) ALLEN, Bull. XXXI, p. 76, 1912. La Florida.

Four specimens: La Florida, 1; La Guneta, 1 (Miller); Barbacoas, 2 (Richardson).

¹ *Dasyprocta exilis* Wagler, Isis von Oken, 1831, p. 621. "Brasilia ad flumen Amazonum."

² Ann. and Mag. Nat. Hist. (8), VII, p. 110, July, 1913.

43. **Agouti paca** (near *sierræ* Thomas).

One specimen, a young female, Paramillo (alt. 12,500 ft.), Antioquia (Miller and Boyle).

This specimen belongs to the *sierræ* group, but further material will probably show that it is subspecifically separable from typical *sierræ* (type locality, Andes of Merida).

44. **Dinomys branickii** Peters.

One specimen, a flat skin without feet or tail, La Candela, Huila, altitude 6500 feet (Miller). Mr. Miller obtained this skin from the hunter who killed the animal, and he has no doubt of its having been taken near where the man lived, that is, at or near La Candela.

The type specimen of this species was taken by Jelski, according to Peters (Monatsb. k. p. Acad. Wissensch. Berlin, 1873, p. 552), in the mountains of Central Peru (altitude not given). Later Goelde (P. Z. S., 1904, II, p. 161) stated: "As matters now stand, it would be justifiable to suppose that the true home of *Dinomys* is not properly in the Peruvian Andes, and that the first specimen found there was merely a stray individual, and that its actual habitat may rather be located in the almost unexplored regions of the eastern slopes and tablelands of the Bolivian and Peruvian foothills bordering on Brazil, including geographically the headwaters of the Rivers Acre, Purús, and Juruá." However this may prove to be, the capture of the present specimen in the Eastern Andes of Colombia appears to confirm its mountain habitat, besides extending the range of the species far to the north of the point where it was originally discovered.

OCTODONTIDÆ.

45. **Præchimys semispinosus semispinosus** (Tomes).

Thirty-five specimens,—27 adult and 8 young: Florencia, Caquetá district, 18; Muralla, Caquetá district, 9 (Miller). Seven of the adults — about one fourth — are tailless.

The type locality of *Echimys semispinosus* Tomes, according to Thomas (on the back of label), is Gualaquiza, Ecuador, this being the specimen from which the skull was figured. This locality is in southeastern Ecuador on the "Rio S. Jago" (Sclater, P. Z. S., 1858, p. 450) probably the Rio Santiago of modern maps. Three specimens of this species were received "in spirits, all of which were females; one of them contained two young" (Tomes, P. Z. S., 1860, p. 267). Two of these specimens are now in the

British Museum, "evidently skinned out of spirit and much discolored," as stated on the labels. I omitted to examine the type skull figured by Tomes, but from an examination of Tomes's figure it is too adult to have belonged to either of these two skins, which are only about half-grown. They are indistinguishable in coloration and other features from specimens of corresponding age collected at Florencia and Muralla. The skin of the third specimen, doubtless the adult female mentioned by Tomes, and the one to which the figured skull belonged, has apparently been lost.

46. ***Proechimys semispinosus calidior* Thomas.**

Twenty-four specimens: San José, 14 (Richardson; Bull. XXXI, p. 76, 1912); Barbacoas, 5 (Richardson); Bagado and Andegada, 4 (Kerr); Nóvita Trail, 1 (Miller).

The latter, as well as the 14 specimens collected at San José by Richardson (as previously recorded, *l. c.*), differ quite appreciably in coloration from the specimens from the Caquetá district east of the Andes, the dorsal pelage being suffused with a brighter, yellowish rufous tint, and the median dorsal region is strongly washed with black, a feature not present in typical *semispinosus*. The tail is also much more hairy in *calidior*.

The series thus far obtained by our collectors extends the known range of *calidior* from the coast region of northern Ecuador northward to Baudo on the coast, and to Nóvita in the San Juan valley. Neither form has been taken at altitudes above 700 feet, and the fact that none have been taken at the many localities above this altitude where thorough collecting has been carried on would seem to indicate that these two forms have been for a long period geographically separated.

47. ***Proechimys o'connelli* Allen.**

Seven specimens: Villavicencio, 5 (O'Connell; Bull. XXXII, p. 479, Sept. 25, 1913); Barrigona, 2 (Gonzales).

48. ***Hoplomys gymnurus* (Thomas).**

Thirteen specimens: Barbacoas, 8; Buenavista, 1 (Richardson); Bagado, 2 (Kerr); Alto Bonito, 1; Puerto Valdivia, 1 (Miller and Boyle).

Compared with the type and other material in the British Museum, from Cachavi and St. Xavier, Ecuador, and with others from Rio Tanana, branch of the Rio San Juan, Chocó district, Colombia.

The spines develop early, forming part of the first pelage, as shown by specimens less than one fourth grown, in which the fulvous underfur was still wholly absent.

49. **Dactylomys dactylinus dactylinus** (*Desmarest*).

One specimen, adult female, Villavicencio (Fuertes). Total length, 689; head and body, 254; tail, 425; hind foot, 55.

This specimen greatly extends the known range of this genus from Nanta, at the mouth of the Rio Napo, northeastward to the headwaters of the western tributaries of the Rio Orinoco.

50. **Isothrix rufodorsalis** *Allen*.

A second specimen, in fine condition, has recently been received from the Sierra Nevada de Santa Marta, collected by M. A. Carriker. It agrees essentially with the type in every particular.

51. **Thrinacodus apolinari** *Allen*.

One specimen, Tomeque, near Bogotá (Apolinar Maria). (Bull. XXXIII, p. 387, pl. xxviii, 1914.)

HETEROMYIDÆ.

52. **Heteromys australis** *Thomas*.

Heteromys lomitensis ALLEN, Bull. Amer. Mus. Nat. Hist., XXXI, p. 77, April 19, 1912.

Twenty-five specimens: Las Lomitas, 3; Barbacoas, 5; Buenavista, Nariño, 4 (Richardson); Bagado, 1 (Kerr); Salento, 2; El Roble, 8 (Miller); Alto Bonito, 1; La Frijolera, 1 (Miller and Boyle).

The series of six specimens, from near sea level at St. Xavier, lower Cachivi River, northwestern Ecuador, on which *H. australis* Thomas was based, are all in abnormal pelage, being faded, greatly worn, dull brown instead of black, and spiny, lacking the full and soft overlying hairs present in the specimens on which *lomitensis* was founded. Yet a comparison of the present series, consisting partly of specimens from near the type locality of *australis*, leaves no doubt that the striking differences in coloration and character of the pelage between the two series are either quite accidental or merely seasonal. The contrast in coloration and pelage between the two is rarely more striking in the case of any two congeneric species, and as no hint was given in the description of *H. australis* of the worn and faded character of the pelage, it was quite natural to mistake specimens in fresh, unbleached and unworn condition for a quite distinct species. In size, cranial characters, and distributional range, there is nothing to suggest specific separation, so that *H. lomitensis* must be referred to *H. australis*.

53. *Heteromys anomalus* Osgood.

One specimen, Honda (O'Connell).

MURIDÆ.**54. *Mus musculus musculus* Linné.**

Seven specimens, San José and Caldas (Richardson). (Bull. XXXI, p. 77, 1912.) Also numerous specimens, from near Bogotá (Gonzalez).

55. *Epimys rattus alexandrinus* (Geoffroy).

Thirty specimens: Barbacoas, 5 (Richardson); Bagado, 4 (Kerr); Noanama, Rio San Juan, 1 (Miller); San Agustin, 6 (Miller); Buenavista, near Bogotá, 3 (O'Connell); vicinity of Bogotá, a large series (Gonzalez). Also a pure albino from Bogotá (A. Maria).

The specimens from the coast region are the typical white-bellied phase; those from the interior have plumbeous bellies and darker upperparts than typical *alexandrinus*, being intermediate between *alexandrinus* and *rattus*.

56. *Reithrodontomys milleri* Allen.

Twenty-five specimens: Munchique and Cocal, 17 (Miller; Bull. XXXI, p. 77, 1912); San Agustin, Huila, 1; La Guneta, 1; El Roble, 6 (Miller).

The Central Andes specimens are darker on the back and smaller than the type series, but they are also apparently younger. All but two are without skulls; the single skull complete enough for satisfactory comparison is adult and confirms, as far as it has weight, the smaller size of the Central Andes series as compared with the original series from the Western Andes, two degrees of latitude further south.

57. *Reithrodontomys söderströmi* Thomas.

Four specimens, Valle de las Papas (alt. 10,000 ft.), Central Andes, Huila (Miller).

These have been compared with the type and 12 topotypes of the species from Quito in the British Museum, from which they do not essentially differ.

The type of *söderströmi* agrees with the description, but differs from the topotype series in having the tip of the tail and the metapodials white, which are not so in the topotypes, in which the metapodials are dark medially and the tip of the tail is not white-tipped. The original description is therefore highly misleading.

58. ***Rhipidomys mollissimus* Allen.**

One specimen, Miraflores (Miller). (Bull. XXXI, p. 78, 1912.)

This species has no close relationship with *R. fulviventer* Thomas, as formerly suggested (*l. c.* p. 79), but is much nearer *R. pictor* Thomas, which is, however, brighter colored and much smaller than *mollissimus*, and has the feet flesh-colored instead of black.

