Article III.—ADDITIONAL NOTES ON COSTA RICAN MAMMALS, WITH DESCRIPTIONS OF NEW SPECIES.

By J. A. ALLEN.

Through the kindness of Mr. Anastasio Alfaro, Director of the Museo Nacional of Costa Rica, and Mr. George K. Cherrie, formerly assistant at the Museo Nacional, I have had the opportunity of examining much material relating to the mammals of Costa Rica, a considerable part of which material has been contributed to this Museum, either by Messrs. Alfaro and Cherrie personally or by the Costa Rica Museum. A small collection has also recently been purchased of Mr. Cherrie. These combined collections number about 300 specimens, and represent 65 species. In April, 1891, I published a paper entitled 'Notes on a Collection of Mammals from Costa Rica' (this Bulletin, III, pp. 203–218), in which 38 species were recorded as represented in the material then under review. This was followed in September, 1892, by a second paper, entitled 'Further Notes on Costa Rica Mammals, with description of a new species of *Oryzomys*' (this Bulletin, V, pp. 237–240), adding 9 species to the 38 previously recorded. Since the publication of this latter paper various small lots of Costa Rica mammals have been received from Mr. Alfaro, and a small collection purchased of Mr. Cherrie. These later sendings were found to contain a number of undescribed species, which have been published from time to time in this Bulletin. No general report has been made upon this later material, which is now taken as the basis of the present paper, and adds some 20 species to the number here previously recorded. As a matter of convenience for future reference, it has been deemed advisable to include in the present communication all of the species mentioned in the previous papers, with references to the place of mention, or description, in the case of the new species separately described.[1] This paper is, therefore, not only a report on the

[1] The new Costa Rican mammals already described in this Bulletin from material received from Messrs. Alfaro and Cherrie are 14 in number, to which 4 more are now added, and two new genera are characterized.

recent accessions, but a summary of my previous papers on Costa Rica mammals. The nomenclature is here revised to conform to numerous recent changes. A star is prefixed to the species not given in the former papers.

It is a pleasure in this connection to call attention to the excellent annotated list of Costa Rican mammals recently published by Mr. Anastasio Alfaro.[1] While doubtless not complete, it thoroughly represents our present knowledge of the mammalian fauna of Costa Rica, and forms an admirable basis for further work in this field. The total number of species enumerated is 121; of these 10 species are domesticated animals, and 4 are introduced species of *Mus*, leaving 107 as indigenous to Costa Rica. A few species, chiefly Bats, are introduced on general grounds as likely to occur from their known distribution both to the northward and southward of Costa Rica; but the basis of their inclusion is always duly indicated.

1. **Mycetes palliatus** *Gray.* (Bull. III, p. 204.)

2. **Ateles geoffroyi** *Kuhl.* (Bull. III, p. 204.)

3. **Cebus hypoleucus** (*Humb.*). (Bull. III, p. 204.)

4. **Adelonycteris fusca** (*Beauv.*). (Bull. III, p. 204.)

5. **Rhogeëssa parvula** *H. Allen.* (Bull. V, p. 237.)

6. **Atalapha borealis frantzii** *Peters.* (Bull. III, p. 204; V, p. 237.)

*7. **Vespertilio nigricans** *Wied.*—One specimen.

8. **Saccopteryx bilineata** (*Temm.*). (Bull. V, p. 237.)

*9. **Rhynchonycteris naso** (*Wied*).—Eleven specimens, without definite locality; G. K. Cherrie.

[1] Museo Nacional |—| Mamiferos| de | Costa Rica | por | Anastasio Alfaro |—| Estudio | corregido y aumentado por el Profesor | J. A. Allen |—| Impreso para | La primera Exposicion Centroamericana |—| San José, Costa Rica | Tipografia Nacional |—| 1897—12mo, pp. 51.

10. Diclidurus albus *Wied.* (Bull. V, p. 237.)—Also two additional specimens from La Palma, August, 1891, and October, 1892; G. K. Cherrie.

