

Article XIII.—DESCRIPTIONS OF TEN NEW NORTH
AMERICAN MAMMALS, AND REMARKS ON
OTHERS.

By J. A. ALLEN.

The large additions made during the last few months to the collection of mammals in the American Museum include a number of undescribed forms, mainly from the collections of Messrs. W. W. Price and W. W. Granger. Mr. Price's collection, made in southeastern Arizona, alone numbers about 1500 specimens, one-half of which has been purchased by the Museum. The whole collection, however, has been kindly sent by Mr. Price to the Museum for determination, and will form the basis of a special paper on the mammals of southern Arizona, to be published shortly in the Museum 'Bulletin,' Mr. Price contributing his important field notes, covering nearly a year's work of himself and assistants. In addition to the several new species discovered, his observations and collections greatly extend the hitherto recorded range of many species of mammals. Thus the known range of *Tamias cinereicollis*, *T. lateralis*, *Sciurus hudsonius mogoloniensis*, *Arvicola alticolus*, and *Sitomys americanus rufinus* has been carried from the San Francisco Mountains southeastward along the Pine Plateau region to the White Mountains, and some of them to the Chiricahua and Graham Mountains; and the large *Nyctinomus macrotis nevadensis*, described by Dr. Harrison Allen from Nevada, has been found by Mr. Price in the Chiricahua Mountains. Much light has also been thrown upon the range of various other species in southern Arizona.

Mr. Granger's collection, numbering over 500 specimens, collected mainly in South Dakota, contains several species new to the fauna of the Black Hills region, and will also be made the subject of a special report.

The measurements given in the following paper were taken by the collector from the fresh specimen before skinning, unless otherwise stated.

***Perognathus pricei*, sp. nov.**

Above gray, lined with black ; no fulvous lateral line ; beneath white ; tail strongly crested penicillate, dark above, becoming blackish distally, white below ; ears dusky ; feet grayish white, soles naked. Pelage rather harsh but not spiny.

Measurements.—Total length (type), 157 mm. ; tail vertebræ, 90 ; pencil at tip of tail, 10 ; hind foot, 23 ; ear, 7.5. Average of 5 adult specimens (4 ♂♂, 1 ♀) : Total length, 151 ; tail vertebræ, 82 ; hind foot, 22 ; ear, 8.

Skull.—Total length, 23 ; basilar length,¹ 18 ; mastoid breadth, 12 ; length of nasals, 8 ; breadth of interparietal, 8 ; greatest length of interparietal, 4 ; length of mastoid area, 12. The interparietal is large, distinctly pentagonal, twice as broad as long. The mastoid area is correspondingly reduced.

Type, No. $\frac{8859}{8855}$, ♂ ad., Oposura, Sonora, May 31, 1894 ; B. C. Condit (Price Collection).

Named for Mr. W. W. Price, in recognition of his important mammalogical explorations in southern Arizona.

This species is based on 5 adult specimens (4 males and 1 female) taken at Oposura, Sonora, May 30 and 31, 1894, by Mr. B. C. Condit, of Mr. W. W. Price's Arizona Expedition.

This species appears to bear no close resemblance to any hitherto described. In color it somewhat resembles *P. intermedius* Merriam, which is, however, a much larger species, with very different cranial characters, and not nearly so clear gray.

***Perognathus conditi*, sp. nov.**

Above yellowish gray, lined with black ; a broad pale fulvous lateral line ; feet and lower parts white ; ears grayish dusky ; tragus about as high as broad ; tail dusky above, white below, not crested, and only very slightly tufted at the end. Soles naked.

Measurements.—Total length (type), 197 mm. ; tail vertebræ, 88 ; hind foot, 27 ; ear, 10. Another specimen (♂ ad.), measures : Total length, 193 ; tail vertebræ, 87 ; hind foot, 24.5 ; ear, 12.

Skull.—Total length, 29 ; basilar length, 24 ; greatest mastoid breadth, 14 ; length of nasals, 10.5 ; breadth of interparietal, 7 ; greatest length of interparietal, 5. The interparietal is large, pentagonal, with the posterior lateral borders much rounded ; mastoid area only moderately developed.

¹ Front border of intermaxillæ to posterior border of occipital condyles.

Type, No. $\frac{8860}{8888}$, ♂ ad., San Bernardino Ranch, southeastern corner of Cochise Co., Arizona, March 23, 1894; B. C. Condit (Price Collection).

Named for Mr. B. C. Condit, an associate of Mr. Price in his explorations in Arizona.

This species should probably be compared with *P. baileyi* Merriam from Sonora, but it is apparently smaller, more fulvous, with the tail less crested, and the interparietal more pointed in front and more rounded on the postero-lateral borders.