59. ***Rhipidomys goodfellowi* Thomas.**

One specimen, adult female, Florencia (alt. 675 ft.), Caquetá (Miller).

60. ***Rhipidomys cocalensis* Allen.**

Four specimens, Cocal (Miller). (Bull. XXXI, p. 79, 1912.)

This species has been compared with the type and topotype of *R. latimanus* (Tomes), to which it is related, but *cocalensis*, as shown by the skulls, is much larger than *latimanus*, the total length of the skull in *latimanus* being 31 mm. and the greatest breadth 16 mm., as compared with 35 mm. and 19 mm. for the same measurements in *cocalensis*.

61. ***Rhipidomys similis* Allen.**

Six specimens, Cocal (Miller). (Bull. XXXI, p. 79, 1912.)

This proves to be too unlike any of the other described species of the genus to require comparison with them.

62. ***Rhipidomys quindianus* Allen.**

Two specimens, El Roble, Central Andes (Miller). (Bull. XXXII, p. 600, 1913.)

63. ***Rhipidomys caucensis* Allen.**

Three specimens, Munchique, Western Andes (Miller). (Bull. XXXII, p. 601, 1913.)

64. ***Æcomys bicolor* (Tomes).**

Six specimens: Andalucia, 1; Florencia, 5 (Miller). Florencia (altitude 675 feet) is at the eastern base of the Andes, in the Department of Caquetá.

65. ***Thomasomys laniger* (Thomas).**

Three specimens, Chipaque, Eastern Andes (O'Connell).

66. *Thomasomys cinereiventer* Allen.

Sixty specimens: Popayan (10,300 ft.), 22; and Cocal (6000 ft.), 8 (Miller; Bull. XXXI, p. 80, 1912); Alamaguer (10,300 feet), 4; La Guneta, West Quindio Andes (10,300 feet), 11; Santa Isabel, Quindio Andes (12,700 feet), 5; Andalucia (7000 feet), 8 (Miller); Sta. Elena and Paramillo, 1 each (Miller and Boyle).

This species presents a general resemblance to *T. kalinowskii*, from Vitoc, Central Peru, so far as can be determined by comparison with the type of the latter, formerly preserved for a long time in spirits. But the type skull presents well-marked differences from the skulls of *cinereiventer* in its depressed instead of straight rostrum and shorter and narrower palatal foramina. The two species are similar in size and probably also in coloration.

67. *Thomasomys popayanus* Allen.

Twenty-one specimens: Popayan, Western Andes, 14 (Miller; Bull. XXXI, p. 81, 1912); Santa Isabel, Quindio Andes (12,000 feet), 2; Salento, 1 (Miller); Sta. Elena and Paramillo, each 1 (Miller and Boyle).

As said in the original description (*l. c.*), this species most resembles *T. princeps* (Thomas), from the plains of Bogotá. A direct comparison of *T. popayanus* with the type and five topotypes of *T. princeps* shows that *princeps* is a much larger species and much more intensely colored both above and below, the upperparts being rufous brown, and the lower parts more strongly ochraceous. There are no external measurements for the *princeps* specimens, except for the hind foot, which without the claws is as long or longer than the hind foot of *popayanus* with the claws, and proportionately broader. The skull is broader and more massive, the supraorbital ridges are more heavily developed, and the lower jaw is much more robust and heavier, in accordance with the larger size of the animal as indicated by the larger hind feet and longer tail.

T. popayanus agrees well with *T. aureus* (Tomes) in coloration but is much smaller, with weaker dentition and slight cranial differences. It is probably only a subspecies of the *T. aureus* group, to which *T. princeps* seems also referable as a subspecies.

68. *Neacomys pusillus* Allen.

One specimen, San José, Cauca (Richardson). (Bull. XXXI, p. 81, 1912.)

Three specimens (Miller) from El Roble, Nov. 9-11, without skulls agree in size and coloration with this species, to which they are provisionally referred.

69. **Neacomys spinosus** (Thomas).

Four specimens: La Murelia, Caquetá, July 11-19 (Miller).

70. **Oryzomys pectoralis** Allen.

One hundred and twenty-six specimens, all from the Western Andes, except 10 from Miraflores (Richardson), as follows: Cocal, 10; Gallera, 2; Munchique, 45; crest of Western Andes, west of Popayán, 30; Güengüe, 1 (Miller); San Antonio, 10; Las Lomitas 1 (Richardson; Bull. XXXI, pp. 83-85, 1912), altitudes 4000-10,340 feet; El Eden, East Quindio Andes, 1; West Quindio Andes, above Salento, 3; La Guneta, West Quindio Andes, 1; El Roble, Quindio Andes, 2 (Miller); Sta. Elena, 8; La Frijolera, 6 (Miller and Boyle).

Another specimen (without skull) from Andalucia, Huila, Eastern Andes, altitude 10,300 feet (Miller), is provisionally referred to this species.

As stated in the original description (this Bulletin, XXXI, p. 85, April 19, 1912), *O. pectoralis* is related to *O. albigularis* (Tomes), but it is much larger, as I have since confirmed by direct comparison with a large series of *O. albigularis* in the British Museum from Pallatanga, Ecuador, the supposed type locality (type not known to be in existence). *O. keaysi* Allen, from southern Peru, is a member of the same group, but usually wholly lacks the pectoral white patch.

Mr. Osgood has made (Field Mus. Nat. Hist., Zool., X, No. 12, p. 159, April 20, 1914) a pronouncement on the relations of this and other species of *Oryzomys* recently described by me which I am quite unwilling to accept as final.

71. **Oryzomys helvolus** Allen.

Six specimens, Villavicencio and Buenavista, near Bogotá (O'Connell). (Bull. XXXII, p. 597, 1913.)

72. **Oryzomys o'connelli** Allen.

Four specimens: Buenavista, Eastern Andes, 2 (O'Connell; Bull. XXXII, p. 597, 1913); Rio Guatequi, 2 (A. Maria).

73. **Oryzomys vicencianus** Allen.

Two specimens, Villavicencio, eastern base of Eastern Andes (O'Connell). (Bull. XXXII, p. 598, 1913.)

74. ***Oryzomys mureliæ* Allen.**

Oryzomys incertus ALLEN, Bull. XXXII, p. 598, 1913; *Oryzomys mureliæ* ALLEN, Bull. XXXIV, p. 630, 1915, to replace *incertus*, preoccupied.

One specimen: La Murelia (= Muralla), Caquetá (Miller).

75. ***Oryzomys palmiræ* Allen.**

Thirty-six specimens: Palmira, 1; Cocal, 1; crest of the Andes west of Popayan, 1; Miraflores, 5; Las Lomitas, 6 (Miller; Bull. XXXI, p. 83, 1912); Rio Frio, 17; Salencio, Nóvita Trail, 3; near San Agustín, Huila, 1; La Candela, Huila, 1 (Miller).

76. ***Oryzomys perenensis* Allen.**

Eight specimens: Florencia, Caquetá (altitude 675 feet), 5; Muralla, Caquetá (altitude 600 feet), 3 (Miller).

This series agrees satisfactorily with three topotypes of *O. perenensis* from Perené, Peru (altitude 800 m.), collected by P. O. Simons. These localities are both in the Amazonian watershed.

77. ***Oryzomys gracilis* Thomas.**

Two specimens: Barbacoas, 1 (Richardson); La Frijelora, 1 (Miller and Boyle).

The Barbacoas specimen is doubtfully referred to this species, although it agrees satisfactorily with it in size and coloration; the other is practically a topotype.

78. ***Oryzomys auriventer* Thomas.**

Three specimens: Santa Isabel, Quindío Andes, 2; Salento, 1 (Miller).

These specimens closely resemble in coloration the type and topotype (in British Museum, from central Ecuador) of this species, but are somewhat smaller and also younger. They are, however, referred to it with some reservation.

79. ***Oryzomys barbacoas* Allen.**

Two specimens, Barbacoas. (Bull. XXXV, p. 85, April 28, 1916.)

80. ***Oryzomys balneator* Thomas.**

One specimen, young adult, Ricuarte, southwestern Colombia near Ecuador boundary (Richardson). Provisionally referred to this species.

81. *Oryzomys (Oligoryzomys) munchiquensis* Allen.

Twenty-three specimens: Munchique, Cocal, and La Florida, Western Andes (Miller; Bull. XXXI, p. 85, 1912); Ricuarte, 2 (Richardson); La Sierra, 2; La Palma, 1; Salento, 1; Rio Toché, 2 (Miller).

This species closely resembles *O. stolzmanni* in coloration. Six adults measure: Total length, 179 (170–200); head and body, 76.3 (69–85); tail, 103 (90–115); hind foot *with claws*, 20.6 (20–22). Six adults of *O. stolzmanni* (in British Museum) measure: Total length, 215 (205–225); head and body, 91.6 (90–98); tail, 122 (115–135); hind foot *without claws*, 24.3 (22–28). The hind foot in *munchiquensis*, *with the claws* averages 4 mm. shorter than in *stolzmanni* *without* the claws, and is proportionately smaller in all other measurements.

82. *Oryzomys (Oligoryzomys) fulvirostris* Allen.

Eighteen specimens: Gallera and Munchique, 3 (Miller; Bull. XXXI, p. 86, 1912); Salento, 2; Rio Toche, 10; El Roble, 2; Valle de las Papas, Central Andes, 1 (Miller). Altitudes 6800–7200 feet, with one (Valle de las Papas) 10,000 feet.