***11. Molossus rufus** *Geoffr.*—One specimen, ♂ ad., Boruca, Nov. 23, 1891; G. K. Cherrie.

12. Nyctinomus brasiliensis *I. Geoffr.* (Bull. V, p. 237.)—Another specimen, San José, August, 1889; G. K. Cherrie.

13. Hemiderma brevicauda (*Wied*). (Bull. III, p. 204; V, p. 238.[1])

14. Glossophaga soricina (*Pall.*). (Bull. III, p. 204.)—Also a specimen from Jimenez and another from San José; A. Alfaro.

15. Artibeus intermedius, sp. nov.

Artibeus carpolegus ALLEN, Bull. Am. Mus. Nat. Hist. III, No. 2, 1891, p. 205; *ibid.* V, 1893, p. 238.

Rather smaller than *A. palmarum*, and much darker, with the head stripes narrower and much less distinct, and the cheek stripes obsolete.

Adult above dark sooty gray, scarcely lighter on the ventral surface, where the hairs are indistinctly grayish tipped. Color of the pelage everywhere nearly uniform to the base. Membranes blackish brown, haired about as in *A. palmarum*.

Young.—Darker, blackish sooty gray, without any indication of head stripes.

Measurements (from skin, type, ♂ ad.).—Fore arm, 65; thumb (with claw), 15; 3d digit, metacarp. 57, 1st phal. 20, 2d phal. 31, 3d phal. 15; tibia, 22; foot, 17.

Skull.—Brain-case narrow and high, the dorsal outline remarkably convex. Total length, 29; basal length, ? (skull imperfect below); zygomatic breadth, 19; mastoid breadth, 16; breadth across mm², 12; length of palatal floor, 14.

Type, $\frac{9594}{7985}$, ♂ ad., San José, Costa Rica, June 21, 1891; George K. Cherrie.

Represented by 2 adults from San José, and 5 nearly full-grown young from Limon (May 27, 1891), all collected by Mr. Cherrie. The young are darker (decidedly blackish) than the adults, and

[1] By some inadvertance, two specimens of this lot were here recorded as *Artibeus cinereus!* There is still a Costa Rican record for the species (*cf.* Dobson, Cat. Chirop. Br. Mus., 1878, p. 521), so that it is very properly included by Mr. Alfaro in his list of Costa Rica mammals.

are probably in first pelage, the outer pair of milk molars being still in place.

This form is apparently intermediate between *A. palmarum* and *A. perspicillatus*, but differs from either so much in the form of the skull as to warrant at least its provisional separation from both.

16. Vampyrops lineatus (*Geoffr.*). (Bull. V, p. 238.)

***17. Blarina nigrescens** *Allen.* (Bull. VII, p. 339.)

***18. Blarina orophila** *Allen.* (Bull. VII, p. 340.)

19. Blarina costaricensis *Allen.* (Bull. III, p. 205.)—As stated in the original description, there is little to distinguish *B. costaricensis* from *B. brevicauda*, except the alleged locality. For this reason Dr. Merriam (N. Am. Fauna, Nov. 10, 1896, pp. 10, 12) has referred *costaricensis* to *brevicauda*, considering that it doubtless came from Iowa instead of Costa Rica, and that the alleged type locality is due to accidental error. On the other hand, Mr. Cherrie, the collector of the type, still affirms that such an error was impossible, and that the specimen was actually taken at La Carpentera, Costa Rica, in October, 1890. Consequently Mr. Alfaro, in his 'Mamíferos de Costa Rica' (Jan., 1897, p. 15), has compromised the case by including *Blarina brevicauda* in his list of the mammals of Costa Rica. I enter it here under the original designation, awaiting further developments.