Represented by 3 specimens (1 ad. ♂, 1 young ad. ♂, and 1 ♂ juv.) taken at San Bernardino Ranch, Cochise Co., Arizona, March 23 and May 1, 1894. The young specimen is grayer and less fulvous than the adults, the type being scarcely distinguishable in color from Kansas and South Dakota specimens of *P. paradoxus*, and the tail is quite as sparsely haired. In fact, in point of color, *P. conditi* is not readily distinguishable from specimens of *P. paradoxus* from the southeastern base of the Black Hills; and cranially the differences are by no means strongly marked.

***Reithrodontomys mexicanus fulvescens*, subsp. nov.**

Above yellowish brown, more or less heavily lined with black; a bright, strongly marked fulvous lateral line; below whitish, the basal two-thirds of the pelage plumbeous; ears dusky externally, rusty within, well clothed with fine short hairs; tail indistinctly bicolor, pale brown above, lighter below, sparsely haired, but the hairs pretty thoroughly concealing the annulations; feet soiled white, heels sparsely covered as far as the first tubercle with fine short hairs.

Measurements.—Total length (type), 183 mm.; tail vertebrae, 102; hind foot, 19; ear, 14. Average of three adults (2 ♂♂, 1 ♀): Total length, 172; tail vertebrae, 99; hind foot, 19.3; ear, 14.7. Eight adult specimens of *R. mexicanus* from Brownsville, Texas, average: Total length, 178; tail vertebrae, 98; hind foot, 20.

Type, No. $\frac{8411}{8788}$, ♂ ad., Oposura, Sonora, June 1, 1894; B. C. Condit (Price Collection).

This subspecies is represented by three adult specimens taken by Mr. B. C. Condit at Oposura, Sonora, May 31 and June 1, 1894. It presents an astonishingly close resemblance, in size and proportions, to September specimens of *R. mexicanus*¹ from

¹ The type locality of *R. mexicanus* (Saussure) was Tehuacan, State of Puebla, Mexico, from which region, however, no material is at present available for comparison.

Brownsville, Texas, but the pelage is softer and fuller, and the color above more strongly yellowish; the tail and heels are also slightly more hairy; but it is far from certain that these differences are not in large part seasonal, though hardly probable.

The Price Collection also contains 6 specimens of *R. megalotis* from Fairbank, Arizona, and 5 specimens from the Chiricahua Mountains that seem indistinguishable from *R. longicaudus*. The series of *R. megalotis* is from very near the type locality of the species.

***Arvicola leucophæus*, sp. nov.**

Middle region of upper parts suffused with pale reddish brown, conspicuously lined with black, and slightly tinged with gray; sides grayer and less reddish, and less lined with black; underparts strongly whitish gray, the fur plumbeous at base with long whitish tips, concealing the plumbeous underfur, and giving a general whiteness to the whole underparts. Tail brown above, whitish below, of medium length. Feet dusky above, strongly washed with gray.

Measurements.—Total length (type), 173 mm.; tail vertebræ, 50; hind foot, 22.5; ear, 16. Average of 3 adult specimens (1 ♂, 2 ♀♀): Total length, 166; tail vertebræ, 49; hind foot, 22.7; ear, 15.

Skull.—Total length, 28; basilar length, 21; greatest zygomatic breadth, 16; greatest parietal breadth, 12.5; least interorbital breadth, 4; length of nasals, 8.5; upper molar series, 6.5. The brain-case is broad and flat; the interorbital region is remarkably broad; rostrum also broad; angle of mandible exceptionally developed, even broader and heavier than in the much larger *A. edax*. Dentition as in the *Mynomes* section generally, but the molars are narrow in proportion to the heavy development of the skull.

Type, No. 8408, ♂ ad., Graham Mountains, Arizona, July 18, 1894; Price and Condit (Price Collection).

This species is represented by 4 specimens (1 ♂, 2 ♀♀ ad., 1 ♀ juv.), taken by Messrs. Price and Condit in the Graham Mountains, Arizona, July 18 and 19, 1894. It is readily distinguished externally by the whiteness of the underparts; the coloration above is perhaps slightly more ferrugineous than that of *A. alticolus*, which is, however, a somewhat larger species, with a relatively longer tail. In cranial characters it appears to most resemble *A. edax*, but differs from it in much smaller

size, lighter dentition, relatively greater interorbital breadth, and the still greater development of the mandibular angle.

The Price Collection also contains three specimens of an *Arvicola* from the White Mountains, Arizona, which I provisionally refer to *A. alticolus*.