This is a member of the *O. dryas* group, near *O. humilior*, but much paler than either *humilior* or *dryas*.

83. *Oryzomys (Oligoryzomys)* near *tenuipes* Allen.

Two specimens: Lumapaz, near Bogotá (A. Maria).

These specimens are near *Oryzomys (Oligoryzomys) tenuipes* Allen from Merida, but with the underparts clear white instead of pale buff as in *tenuipes*.

84. *Melanomys affinis affinis* Allen.

Oryzomys (Melanomys) obscurior affinis ALLEN, Bull. XXXI, p. 88, 1912.

Melanomys affinis affinis ALLEN, Bull. XXXII, p. 539, 1913.

Fourteen specimens, coast region of southwestern Colombia (Richardson).

85. *Melanomys affinis monticolor* Allen.

Melanomys affinis monticolor ALLEN, Bull. XXXII, p. 540, 1913.

Oryzomys (Melanomys) obscurior ALLEN (not of Thomas), Bull. XXXI, p. 87, 1912.

Thirty-six specimens: Gallera and Cocal, west slope of Western Andes (Miller).

86. ***Melanomys phæopus phæopus*** (*Tomes*).

Oryzomys (*Melanomys*) *phæopus* ALLEN, Bull. XXXI, p. 87, 1912.

Melanomys phæopus phæopus ALLEN, Bull. XXXII, p. 541, 1913.

Twenty-nine specimens: Munchique, La Florida (Miller); Las Lomitas, and Caldas (Richardson); Western and Central Andes.

87. ***Melanomys phæopus vallicola*** *Allen*.

Twenty-four specimens, Rio Frio, Cauca Valley (Miller). (Bull. XXXII, p. 544, 1913.)

88. ***Melanomys phæopus tolimensis*** *Allen*.

Five specimens, Rio Toché (Miller). (Bull. XXXII, p. 545, 1913.)

89. ***Melanomys lomitensis*** *Allen*.

Six specimens, Las Lomitas, Western Andes (Richardson). (Bull. XXXII, p. 545, 1913.)

90. ***Melanomys buenavista*** *Allen*.

Seven specimens, Buenavista, Eastern Andes (O'Connell). (Bull. XXXII, p. 547, 1913.)

91. ***Melanomys obscurior*** (*Thomas*).

Ten specimens: La Frijolera, 8; Alto Bonito, 2 (Miller and Boyle).

These specimens are practically topotypes, Concordia, the type locality being only a few miles away from these localities and in the same faunal zone.

Seven adults: Total length, 217 (207–230) mm.; tail vertebræ, 95 (94–97); hind foot, 24.7 (24–25).

92. ***Æpeomys fuscatus*** *Allen*.

Twenty specimens: San Antonio, 12 (Richardson; Bull. XXXI, p. 89 1912); El Roble, Quindio Trail (7200 ft.), 6; Salento, Quindio Trail (7000 ft.), 2. These localities are about 70 miles north of San Antonio, the type locality of the species.

On direct comparison of the large type series of *Æ. fuscatus* with the type of *Æ. vulcani*, west slope of Mt. Pichincha at an altitude of 12,000 feet, *fuscatus* proves to be smaller and less brown than *vulcani*, and the anterior edge of the zygomatic plate is more produced and the palate itself is much

broader. The skull is much smaller, the total length only equalling the length of the skull in *vulcani* to the parieto-occipital suture (the type skull of *vulcani* lacks the occipital part), and the tooththrow is correspondingly shorter and narrower. The type skull of *fuscatus* differs slightly from the skulls of the cotypes, showing a closer resemblance to the type skull of *vulcani* than any of the other skulls in the original type series of ten in the form of the zygomatic plate. On comparison with *Æ. lugens* Thomas, it was found that *lugens* and *vulcani* resemble each other more than either does *fuscatus*.

93. ***Microxus affinis* Allen.**

Two specimens: San Antonio, type (Richardson; Bull. XXXI, p. 89, 1912); Sta. Elena, 1 (Miller and Boyle).

On comparison of the type of *M. affinis* with the type and five other Bogotá specimens of *M. bogotensis* Thomas, *affinis* proves to be much larger than *bogotensis*, with the superficial coloration (hair-tips) olive instead of rufescent. In coloration *M. affinis* is nearer *M. mimus* Thomas, from which it differs in much smaller size, *affinis* having a total length of 160 mm. while two adult specimens of *mimus* have a total length respectively of 184 and 187, and a correspondingly greater length of tail and hind foot.

94. ***Microxus bogotensis* (Thomas).**

Four specimens, Rio Toché (Miller).

These specimens all lack skulls, but are identified with little hesitation as *Microxus bogotensis* on the basis of the external characters, especially the size and the rufescent tone of the hair-tips of the upperparts.

95. ***Akodon tolímæ* Allen.**

Thirty-eight specimens: Rio Toché, Central Andes (Miller). (Bull. XXXII, p. 480, 1913.)

96. ***Akodon chapmani* Allen.**

Three specimens: Chipaque and Buenavista, Eastern Andes (O'Connell). (Bull. XXXII, p. 600, 1913.)

97. ***Zygodontomys brunneus* Thomas.**

One specimen, Andalucia, June 12 (Miller).

98. **Zygodontomys griseus** Allen.

One specimen, El Triunfo, Magdalena Valley (O'Connell). (Bull. XXXII, p. 599, 1913.)

99. **Zygodontomys fraterculus** Allen.

Two specimens: Chicoral, Tolima (Miller). (Bull. XXXII, p. 599, 1913.)

100. **Tylomys miræ** Thomas.

Six specimens, the oldest a young adult, the others one third to two thirds grown: Barbacoas, 5; Buenavista, Dept. Nariño, 1 (Richardson).

The coloration in this series is a darker, clearer gray above and a clearer white below than in the type and other specimens from northern Ecuador, which are all old adults in somewhat worn and apparently more or less faded pelage.

101. **Nectomys magdalensæ** Thomas.

A half-grown specimen from Buenavista, near Bogotá (O'Connell), too young for satisfactory determination, is provisionally referred to this species.

102. **Nectomys garleppæi** Thomas.

Seven specimens: near San Agustín, Huila, 3; Andalucía, Huila, 2; Florencia, Caquetá, 2 (Miller).

SCIURIDÆ.

103. **Microsciurus similis similis** Nelson.

Seven specimens: San Antonio, 1 (Richardson); Cocal, 2, Gallera, 2, Salencio, 2 (Miller). (Bull. XXXI, p. 92, 1912; XXXIII, p. 153, 1914; XXXIV, p. 192, 1915.)

104. **Microsciurus similis fuscus** Thomas.

Three specimens: Juntas de Tamaná, 1 (Miller); Baudo, 2 (Kerr). (Bull. XXXIII, p. 154, 1914.)

105. **Microsciurus otinus** Thomas.

Seven specimens: Puerto Valdivia, 3, Alto Bonito, 4 (Miller and Boyle). (Bull. XXXIV, p. 307, 1914.)

106. **Microsciurus mimulus** *Thomas*.

Five specimens: Barbacoas, 5 (Richardson). Bull. XXXIII, p. 58, 1914.)

107. **Microsciurus palmeri** *Thomas*.

Four specimens: Nóvita, 2, San José, 1, Buenavista, Nariño, 1 (Miller and Richardson). (Bull. XXXIII, p. 160, 1914.)

108. **Microsciurus florenciæ** *Allen*.

Four specimens: Florencia, 2, Muralla, 2 (Miller). (Bull. XXXIII, p. 164, 1914.)

109. **Leptosciurus pucheranii pucheranii** (*Fitzinger*).

Seven specimens: near Bogotá, 2 (Gonzales); Fusugasugá, 3 (O'Connell); La Candela, 1, Andalucia, 1 (Miller). (Bull. XXXIV, p. 200, 1915.)

110. **Leptosciurus pucheranii medellinensis** (*Gray*).

Seven specimens: Barro Blanco, 4, Santa Elena, 3 (Miller and Boyle). (Bull. XXXIV, p. 307, 1915.)

111. **Leptosciurus pucheranii salentensis** (*Allen*).

Fifteen specimens: El Roble, 2; Laguneta, 2; Miraflores, 2; Palmira, 1 (Miller); La Frijolera (near Puerto Valdivia), 8 (Miller and Boyle). (Bull. XXXIII, p. 587, 1914; XXXIV, pp. 203, 307, 1915.)

112. **Leptosciurus pucheranii caucensis** (*Nelson*).

Three specimens: Miraflores, 2; near Palmira, 1 (Richardson). (Bull. XXXI, p. 91, 1912; XXXIV, p. 203, 1915.)

113. **Mesosciurus hoffmanni hoffmanni** (*Peters*).

Forty-four specimens: San Antonio, 9; Miraflores, 9; Las Lomitas, 2 (Richardson); Cerro Munchique, 8; Gallera, 2; La Florida, 2; La Sierra, 7; El Eden, 5 (Miller). (Bull. XXXI, p. 90, 1912; XXXIV, p. 217, 1914.)

114. **Mesosciurus hoffmanni quindianus** (*Allen*).

Twenty specimens: Rio Frio, 6; Salencio, 1; Salento, 2; Laguneta, 5 (Miller); Barro Blanco, 3; Santa Elena, 2; Malena, 1 (Miller and Boyle). (Bull. XXXIII, p. 587, 1914; XXXIV, pp. 222, 308, 1915.)

