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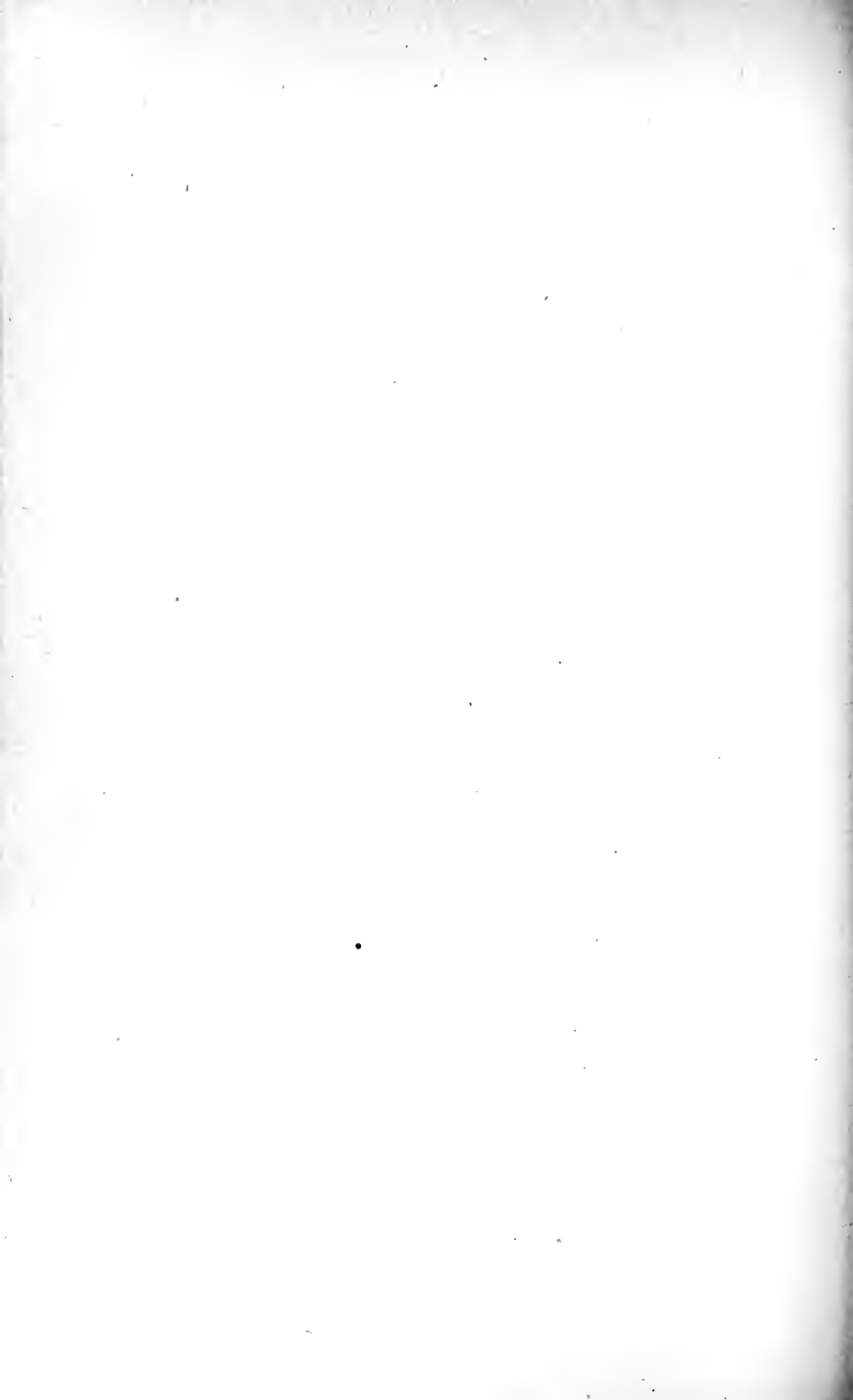
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DESCRIPTIONS OF TWENTY-
SEVEN APPARENTLY NEW
SPECIES AND SUBSPECIES
OF MAMMALS.

ALL BUT SIX COLLECTED BY

Edmund Heller.

BY

D. G. ELLIOT, F. R. S. E., ETC.
Curator of Department.



CHICAGO, U. S. A.

December, 1903.



DESCRIPTIONS
OF TWENTY-SEVEN APPARENTLY NEW SPECIES AND
SUBSPECIES OF MAMMALS.

BY D. G. ELLIOT, F.R.S.E., ETC.

ORDER UNGULATA.

FAM. BOVIDÆ.

OVIS.

Ovis cervina *cremnobates. Subsp. nov.

Type locality: Mattomi, San Pedro Martir Mountains, Lower California, Mexico.

Geogr. distr.: San Pedro Martir, and probably the Laguna Mountains, Lower California, Mexico.

Genl. char.: Resembling the *O. c. nelsoni* from Grape Vine Mountains, boundary of Nevada and Lower California, but of a much lighter color, the head of a three-year-old ram being nearly white, with a very small caudal patch † not divided from color of upper parts



by any perceptible line; fore part of legs almost black, similar to those of *O. stonii*; head very broad between orbits, from 20 to 25 mm. broader in old rams than the head of *O. c. nelsoni*; horns of old rams very large and curving outward from the head; those of ewes with the points diverging widely apart.

* *κρημνοῦ ἀγρῶς*—haunter of the cliffs.

† Misled by a dressed skin which showed the patch and the white of inner side of thighs together, I said in my previous paper, p. 209, that this caudal patch was very large, when the contrary is the fact.

Color: Upper parts and sides varying in individuals from drab gray or pale broccoli brown to hair brown; in some cases this sheep appears almost white; chest and line along ventral surface and front of legs black or brownish black; head and neck hair brown, darker than back in some individuals; drab-gray in the old ram; back part of legs and inside of hind legs, narrow line in center of ventral surface, caudal patch, nose around nostrils, and inside of ears white; line across caudal patch from tail to darker color on rump (as in all mountain sheep), and the tail brownish black.

Measurements—Female: Total length, 1450; tail, 120; hind foot, 375; ear, 114. Skull: total length, 283; occipito-nasal length, 226; Hensel, 246; width between outer edge of orbits, 156; zygomatic width, 124; length of nasals, 109; palatal length, 148; length of upper tooth row, 84; length of half of mandible, 203; of lower tooth row, 82. Horns: total length along curve, 310; circumference at base, 144; spread at tip, 393. Head of old ram: total length, 330; width between orbits, inner edge, 180; circumference of horn at base, 395; length along outer curve, 850; spread at tips, 485.