***Sitomys americanus arizonæ*, subsp. nov.**

Similar in coloration to *S. a. gambeli*, but smaller, with relatively shorter tail and slightly larger ears. Above pale wood brown, slightly darker along the middle of the back, and lighter or more ashy on the sides, generally with no trace of a lateral line; feet and beneath white, the basal half of the pelage plumbeous; tail dusky above, grayish white below.

Young, in first pelage.—Above dark plumbeous slate; below whitish, the plumbeous underfur showing through the surface.

Measurements.—Total length (type), 158 mm.; tail vertebræ, 67; hind foot, 24; ear, 17. Average of 42 adults: Total length, 160 (145–183); tail vertebræ, 65 (57–80); hind foot, 22.5 (20–24); ear, 17 (16–18).

Type, No. $\frac{3414}{8744}$, ♂ ad., Fairbank, Arizona, March 13, 1894; Price and Condit (Price Collection).

This is a strongly marked form of the short-tailed or *sonoriensis* group of the genus *Sitomys*, characterized by the nearly uniform brownish gray color of the entire upper parts. It is represented by a series of nearly 70 specimens, 50 of which (all adult but two) were taken at Fairbank, Arizona, Feb. 22 to March 13, 1894. This series is remarkably uniform in coloration, though the extremes vary considerably in size. Two or three specimens show a slight fulvous wash, approaching the color of a pale *Sitomys eremicus*. All the specimens of *Sitomys* obtained at Fairbank, except a few examples of *S. eremicus*, were of this form.

I also refer to this species a series of 20 specimens from San Bernardino Ranch, taken March 21 to May 4. These consist of young in various stages of immaturity, from nurslings up to breeding females which still retain the plumbeous pelage of the young. At first they were thought to represent a distinct species, characterized by a permanent plumbeous coloration, but on comparing the older examples of the series with the Fairbank specimens it became at once evident that they must be referred to

S. a. arizonæ, there being a few specimens in the San Bernardino series which completely connect the two.

The large series obtained in the White, Chiricahua and Graham Mountains are of the *rufinus* type, from which, however, some of these several mountain strains of reddish, short-tailed *Sitomys* may perhaps be separable as local races of the *sonoriensis* group.

***Neotoma campestris*, sp. nov.**

Similar in size and cranial characters to *Neotoma micropus*, but very different in coloration. Above yellowish gray, varying to buffy ochraceous, finely lined with black-tipped hairs, which are conspicuous over the median dorsal region, and more sparingly developed on the sides; head slightly lighter and more grayish; feet, to considerably above ankles and wrists, pure white; throat, breast, middle of abdominal region, and posterior third of ventral surface pure white to base of the hairs, the pelage here long, soft and cottony; the whiteness of the underparts also extends well up on the sides of the body, where, however, the basal portion of the fur is plumbeous. Ears rather small, thinly haired, dusky, narrowly rimmed with white. Tail thickly haired, the hairs everywhere concealing the annuli, pale grayish brown above, sides and below pure white.

Young (one-fourth grown) are clear ashy gray above, more or less shaded along the middle of the back with blackish; below pure white to the base of the fur. Tail very thinly covered all round with short whitish hairs.

Measurements.—Total length (type), 388 mm.; tail vertebræ, 170; hind foot, 40; ear from anterior base (measured from dry skin), 24. Average of six adult specimens: Total length, 370; tail vertebræ, 155; hind foot, 40.5; ear from anterior base (measured in dry skin), 25.

Skull.—Similar to that of *N. micropus*, but with heavier dentition and the 'sphenopalatine vacuities' very nearly closed.

Type, No. $\frac{7785}{742}$, ♂ ad., Pendennis, Lane Co., Kansas, May 8, 1894; W.W. Granger.

This species is represented by two adult males, four adult females, and four quarter-grown young, taken on the Smoky River, near Pendennis, Lane County, Kansas, May 8, 1894, by Mr. Walter W. Granger, and also by a single specimen taken at Fort Lyons, Colorado, Feb. 4, 1885, by Capt. P. M. Thorne, U.S.A. This latter specimen, an adult male, is in full winter pelage, and differs from the others only in the upper surface of the tail being more distinctly blackish.

This species agrees very closely in size and proportions with *N. micropus*, but the two species differ widely in coloration, the

former being slaty plumbeous above instead of yellowish gray or buffy, as in the Kansas form. Twenty fully adult specimens of *N. micropus* average as follows: Total length, 371 mm.; tail vertebræ, 154; hind foot, 39. In cranial characters the two forms differ mainly in the great reduction of the sphenopalatine vacuities in *N. campestris*, which are narrowed to very fine slits, which in some specimens are as fully closed as in the *N. cinerea* group. The teeth are also rather heavier and broader. The pterygoid notch is very broad anteriorly.