115. **Mesosciurus hoffmanni hyporrhodus** (Gray).

Twenty-one specimens: Fusugasugá, 7; Quitame, 4 (O'Connell); Panama Largo, 3; Monte Redundo, 1; Anolaima, 6 (Gonzales). (Bull. XXXIV, p. 223, 1915.)

116. **Mesosciurus griseimembra** (Allen).

Five specimens: Buenavista, 4 (O'Connell); Andalucia, 1 (Miller). (Bull. XXXIII, p. 589, 1914; XXXIV, p. 233, 1915.)

117. **Mesosciurus candalensis** (Allen).

Eleven specimens: La Candela, 8; La Palma, 3 (Miller). (Bull. XXXIII, p. 590, 1914; XXXIV, p. 235, 1915.)

118. **Mesosciurus gerrardi milleri** (Allen).

Fourteen specimens: Cocal, 2 (Miller); Ricuarte, 4; Barbacoas, 8 (Richardson). (Bull. XXXI, 91, 1913; XXXIV, p. 241, 1915.)

119. **Mesosciurus gerrardi salaquensis** (Allen).

Ten specimens: Rio Salaqui, 3 (Kerr); Alto Bonito, 3; Dabeiba, 4 (Miller and Boyle). (Bull. XXXIII, p. 594, 1914; XXXIV, pp. 245, 309, 1915.)

120. **Mesosciurus gerrardi baudensis** Allen.

Four specimens: Baudo, 2; Bagado, 1 (Kerr); Juntas de Tamaná, 1 (Miller). Bull. XXXIV, p. 308, 1915.)

121. **Mesosciurus gerrardi valdiviæ** Allen.

Twelve specimens: Puerto Valdivia, 6; Frijolera, 6 (Miller and Boyle). (Bull. XXXIV, p. 309, 1915.)

122. **Mesosciurus saltuensis magdalensæ** Allen.

Two specimens: Banco, near mouth of Rio Cauca (O'Connell). (Bull. XXXIII, p. 593, 1914; XXXIV, p. 251, 1915.)

123. **Urosciurus igniventris igniventris** (Wagner).

Five specimens: La Florencia, 4, La Murelia, 1 (Miller). (Bull. XXXIV, p. 271, 1915.)

124. **Urosciurus igniventris tœdifer** (Thomas).

Two specimens: Buenavista, (O'Connell; Bull. XXXIV, p. 272, 1915); Rio Lengupa, near Bogotá, (A. Maria).

MUSTELIDÆ.

125. **Mustela affinis affinis** Gray.

Mustela aureoventris GRAY, Proc. Zool. Soc. London, 1865, p. 115 (part, only the New Grenada specimen).

Mustela affinis GRAY, Ann. and Mag. Nat. Hist. (4), XIV, p. 375, Nov., 1874. New Grenada.

Mustela affinis affinis ALLEN, Bull. Amer. Mus. Nat. Hist., XXXV, pp. 98, 99, 100. Type locality fixed as Bogotá, Colombia.

Five specimens, vicinity of Bogotá.

In my paper on 'The Neotropical Weasels' I designated (*antea*, p. 99) Bogotá, Colombia as the type locality of Gray's *Mustela affinis*, and on page 104 of the same paper expressed the opinion that Gray's second specimen of his *Mustela aureoventris*, from "New Grenada (Fraser)," later became the type of his *M. affinis*. In a footnote to p. 99 of my above-cited paper I stated, on the authority of Oldfield Thomas of the British Museum that the type of *M. affinis* was still extant, and that I hoped soon to have his opinion as to whether my assumptions were well founded. His kind reply was received too late for use in my paper on the Neotropical weasels, but it is so important and conclusive as to the facts in the case that I take the liberty of inserting it here. He writes (*in litt.* of date April 10, 1916): "You are no doubt correct in saying that Gray's 2d specimen of *M. aureoventris* from New Grenada, was afterwards the type of his *affinis*. His reference to 'Fraser' is evidently a mistake, as the animal is registered as 'Purchased of Stevens,' and Fraser was never near New Grenada.

"At about the same time a number of birds were purchased of Stevens, labelled 'Bogotá,' and this may I think be taken as the true locality. But I do not know who the actual collector was, as Stevens was only a London dealer."

126. **Mustela affinis costaricensis** Goldman.

Putorius macrurus ALLEN (not of Taczanowski), Bull. Am. Mus. Nat. Hist., XXXI, p. 92, April 19, 1912. Munchique and Miraflores.

Mustela affinis costaricensis ALLEN, *ibid.*, XXXV, p. 101, April 28, 1916.

Five specimens: Munchique, 1; Miraflores, 1 (Miller); Sta. Elena, 2; Barra Blanco, 1 (Miller and Boyle).

127. **Tayra barbara barbara** (Linné).

Three specimens: Barrigona (near Bogotá), 1 (Gonzales); Puerto Valdivia, Antioquia, 2 (Miller and Boyle).

The Valdivia specimens are both males (one an old adult with the cranial sutures obliterated by ankylosis, the other younger with the fronto-maxillary and nasal sutures still open), taken on the same date at the same locality, yet they differ notably in the texture of the pelage and in coloration. The pelage in the younger animal is much softer and longer than in the other. Both are intense black except on the head and top and sides of the neck, where in the younger animal the color is brownish gray varied with black-tipped hairs; in the other these parts are golden brown from the anterior base of the ears nearly to the shoulders, the face gray varied with black-tipped hairs. In the younger specimen the yellow spot on the lower fore neck is pale and reduced to a small circular area about 10 mm. in diameter; in the other it is deep yellow, large, and triangular in outline, and about 35 mm. long and about the same in breadth on the lower border.

The collector's measurements are, respectively, total length, old ♂ 1035, young ♂ 1020 mm.; head and body, 620, 590; tail vertebrae, 430, 415. Skull, total length, old ♂ 120, young ♂ 116; condylobasal length, 115, 112; zygomatic breadth, 69, 64; interorbital constriction, 26, 22.5; postorbital processes, 34, 31; postorbital constriction, 21, 23; breadth of braincase, 53, 52; mastoid breadth, 45, 49; maxillary toothrow, 23, 23.2; carnassial, 9×7.3 , 9×7.5 .

128. **Conepatus mapurito** (Gmelin).

Two specimens, adult male and female, Balcillas, near Bogotá (Gonzales).

PROCYONIDÆ.

129. **Nasua nasua candace** Thomas.

Nasua quichua ALLEN, Bull. XXXI, p. 93, 1912. Not *N. quichua* Thomas.

Six specimens: Salento, 4; Popayan, 1; Cali, 1 (Miller); Subia, near Bogotá, 1 (Gonzales).

The Subia specimen is doubtfully referred here; it doubtless represents Thomas's recently described *Nasua judex* from "Bogotá." The others conform to the description of *N. candace* and geographically are referable, judging by other groups of similar distribution.

130. **Nasua olivacea olivacea** Gray.

One specimen, skin without skull, Anolaima, near Bogotá (Gonzales).

131. **Nasua olivacea lagunetæ** *Allen*.

Eight specimens, Salento district (Miller). (Bull. XXXII, p. 483, 1913.)

132. **Bassaricyon medius** *Thomas*.

Three specimens: Gallera, 2 (Miller; Bull. XXXI, p. 93, 1912); Puerto Valdivia, 1 (Miller and Boyle).

133. **Potos flavus tolimensis** *Allen*.

Four specimens (skins only): Giradot, Tolima, 1 (Chapman; Bull. XXXII, p. 481, 1913); Dabeiba, 3 (Miller and Boyle).

134. **Potos flavus meridensis** *Thomas*.

Two specimens, Fusugasugá, Eastern Andes (O'Connell).

135. **Potos flavus caucensis** *Allen*.

Seven specimens: San Antonio, 3, practically topotypes (Richardson; Bull. XXXI, p. 93, 1912); San Agustín, 2 (Miller); Bogado, 2 (Kerr).

FELIDÆ.

136. **Panthera onca** (*Linné*).

A beautiful jaguar skin was obtained by Mr. L. A. Fuertes, who accompanied Dr. Chapman on his 1913 expedition to the Eastern Andes as artist, which through his kindness I have had opportunity to examine. It was taken at Villavicencio, at the eastern base of the Eastern Andes (alt. 1500 ft.). In comparison with skins from Corumbá, Matto Grosso, it is very pale, the ground color being much lighter and the black markings much more restricted in area. The median dorsal band from the middle of the back to the base of the tail (beginning at the posterior border of the thoracic region) consists of a double row of long narrow black spots, as in one of the Corumbá specimens, but the adjoining lateral band on either sides has the circular spots open and less heavy than in Corumbá skins.

137. **Oncoides pardalis æquatorialis** (*Mearns*).

Two specimens: 1 adult male, skin and skull, Caquetá district, Colombia (Miller); 1 young male, skin and skull, Las Pabas, Cauca, Colombia (Batty).

Collector's measurements of the adult male (No. 33895): Total length, 1200 mm.; tail vertebræ, 350; hind foot, 160. Skull measurements: Total

length, 142; condylobasal length, 132; zygomatic breadth, 94; interorbital breadth, 26.4; postorbital breadth, 32; breadth of braincase, 52; length of nasals on midline, 31; on outer border, 37; length of maxillary toothrow, 30.6; upper carnassial, 15×7.4 .