20. Felis pardalis *Linn.* (Bull. III, p. 204.)

21. Procyon lotor hernandezii *Wagler.* (Bull. III, p. 204.)

***22. Bassaricyon gabbii** *Allen.* (Proc. Acad. Nat. Sci. Phila., 1876, p. 23, pl. i.)

***23. Bassariscus sumichrasti** *Sauss.*—One specimen, without definite locality, collected by Mr. Cherrie.

24. Cercoleptes caudivolvulus (*Pall.*). (Bull. III, p. 204.)

25. Galictis barbara (*Linn.*). (Bull. III, p. 204.)

***26. Lutra felina** (*Mol.*).—A flat skin, without skull, ♂, La Palma, Feb. 12, 1892; G. K. Cherrie.

27. Conepatus marpurito (*Gmel.*). (Bull. III, p. 204.)

28. Sciurus hypopyrrhus *Wagler.* (Bull. III, p. 206.)

29. Sciurus æstuans hoffmanni *Peters.* (Bull. III, p. 206.) —An additional specimen, Tuis, July 17, 1894; G. K. Cherrie.

***30. Sciurus (Microsciurus) alfari** *Allen.* (Bull. VII, p. 333.)

***31. Mus rattus** *Linn.*—One specimen, San José; A. Alfaro.

***32. Mus alexandrinus** *E. Geoffr.*—One specimen, San José; A. Alfaro.

***33. Mus musculus** *Linn.*—Four specimens, San José; A. Alfaro. Unusually light colored.

34. Tylomys nudicaudus *Peters.* (Bull. III, p. 210.)

35. Akodon teguina (*Alston*). (Bull. III, 208; V, p. 238.)—Also 4 specimens, La Carpentera, September, 1891; G. K. Cherrie.

36. Peromyscus cherriei *Allen.* (Bull. III, p. 211; not V, p. 238, which is *Reithrodontomys costaricensis.*)

37. Peromyscus nudipes *Allen.* (Bull. III, p. 213; V, p. 239).

38. Peromyscus, sp. ind. (=*Hesperomys* (*Vesperimus*) *leucopus sonoriensis*, Bull. III, p. 211.)—The specimen recorded as above is probably not '*sonoriensis*' (=*texanus*) as that form is now understood. It is a short-tailed *Peromyscus*, of the size and general appearance of the *texanus* group. At present the specimen (in spirits) is drab brown above, lower parts and feet white, tail quite hairy and bicolored, being much darker above than below.

The specimen measures: Total length, 136; tail vertebræ, 58; hind foot, 18; ear (from notch), 13. The skull (that of a young adult) is not distinguishable from skulls of the *P. texanus* group of corresponding age.

***39. Reithrodontomys costaricensis** *Allen.* (Bull. VII, p. 139.)

***40. Reithrodontomys australis** *Allen.* (Bull. VII, p. 328.)

41. Oryzomys alfaroi *Allen.* (Bull. III, p. 214.)—Represented by 26 additional specimens, taken at Tuis, July, 1894, by Mr. Cherrie.

42. Oryzomys costaricensis *Allen.* (Bull. V, p. 239.)

43. Oryzomys couesi *Alston.* (Bull. V, p. 240.)

***44. Oryzomys talamancæ** *Allen.* (Proc. U. S. Nat. Mus., XIV, 1891, p. 193.)

Through the kindness of Mr. F. W. True, Curator of Mammals in the United States National Museum, I have before me the type and only known specimen of this species for examination. In some features it appears to resemble Mr. Oldfield Thomas's recently described *O. melanotis* (Ann. & Mag. Nat. Hist. (6), XI, 1893, p. 404), particularly in its large ears and very short anterior palatine foramina, which occupy but about one-half the distance between the inner base of the incisors and the front border of m^1, instead of two-thirds to three-fourths, as is the rule in this genus. It is, however, a much larger animal than *O. melanotis*, with an absolutely, as well as relatively, much shorter tail, so that the two species are apparently not very closely allied.

There is little to add to the original description, except to give a few additional measurements of the skull, as follows:

Width of brain-case, 12; width of interparietal, 8.5; length of same, 3; distance from m^1 to inner base of incisors, 7.5; length of anterior palatine foramina, 3.8; greatest breadth of same, 2.3; length of lower jaw (inner base of incisors to posterior border of condyle), 16; height of same at condyle, 7.1.