This species is much larger than *N. fallax* Merriam, from Boulder County, Colorado, much less strongly colored, and lacks the peculiar character of M_3 , which in *N. fallax* has "3 instead of 2 salient angles on outer side, and 2 reëntrant angles instead of 1." It is evidently much more nearly related to *N. baileyi* Merriam from Valentine, Cherry County, Nebraska, with which it agrees in size and proportions, and of which it may prove to be merely a southern form; but it is strongly buffy instead of "grizzled gray," and has the shorter palate and longer incisive foramen of *N. floridana* and *N. micropus*.¹

***Neotoma rupicola*, sp. nov.**

Similar in proportions and coloration to *N. campestris*, but much smaller and much paler, with much larger ears and a bushy tail. Above creamy buff, slightly darkened with black-tipped hairs, confined mainly to the middle of the dorsal region; head and face not very distinctly paler; feet and whole lower parts pure white to the base of the hairs; tail bushy, gray above, generally becoming lighter towards the tip, pure white below; ears large, grayish, thinly haired, conspicuously edged with white.

Measurements.—Total length (type), 330 mm.; tail vertebræ, 154; tail to end of hairs, 178; hind foot, 41; ear from notch (27 measured from skin). Average of 14 adults (7 ♂♂, 7 ♀♀): Total length, 336; tail vertebræ, 146; hind foot, 40.

Skull.—In cranial characters *N. rupicola* belongs to the *N. orolestes* group of bushy-tailed Wood Rats, and except in the well-developed sphenopalatine vacuities bears a general resemblance to the '*Teonoma*' section of the genus *Neotoma*.

Type, No. 8319, ♂ ad., Corral Draw (southeastern base of Black Hills), South Dakota, August 21, 1894; W. W. Granger.

¹ Material received since the publication of my *N. micropus canescens* shows that it is inseparable from *N. micropus*. It is interesting to note that specimens of *Neotoma* from Fort Lyon, Colorado, and Lane County, Kansas, show no approach in coloration to Oklahoma specimens of *N. micropus*.

Represented by a series of 35 specimens, taken at the southeastern base of the Black Hills, June 7 to August 28, 1894, by Mr. W. W. Granger. It includes immature examples of various ages, from one-fourth grown upward, as well as numerous adults. The seasonal variation is not very strongly marked, but the June and July specimens are rather paler and less strongly buffy than the late August specimens in fresh fall pelage. Very young specimens are pale gray above, slightly varied with dusky hairs on the back. In adults the tail above often lightens toward the tip, where it is sometimes clear white.

This species differs from *N. orolestes*, apparently its nearest ally, in its much paler coloration, smaller size, and relatively much shorter tail.

***Neotoma grangeri*, sp. nov.**

Similar in size and coloration to *N. cinerea*, but with well-developed sphenopalatine vacuities.

Adult in summer: Above gray strongly varied with dusky, the ground color varying from clay color to pale buffy, heavily lined with black hairs; head darker, purer gray, nearly without any tinge of fulvous; tail above dusky gray, nearly concolor with the back, pure white below; feet pure white as far as wrists and ankles; ears blackish, thinly haired, very narrowly edged with white; underparts white, in thin summer pelage without plumbeous at base of fur.

Young, a few weeks old (nurslings): Ashy gray, the middle of the back strongly blackish. *Young*, half-grown: Above slightly washed with pale buff, particularly on the sides, strongly varied with black over the middle of the back, much less so on the sides.

Measurements.—Total length (type), 393 mm.; tail vertebræ, 173; tail to end of hairs, 190; hind foot, 41; ear from notch, 28 (measured from skin). Average of 5 adults (3 ♂♂, 2 ♀♀): Total length, 381 mm.; tail vertebræ, 163; hind foot, 41.

Skull.—Total length, 51; basal length, 49; greatest parietal breadth, 28; least interorbital breadth, 5; length of nasals, 19; length of incisive foramina, 12; length of palate, 9.

Type, No. $\frac{3391}{8}$, ♂ ad., Custer, Black Hills, South Dakota, August 4, 1894. Collected by Mr. W. W. Granger, for whom the species is named.

This species is represented by 14 specimens taken at Custer, South Dakota, July 25 to August 9, and by two taken at Glendale, Sept. 8, 1894, by Mr. W. W. Granger. Five are fully adult, 6 are 'young adults,' and 5 are young, one-third to two-thirds

grown. They are all very dark colored, and form a very uniform series, except one, a very old male, taken Aug. 8, which differs from all the others in having the whole upper parts bright buffy ochraceous, and the tail above very light gray, fading to whitish basally. No other specimen shows any approach to this phase of coloration, although other adults were taken the same day at the same place. This may be an adult in fall pelage, as the coat is much fuller and softer than in any of the others, but the peculiar coloration is possibly due to old age.