The young male, about two thirds grown, still retains the greater part of the milk dentition; the canines and carnassials are just breaking through the alveoli. As in other young ocelots, the pelage is longer and softer than in adults and very different in color, the ground color of the sides, limbs and tail being white, and on the back posterior to the shoulders fulvous or mixed fulvous and white; shoulders, nape and head yellowish tawny. The dark markings throughout are intense black and sharply defined. A skin at this stage, *without the skull*, might readily be considered as belonging to a different species from the adult. That young specimens of the *pardalis* group differ markedly in color from the adults of the same subspecies, even when nearly full grown, is shown to be true of *O. p. mearnsi*, *O. p. sanctæ-martæ*, and *O. p. albenscens*.

Oncoides pardalis æquatorialis in coloration closely resembles in a general way *O. p. mearnsi* of Central America (Panama to Nicaragua), but the tawny color of the upperparts is deeper and more rufous, and extends much lower on the sides of the body. Specimens from western Colombia agree closely with Ecuador specimens, as would be expected, the type locality of *æquatorialis* being in northwestern Ecuador.

138. **Margay tigrina elenæ** Allen.

One specimen, Santa Elena, Antioquia (Miller and Boyle). (Bull. XXXIV, p. 631, 1915.)

139. **Margay caucensis** Allen.

One specimen, skin only, Las Pabas, near San Antonio (Batty). (Bull. XXXIV, p. 631, 1915.)

140. **Margay tigrina wiedi** (Schinz).

Two specimens: 1 adult male, skin and skull, Florencia (alt. 1000 ft.); 1 adult skin without skull, sex (♀ ?) not indicated, Andalucia (Miller).

External measurements, total length, ♂ 1030, ♀ ? 800; tail, ♂ 420, ♀ ? 300; hind foot, ♂ 120, ♀ ? 110. Skull of male (No. 33894), total length, 99; condylobasal length, 96; zygomatic breadth, 63; interorbital breadth, 19; postorbital breadth, 35; breadth of braincase, 45.5; length of nasals on midline, 16.5, on border, 21; length of maxillary toothrow, 22.5; upper carnassial, 12.2×6 .

These two specimens do not seem to be separable from a specimen of *wiedi* taken at Urucum, Matto Grosso, Brazil (Roosevelt Exped.). Further material, however, may show that *wiedi* of Espirito Santo, Brazil, which is the type region of the species,¹ may be different from the Matto Grosso specimens.

141. ***Herpailurus jaguarundi*** (*Fischer*).

Three specimens, hunter's skins: Popayan, 1 (Miller; Bull. XXXI, p. 93, 1912); near Bogotá, 2. One of the latter is in the gray phase, the other in the red phase; both are very dark for their respective phases.²

CANIDÆ.

142. ***Cerdocyon thous*** (subsp. indet.).

Three specimens: a flat skin without skull, from near Bogotá (P. G. Howes); 2 young, about a week old, from Fusugasugá (G. K. Cherrie).

No other canid is included in the present large collection of mammals from Colombia.

SORICIDÆ.

143. ***Cryptotis thomasi*** (*Merriam*).

Two specimens, Paramo de Bogotá (A. Maria).

The bats collected on the recent American Museum expeditions to northern South America (about 250 specimens) have been identified by direct comparison with material in the United States National Museum. I am greatly indebted to Mr. Gerrit S. Miller, Jr., Curator of Mammals at the National Museum, for valued assistance in their determination.

EMBALLONURIDÆ.

144. ***Rhynchiscus naso*** (*Wied*).

Thirteen specimens: Nóvita, Rio San Juan, 5; La Murelia (=Muralla), Caquetá district, 8 (Miller).

¹ In my second paper on mammals from Nicaragua (this Bulletin, XXVIII, pp. 108, 109, April 30, 1910) two specimens of cats were left unidentified, an adult male from Volcan de Chinandega (No. 28957) and an adult female from Matagalpa (No. 29596). I now find that they represent a form of the *Margay wiedi* group, allied to if not identical with *M. tigrina oncilla* (*Felis pardinoides oncilla* Thomas), the type locality of which is Volcan de Irazú, Costa Rica.

My *Felis carrikeri* (this Bull., XX, p. 47, Feb. 29, 1904) is probably a melanism of some form of *Margay tigrina*, perhaps of *Felis pardinoides oncilla* Thomas.

² I have long been convinced that *Felis eyra* and *F. jaguarundi* (auct.) were merely color phases of the same species. I find that Matschie held the same view as early as 1895 (S. B. Gesell. Naturfors. Freunde Berlin, Dec. 1895, p. 196).

NOCTILIONIDÆ.

145. **Dirias zaparo** (*Cabrera*).

One specimen, Noanoma, Rio San Juan, Dec. 31 (Miller). Agrees satisfactorily in size and coloration with Cabrera's description of the type from the upper Napo River. Much larger and very different in color from the type of *Noctilio* [*Dirias*] *minor* Osgood, with which it has been compared.

PHYLLOSTOMIDÆ.

146. **Micronycteris megalotis megalotis** (*Gray*).

Two specimens, Anolaima (alt. 7000 ft.), near Bogotá (O'Connell).

147. **Phyllostomus hastatus panamensis** *Allen*.

Ten specimens, Nóvita, Rio San Juan, Dec. 25 (Miller). All are the dark brown phase. Forearm, 90 (88-93); third metacarpal, 78 (76-80).

148. **Phyllostomus hastatus caucæ** *Allen*.

Five specimens (skins without skulls), Rio Frio (alt. 3500 ft.), Nov. 29 (Miller). All are the red phase. Forearm, 91.8 (91-92); third metacarpal, 83 (81-84).

149. **Glossophaga soricina soricina** (*Pallas*).

Seven specimens, Rio Frio (alt. 3500 ft.), Nov. 29-Dec. 1 (Miller).

150. **Glossophaga apolinari** *Allen*.

Five specimens, Boqueron de San Francisco, near Bogotá (A. Maria). (Bull. XXXV, p. 86, 1916.)

151. **Hemiderma perspicillatum** (*Linné*).

Sixty-two specimens: Rio Frio, 10 (Miller); Andagada, 3 (Kerr); Salento, 7; Salencio, 2; near San Agustin, 15; Andalucia, 2; Muralla, 16 (Miller); Sta. Elena, 10; Barro Blanco, 1; Puerto Valdivia, 3; La Frijolera, 1; La Playa (near Barranquilla, 2 (Miller and Boyle). The collecting dates cover nine months of the year.

The Rio Frio specimens are larger and redder than those from the localities further south (Muralla, San Agustin and Andalucia), but for the present it seems best to use *Hemiderma perspicillata* as a blanket name for all the specimens from Colombia.

152. **Uroderma bilobatum** *Peters.*

Two specimens: Barbacoas, 1 (Richardson); Sta. Elena, 1 (Miller and Boyle).

153. **Vampyrops dorsalis** *Thomas.*

One specimen (skin without skull), Ricuarte (Richardson).

154. **Artibeus cinereus bogotensis** *Andersen.*

One specimen, Tómeque, near Bogotá (Apolinar Maria).

155. **Artibeus toltecus ravus** *Miller.*

Two specimens, Barbacoas, Aug. 25; Buenavista, Nariño Dept., Sept. 30 (Richardson).

156. **Artibeus jamaicensis æquatorialis** *K. Andersen.*

One specimen (practically a topotype), Cali (3500 ft.), Feb. 8 (Miller).

157. **Artibeus lituratus** (*Illiger*).

Three specimens, Andalucia (3000 ft.), June 17 (Miller).

158. **Artibeus watsoni** *Thomas.*

Four specimens, Dabeiba, Rio Sucio (Miller and Boyle).

DESMODONTIDÆ.

159. **Desmodus rotundus** (*Geoffroy*).

Four specimens, Rio Frio (Miller).

FURIPTERIDÆ.

160. **Furipterus torrens** (*F. Cuvier*).

One specimen, Andagada (Kerr).

VESPRTLIONIDÆ.

161. **Eptesicus andinus** *Allen.*

Five specimens: Valle de las Papas (10,000 ft.), Central Andes, 2; Almaguer (10,300 ft.), 1; El Roble (7000 ft.), 1 (Miller); Fusugasugá (6000 ft.), 1 (O'Connell). (Bull. XXXIII, p. 382, 1914.)

162. **Myotis punensis** Allen.

Two specimens, Barbacoas (Richardson). (Bull. XXXIII, p. 383, 1914.)

163. **Myotis esmeraldæ** Allen.

Three specimens, Buenavista, Dept. Nariño (Richardson). (Bull. XXXIII, p. 385, 1914.)

164. **Myotis caucensis** Allen.

Six specimens: Rio Frio, 1 (Miller); Juntas de Tamana, Chocó district, 5 (Miller). (Bull. XXXIII, p. 386, 1914.)

165. **Eumops milleri** (Allen).

Eight specimens, Barbacoas (Richardson).

166. **Molossus bondæ** Allen.

Six specimens: Barbacoas, 4 (Richardson); Nóvita, Rio San Juan, 2 (Miller).

CALLITRICHIDÆ.

167. **Ædipomidas geoffroyi** (Pucheran).

Ædipomidas salaquiensis ELLIOT, Bull. Amer. Mus. Nat. Hist., XXXI, p. 137, July 23, 1912; Primates, III, 1913, p. 255.

Ædipomidas geoffroyi ELLIOT, Bull. Am. Mus. Nat. Hist., XXXIII, p. 644, Nov. 14, 1914.