In my paper on the Mammals of the San Pedro Martir Mountains, I referred the specimens of mountain sheep obtained by Mr. Heller to the *O. c. nelsoni* with a doubt, as I had had no opportunity to compare them with any examples of the form described by Dr. Merriam. By the kindness of my friend D. A. K. Fisher, Assistant Chief of the Biological Survey, who sent me a skin and skull of an old ram from the Chuckawalla Mountains, killed in August, 1902, and referred to *O. c. nelsoni*, I have been able to compare the two forms. In color this ram is quite different from all of my thirteen specimens from the San Pedro Martir Mountains, being very much darker, the animal being in the "blue" coat, and is a dark brownish drab, with a very large and wide caudal patch, and the legs are brownish in front, and not black or blackish; in fact, more on the *Ovis cervina* style, while these parts in San Pedro Martir examples are more on that of the *Ovis stonii*. I regret very much that I am unable to make a comparison of the skulls of the two large rams, but the one from the San Pedro Martir, at present in my possession, is mounted, and has been loaned to me by Mr. Dupee, of Chicago, who shot it, and the measurements of the head given above are taken over the skin. The horns of the ram are longer and heavier than those of the Chuckawalla Mountains specimen, and stand out from the head more. The differences between the new race and *O. c. nelsoni* may be summed up as follows: darker legs, more like those of *O. stonii*, much smaller caudal patch grading so imperceptibly into the color of the back as to leave no dividing line whatever; the

general color of upper parts being broccoli or hair brown instead of a pale dingy brown; the skull wider between orbits, and horns somewhat wider apart at tips. When a comparison of old ram skulls can be made, other differences may be found. Mr. Heller's thirteen examples were killed during the latter part of June and in July, and it would be advantageous to have specimens taken at the same time of year, as the color of the coat changes with the season somewhat, although not to the same degree as is witnessed among the deer. All of the thirteen specimens were females except one, a young male, no old ram having been secured. The horns of the ewes are unusually large for this sex, and have a wide spread at the tips. The figures here given of the heads of the old ram and ewe (type specimen) show very well the shape and type of the horns.

ORDER RODENTIA.

FAM. SCIURIDÆ.

CITELLUS.

*Citellus l. *vinnulus.* Subsp. nov.

Type locality: Keeler, Owens Lake, Inyo County, California.

Geogr. distr.: Panamint, Coso, and Inyo Mountains to Keeler, Owens Lake, Inyo County, California.

Genl. char.: Nearest to *C. peninsula* from Lower California, but the under part of body and tail white instead of pale yellow in the summer pelage. It is generally darker and more vinaceous than *C. leucurus*, and with a smaller hind foot; and not so dark as *C. l. cinnamomea*, and the hind foot smaller.

Color: Top of head and upper parts mixed black and vinaceous, the latter hue predominating and giving the tone to the general color; nape and between shoulders with the hairs tipped with white, giving to this part a gray appearance, lighter than the other parts; two rather broad white stripes from shoulders to end of rump; shoulders, top of fore legs and feet to toes, thighs, and upper surface of hind legs and feet dark vinaceous; toes white on fore feet, buffy vinaceous at tips on hind feet; sides of face and neck and entire under part of body, legs, and feet silvery white; base of fur plumbeous; tail above like back for basal third, remainder black with white hairs intermingled and edged with white; under part white with a subapical black bar.

Measurements: Total length, 215; tail vertebræ, 66; hind foot,

**Vinnulus*—charming.

38.5; ear, 12. Skull: total length, 37.3; Hensel, 30; zygomatic width, 19; interorbital width, 10; length of nasals, 10.5; palatal length, 12; length of upper tooth row, 7; length of mandible, 22; length of lower tooth row, 7.

Strange as it may appear, this form has its nearest ally in *C. l. peninsulae* from Lower California, differing from that race in the characters given above. The general dark coloring and the vinaceous hind foot with its smaller measurements readily serve to distinguish it from *C. leucurus*. The hind foot of the type exhibits the greatest dimension, and the average of this member in the series before me would be much less, as a number measure only 36, some even 35.5 mm. It seems to supplant the *C. leucurus* of the Mohave Desert, and is dispersed through the mountain region between Keeler and Death Valley. Keeler examples, like other mammals from that locality, exhibit the deepest colors, and the race appears to be strongly marked.

Citellus *chlorus. Sp. nov.

Type locality: Palm Springs, Riverside County, California.

Geogr. distr.: Riverside and San Diego counties, California.

Genl. char.: Size about equal to that of *C. tereticaudus*, but color entirely different. Skull rather stout and heavy; tail long.

Color: Entire upper parts and sides olive gray with a brownish sheen in certain lights; upper part of arms and thighs olive gray; entire under parts grayish white; hands brownish, feet whitish; tail above, basal half like back, slightly more brownish, apical half blackish mixed with brown and edged with white; beneath pale brown, margined very narrowly with black and fringed with white; ears very small, blackish.

Measurements: Type. Total length, 255; tail, 100; hind foot, 37; ear, 8. Extremes: total length, 230-255; tail, 88-100; hind foot, 35-37; ear, 7-8. Skull: total length, 32; Hensel, 30; interorbital width, 8; zygomatic width, 22; width of brain case, 18; length of nasals, 8; palatal length, 17; length of upper tooth row, 7; length of the half of lower mandible, angle to tip of incisors, 24; length of lower tooth row, 6.5.

This species of *Citellus* is not like any of the other members of this particular group. In the entire absence of spots it resembles its relatives, but is at once distinguished from all others by its peculiar coloring.

* *χλωρος*—pale.

Citellus *eremonomus. Sp. nov.

Type locality: Furnace Creek, Death Valley, Inyo County, California.

Genl. char.: Size small; color a darker vinaceous than that of any other member of the unspotted group of *Citellus*; tail with only basal half like that of the upper parts. Skull similar to that of *C. mohavensis*, but processes of the pterygoids do not touch the bullæ.

Color: Upper parts grizzled vinaceous cinnamon; sides of face, nose, and body, inner sides of legs, and entire under parts, silvery white; fore feet pale brown, hind feet whitish; tail above, basal half grizzled vinaceous cinnamon like the back, terminal half blackish mixed with white hairs, and narrowly edged with white, under part silvery white at base, remainder buff mixed with black, bordered and tipped with black, and narrowly fringed with white. Ears very small, similar in color to the back.

Measurements: Total length, 252; tail vertebræ, 89; hind foot, 35; ear, 8.5. Skull: total length, 36; occipito-nasal length, 35; Hensel, 30; zygomatic width, 23; interorbital constriction, 9.5; palatal length, 17; length of nasals, 12; length of upper tooth row, 7; length of mandible, angle to tips of incisors, 25; length of lower tooth row, 7.

This form in its coloring is quite different from any of those described belonging to this particular group, and its peculiar vinaceous cinnamon color with the plumbeous bases of the hairs showing through at intervals gives it a somewhat scaly, harsh appearance, more like the members of the *harrisi* group, but without any stripe. It was not common in the locality in which it was taken, for Mr. Heller, who collected the specimens, was able to secure only three individuals.

FAM. MURIDÆ.

ONYCHOMYS.

Onychomys pulcher. Sp. nov.

Type locality: Morongo Pass, San Bernardino Mountains, California.

Genl. char.: Color pale, size medium.

Color: Upper parts buff, inclining to pinkish, darker on rump, where the tint becomes almost a salmon buff; nose, sides of face, lips, entire under parts, legs, and feet, pure white; tail above soiled white, sides and under parts white; ears whitish at base, in life probably

* *ἔρημονομος*—living in a desert.

flesh color, apical half brownish black; a tuft of whitish hairs covers the base of ear. Orbital ring black.

Measurements: Total length, 150; tail vertebræ, 55; hind foot, 21; ear, 18.5. Skull: total length, 25.5; Hensel, 20; zygomatic width, 13.5; interorbital constriction, 5; length of nasals, 9; palatal length, 10; length of upper tooth row, 4; length of mandible, 15; length of lower tooth row, 4.