N. grangeri is probably merely the Black Hills representative of *N. cinerea* of the Rocky Mountains, from which it differs in having well-developed sphenopalatine vacuities, as in the *N. orolestes* group. It is much larger than *N. rupicola*, and differs from it so totally in coloration at all ages as not to require comparison with it.

These two forms of *Neotoma* are perfectly parallel, in respect to color differences, with the forms of *Sitomys* and *Tamias* occurring at the same localities, the Black Hills affording a dark phase of each, and the adjoining plains at their eastern base a light fulvous phase. Thus on the Plains we have the pale fulvous *T. minimus* in contrast with the dark *borealis* form of the *T. quadrivittatus* group in the Black Hills; in the same way the fulvous *Sitomys americanus nebracensis* contrasts with a Black Hills form closely related to the dark northern *S. a. arcticus*; and the pale fulvous *N. rupicola* of the Plains contrasts with the dark colored *N. grangeri* of the Black Hills.

***Sciurus hudsonicus*¹ *dakotensis*, subsp. nov.**

Sciurus hudsonius var. *hudsonius* ALLEN, Mon. N. Am. Roden. 1877, p. 672 (in part).

¹ The name *hudsonicus* Erxleben has one year priority over *hudsonius* Pallas, as shown by me in 1877 (Monog. N. Am. Roden., 1877, p. 683), in commenting upon which fact I said:

"Following the strict rule of priority, the name should probably be written *hudsonicus* (from Erxleben), this being the first distinctive appellation given to this form, it having apparently a priority of one year over *hudsonius*." I did not then insist upon its adoption, following the rather lax system in such matters then prevailing. The names of the several forms of the Chickaree group of Squirrels should stand as follows:

Sciurus hudsonicus (Erxl.).
Sciurus hudsonicus dakotensis Allen.
Sciurus hudsonicus douglasii (Bachm.).
Sciurus hudsonicus vancouverensis Allen.
Sciurus hudsonicus californicus Allen.
Sciurus hudsonicus fremonti (Aud. and Bachm.).
Sciurus hudsonicus mogollonensis (Mearns).

Paler and more fulvous than *S. hudsonicus*, and much less reddish. Size slightly larger; proportions similar.

Type, No. —, ♂ ad., Squaw Creek, Black Hills, South Dakota, July 21, 1894; W. W. Granger.

This is the pale form referred to by me in 1877 (l. c., p. 681) as follows: "As already noticed, in the region of the Black Hills, var. *hudsonius* loses much of its redness; the dorsal band becomes less distinct; the middle of the tail is paler; and the edging of the tail is yellowish gray, instead of bright fulvous, or yellowish red as is the case in eastern specimens." A series of 7 specimens collected by Mr. W. W. Granger, in the Black Hills, South Dakota, in July and September, confirm the differences shown by the series examined by me in 1877. It is further to be noted that the black lateral line, usually so conspicuous in eastern examples taken at this season, is either entirely wanting, or only slightly indicated in Mr. Granger's specimens. Probably, as in the case of *Tamias quadrivittatus borealis*, *S. h. dakotensis* is the prevailing form northeastward to Pembina and the Turtle Mountains, as indicated in my Monograph of the Sciuridæ (l. c., p. 692, in Table XIII).

Nyctinomus nevadensis (*H. Allen*).

Nyctinomus macrotis nevadensis H. ALLEN, Mon. N. Am. Bats, 1893 (=1894), p. 171, pll. xxxiv, xxxv ("Nevada and California").

Dr. Harrison Allen has recently described a form of *Nyctinomus* from "Nevada and California" (exact locality not stated), under the name *Nyctinomus macrotis nevadensis*, based on two immature specimens. An examination of these two specimens¹ shows that even the older one of the two (U. S. Nat. Mus., No. $\frac{15178}{36569}$, California, John Mullan) is so young as to still retain the milk incisors in the upper jaw.² The very short, thin, unicolor pelage also indi-

¹ I am indebted to the kindness of Mr. Frederick W. True, Curator of Mammals, U. S. National Museum, for the opportunity of examining these precious specimens. They are preserved in alcohol, but the skulls have been removed and separately preserved. They are labeled as follows: " $\frac{15178}{36569}$, *Nyctinomus macrotis nevadensis*, California. John Mullan." The labels of both the animal and the skull bear the same inscription. The other specimen is merely a skin in alcohol. The label, as nearly as can be deciphered, has on one side "*N. macrotis*, Nevada. 1052"; on the other side, "353. Label in envelope." The California example must obviously be taken as the type of the species, although some of the details of the ear (as Fig. 3, pl. xxxiv) appear to have been drawn from the Nevada specimen.