45. Oryzomys chrysomelas, sp. nov.

Hesperomys (*Habrothrix*) *caliginosus* ALLEN, Bull. Am. Mus. Nat. Hist. III, No. 2, 1891, p. 210. Not *Hesperomys caliginosus* Tomes.

Adult.—Above dark (blackish) brown finely mixed with bright yellowish rufous, brighter and more rufous on the sides; below strong yellowish brown, with a slight grayish cast. Ears small, black, nearly naked within and without (a few short black hairs visible under a lens on both surfaces); feet blackish brown, naked below and nearly so above; tail about half the length of head and body, black, unicolor, naked (very short black hairs discernible with a lens); nails light horn color, in contrast with the dusky feet.

Young.—Nearly uniform blackish brown above, below somewhat lighter, with a tinge of gray.

Measurements (from skin).—Total length (of type), 187; tail, 90; hind foot, 25; ear (from notch), 10.5.

Skull (of type).—The skull is remarkable for the great breadth of the supra-orbital ridges, considering the size of the animal, which are developed into a thin broad shelf. The anterior palatal foramina do not quite reach the line of the anterior base of the first molar. The teeth and the skull in general features are typically those of an *Oryzomys*. Total length, 28; basal length, 23.5; palatal length, 5.3; zygomatic breadth, 15; breadth of brain-case, 12; length of nasals, 9.5; length of upper tooth row, 5.3.

Type, No. $\frac{10777}{9078}$, ♂ ad., Suerre, Costa Rica, July 16, 1895; A. Alfaro.

In 1893 (*l. c., supra*) I referred provisionally a number of skins in bad condition (skulls not available for examination) from San Carlos and Pacuare to Tomes's *Hesperomys caliginosus*, from Ecuador. All but one of these specimens soon passed out of my hands. Recently the Museum has purchased of Mr. George K. Cherrie a series of 5 very good skins with separate skulls in good condition. An examination of this material shows that the species is referable not to *Akodon* (=*Abrothrix*), but to *Oryzomys*. Externally *O. chrysomelas* appears to very closely resemble *Hesperomys caliginosus* Tomes, but if Tomes's species is properly referable to *Akodon*, the cranial characters of the two species must be very different.

O. chrysomelas somewhat approaches *O. alfaroi* Allen in coloration, but the latter is a much more slender animal, with the tail, both absolutely and relatively, very much longer, while the skull

is much smaller and otherwise very different from that of *O. chrysomelas.*

Zygodontomys, gen. nov.

Type, *Oryzomys cherriei* Allen.

PLATE I, FIGS. 1–7.

Pelage full and soft, and with the general external appearance of *Sigmodon.* Skull characters in general much as in *Oryzomys,* but with a very different tooth-pattern. Teeth, in respect to relative size and general outline, as in *Oryzomys,* but the cross furrows between the successive pairs of cusps are cut off by a longitudinal bar of enamel, yoking together the pairs of cusps on the median line of the tooth. Thus the anterior cone of m^1 is connected with the two succeeding pairs of cones by a median longitudinal ridge, and the two pairs of cones in m^2 are similarly connected. The same structure also characterizes the lower molars. (Plate I, Figs. 2, 4, 6, 7.)

This peculiar arrangement of the enamel pattern of the teeth is combined with a pelage very different from that found in true *Oryzomys,* the external resemblance being more with *Sigmodon.* The type species, *Z. cherriei,* has the rostral portion of the skull very broad and short, with very broad anterior palatine foramina. A second species, *Z. brevicauda* (=*Oryzomys brevicauda* All. & Chapm.), from Trinidad, has the rostral portion of the skull narrower and longer, about as in *Oryzomys.*

*46. Zygodontomys cherriei (*Allen*).

Oryzomys cherriei ALLEN, Bull. Am. Mus. Nat. Hist. VII, 1895, p. 329. (Published Nov. 8, 1895.)

Sigmodontomys, gen. nov.

Type, *Sigmodontomys alfari* Allen.

PLATE I, FIGS. 8–14.