This is a pale *Onychomys*, not exactly resembling any other species. It is about the size of *O. macrotis* from Lower California, but quite different in color. It is a desert form as well as a mountain-dweller, and ranges from the Morongo Pass through the Mohave Desert to Lone Pine, and is also found on the Coso Range. It is a very pretty species, with its peculiar pinkish and salmon buff coloring.

PEROMYSCUS.

Peromyscus *petraius. Sp. nov.

Type locality: Lone Pine, Inyo County, California.

Genl. char.: Similar to *P. auripectus*, but paler; tail much darker, foot smaller, no pectoral spot.

Color: Head and upper parts ochraceous buff lined with black; side paler; lips, face beneath eyes, lower part of flanks, hands, and feet white; base of fur plumbeous; tail hairy, dusky or blackish above, beneath whitish; ears brownish black, base covered by a tuft of ochraceous buff hairs.

Measurements: Total length, 177; tail vertebræ, 98; hind foot, 20.5; ear, 20. Skull: total length, 24; Hensel, 18; zygomatic width, 12; interorbital constriction, 4; palatal length, 9; greatest width of brain case, 7; length of upper molar series, 3; length of mandible, angle to tips of incisors, 13; length of lower tooth row, 3.

This mouse is allied to *P. auripectus*, Allen, but can be readily distinguished from that species by its paler coloration, darker tail, and smaller foot, the average length of this member in fifteen examples being 20.1.

Peromyscus parasiticus. Sp. nov.

Type locality: Lone Pine, Inyo County, California.

Genl. char.: similar to *P. r. pinalis*, but larger in all of its dimensions. Skull with larger rostrum, longer nasals, broader between orbits, and larger, differently shaped brain-case.

Color: Top of head and dorsal region dusky cinnamon, becoming

* πετραίος—frequentering rocks.

pale cinnamon on sides of face beneath eyes; shoulders, flanks, and sides of rump, lips, sides of nose, lower part of flanks, thighs, hands and feet, and entire under parts white; base of fur plumbeous; tail above dusky, beneath yellowish white.

Measurements: Total length, 214; tail vertebræ, 119; hind foot, 23.5; ear 20.5. Skull: total length, 28; Hensel, 19; zygomatic width, 13; interorbital constriction, 4.5; width of brain-case, 12.5; length of brain-case, 14; palatal length, 11; length of nasals, 11; length of upper tooth row, 4; length of mandible, angle to tip of incisors, 16; length of lower tooth row, 4.

With a coloring very like that of *P. r. pinalis*, the great difference in size of skull and shape of brain-case, together with the geographical distribution, shows that the two animals represent forms that are quite separate from each other. These specimens were taken at the base of the mountains at about 4,000 feet elevation, and no individuals were seen either in the high mountains or on the desert. It would appear to be local in its habitat. In a certain way, according to Mr. Heller, it is something of a parasite, frequenting and taking possession, when possible, of the nest of the wood rats (*Neotoma*) dwelling in the same region. It is on account of this trait in its character that I have given it the above specific name.

Peromyscus *metallicola. Sp. nov.

Type locality: Providentia Mines, Northwestern Sonora, Mexico.

Genl. char.: Similar to *P. eremicus*, but tail hairy and with a pencil; sides deep orange buff, instead of pale fulvous.

Color: Upper parts mixed black and orange buff; forehead and nose gray and buff mixed; sides of face, shoulders, sides, and rump about base of tail deep orange buff; orbital ring black; lips and entire under parts, hands, and feet pure white; tail above dusky, sides beneath white; ears brown.

Measurements: Total length, 190.5; tail vertebræ, 101.6; hind foot, 25. Skull: occipito-nasal length, 26; Hensel, 20; zygomatic width, 13; interorbital constriction, 4.5; width of brain-case, 12; length of nasals, 10; palatal length, 10.5; length of upper tooth row, 4; length of mandible, angle to alveolus of incisor, 10; length of lower tooth row, 4.

This mouse, with a general resemblance to *P. eremicus*, is strikingly different in having the tail thickly covered with hair and a pencil at the tip, while the tail of the species compared is naked. The buff

* *Metallicola*, a dweller in a mine.

colors are much brighter and deeper, altogether of an orange instead of a pale fulvous hue. A series was procured at the type locality by Mr. J. Rowley.

Rhithrodontomys catalinæ. Sp. nov.

Type locality: Saint Catalina Island, Santa Barbara Islands, California.

Genl. char.: Similar to *R. longicauda*, but larger; hind foot very much larger.

Color: Top of head and dorsal region brownish black or buff mixed, black predominating; sides cream buff; indistinct cream buff lateral line; under parts, hands, and feet white, plumbeous of under fur showing through on under parts; large cream buff spot on breast; tail above blackish, beneath soiled white; ears brown.

Measurements: Total length, 155.7; tail vertebræ, 83.8; hind foot, 19.5.

While resembling in its coloring the well-known *R. longicaudus* from the coast region of California, the present form is characterized by its larger size, as shown in all the measurements, the length of the hind foot being especially noticeable.

NEOTOMA.

Neotoma fuscipes mohavensis. Subsp. nov.

Type locality: Ore Grande, Mohave Desert, Kern County, California.

Genl. char.: Smaller than *N. f. macrotis*, more grayish in color, and with a smaller foot.

Color: Upper parts dark drab gray, darkest on top of the head and on the dorsal line; sides paler, inclined to buffy; fore legs buffy gray; thighs dark gray or light plumbeous; chin, throat, inner side of fore legs and thighs, and ventral region with the lower part of thighs, hands and feet white; hairs on sides plumbeous at base, all the others on under parts white to the roots; tail above blackish brown, beneath whitish brown, line of demarcation very distinct; ears naked, dark brown.

Measurements: Total length, 384; tail vertebræ, 173; hind foot, 40; ear from notch, 31. Skull: occipito-nasal length, 47; Hensel, 39; zygomatic width, 24; interorbital constriction, 5; length of nasals, 16; palatal length, 21; length of upper tooth row, 9; length of mandible, angle to tips of incisors, 31; length of lower tooth row, 8.

This desert rat is noticeable for its gray color, with hardly any red showing, so often conspicuous in its relative *N. f. macrotis*. It would seem to be the desert representative of that race. Mr. Heller found it only at the type locality where seven specimens were taken, and the extent of its distribution has not been ascertained.

***Neotoma desertorum grandis*. Subsp. nov.**

Type locality: Cameron Lake, Sierra Nevada, Kern County, California.

Genl. char.: Similar to *N. desertorum*, but larger; tail more hairy and blacker above.

Color: Upper parts mixed buff and black; sides and thighs brighter buff with less black; nose and sides of face buff; under parts and feet white; under fur along sides and thighs plumbeous; hairs on throat, chest, and middle of ventral surface white to the roots; tail very hairy, black above, white beneath; ears pale brown, tuft of buff hairs at base succeeded by a band of black hairs near middle of ear.

Measurements: Total length, 385; tail, 185; hind foot, 38; ear, 30. Skull: total length, 47; Hensel, 40; zygomatic width, 23; inter-orbital constriction, 6; length of nasals, 17; palatal length, 21; length of upper tooth row, 8; length of mandible, angle to tip of incisors, 30; length of lower tooth row, 9.

This is a large rat, equaling in size *N. f. streatori*, but with the coloring of *N. desertorum*, and a larger hind foot than that species; in fact, the two specimens from Cameron Lake are exactly alike in appearance with topotypes from Furnace Creek, Death Valley, except the black tail, but the great size at once separates them from the longer known species. The skull, save in its greater dimensions, offers no particular differences from that of *N. desertorum*.