² Since the above was put in type I have received from Mr. True the skull of the other specimen (U. S. N. M., No. 60660). This skull retains not only the upper milk incisors, but also the upper milk canines, although the permanent canines have cut the gum. The rest of the teeth belong to the permanent set.

Mr. True, in reply to my inquiries, kindly informs me that no information concerning the history of these specimens beyond that furnished by the labels, as above given, is obtainable.

cates juvenility. It is therefore of great interest to find in Mr. Price's collection of Arizona mammals a specimen of *Nyctinomus* from the Chiricahua Mountains referable to the same species. It is an adult male, with a well-developed gular sac. It is not only considerably larger than the type of *N. m. nevadensis*, but somewhat larger than the measurements given by Dobson (P. Z. S., 1876, p. 729) for the type of *N. macrotis*. Its resemblance in general features to *N. macrotis* is evidently strong.

The type of *N. macrotis* Gray (Ann. & Mag. Nat. Hist., IV, 1839, p. 5) came from the interior of the island of Cuba. According to Dobson (l. c.) it was a female, and appears to have been unique up to the date of Dobson's 'Catalogue of the Chiroptera,' published in 1878. Dobson, however, refers to *N. macrotis* various species described by other authors, from southern Brazil and Paraguay. As it has not been reported from either Mexico or Central America the probability, on geographical grounds, is therefore strongly against the occurrence of the true *N. macrotis* in Arizona, California, or Nevada, aside from the various discrepancies in the structure of the ears, etc., already pointed out by Dr. H. Allen as existing between *N. macrotis* and his *N. m. nevadensis*. Between the Arizona and California specimens, however, there are no differences that might not easily result from the great difference in the age of the specimens. In the California and Nevada specimens the pelage is short, thin and unicolor from base to tip, as is usually the case in young Bats in first pelage. In the older (California) example the second growth of hair appears to be coming in in patches on the chest.

In raising *N. macrotis nevadensis* to full specific rank the detailed account already given by Dr. Allen of the young may be supplemented by the following description of an adult male :

Adult Male.—Structure of the ears, membranes, etc., as already given for the young (*cf.* H. Allen, l. c.). Pelage above dull brown, slightly rufescent. the basal half whitish ; below similar, but rather lighter.

Measurements.—Total length, 140 ; alar expanse, 410 (collector's measurements from the fresh specimen). The following are from the skin : Forearm, 58 ; 2d digit, metacarpal, 60 ; 3d digit, metac., 58, 1st phal., 23, 2d phal., 20, 3d phal., 8 ; 4th digit, metac., 53, 1st phal., 48, 2d phal., 2.5 ; 5th digit, metac., 27, 1st phal., 20, 2d phal., 3 ; tibia, 16 ; foot, 10 ; tail, 63, free portion

of same, 34. (The measurements of the tail are only approximate, and are possibly too large, as the tail has the appearance of having been pulled out too long.) Height of ear, 24; width of same, 36.

Skull.—Total length, 23; basilar length, 21; zygomatic breadth, 12.5; mastoid breadth, 11.5; least interorbital breadth, 6; length of lower jaw, 16; height of same at coronoid, 3.5. The skull (including dentition) is in general as described by Dr. Allen, except that it is larger and heavier, with the sagittal crest continued to the occipital, and there is less depression at the junction of the frontal and parietal segments. All the processes are heavier, as would be expected in an old skull.

Type of the above description, No. $\frac{8414}{16}$, ♂ ad., Chiricahua Mountains, June 22, 1894; W. W. Price and B. C. Condit.

As already noted, there is a well-developed gular sac, which is said to be wanting by Dr. Dobson in both *N. macrotis* and the smaller *N. gularis*; but Dr. Dobson's specimen of *N. macrotis* was a female, and this is a feature which varies with sex and age in the same species of both *Nyctinomys* and *Molossus*.