Pelage very thick and soft as in *Zygodontomys,* or as in the soft pelaged species of *Sigmodon* (*e.g.*, *S. borucæ*) and the voles (*Microtus*). Skull peculiar in many respects. Supraorbital ridges very strongly developed, thin and inclined upward at the orbits. Anterior plate of the zygoma very broad, but not developing a point at the anterior upper border, as in *Sigmodon.* Nasals rapidly tapering posteriorly, terminating in a narrow point beyond the premaxillary suture. Anterior palatine foramina broad, short, not nearly reaching the

plane of the front molars. Posterior nares very broad, the pterygoids heavy and parallel, and the posterior palatal border only slightly hollowed; palate extending beyond the molars, and with the slight pits seen in *Oryzomys*. Interparietal very large, the length about one-half the breadth, rounded at the ends, with the anterior and posterior borders only slightly convex. Audital bullæ globular, of medium size. Dentition very heavy; quite as heavy as in *Sigmodon*, the teeth obliquely implanted. The enamel pattern of the molars is somewhat intermediate between that of *Sigmodon* and *Oryzomys*, but the teeth rather more approach in form and structure those of the latter. General outline and relative size of the teeth as in *Oryzomys*, m^3 being about one-third the size of m^2, but the tubercles are less prominent. On the outer border (teeth only slightly worn) there are no reëntrant angles; on the inner border they are deep, extending nearly to the median line, two in m^1, one in m^2, none in m^3. In the lower molars the plan, as usual, is reversed, there being no reëntrant angles on the inner surface, but on the outer there are two on m_1, and one on each in m_2 and m_3. The crown surface, however, shows a deep infolding of enamel on the inner half of the teeth—two on m_1, two on m_2 and a slight fold on m_3. (Plate I, Figs. 13 and 14.)

*47. Sigmodontomys alfari, sp. nov.

Pelage full, long and soft, much as in *Sigmodon borucæ*. Above strong yellowish brown, shaded with dusky brown over the middle region, lighter on the sides, passing into clear yellowish brown along the lower edge of the dorsal surface; the hairs are plumbeous at base, broadly tipped with yellowish brown, with a very slight intermixture of black hairs; below grayish white (fur plumbeous basally), sharply defined against the color of the upper parts; ears small, nearly hidden in the fur, naked, blackish brown; upper surface of fore feet pale brown, the toes grayish brown and nearly naked; hind feet grayish brown, nearly naked, the minute dusky scales, especially of the toes, distinctly visible; soles naked, blackish; tail unicolor, dark brown, naked.

Measurements (approximate, from skin).—Total length, 278; head and body, 123; tail, 155; hind foot, 37; ear (from notch), 14; ratio of tail length to total length, 56.

Skull.—Total length, 35.2; basal length, 25.4; zygomatic breadth, ?; least interorbital breadth, 12; width of brain-case, 13.2; length of nasals, 14.3; length of palatal surface, 15; distance from m^1 to inner base of incisors, 8.5; length of anterior palatine foramina, 5.3; length of upper tooth row (crown surface), 5.3; length of lower jaw (inner base of incisors to outer border of condyle), 18; height of jaw at condyle, 8.5; length of lower tooth row (crown surface), 6.

Type, No. $\frac{12486}{10744}$, ♂ ad., Jimenez (altitude, 700 feet), Costa Rica; Anastasio Alfaro.

This species is based on a single specimen, collected at Jimenez, by Mr. Alfaro. Externally this species is strongly suggestive of a *Sigmodon*, particularly *S. borucæ*, described later in the present paper, which it greatly resembles in its long, soft, thick pelage, and in coloration. The tail, however, is more than half the total length, instead of considerably less, as in the longest-tailed species of *Sigmodon*. It is generically distinct from any other Central American species, but what its nearest relatives may be among the South American forms of the family, lack of material renders it impossible to determine. Its large, almost naked hind feet, long, hairless tail, relatively small ears, and peculiar dentition, seem to exclude it from any hitherto recognized genus.

This species is named in honor of Mr. Anastasio Alfaro, Director of the National Museum of Costa Rica, to whom I am so greatly indebted for the material that has served as the basis of this and my former papers on Costa Rican mammals.