TEONOMA.

***Teonoma cinerea *acraia*. Subsp. nov.**

Type locality: Hot Springs, Long Cañon, Mount Whitney, Inyo County, California. Altitude 8,000 feet.

Genl. char.: Similar to *T. cinerea*, but much paler, tail paler, foot smaller.

Color: Upper parts pinkish buff lined with black on top of head and dorsal region, lightest on rump; sides of face and flanks pinkish buff with very little black showing; this color extending over shoulders

* *ἀκραία*—dwelling on the hills.

and thighs; orbital ring black; entire under parts, hands, and feet white; base of fur on sides only, plumbeous; tail above like back, slightly darker towards tip, beneath yellowish white; ears naked, dark brown; soles of feet naked.

Measurements: Total length, 360; tail vertebræ, 150; hind foot, 40; ear, 33.5. Skull: total length, 45.5; Hensel, 40; zygomatic width, 25; interorbital constriction, 6; width of brain-case above roots of zygomata, 19; palatal length, palatal arch to alveolus of incisor, 22; length of upper tooth row, alveolar border, 9; length of mandible, angle to tips of incisors, 31; length of lower tooth row, alveolar border, 9.

This wood rat is of a very much paler color than *T. cinerea*, the tail being especially noticeable for its light hue when placed among specimens of the typical form. The skull presents no differences worthy of remark. This rat was procured by Mr. Heller at high elevations, 8,000–11,000 feet on Mt. Whitney, and on the Inyo Mountains, the higher range being on the last named, where it was more numerous at timber line.

FAM. GEOMYIDÆ.

THOMOMYS.

Thomomys **scapterus*. Sp. nov.

Type locality: Hannopec Cañon, Panamint Mountains, Inyo County, California.

Geogr. distr.: Panamint, Inyo and Coso mountains, Inyo County, California.

Genl. char.: Similar to *T. operarius*, but much darker in color, and with much shorter nasals.

Color: Upper parts and side wood brown, heavily lined with black on top of head and dorsal region, in some specimens nearly forming a dorsal band, but in the type this part is more uniform with the side, the back being less heavily lined with black; lower sides and entire under parts white, the plumbeous under fur showing through; hands and feet whitish; tail unicolor, white; ears and small spot behind ear black.

Measurements: Total length, 229; tail vertebræ, 74; hind foot, 29; ear, 6. Skull: total length, 37; Hensel, 33; zygomatic width, 23; interorbital constriction, 6; greatest width of brain case, 9; palatal

* *σκαπτηρ*—a digger.

length, 33; length of nasals (median), 10; anterior width of nasals, 5; length of mandible, angle to alveoli of incisors, 24.

This gopher is distributed along the bases of the mountain ranges named above, but does not go out on to the desert, nor west of the Inyo Mountains. Its dark coloring will distinguish it at all times from *T. operarius*, which seems to be its nearest relative.

FAM. HETEROMYIDÆ.

SUB. FAM. DIPODOMYINÆ.

DIPODOMYS.

Dipodomys deserti helleri. Subsp. nov.

Type locality: Keeler, Owens Lake, Inyo County, California.

Genl. char.: Size similar to that of *D. deserti*, color pale ochraceous instead of pale yellowish brown; upper part of tail like back with no black markings, no black on face.

Color: Upper parts pale ochraceous or dark pinkish buff; of a similar tint, but not so dark as are the upper parts of *D. nitratus*; line over eyes, sides of nose and forepart of face, entire under parts, limbs, and feet pure white; tail with line above pale ochraceous like back, becoming ochraceous near tip, sides and under part and tip pure white; ear same color as back.

Measurements: Total length, 333; tail 195; hind foot, 53.5; ear, 16. Skull: total length, 43; Hensel, 37; zygomatic width, 21; width of mastoids, 29; greatest width of parietals, 20; length of nasals, 14; palatal length, 14; length of upper tooth row, 5; length of mandible, condyle to tip of incisors, 21; length of lower tooth row, 5.

A series of this form from Keeler, collected by Mr. Heller, presents the same differences from typical *D. deserti* as *D. nitratus* from the same locality does from *D. m. simiolus*. It is much redder, lacks entirely the pale yellowish brown hue of *D. deserti*, and has no black or dusky hue upon the tail. I have much pleasure in naming this well-marked race after Mr. E. Heller, whose work in the field has contributed so greatly to the enlargement of the mammal collections of this Institution.

*Dipodomys m. *arenivagus*. Subsp. nov.

Type locality: San Felipe, Lower California, Mexico.

Genl. char.: Size small; similar to *D. m. simiolus*, but paler; ear

* Arena, sand; vagor, to wander.

larger, hind foot shorter; skull narrower across mastoids and parietals; nasals shorter.

Color: Upper parts pinkish buff, palest on the head and darkest on rump, the plumbeous under fur showing in places; no black streaks on face; white spots behind ears and above eyes; upper parts of sides from eye to rump, like color of rump; nose, sides of face, lower part of flanks, entire under parts and limbs, pure white; a narrow line of pinkish buff across thighs; hands yellowish white, feet white; tail with a bushy pencil, the upper parts to tip pale drab, sides and beneath white; ears naked, yellowish.

Measurements: Type. Total length, 225; tail vertebræ, 134; hind foot, 36; ear, 15. Average of ten specimens: total length, 234.7; tail, 137.3; hind foot, 36.7; ear, 14.1. Skull: total length, posterior line of mastoids to anterior end of nasals, 34; Hensel, 20; zygomatic width, 15; width of mastoids, 22; greatest width of parietals, 15; length of nasals, 12; greatest width of rostrum, 5; palatal length, 11; length of upper tooth row, 3; length of mandible, condyle to tip of incisors, 16; length of lower tooth row, 3.

In my paper on the Mammals of the San Pedro Martir Mountains (Field Museum Publication, Vol. III., p. 220), I referred the ten specimens of *Dipodomys* from San Felipe and Cañon Esperanza to *D. m. simiolus*. Since that paper was issued, I have received from Mr. E. Heller, series of *Dipodomys* from Palm Springs (Agua Caliente), and Whitewater, type localities of *D. m. simiolus* and *D. m. similis* respectively. On comparing the Lower California examples with these, it is at once seen that the Mexican animal is lighter and more pink in color, very much smaller in all its measurements, and is without the dark streak on the lower side of the tail. These ten specimens represent a well-marked diminutive race of *D. merriami*, nearest allied to *D. m. simiolus*.

***Dipodomys merriami mortivallis.* Subsp. nov.**

Type locality: Furnace Creek, Death Valley, Inyo County, California.

Genl. char.: Similar to *D. m. simiolus*, but the dorsal and ventral stripes and pencil of the tail vary from a purplish drab to a pale russet, quite different from the blackish tail of *D. m. simiolus*. The general color of the upper parts of the body is darker than that of the sub-species just named. The skulls of the two forms are much alike, save the new race has much longer and broader nasals widening at the anterior end; the extreme width of the parietals is greater, and the mastoids are broader.