Three specimens: Rio Salaqui, 1, type of *Ædipomidas salaquiensis* Elliot; Baudo, 2, July 20, 1912 (Mrs. Kerr).

Additional material from Panama and Baudo shows that the type of *salaquiensis* is not separable from specimens from Panama and the Baudo region. The yellow underparts of *salaquiensis* are evidently due to staining and not normal. In two specimens from Baudo the underparts are clear white in one while the other has the lower abdomen stained yellow, as in the type of *salaquiensis*, except that in the latter the whole ventral surface is yellow. In two specimens from Panama one has the lower abdomen strongly stained with yellow while in the other the whole ventral surface is white. The author was further misled in regard to the size of the type skull of *salaquiensis*, the published measurements of which do not exceed those of Panama specimens instead of being much larger. The type of Pucheran's *Hapale geoffroyi* is stated by him to have been received from Panama.

168. **Ædipomidas œdipus** (Linné).

Seniocebus meticulosus ELLIOT, Bull. Amer. Mus. Nat. Hist., XXXI, p. 31, March 4, 1912; Primates, I, p. 188, col. pl. (frontispiece), pl. xxii, skull.

Ædipomidas œdipus ELLIOT, Bull. Amer. Mus. Nat. Hist., XXXIII, p. 644, Nov. 1914.

Two specimens, Rio San Jorge, Bolivar (Kerr), an adult male (type of *Seniocebus meticulosus* Elliot) and an adult female.

169. **Ædipomidas leucopus** (Günther).

Hapale leucopus GÜNTHER, Proc. Zool. Soc. London, 1876, p. 743, pl. lxxii.

Seniocebus pegasis ELLIOT, Bull. Amer. Mus. Nat. Hist., XXXII, p. 252, July 14, 1913.

Ædipomidas leucopus ELLIOT, Bull. Amer. Mus. Nat. Hist., XXXIII, p. 645, Nov. 1914.

Four specimens; No. 34563, adult female, type of *Seniocebus pegasis* Elliot, Puerto Berrio, Rio Magdalena, Jan. 29, 1913 (L. A. Fuertes); Puerto Valdivia, 1; Malena, 2 (Miller and Boyle).

One of the Malena specimens has the apical fourth of the tail white.

170. **Callicebus ornatus** (Gray).

Twelve specimens: Villavicencio, 5 (O'Connell); Barrigon, 10 miles east of Villavicencio, 7 (Gonzales).

ALOUATTA SENICULUS GROUP.

Simia seniculus LINNÉ, Syst. Nat., ed. 12, 1766, p. 37.

Alouatta, or *Myceles*, *seniculus*, in part, of most authors.

The only point of value in Linné's brief description of his *Simia seniculus* is the type locality, given as follows: "Habitat Carthagenæ in sylvis ad fluvium." In the absence, in the present connection, of specimens from the immediate vicinity of Cartagena it is impossible to determine whether specimens from the upper Cauca Valley, or from other parts of Colombia, as the Bogotá and Santa Marta districts, represent the typical phase of *seniculus*, but the available material clearly shows, notwithstanding the wide range of individual variation in coloration, size, and cranial details, that there are a number of local, and probably intergrading, phases of the group to which *seniculus* was the first specific name given. In order to define these forms and their distribution and relationships a vast number of specimens will be necessary.

In determining the material recently received at the American Museum

I have attempted to utilize some of the earlier names. This material, numbering about 100 specimens, when laid out in series according to the localities represented, shows that the red howlers of northern South America (*i. e.*, north of Amazonas) fall into seven groups, as follows: (1) Upper Rio Cauca; (2) Santa Marta; (3) northern coast of Venezuela; (4) Bogotá region; (5) Guiana and Lower Orinoco; (6) Trinidad; (7) Rio Caquetá.

Very few of the specific names given by authors to alleged forms of the *seniculus* group rest on a tangible foundation, not even that of locality. The characters given, based at most on two or three specimens, are of such a general character that they fail to be distinctive, and the locality of the type specimens is rarely given more definitely than "Colombia," "Venezuela," or "Brazil." Most authors have erroneously regarded Guiana as the type locality of *seniculus*, and have usually ascribed *ursinus* to Brazil, so that the comparisons they have instituted with these species have been with forms only remotely related to the real *seniculus* or the real *ursinus*.

My material shows that the color of the tail, the basis of I. Geoffroy's *Myctes chrysuros*, is exceedingly variable. While it is usually of the same general color as the limbs and head, but of a lighter tone, it varies in specimens from the same locality from pale chestnut to dull red, with a tendency to a lighter color apically than at the base; the apical third, or half, or two thirds (as the case may be) may be distinctly yellow, as light in tone as the color of the back. Also, in specimens from the same locality, the range in the intensity of the color of the pelage as a whole varies widely, although the majority of the specimens are practically similar; while the hairs individually, particularly on the head, nape and shoulders, are for the most part of a uniform tint from base to tip, they may be darker at the extreme base in some specimens, while others have the hairs of the head, nape, and shoulders, and sometimes on other parts of the body, broadly annulated with black, or black for even the greater part of their length, but whether due in part to season or age is not easily determinable.

The skull varies greatly not only with sex and age, but through purely individual variation; the skull of the female is usually considerably smaller than that of the male and much less heavily ossified. Practically adult skulls vary greatly in massiveness with age, and consequently in size, growth through the deposition of bony matter apparently continuing as long as the animal lives. Distinctions based on the skull are therefore difficult to establish without a large amount of strictly comparable material from different localities. In the case of the Santa Marta form (*Alouatta seniculus rubiginosa*), described by me in 1904, the skull proves to be considerably above the average size for the *seniculus* group, relatively very broad, with, correlatively, very broad nasals. The two forms, *rubiginosa* and *caucensis*,

stand well apart from each other, both in coloration and in cranial characters, and also from the other forms here recorded.

In recently describing *Alouatta seniculus bogotensis*¹ I had occasion to consider some of the earlier names given to Colombian forms of this group, as follows:

"In this connection it is necessary to consider two earlier names for red howlers from 'Colombia.' The first is *Stentor chrysuros* I. Geoffroy (Mém. du Mus. d'Hist. nat. Paris, XVII, 1828 [1829], pp. 166, 171; Guérin's Mag. de Zool., 1832, Cl. I, pl. 7, text and colored plate), described from three specimens collected by M. Plée and believed to have come from 'la vallée de la Madeleine.' On geographical grounds they would seem referable to *Alouatta seniculus* (Linn.), the type locality of which is Cartagena, Colombia. Comparison is made by Geoffroy with '*Stentor seniculus*,' but his specimens of *seniculus*, as he states, were from Guiana, as his comparison also shows, and hence with what is now known as *Alouatta seniculus macconnelli*. His principal character of *chrysuros* was the color of the tail, the apical half of which was 'd'un fauve doré très brillant,' like the color of the back, present in two of his three specimens and less pronounced in the third. As is well known, the color of the tail in the red howlers varies from red to yellow in specimens from the same localities, so that the alleged character obviously has no value. It seems best therefore to consider *chrysuros* as a synonym of typical *seniculus*, where it has usually been placed.

"The second name is *Mycetes laniger* J. E. Gray (Ann. and Mag. Nat. Hist., XVI, p. 219, Oct. 1845), from 'Colombia,' and 'purchased at Paris.' As the description is inadequate for the identification of the species, and there is no definite type locality, the species is indeterminable without examination of the type, presumably extant in the British Museum."

171. *Alouatta seniculus caucensis* Allen.

Alouatta seniculus caucensis ALLEN, Bull. Amer. Mus. Nat. Hist., XX, p. 462, figs. 2, 4, Nov. 28, 1904. (Upper Rio Cauca, Colombia).

Twenty-one specimens, all from western Colombia: Rio Salaqui, 1 (Kerr); Salento, 4; Rio Frio, 7 (Miller); Frijolera, Antioquia, 5 (Miller and Boyle); Las Lomitas, 1; Güengüe, 1 (Richardson); San Agustín, 2 (Miller).

These agree well in the main with the type series (8 specimens) from Charingo, Upper Cauca region, but present phases of pelage not well represented in the original series. The specimens from the southern part of the Western Andes and those from San Agustín, in the southern part of the

¹ Bull. Amer. Mus. Nat. Hist., XXXIII, 1914, p. 649.

Eastern Andes, are indistinguishable, but those from Salento and Rio Frio, in the northern Central Andes, differ in having the nape and shoulders darker and more varied with black, the hair of these parts being red at the surface with a broad band of black below, sometimes extending to the base of the hair; in other instances the black basal portion is divided by a broad annulation of red. As most of these specimens are young adults it may be that this is a phase of coloration due to age, especially as some of the older specimens are quite like comparable specimens in the type series.

The single specimen, an adult female, from the Rio Salaqui, north-western Colombia, is quite like comparable specimens from the Upper Cauca region.

172. ***Alouatta seniculus rubicunda* Allen.**

Alouatta seniculus rubicunda ALLEN, Bull. Amer. Mus. Nat. Hist., XX, p. 458, figs. 1, 3, Nov. 28, 1904. (Bonda, Santa Marta, Colombia).

There is nothing to add by way of qualification or correction of the detailed description already given (*l. c.*), except to say that the type locality of *A. senicula*, given as "Guiana," should be corrected to Cartagena, Colombia. The large amount of material since received from other localities confirms the distinctions based on the Santa Marta series, except in regard to the alleged curvature of the maxillary tooththrows, which proves to be not constant, in most specimens the tooththrows being straight, as in other forms of the *seniculus* group.