48. Sigmodon borucæ, sp. nov.

Adult.—Pelage full and rather soft for a *Sigmodon*. Above yellowish brown, with a slight tinge of chestnut, grizzled with black and gray, darker over the median area, lighter on the sides; lower surface whitish gray, tinged with plumbeous, the plumbeous of the basal portion of the pelage showing more or less at the surface. Ears dusky, naked externally, thinly clothed with very short yellowish gray hairs within; fore and hind limbs like the adjoining parts of the body; feet dark gray; tail dark brown, a little lighter on the lower surface than above, nearly naked.

Young.—Pelage soft, above nearly uniform dark yellowish brown, with a slight reddish shade; below the tips of the hairs are more or less buffy, tinged with the gray of the under pelage. Ears, feet and tail darker than in the adult. In changing to the adult pelage the under surface presents a more or less patchy appearance, the buffy tints of the first pelage being mixed in irregular areas with the new whitish tipped hairs of the second pelage.

Size medium. The type (♀ ad.) measured in the flesh: Total length, 275; tail, 115; hind foot (in skin), 30; ear, from notch (in skin), 15. Eleven specimens, mostly young adults (none very old), measured in the flesh by the collector, give the following: Total length, 248 (230–275); tail, 110 (100–125); ratio of tail to total length, 44.2.

Skull.—Nasals rather broad; infraorbital opening very broad, evenly and obtusely rounded above posteriorly; anterior palatal foramina extending to just behind the anterior base of m^1. Total length, 33; basal length, 29; zygomatic breadth, 18; least interorbital breadth, 6; width of brain-case, 13; length of nasals, 12; width of nasals, 3.8; palatal length, 15; length of upper tooth row, 5.5; length of palatal foramina, 8.

Type, No. $\frac{11761}{10045}$, ♀ ad., Boruca, Costa Rica, Dec. 12, 1891; George K. Cherrie.

This species is based on a series of 22 specimens, collected by Mr. George K. Cherrie at Boruca, Costa Rica, on the Pacific slope, not far from the coast, during the months of November and December, 1891. The series consists mostly of young adults, none of the specimens being apparently very old. It includes four examples in first pelage, and several young in change.

Sigmodon borucæ is very distinct from any of the forms of *Sigmodon* found in southern Mexico. In coloration it presents a singularly close resemblance to *S. hispidus*, as represented in the Carolinas and northern Florida. It differs, however, quite appreciably on close comparison, averaging much darker, with a thicker, softer pelage, and it has also a much longer tail, which in *S. hispidus* averages only 38 per cent. of the total length as against 44 per cent. in *S. borucæ*. It presents a pelage similar in character to that of the soft, heavily-furred species of the genus *Zygodontomys;* in fact, it bears so close a resemblance both in the texture of the pelage and in coloration to my *Z. cherriei*, from the same locality, that the two species are easily confounded on casual inspection.

I refer also provisionally to this species a series of 6 specimens from San José, Costa Rica, and 1 (♀ ad.) from Talamanca, C. R. Three of the San José specimens are adult and 3 are immature, one of the latter being in first pelage. They agree in all essential features with the Boruca specimens, except in possessing a coarse, hispid pelage, strikingly in contrast with the soft pelage of the Boruca series. As this greater coarseness and stiffness of the pelage characterizes both old and young alike, in contrast with the Boruca specimens, it seems to indicate that the San José form may prove separable from typical *S. borucæ*, but I am unable at present to distinguish any other tangible difference between the two forms. The San José specimens come from an altitude of

5000 feet, while the Boruca series was collected at nearly sea level.

The single Talamanca specimen was formerly referred by me to "*Sigmodon hispidus toltecus*" (this Bulletin, III, No. 2, April, 1891, p. 207), as also one of the San José specimens (*ibid.*, V, p. 238).