Color: Type ♂. Above russet, darkest on the rump, the plumbeous under fur showing occasionally in places; sides dark russet; spots behind ear, superciliary stripe, face in front of eye, nose, entire under parts, stripe across thigh, and feet pure white; inner side of thighs deep russet like the rump; black bar across rump; tail bushy on apical third, with dorsal and ventral stripe pale russet; sides white; ears russet. Other specimens from Furnace Creek have the tail a purplish drab on the dorsal and ventral stripes, and also the bushy portion or pencil; but all the examples have the broad, long nasals and other characters of the skull mentioned above.

Measurements: Type, total length, 240; tail, 142; hind foot 37.5; ear, 14. Extremes: total length, 240-260; tail, 142-160; hind foot, 37.5-40; ear, 12-15. Skull: total length, anterior end of nasals to outer margin of mastoid, 36; Hensel, 22; greatest width across mastoids, 22; least interorbital width, 13; width of interparietal at mastoids, 17; length of nasals, 13; posterior width, 2; anterior width, 3; length of upper tooth row, 3.5; height at coronoid process from angle, 6.

This Kangaroo rat is probably nearest to *D. m. simiolus*, but is of a deeper color, and has a differently colored tail and much longer nasals. It appears to be restricted to the Death Valley region.

PEROGNATHUS.

Perognathus *mesembrinus. Sp. nov.

Type locality: Palm Springs.

Genl. char.: Color pale; tail hairy; pencil large, bushy; size medium.

Color: Upper parts mixed drab gray and buff; no lateral line; thighs like back; lips, entire under parts, fore legs, fore and hind feet white; tail above and pencil brownish drab, beneath whitish; ears dark brown, bases covered with tufts of drab gray.

Measurements: Total length, 195; tail vertebræ, 114; hind foot, 23; ear, 11. Skull: total length, 21; Hensel, 18; zygomatic width, 13; interorbital constriction, 7; mastoid width, 14; greatest parietal width, 10.5; length of mastoids, 9; palatal length, 10; length of nasals, 9.4; length of upper tooth row, 4; length of mandible, 12.5; length of lower tooth row, 3.5.

This is a small pale desert form nearest allied probably to *P. formosus* from Death Valley. The skull, while considerably shorter than that of the species just named, is equally broad, and with the

* μεσεμβρινος—South or southern, southern representative of *P. formosus*.

same large mastoids. Like *P. formosus* it is also on the borderland of *Perognathus* and *Chaetodipus*, the mastoids protruding beyond the occiput just enough to retain it in *Perognathus*. Of the two forms, however, the present one has the mastoids projecting the farthest beyond the occiput, and the bullæ in both are large and widely separated anteriorly. A series of the new species was obtained at Palm Springs, which would seem to be its northern limit, but it evidently goes into Lower California; for one specimen from Mattomi on the edge of the desert, collected by Mr. Heller, and which in my paper on the San Pedro Martir mammals, I had referred to *P. fallax*, proved, on comparison, to belong to this species.

Perognathus *elibatus. Sp. nov.

Type locality: Mount Pinos, Los Angeles County, California, altitude 5,000 feet.

Genl. char.: Size small; color dark; tail long.

Color: Upper parts black and buff, the former color predominating; nose, sides of face, line over eye, and lateral line cream buff; under parts, hands, and feet white; tail, basal half above buff tinged with dusky, remainder dusky, beneath yellowish white; ears brown, white spot on each side of margin near notch; whiskers black; line on side of nose black.

Measurements: Total length, 146; tail, 77; hind foot, 20.5; ear, 7. Skull: total length, 22; Hensel, 15; zygomatic width, 11; interorbital constriction, 5; mastoid width, 12; greatest width of parietals, 9; length of nasals, 7; palatal length, 8; length of upper tooth row, 3; length of mandible, angle to end of incisors, 11; length of lower tooth row, 3.

This is a very distinct species of *Perognathus*, belonging to the *Panamintinus* group, but very much darker in color than any other form, being almost black on the upper parts. Mr. Heller obtained a series in a valley on Mount Pinos at an elevation of 5,000 feet, the only place in which the species was found. It dwells among the pines, evidently only at high elevations.

Perognathus †pericalles. Sp. nov.

Type locality: Keeler, Owens Lake, Inyo County, California.

Genl. char.: Size small; colors very pale; ear rather large.

Color: Entire upper parts deep cream buff tinged with reddish,

* ἡλίβητος—high mountains.

† περικαλλής—very beautiful.

darkest on head and rump; sides paler cream buff; upper lip and entire under parts white; feet buffy white; tail above pale brown, beneath yellowish white; ear pale brown, with a buffy tuft of hair at base.

Measurements: Total length, 130; tail vertebræ, 73; hind foot, 19; ear, 6.5. Skull: total length, 21.5; Hensel, 14.5; zygomatic width, 11; interorbital width, 5; mastoid width, 12; greatest width of parietals, 10; length of interparietal, 2.5; length of nasals, 8.4; palatal length, 7.5; length of upper tooth row, 4; length of mandible, angle to tips of incisors, 10.5; length of lower tooth row, 3.

This is a very beautiful little species with the rich coloring so prevalent in the mammals from Keeler. It is not unlike the rich hues of the species of *Dipodomys* from the same locality, and also of that which I consider the summer pelage of *P. stephensi* from Death Valley. This new species must be very rare, as Mr. Heller was able to procure only two examples.

CHETODIPUS.

Perognathus hispidus maximus. Subsp. nov.

Type locality: Noble, Oklahoma Territory.

Genl. char.: Similar to *P. h. paradoxus*, but brighter in color; hind foot and other dimensions larger. Skull longer, parietals wider; interparietal longer; mastoids wider.

Color: Upper parts mixed ochraceous and black, the latter color predominating; lateral line from nose to rump including shoulder and upper part of fore and hind legs very bright ochraceous buff; face and orbital region bright ochraceous buff, lightly lined with black; under parts, hands, and feet white; tail above blackish brown, sides buff, beneath white; ear buff on outside, dusky inside.

Measurements: Total length, 243; tail vertebræ, 110; hind foot, 29. Average of five specimens: total length, 232; tail vertebræ, 109.4; hind foot, 27.8. Skull: total length, 34; Hensel, 25; zygomatic width, 16.5; mastoid width, 16; length of parietal, 5; greatest width of parietals, 14; length of nasals, 10.5; palatal length, 14; length of upper tooth row, 5; length of mandible, angle to tip of incisors, 20; length of lower tooth row, 4.

While resembling *P. h. paradoxus*, the present race is easily distinguished from that form by its bright colors and greater size, the latter indeed making it quite conspicuous when compared with its nearest relatives. A series of these was obtained by Mr. Surber in Oklahoma Territory, which were referred in my paper (Pub. Field Columb. Mus., 1899, I., p. 300) to *P. h. paradoxus*, from which it seems entitled to be separated as a distinct race.

FAM. LEPORIDÆ.

LEPUS.

SILVILAGUS.

Lepus* laticinctus. Sp. nov.

Type locality: Ore Grande, Mohave Desert, Kern County, California.

Genl. char.: Desert form, much paler than either *L. auduboni* or *L. a. sanctidiegi*, with a much paler nape, a dark band across thighs, and soles of feet bistre, and the nasals shorter on the median line.