***Arvicola (Pedomys) haydenii* Baird.**

Arvicola (Pedomys) haydenii Baird was described from a single specimen from Fort Pierre, South Dakota, on the Missouri River, about 150 miles directly east of the Black Hills. In the Granger collection I find a single specimen, an adult female, of the subgenus *Pedomys*, taken on Spring Creek, at the eastern base of the Black Hills, June 22, 1894. This specimen is evidently a little larger and a little grayer than Baird's type, but agrees with it so closely, especially in the dimensions of the skull and in the peculiarities of dentition, that I have little hesitation in referring it to *A. haydenii*. Baird's description of the cranial and dental characters, as well as of the external appearance, of his *A. haydenii* is so detailed that I find little to add from the basis of the present specimen. It is, however, obviously grayer—gray mixed with black, very slightly tinged with yellowish brown, rather than yellowish brown washed with gray. Mr. Granger's measurements from the fresh specimen are as follows: Total length, 183; tail vertebræ, 45; hind foot, 25. The corresponding measurements given by Baird for his type are: Total length, 152; tail vertebræ, 38; hind foot (from dry skin), 20.5. But there is much less

difference in the measurements of the skulls, which compare as follows: Black Hills specimen—total length, 30; zygomatic breadth, 17; nasals, 9; upper molar series, 7. Type of *haydenii*—total length, 29; zygomatic breadth, 16.5; nasals (not given); upper molar series, 6.4. Hence the difference in external measurements is obviously more apparent than real.

Since writing the above I have received, through the kindness of Mr. True, the type of *haydenii*, an examination of which confirms the opinion above given of the relation of *haydenii* to Mr. Granger's Black Hills specimen. Baird's type appears to have been originally an alcoholic, and to this fact may be due in part the more yellowish cast of color it presents in comparison with the Black Hills specimen.

Three other Nebraska specimens are mentioned by Dr. Coues as referable to either "*austerus*" or to "*austerus curtatus*." These have also been kindly sent to me for examination by Mr. True. Says Dr. Coues (l. c., p. 212): "A Platte River specimen (No. 3094) is identical with the type of '*haydeni*.'" This specimen is labeled "♂, Crossing of Platte, July 8, '57. Wm. S. Wood." On the back of his label Dr. Coues has written, "Exactly like '*haydeni*.'" With this opinion I heartily concur. Another specimen (U. S. N. M., No. 3055) is referred to *curtatus*, but with the remark (l. c., p. 216): "In color, almost exactly like the paler '*haydeni*' stripe of *austerus*; . . ." On the label is written "Platte R. (320 m. fr. Ft. Riley). Dr. W. A. Hammond." This would bring the locality in western Nebraska, about 100 miles south of the Black Hills. In coloration and size it very closely resembles the Granger specimen above recorded. These specimens indicate the extension of the range of *Arvicola haydenii* from Fort Pierre and the Black Hills southward to the North Platte River in western Nebraska.

The third specimen (U. S. N. M., No. ³²⁴¹₁₂₁₁₇), collected by Dr. F. V. Hayden on Lieut. (later Gen.) G. K. Warren's Exploration of the Upper Missouri and Yellowstone, is without locality on the original label, but on a later label is credited to "Nebraska"; it was probably taken somewhere in what is now North Dakota.

It was referred by Coues to his *curtatus*. It is much smaller and somewhat paler than the others (except No. 3055), and is apparently referable to *Arvicola austerus minor* Merriam, with which it agrees closely in size and dentition.

Mr. True has also sent to me for examination what remains (the skull only) of Baird's type of his *Arvicola (Pedomys) cinnamomeus*, which demands consideration in the present connection, since this name has priority of two pages over his *A. haydenii*, in case the two should prove the same.

***Arvicola (Pedomys) cinnamomeus* Baird.**

This species was based on a single specimen from Pembina, North Dakota, of which only the skull is now extant. According to Baird, it bears a close resemblance in external characters to *A. austerus*, from which it was separated in part on peculiarities of dentition, which both Dr. Coues¹ and Dr. Merriam² consider to be probably abnormal. After an examination of the skull, however, I find myself unable to share this opinion. In addition to the unusual character of the enamel folds of the last upper molar, as noted by Baird, there is the great length and narrowness of the whole skull, and particularly of the rostral portion, as correctly stated by Professor Baird. He also refers to the large size of the Pembina specimen, in comparison with typical (Illinois) examples of *austerus*, the greater length of the tail, the larger size of the nail on the thumb, and the smaller ears—features now impossible to verify, in consequence of the destruction of the skin. The skull, however, sufficiently substantiates the large size, and there is no good reason to question Baird's statements respecting the other differences.

I have no Illinois or Wisconsin examples of *A. austerus*, but the Museum has a large series from Fort Snelling, Minnesota (Dr. E. A. Mearns Collection). The largest skull of this series (probably referable to *A. austerus minor* Merriam) is not more than half the size of the Pembina specimen, which differs besides in numerous important cranial details. It is also to be noted that the form of *austerus* occurring over the region to the southeast-

¹ Mon. N. Am. Roden., 1877, pp. 212, 213, 217.