173. ***Alouatta seniculus bogotensis* Allen.**

Five specimens, Subia, near Bogotá (Gonzales). (Bull. XXXIII, p. 648.)

174. ***Alouatta seniculus caquetensis* Allen.**

Two specimens, La Murelia = Muralla (Miller). (Bull. XXXIII, p. 650.)

175. ***Alouatta æquatorialis* Festa.**

One specimen, adult male, Ricuarte (Richardson).

Total length, 1270 mm.; head and body, 690; tail vertebræ, 580; hind foot, 140. Skull, total length, 118; occipitonasal length, 99; zygomatic breadth, 84; orbital breadth, 61; interorbital breadth, 12; postorbital breadth, 41; breadth of braincase, 52; breadth of rostrum at canines, 32; palatal length, 42; palatal breadth at m^1 , 23; nasals, 19×12 ; maxillary tooththrow, 34.

[The following forms are added as pertinent to the present consideration of the *Alouatta seniculus* group, although not occurring within the prescribed limits of this paper.

***Alouatta seniculus ursina* (Humboldt).**

Simia ursina HUMBOLDT, Observ. de Zool. et Anat. comp., I, livrs. 1 (1st. issue, 1805, apud Sherborn¹), pp. 8, 331, 355, pl. xxx (2d issue, 1812), part; not the plate, and not the Rio Orinoco references.

Stentor ursinus E. GEOFFROY, Ann. de Mus. d'Hist. nat. Paris, XIX, 1912, p. 108 (ex Humboldt).

Mycetes ursinus DESMAREST, Mamm. I, 1820, p. 78 (ex Humboldt).—KUHL, Beitr. zur Zool., 1820, p. 29, part.—Also, in part, of subsequent authors.

Mycetes seniculus WAGNER, Schreber's Säuget., Suppl., I, 1840, p. 179, part, only the reference to Humboldt; *ibid.*, V, 1855, p. 67, part.

The type locality may be fixed as Caracas, Venezuela, on the basis of the vernacular name, *Abraguato de Caracas*, employed for it by Humboldt in his description, although the range he assigned to it embraced a large part of Venezuela, including the Lower Orinoco. The brief diagnosis is inadequate for the determination of the species, and the plate should be excluded from consideration, it having been based on a monkey 'probably from Brazil' ("Cet individu est probablement originaire du Brésil").

Five specimens, Venezuela: Cristobal Colon, 3 (Miller); El Hacha, 2 (Carriker).

These specimens, in their very dark coloration, resemble *A. s. rubicunda*, but the Cristobal Colon specimens are even darker than that form, the limbs being blackish chestnut, the head and tail very dark, and the back chestnut red. The external measurements and the skulls indicate a much smaller form than *rubicunda*, with a narrower skull and much narrower nasals.

The specimens vary greatly individually in intensity of coloration. The darkest one from Cristobal Colon has the fore limbs and beard nearly black, and the tips of the hairs on the back are dark red; in another the fore limbs and beard are dark purplish chestnut, the tips of the hairs on the back orange red; the other is intermediate between these two. Of the two specimens from El Hacha one, taken Jan. 6, is as dark as the Cristobal Colon specimens, the other (taken Nov. 27) is the lightest of the series of five and has the pelage more worn.

¹ Ann. and Mag. Nat. Hist. (7), III, p. 428, May, 1899.

***Alouatta seniculus macconnelli* Elliot.**

Alouatta macconnelli ELLIOT, Ann. and Mag. Nat. Hist. (8), V, p. 80, Jan. 1910; Primates, I, p. 281, 1913, part.—ALLEN, Bull. Amer. Mus. Nat. Hist., XXVIII, p. 148, May 27, 1910; *ibid.*, XXX, p. 271, Dec. 2, 1911 (Rio Mato and El Llagual, Venezuela).

Three adult specimens, 1 male, 2 females, Tumatumari, British Guiana, August 1, 1913 (Miller).

Collector's measurements, total length, ♂ 1190, ♀ ♀ 1130, 1080; head and body, 600, 510, 500; tail vertebrae, 590, 510, 500; hind foot, 140, 135, 125.

Skull, total length, ♂ old, 131, ♀ young adult, teeth not worn, 118; occipitonasal length, 107, 91; basal length, 121, 91; zygomatic breadth, 80, 70; orbital breadth, 64, 60; postorbital breadth, 39, 44; palatal length, 54, 40; palatal breadth at m¹, 23, 20; nasals, 25 × 15, 22 × 10; maxillary toothrow, 34, 32.

The Guiana specimens agree in coloration with the description of the type. Lower Orinoco specimens closely resemble those from Guiana, having the fiery golden tinge so characteristic of Guiana specimens.

***Alouatta insulanus* Elliot.**

Alouatta insulanus ELLIOT, Ann. and Mag. Nat. Hist. (8), V, p. 79, Jan. 1910; Primates, I, 1913, p. 382.

One specimen, a flat skin without skull, Island of Trinidad, B. W. I., April, 1894 (F. M. Chapman).

In the nearly uniform coloration this insular form is very different from the red howlers of the Venezuela mainland.]

176. *Pithecia milleri* Allen.

Two specimens, La Murelia (Miller). (Bull. XXXIII, p. 650, 1913.)

[The following species is added here as being a convenient place of record for the measurements.

***Pithecia pithecia* (Linné).**

Four adults, British Guiana: Potara Landing and Kaieteur Falls, 2 males; Tumatumari, 2 females (Miller).

The male was not measured. Two females, total length, 830, 760 mm.; head and body, 400, 340; tail vertebrae, 430, 420; hind foot, 130, 110.

Skull, total length, ♂ 75, ♀ ♀ 76.5, 74; occipitonasal length, 71, 72,

69.5; zygomatic breadth, 52, 51, 51; orbital breadth, 39.5, 40.3, 40.8; postorbital breadth, 33, 33, 34; interorbital breadth, 5, 5.5, 5.6; breadth of braincase, 39, 40, 41; breadth of rostrum at canines, 21.8, 22, 21.5; palatal length, 25, 26.5, 25; breadth of palate at m^1 , 12, 12, 12; nasals, 17×8 , 16×7 , 17×7 ; maxillary toothrow, 17.6, 18.6, 18.

Judging by the skull and teeth, these three specimens are all quite old and very nearly of equal age. Apparently there is very little sexual difference in the size of the skull.]

177. **Saimiri caquetensis** Allen.

Five specimens, all adult males: Florencia, 2 (Miller); Barrigona (southwest of Bogotá), 3 (Gonzales). (Bull. XXXV, p. 87, April 28, 1916.)

178. **Aotus lemurinus** (I. Geoffroy).

Nyctipithecus lemurinus I. GEOFFROY, Arch. du Mus. d'Hist. nat. de Paris, IV, 1844, p. 24, pl. ii. Santa Fé de Bogotá, Colombia.

Aotus vociferans ELLIOT (not of Spix), Primates, II, 1913, p. 13 (part).

Aotus aversus ELLIOT, Bull. Amer. Mus. Nat. Hist., XXXII, p. 251, July 14, 1913. Fusugasugá, about 30 miles southwest of Bogotá (alt. 6000 ft.), Colombia.

Four specimens: Fusugasugá (alt. 6000 ft.), 2, type and topotype of *Aotus aversus* Elliot (*l. c.*); Subia (about 30 miles west of Bogotá, same altitude and faunal zone as Fusugasugá), 2 (Gonzales).

The Fusugasugá specimens were taken March 30, and are in faded and worn pelage; the Subia specimens were taken July 15, or more than three months later in the season, and are in fresh, unworn pelage. The black lateral head stripes extend to the occiput, and blackish prevails over the mid-dorsal region, due to the long blackish tips to the hairs, which have disappeared by wearing in the type and topotype of *aversus*, so that the black head stripes do not reach the occiput. The head, sides of the body, and outside of the limbs are also of a much clearer gray in the July specimens, through the wearing off of the glistening gray tips in the March specimens.

The type series of I. Geoffroy's *Nyctipithecus lemurinus* (five specimens, *l. c.*; also I. Geoffroy's Cat. méth. Coll. des Mamm. de Mus. d'Hist. nat., 1851, p. 39) came from near Bogotá; he also refers to the considerable amount of individual variation in color presented by his specimens. As Bogotá is on an unforested plateau, Geoffroy's types must have come from some nearby forested region, and doubtless the specimens here recorded may be considered as practically topotypes.

179. **Aotus zonalis** Goldman.

Aotus griseimembra ALLEN (not of Elliot), Bull. Amer. Mus. Nat. Hist., XXXI, p. 95, April, 19, 1912.

Aotus zonalis GOLDMAN, Smiths. Misc. Coll., LXIII, No. 5, p. 6, March 14, 1914.

Three specimens, Rio Sinu, Bolivar Province (Kerr).

180. **Aotus lanius** Dollman.

Aotus lemurinus ALLEN (not of I. Geoffroy), Bull. Amer. Mus. Nat. Hist., XX, 1904, p. 465 (part, not the Santa Marta specimens).

Aotus lanius DOLLMAN, Ann. and Mag. Nat. Hist. (8), IV, Sept. 1909, p. 202, Tolima Mts. (alt. 6000 ft.), Colombia.