Color: Upper part of head and dorsal region pinkish buff, the black bases of the hairs showing, giving these parts a streaked appearance of black and pinkish buff; nape pale tawny ochraceous; rump french gray (No. 10 of Ridgway, plate II), darkest in the middle; sides cream buff; broad band in front of thighs like dorsal region; sides of head mixed buff and black; orbital ring pale buff; pectoral band buff; lips, throat, and rest of under parts, under parts of fore legs, and upper part of hind legs and feet white, with some white on fore feet about toes; soles of all feet bistre; tail above blackish, the hairs tipped with buff; beneath white; ears externally mixed buff and black, with the edges white, internally lead color, nearly naked.

Measurements: Total length, 395; tail vertebræ, 62; hind foot, 88; ear, 79. Skull: total length, 70; Hensel, 53; interorbital width, 19; median length of nasals, 20; lateral length of nasals, 29; posterior width of nasals, 14; anterior width of nasals, 9; palatal length, 25; length of upper tooth row, 11; length of mandible, angle to tips of incisors, 54; length of lower tooth row, alveolar border, 13.

This appears to be a very distinct form, quite different in coloration from any described, and is easily recognizable by its pale hue and the bands in front of thighs and the dark soles of the feet. It was procured only at one locality by Mr. Heller, Ore Grande, where a small series was obtained.

Lepus l. rufipes. Subsp. nov.

Type locality: Furnace Creek, Death Valley, Inyo County, California.

Genl. char.: Similar to *L. laticinctus*, but paler and smaller; soles of feet russet; ear shorter.

Color: Upper parts buffy white; the base of fur lead color, then

*Latus, broad—cinctus a band.

pale brown and hairs tipped with white, which gives the general hue to the upper parts; nape buff, darkest on lower part; top of head like back; sides grayish white; faint brown stripes in front of thighs; rump pale gray; upper part of fore legs, lower part of shoulders and thighs, and soles of feet, russet; pectoral band pale buff; entire under parts and upper surface of hind feet white, base of fur plumbeous; ears mixed buff and black, edges white; tail above similar to rump, beneath white.

Measurements: Total length, 355; tail vertebræ, 59; hind foot, 85; ear, 74. Skull: total length, 66; Hensel, 50; zygomatic width, 32; interorbital width, 16; median length of nasals, 15; lateral length of nasals, 25; anterior width of nasals, 7; posterior width of nasals, 12; palatal length, 24; length of upper tooth row, 11.5; length of lower tooth row, 10.

This race while having a general resemblance to *L. laticinctus* from the Mohave Desert, can be recognized at once by the reddish hue of the soles of the feet and upper part of fore legs. It is also considerably smaller. The race seems to be restricted to Death Valley, as the rabbit of the Panamints and neighboring ranges apparently represents a different race.

Lepus l. *perplicatus. Subsp. nov.

Type locality: Hannoec Cañon, Panamint Mountains, Inyo County, southeastern California.

Geogr. distr.: Panamint, Coso and Inyo mountains, Inyo County, California. Altitude 7,500 feet.

Genl. char.: Similar to *L. laticinctus* and *L. l. rufipes*, but smaller than the former and larger than the latter, with the soles of the feet Prout's brown. Ear shorter in proportion to other dimensions.

Color: Upper parts similar to those of *L. laticinctus*; rump dark gray with the hairs tipped with white; upper part of fore legs vinaceous cinnamon; soles of feet Prout's brown; pectoral band dark buff; throat whitish plumbeous; rest of under parts white.

Measurements: Total length, 380; tail vertebræ, 69; hind foot, 98; ear, 73. Skull: total length, 64.5; Hensel, 49; zygomatic width, 33; interorbital width, 16; median length of nasals, 17; lateral length of nasals, 21; anterior width of nasals, 11; length of upper tooth row, 8; length of lower tooth row, 9.

This race, found at a high elevation on the mountains, is in some respects intermediate between *L. laticinctus* and *L. l. rufipes*, both

*Perplicatus, intermingled.

desert forms. In size it is nearest to the first named, and it may have a darker pelage, but as all the five specimens procured are in process of change it is difficult to say what the color of the perfect dress exactly is. It is considerably larger than *L. l. rufipes*, with a shorter ear, and soles of the feet colored differently from those of the other two forms.

ORDER CARNIVORA.

FAM. CANIDÆ.

VULPES.

Vulpes *arsipus. Sp. nov.

Type locality: Daggett, San Bernardino County, California.

Genl. char.: Similar to *V. macrotis*, but paler and smaller, post-orbital processes longer; pterygoid fossa narrower.

Color: Top of head mixed pale gray and brownish fulvous, more brownish and darker than the back; upper parts of body pale grizzled gray, paler on the sides, where the gray grades into buff; outer sides of fore legs and thighs, and down outside of hind legs to the toes pale fulvous; narrow pectoral collar pale fulvous; black patch on sides of nose from eye, and one on either side of chin; brown post-ocular stripe; under parts, inner side of thigh, and front of hind legs whitish, tail above pale gray, tinged with buff, beneath buffy, tip brownish black; ears externally pale cinnamon and narrowly edged with white.

Measurements: Total length, 810; tail vertebræ, 310; hind foot, 128; ear from notch, 86. Skull: occipito-nasal length, 103; Hensel, 104; zygomatic width, 61; interorbital constriction, 20.5; across post-orbital processes, 28; palatal length, 56; length of nasals, 39; length of upper molar series, anterior edge of first premolar to posterior edge of last molar, 44; length of mandible, 82.5; length of lower molar series, 47.5.

This fox is an inhabitant of the Mohave Desert, and Mr. Heller secured a series at various localities from Daggett north to Wild Rose Spring at the base of the Panamint Mountains. It is paler and smaller than the other described forms, and does not seem to have the reddish summer pelage characteristic of *V. macrotis* and *V. hebes* (hebe?) of Calgary, Alberta, the present form apparently retaining its pale grayish pelage throughout the year. Daggett was the most southern point in the Mohave Desert where this fox was seen by Mr. Heller.

* ἄρσιππος—swift of foot.

FAM. URSIDÆ.

URSUS.

Ursus *hylodromus. Sp. nov.

Type locality: Alberta, Northwest Territory.

Genl. char.: Skull: forehead prominent; elevated above face, highest part of brain-case slightly anterior to a line from the roots of the zygomata; frontals broad at post-orbital processes; outline of nasals concave, the posterior portion curving upwards on to the frontals, similar to the nasals of *U. altifrontalis* and *U. machetes*, but in a less degree; brain-case bulging on sides to a greater extent than that of either of the species named; zygomatic arches only moderately expanded; narial opening very large, wide and evenly rounded inferiorly; occipital crest prominent; bullæ wider than long, the tubular meatus much elongated and narrow; pterygoid fossa broad, narrowest anteriorly at palatal arch, the processes rather short, broad, and their tips turned inwards; palate of nearly equal width for the entire length between the tooth rows, contracting after last molar gradually to the pterygoids; basioccipital flat and very broad, sides low; mandible very heavy; upper outline of coronoid process curving downward posteriorly and forming a hook.

Measurements: Total length, 312; occipito-nasal length, 257; Hensel, 270; zygomatic width, 173; width at post-orbital processes, 96; width between orbits, 69; greatest breadth of brain-case, 102; length of nasals, 76; width anteriorly, 30; width posteriorly, 12; greatest width of narial opening, 50; height of narial opening, 41; width of basioccipital, 47; of basisphenoid, 36; length of pterygoid fossa, 46; anterior width, 16; median width, 25; posterior width at pterygoid processes, 24; palatal length, 153; width between last molars, 45; between canines at posterior edge, 45; between outer edges at palatal arch, 36; length of three upper molars, alveolar border, 67; length of mandible, 217; depth of mandible at middle of second molar, 37.5; height at coronoid process, 88; width of coronoid process above condyle, 57; breadth of coronoid process beneath hook, 41; breadth at hook, 40; length of three lower molars, alveolar border, 65. No skin preserved.