***49. Macrogeomys cherriei** (*Allen*). (Bull. V, p. 337; VIII, p. 45, pl. i.)

50. Heteromys longicaudatus *Gray.* (Bull. III, pp. 215, 270.)—Also 1 specimen from Suerre, July 12, 1895; A. Alfaro; and 1 from Isla Nuevo, Irazu Range, Aug. 20, 1893; G. K. Cherrie.

***51. Echimys centralis** *Thomas.* (Ann. & Mag. Nat. Hist. (6), XVIII, Oct., 1896, p. 312.)—One specimen, a nearly full grown female, taken at Suerre, July, 1895, by Mr. Alfaro, seems more likely to be referable to this species than to *E. semispinosus* Tomes.

Mr. Thomas's '*Echinomys*' *centralis* is based on two specimens from San Emilio, south end of Lake Nicaragua. He says: "No doubt they are the same as the examples of '*E. semispinosus*' recorded by Mr. True [Proc. U. S. Nat. Mus., 1888, p. 467] from Greytown, Nicaragua, and from Pecuare, Costa Rica; so that further details about the species may be learned from his paper."

52. Synetheres mexicanus (*Kerr*). (Bull. III, p. 216.)

***53. Dasyprocta isthmica** *Alston.*—One specimen, Pozo del Pital, Rio Narango, March 12, 1893; G. K. Cherrie.

54. Cœlogenys paca (*Linn.*). (Bull. III, p. 216.)

55. Lepus gabbii *Allen.* (Bull. III, p. 216; V, p. 240.)—Also an additional specimen, San José, September, 1890; G. K. Cherrie.

56. Bradypus infuscatus *Wagler.* (Bull. III, p. 216.)

57. Bradypus castaneiceps (*Gray*). (Bull. III, p. 216.)

58. Cholœpus hoffmanni *Peters.* (Bull. III, p. 217.)

***59. Xenurus gymnurus** (*Ill.*).—One specimen, ♀, Suerre, February, 1896; A. Alfaro.

This species was first recorded from Costa Rica by Dr. von Frantzius, on what was considered by Mr. Alston (Biol. Cent. Am., Mammals, p. 188) as unsatisfactory evidence. Mr. Alfaro, however, has had the good fortune to capture and record (Mamíferos de Costa Rica, 1897, p. 46) the specimen here mentioned, thus establishing beyond question the existence of the species in Costa Rica.

60. Tatusia novemcincta (*Linn.*). (Bull. III, p. 217.)

61. Cyclothurus didactylus (*Linn.*). (Bull. III, p. 217.)

62. Didelphis aurita *Wied* (=? *D. marsupialis* Linn.). (Bull. III, p. 217.)—The series of Costa Rican Opossums of the genus *Didelphis* available for examination is not sufficient to determine satisfactorily their relationships, but they appear to belong to the *aurita* type of the so-called *marsupialis* group. In two young specimens before me from San José, the ears are almost wholly white and the tail is quite as long as the head and body.

The name *marsupialis* is here recognized only provisionally, and in the belief that it should be discarded as indeterminable, in view of the fact that several quite distinct forms have been included under it. The original Linnæan species *marsupialis* is intricately composite; though based mainly, apparently, on early descriptions of Wied's *D. aurita*, it doubtless covered also *D. karkinophaga* Zimm. (=*D. cancrivora* Gmel.), and also the Philander. If we take Linnæus's diagnosis (Syst. Nat., ed. 10, 1758, p. 55) as the basis of the name, it seems to point to *D. aurita* rather than to *D. virginiana*—to an animal with the tail as long as the body and the ears black, tipped with white. It is clearly not *D. karkinophaga* (*cf. anteà*, p. 23).

63. Metachirus quica (*Temm.*). (Bull. III, p. 317.)

64. Marmosa cinerea (*Temm.*). (Bull. III, p. 318.)—Also 2 adults and 4 young, from Tres Rios, Aug. 17, 1893; G. K. Cherrie.