Aotus pervigilis ELLIOT, Bull. Amer. Mus. Nat. Hist., XXXII, p. 252, July 14, 1913. La Candela (alt. 6500 ft.).

Twenty-six specimens: Rio Toch , 1 (Chapman); Salento, 8; West Quindio Pass (9000 ft.), 3 (Miller); near Cali (6000 ft.), 7 (Batty); La Candela (6500 ft.), 3 (Miller), type and paratypes of *A. pervigilis* Elliot; Frijolera, 3 (Miller and Boyle); Alto Bonito, 3 (Miller and Boyle).

I am unable to find satisfactory characters for the separation of these several series of specimens, when seasonal differences of pelage and coloration are taken into account. The type and paratypes of *A. pervigilis* are in worn pelage, and the black tips of the hairs on the tail are worn off, so that the apical part of the tail appears less black. The series from the Salento district are, as a series, much grayer and less rufous than those from the Cali district, but they are all young animals, with the permanent dentition not fully developed. Two or three of the series are adult, and they so closely resemble specimens from the Cali district that they are readily separable only by the labels.

181. **Aotus griseimembra** Elliot.

Aotus lemurinus ALLEN (part, not of I. Geoffroy), Bull. Amer. Mus. Nat. Hist., XX, p. 465, Nov. 28, 1904 (the Santa Marta specimens only).

Aotus griseimembra ELLIOT, Bull. Amer. Mus. Nat. Hist., XXXI, p. 33, March 4, 1912.

Four specimens: Hacienda Cincinnati, Santa Marta, Colombia, 2, type and paratype (M. A. Carriker, Jr.); Bonda, 1 (now mounted), and Valparaiso, Santa Marta, 1 (H. H. Smith Coll.).

182. **Ateles robustus** Allen.

Five specimens: Gallera, 4, type and topotypes (Miller; Bull. XXXIII, p. 652, 1913); Barbacoas, 1 (Richardson).

183. **Lagothrix lagotricha** (Humboldt).

One specimen, Muralla, Caquetá district (Miller).

This specimen differs from the La Palma series (*L. lugens*), from an altitude of 6000 feet, in the pelage being very much shorter and less woolly and the hair on the outer edge of limbs and upper surface of tail not especially lengthened. The general color above is dull brownish gray, lighter on the lower back, and much lighter on the outside of the limbs; crown-patch well defined and pale brown; chin and throat pale brown; chest pale chestnut brown; lower abdomen and anal region black, many of the hairs with gray tips. No measurements were taken and the skull was lost.

The general coloration is much lighter and grayer than even the lightest colored specimens of the *lugens* series, while the character of the pelage is widely different.

184. **Lagothrix lugens** Elliot.

Lagothrix lugens ELLIOT, Ann. and Mag. Nat. Hist. (7), XX, p. 193, Sept. 1907; Primates, II, 1913, p. 58.

Five adult specimens, 3 males, 2 females, La Palma, alt. 6000 ft. (Miller).

The collector's measurements of a male and female (the others not measured), total length, ♂ 1000, ♀ 1090 mm.; head and body, ♂ 480, ♀ 490; tail vertebrae, ♂ 620, ♀ 600; hind foot, ♂ 150, ♀ 120.

An adult male skull measures, total length, 106 mm.; occipitonasal length, 92; zygomatic breadth, 71.8; orbital breadth, 62; interorbital breadth, 10; postorbital breadth, 46; breadth of braincase, 58; breadth of rostrum at canines, 31; nasals, 11 × 13; palatal length, 33; maxillary toothrow, 22.5.

The series of five adults presents a wide range of individual variation in coloration. Two of them, one a male, the other a female, are nearly uniform dull brownish black throughout, the hairs tipped very slightly with lighter over most parts of the upper surface, but most strongly so on the lower back, the sides of the body, and outside of the limbs.

Two other specimens, also male and female, have a rather distinctly defined blackish brown crown, a paler brown area over the shoulders, and the lower back, outer surface of hind limbs, and upper side of the tail gray. The fifth specimen is intermediate between the two extreme phases. The underparts in all are much alike, and distinctly darker or more blackish than the upperparts; in only one is the chest and throat strongly suffused with brownish, but in two others these parts have a brownish cast, in contrast with the rest of the ventral surface. The pelage in all is long and woolly, and very long on the outer edge of the limbs and the under side of

the tail, the hair on the tail in some of the specimens having a length of 70 to 90 mm. Some of the males have very long hair on the chest, in some specimens 180 to 220 mm. long.

185. ***Cebus capucinus nigripectus* Elliot.**

Five specimens: Baudo, 1 (Kerr); Rio Frio, 3 (Miller); San Antonio, 1 (Richardson).

Nearly all are immature; a male and a female have the permanent dentition fully developed, but the skulls would have increased somewhat in size with age.

These specimens, like the type series of *nigripectus*, are none of them fully grown, which of course would affect the measurements to some extent, both external and cranial. Compared, however, with specimens of corresponding age from Chiriqui, Costa Rica, and Nicaragua, they are obviously much smaller, with correspondingly weaker dentition. Externally they differ from Central American specimens in the extension of the black on the underparts forward over the chest, but the color difference on the forehead alleged in the original description of *nigripectus* does not hold. The markedly smaller size, weaker dentition, and extension of black over the chest serve to distinguish *nigripectus* from the Central American form, which Goldman has recently proposed (Proc. Biol. Soc. Washington, XXVII, p. 99, May 11, 1914) to designate as *Cebus capucinus imitator*, he restricting true *capucinus* to northern Colombia (type locality, by designation, the Rio Sinú, northwestern Colombia).

In the absence of specimens of *capucinus* from the type region it seems proper to retain provisionally the name *nigripectus* for the form represented by specimens from the upper Rio Cauca.

With some 40 skulls of the *capucinus* group before me for study, I fail to appreciate the alleged difference of relatively wider premolars in the Central American form. Different specimens from the same locality differ greatly in this respect, the molars being also especially variable in size and form in the series as a whole. There is often a tendency to a marked reduction in size of m^3 , which is a very unstable tooth. The greatest reduction is in No. 18942, an adult female from Boqueron, Chiriqui, in which m^3 is reduced, on each side, to a slender column not larger than p^3 in some species of squirrels, it being less than one fifth of the normal size.

186. ***Cebus fatuellus* (Linné).**

Eight specimens: Villavicencio, 1 (O'Connell); Barrigona, 2 (Gonzales); La Palma, 2; La Candela, 1; Muralla 1 (Miller).

Collector's measurements of 1 young adult male from Villavicencio and

1 adult and 1 young adult female from Barrigona: Total length, ♂ 760, ♀ 830, ♀ 750 mm.; head and body, 360, 360, 360; tail vertebrae, 400, 470, 390; hind foot, 113, 110, 108. Skulls of same, total length, ♂ juv. 87, ♀ ad. 89, ♀ juv. 86; basal length, 59, 58, 57; zygomatic breadth, 56, 57, 52; orbital breadth, 45, 47, 44; interorbital breadth, 5, 4, 4; postorbital breadth, 37.3, 39, 38; breadth of braincase, 51, 51, 48.5; breadth at canines, 24, 24, 25; palatal length, 29, 31, 28; palatal breadth at m^1 , 16.5, 17, 16; nasals,¹ 18×8.5 , 22×8 , 18×8 ; maxillary tooththrow, 22, 21, 21.

No external measurements are available for the specimens from La Palma and La Candela. Two adult skulls from La Palma measure: Total length, ♂ 103, ♀ 93; basal length, 73, 75; zygomatic breadth, 75, 61.3; orbital breadth, 56, 48.6; interorbital breadth, 5.3, 4.3; postorbital breadth, 41, 41; breadth of braincase, 51, 51; breadth at base of canines, 30.6, 29; palatal length, 36, 32.5; palatal breadth at m^1 , 19, 17; nasals, 20×7 , 14×8.5 ; maxillary tooththrow, 24, 22.

The two series agree in coloration, and the difference in size is probably due to the immaturity of two of the Barrigona specimens.

Cebus fatuellus is taken on the basis of Elliot's 'Review of the Primates,' II, p. 102.

[The following two forms are added for comment.

***Cebus apella apella* (Linné).**

Two specimens, adult male and female, Tumatumari, British Guiana, July, 1913 (Miller).

Collector's measurements of the female (male without measurements): Total length, 830 mm.; head and body, 440; tail vertebrae, 390; hind foot, 135. Skulls, total length, ♂ 98, ♀ 93; basal length, 69, 61; zygomatic breadth, 65.5, 58; orbital breadth, 56, 50; interorbital breadth, 5.2, 5.3; postorbital breadth, 40, 40; breadth of braincase, 53.5, 53; breadth of rostrum at canines, 27.5, 23.6; palatal length, 34, 32; breadth of palate at m^1 , 18, 17; nasals, 19×11 , 17×10 ; maxillary tooththrow, 21.

***Cebus apella apiculatus* Elliot.**

Cebus apiculatus Elliot of the Lower Orinoco is closely related to *apella*. In a series of 12 specimens in the American Museum from the type region of *apiculatus* (several of them are topotypes), two closely resemble true *apella*, but as a series the *apiculatus* form is much more reddish brown, with the upper arms lighter or paler than in Guiana specimens; it is easily distinguished and should stand as *Cebus apella apiculatus*.]

¹ The nasals extend in a narrow point far above the fronto-maxillary suture.