This black bear is nearest allied to the *Ursus altifrontalis* from the Olympic Mountains, and the skulls have a general resemblance, with the characters of the present form much less accentuated. It

*ὄλο-δρόμου—wood-ranging.

has a high and broad forehead, but nevertheless it is lower and narrower than in the western species; the brain-case, however, is much wider and more swollen, and the zygomatic arches much less spread as the measurements show—173 to 185; the basioccipital and basisphenoid are much flatter, and the pterygoid fossa much wider, particularly at the posterior end, with the tips of the pterygoid processes turning inward instead of outward, as in *U. altifrontalis*; the palate is wider throughout its length, and does not become narrow anteriorly as in the species just named. In comparison with the eastern black bear (Wisconsin and Maine), the forehead is considerably more elevated, and the brain-case much broader; the nasals are longer and elevated posteriorly; the narial opening much broader and flatter on the inferior border; the pterygoid fossa much wider and the tips of the processes turn inward and not outward. The differences are similar to those which characterized the new form when compared with the Pacific Coast black bears, placing *U. hylodromus* between the two. The eastern black bear, however, has the forehead nearly on a line with the face, and in this respect differs from both of its relatives, and possesses also a comparatively long and narrow brain-case, in the latter peculiarity not unlike that of *U. altifrontalis*, while the new form has the brain-case equally long, but bulging outward posterior to the frontoparietal suture. The shape of the coronoid process of the mandible of the eastern black bear skull is very different from both of these others, the posterior outline being nearly straight from the condyle to the tip, and entirely without the downward curve at the tip so conspicuous in the other two species. The horizontal portion of the mandible of *U. hylodromus* is deeper and heavier than either of the others.

FAM. PROCYONIDÆ.

BASSARISCUS.

Bassariscus albipes. Sp. nov.

Type locality: Near Vera Cruz, State of Vera Cruz, Mexico.

Genl. char.: Size large, color dark, feet white. Skull long, narrow, nasals pointed posteriorly (rounded in *B. astutus* and *B. a. raptor*), and considerably depressed in the middle, causing the outline to be concave, as the posterior portion ascends to the frontals; the brain-case is rather narrow for its length, and does not widen posteriorly equal to that of *B. astutus*; the pterygoid fossa is long and rather broad, and the processes of the pterygoids are thickened and heavy,

very different from the slender processes of the species compared; infraorbital foramina very large and triangular in shape; palate anteriorly much broader for its length than either of the other forms; post-orbital processes short.

Color: Upper parts very dark gray, the hairs being yellowish at base and tipped with black, the dark color predominating to such an extent on the dorsal region that this part seems in certain lights all black; sides of neck and body slightly paler; top of head nearly black like the back, mixed slightly with white and buff hairs; above the eye for the posterior three-fourths is a buff spot connecting posteriorly with a buff stripe that runs under the eye to the nose; black band in front of eye; end of nose blackish brown; muzzle black; upper lip buff; chin and throat buff; rest of under parts yellowish white; shoulders like back; upper parts of fore and hind legs brownish gray; fore feet white or very pale yellowish white, this hue extending up the outside to beyond wrist; under side of legs yellowish white; hind feet with terminal part and toes whitish. Tail very long with alternating white and black rings, and tip black; the black rings much broader than the white and not meeting beneath. Ears, basal half black, remainder white; whiskers very long, jet black.

Measurements: Total length, 870; tail, 425; hind foot, 80. Skull: total length, 89; occipito-nasal length, 80; Hensel, 80; zygomatic width, 53; interorbital constriction, 17; post-orbital constriction, 18; width across post-orbital processes, 25.5; greatest width of braincase, 36; length of nasals, 20.5; mastoid width, 36; length of pterygoid fossa, 18; palatal length, 37.5; width of palate between last molars, 12; between canines, 10.5; length of upper tooth row from anterior edge of canine, alveolar border, 34; length of canine, 11; length of mandible, 55; height at coronoid process, 23; at angle, 9; length of lower tooth row, molar series alveolar border, 27; from anterior edge of canine, 34.

This is a large form of *Bassariscus*, with a dark, almost black, pelage in certain lights on the upper parts, and with a much longer tail than any other described species, and with conspicuously white feet tinged with yellow. In general appearance it does not seem to resemble very closely any of the known raccoon foxes. A single specimen was obtained by Mr. Buxton near Vera Cruz, Mexico.

FAM. MUSTELIDÆ.

GULO.

Gulo *luteus. Sp. nov.

Type locality: Mount Whitney.

Geogr. distr.: Mount Whitney to Yukatat Bay(?), Alaska.

Genl. char.: General color of hind part of head, sides, and base of tail, buff color.

Color: Nose, lips, cheeks back to and including eyes, jet black; top of head and back of eyes pale gray; nape and space between shoulders chestnut; lower part of back and rump seal brown in the center, grading to chestnut on the edges; band across middle of back encircling the dark patch, and sides buff color; under parts blackish chestnut with small white spots on throat; legs and feet black; tail, basal half buff, remainder black; ears chestnut, with broad buff edging.