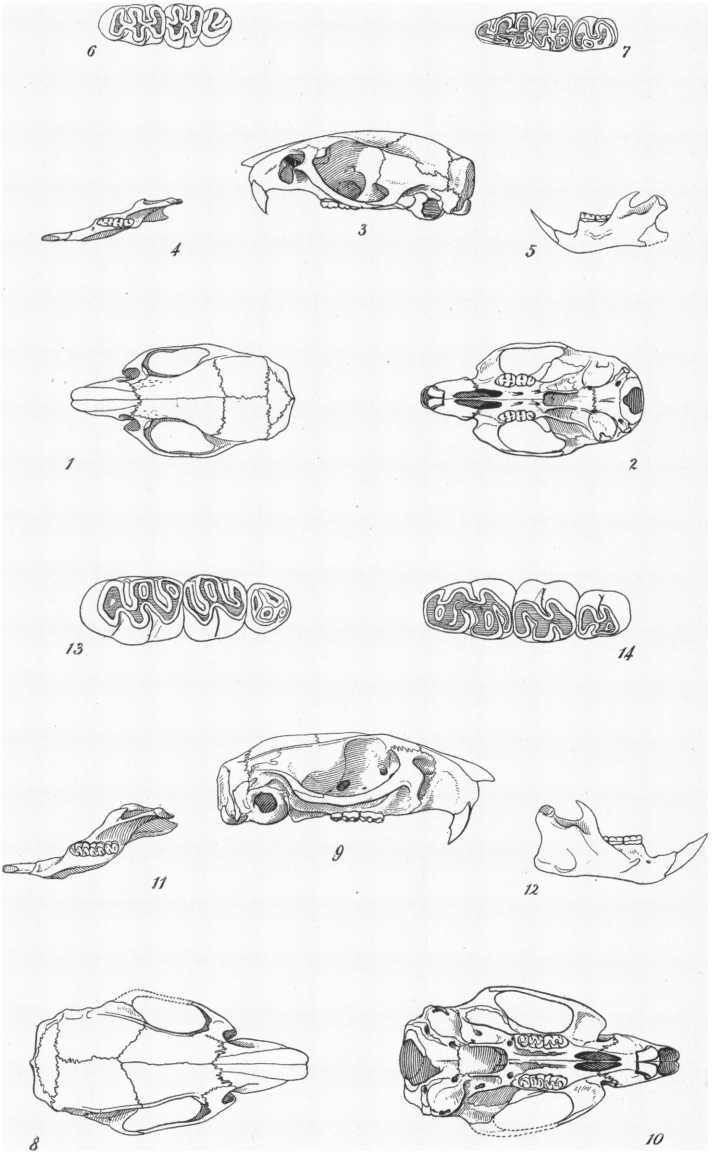
65. Marmosa murina (*Linn.*). (Bull. III, p. 218; V, p. 240.)—Also 1 specimen each from Jimenez and Boruca ; G. K. Cherrie.

66. Philander lanigera *Desm.* (Bull. III, p. 218.)—Two additional specimens—Boruca, Dec. 15, 1891, and Irazú Range ; G. K. Cherrie. The former is a very rufous example ; the latter is gray, tinged slightly with brown where the rufous tints ordinarily prevail.

DESCRIPTION OF PLATE I.

FIGS. 1–7, *Zygodontomys cherriei.*—Fig. 1, skull from above ; Fig. 2, side view of same ; Fig. 3, lower view of same ; Fig. 4, lower jaw, from above ; Fig. 5, lower jaw, from side ; Fig. 6, upper molar series; Fig. 7, lower molar series. Figs. 1–5, natural size ; Figs. 6 and 7, enlarged 4½ times.

FIGS. 8–14, *Sigmodontomys alfari.*—Fig. 8, skull from above ; Fig. 9, side view of same ; Fig. 10, lower view of same ; Fig. 11, lower jaw, from above ; Fig. 12, lower jaw, from side ; Fig. 13, upper molar series ; Fig. 14, lower molar series ; Figs. 8–12, natural size ; Figs. 13 and 14 magnified 4½ times.



Figs. 1–7. ZYGODONTOMYS CHERRIEI.
Figs. 8–14. SIGMODONTOMYS ALFARI.