² Am. Nat., July, 1888, p. 601.

ward of Pembina is much smaller than typical *austerus* from much further south (*cf.* Merriam, *Am. Nat.*, July, 1888, pp. 600, 601). It hence seems reasonable to consider Baird's *cinnamomeus* as distinct from any known form of the *austerus* group, and also from *A. haydenii*. Doubtless further material from the vicinity of Pembina will, sooner or later, firmly reestablish the species.

In connection with the discovery of *Arvicola* (*Pedomys*) *haydenii* at the eastern base of the Black Hills, as chronicled above, it is of interest to note that Dr. Coues has also recorded (*Mon. N. Am. Roden.*, 1877, pp. 216, 217) an alleged specimen of *Pedomys* from the "Black Hills" (*U. S. Nat. Mus.*, No. 3056), taken in August, and considered as probably "a young of the year." He comments at length upon its many peculiarities, as its "extremely short" tail, whitish feet, and excessively pallid coloration. As the skull was enclosed within the skin, he appears to have made no examination of its dentition. This specimen, from which the principal parts of the skull have since been removed, is now before me. It proves not to be a *Pedomys* at all, but an undescribed species of the genus *Phenacomys*, which may be briefly characterized as follows :

***Phenacomys truei*, sp. nov.**

Above similar in coloration to *Arvicola* (*Chilotus*) *pallidus*, but rather darker, especially over the median dorsal region, where the general pale grayish tint of the upper parts is slightly varied with dusky hairs ; below whitish gray, the basal half of the fur plumbeous. Ears of average size for the genus, thinly haired ; feet light or whitish gray ; tail very short, dingy gray, slightly darker above, but not distinctly bicolor, with a slight terminal pencil.

Measurements.—The fragmentary condition of the skin gives so poor a basis for measurement that I copy the dimensions as recorded by Dr. Coues¹ : Total length, 118 ; head and body, 101.6 ; tail vertebræ, 16.8 ; hairs at tip, 3.5 ; fore foot, 11.2 ; hind foot, 19 ; ear, 10.2 (all taken from the dry skin).

Skull.—The skull consists merely of fragments, roughly torn out of the skin. The parts available for study are the palatal portion with the molar teeth in place, and the greater part of both mandibular rami, including the teeth. The

¹ *Monog. N. Am. Roden.*, 1877, p. 217, Table LV, specimen No. 3056. The measurements were given by Dr. Coues in inches and hundredths.

tooth pattern, while distinctively that of *Phenacomys*, differs in various details from that of any of the hitherto described species of the genus. *Upper Molars*.— M_1^1 with a broadly rounded anterior loop, two internal closed triangles, and two external closed triangles; M_2^2 with an anterior internal pyriform loop, two external and one internal triangles; M_3^3 with three deep internal triangles and three very slight angular projections externally. *Lower Molars*.— M_1 with an anterior trefoil, a transverse posterior loop, and three large internal and two small external closed triangles; M_2 with a posterior transverse loop, two very deep, closed internal triangles, and two very slight external angles; M_3 with three very deep internal triangles and an outer sinuous border. Length of upper molar series, 6 mm.; of lower molar series, 5.5 mm.

Type, U. S. Nat. Mus., No. 3056, Black Hills, Aug. 10, 1857; Dr. W. A. Hammond.

Named for Mr. Frederick W. True, Curator of Mammals, U. S. Nat. Mus., to whose kindness I have been many times greatly indebted for valued assistance.

The specimen upon which the above description is based is apparently full grown but quite young, as the molars are not rooted, as they become later in life in this genus. In young individuals they are only partly so¹ or not at all, as in the present specimen.

In coloration *Phenacomys truei* is much lighter than *P. orophilus* Merriam from Idaho, lacking almost entirely the abundant black-tipped hairs which in that species strongly tinge with blackish the whole median dorsal region.

The dentition of *P. truei* is peculiar in the slight development of the external triangles of all the molar teeth, both above and below, in comparison with the other described species. M_1 closely resembles the corresponding tooth in *P. latimanus*, while M_3 closely resembles M_3 in *P. intermedius*.

The discovery of a species of *Phenacomys* in the Black Hills greatly extends the known range of the genus to the southward, east of the Rocky Mountains. *P. orophilus* was described from specimens collected in the mountains of south-central Idaho, but there is a hitherto unrecorded specimen of this species in this Museum from St. Mary's Lake, northwestern Montana, collected by Dr. George B. Grinnell. This is the nearest point to the Black Hills from which *Phenacomys* has been thus far reported.

¹ Cf. Merriam, N. Am. Fauna, No. 5, 1891, p. 66.