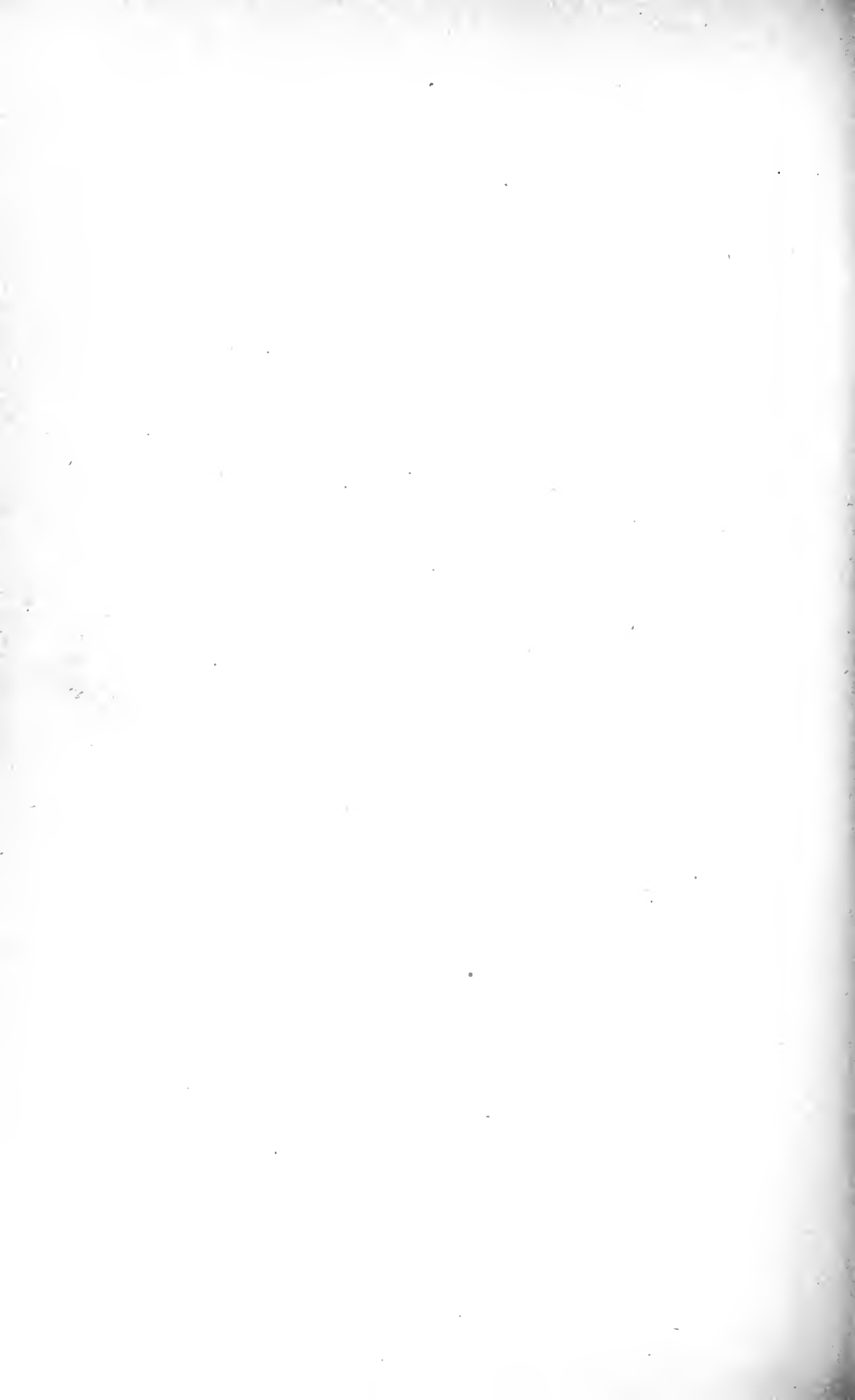
Measurements: Immature. Total length, 850; tail vertebræ, 205; hind foot, 165; ear, 53.

This is a pale species of wolverine, strikingly different from the well-known animal that up to this time has represented the genus *Gulo*. The type specimen is an immature male, but the trappers and ranchmen told Mr. Heller that although the creature was rare, yet occasionally one was killed, and the old ones were exactly like the present specimen. This statement is probably correct, for the young of *Gulo luscus* resemble their parents in coloration. When I was last in Alaska with the Harriman expedition I obtained at Yukatat Bay a skin of a pale-colored adult wolverine, which I was inclined to regard as a freak specimen.

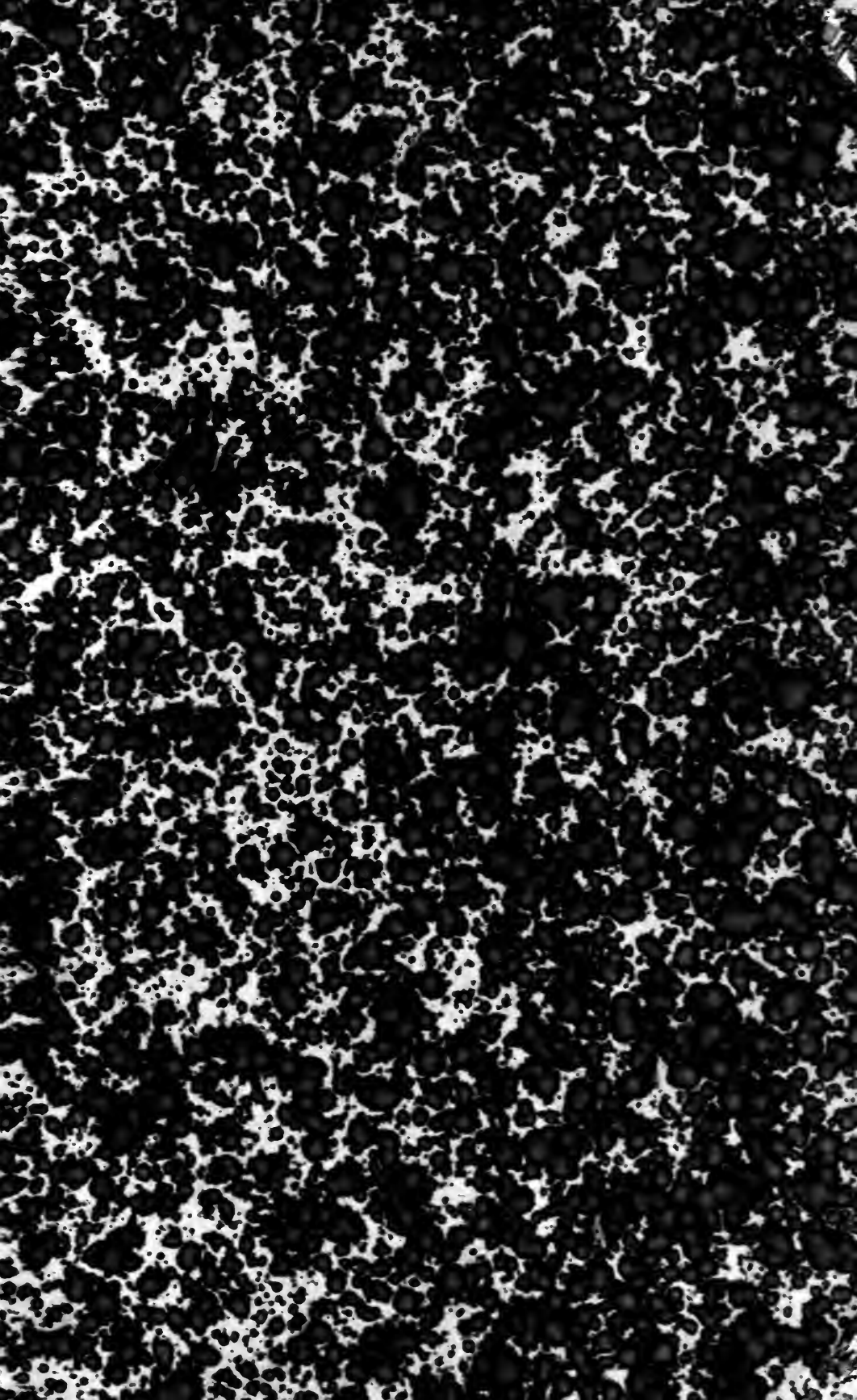
The exact locality of its capture was not known, and the trader from whom it was bought could not say whether the specimen was taken in the vicinity of Yukatat bay or brought from a distance. I brought it back and put it in the collection with other wolverine skins. On comparing the Mount Whitney specimen with this one from Alaska, it was at once seen they were exactly alike in their coloring, and in the distribution of the hues; the buff base of the tail and the sides and the jet black muzzle and fore part of head being especially conspicuous. The Yukatat example is fully adult and about the size of an ordinary *Gulo luscus*, and the exact resemblance of these two specimens to each other would seem to confirm the statement made by the residents near Mount Whitney that the old and young wolverines in their locality do not differ in appearance. A second specimen of wolverine is inter-

*Luteus—buff.

esting on account of the wide distribution of the species so long known, and it is hoped that more examples and an understanding of its distribution may ere long be obtained. Mount Whitney I believe is the most southern locality in which a wolverine has been procured. The skull of the type was badly broken, the animal having been killed by a blow on the head.







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