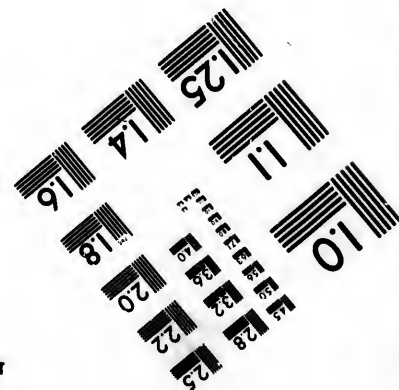
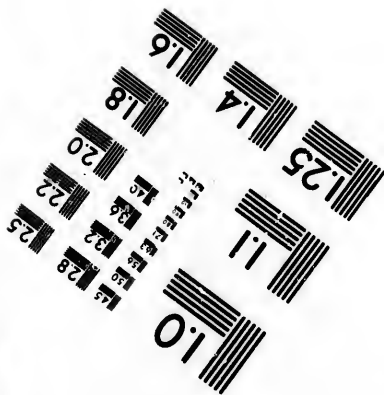
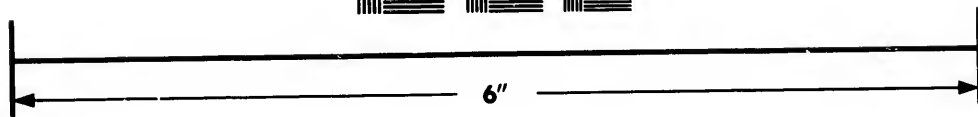
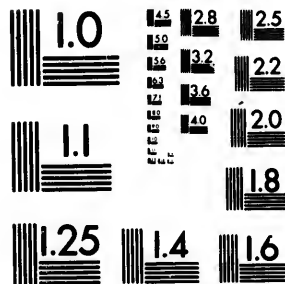


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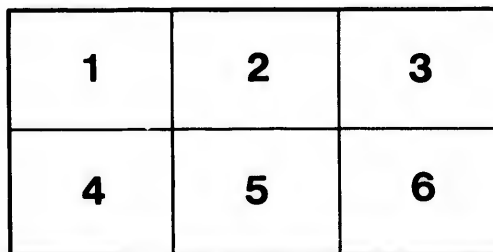
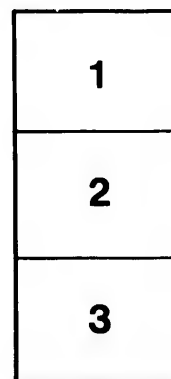
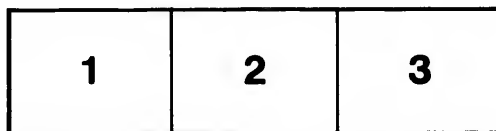
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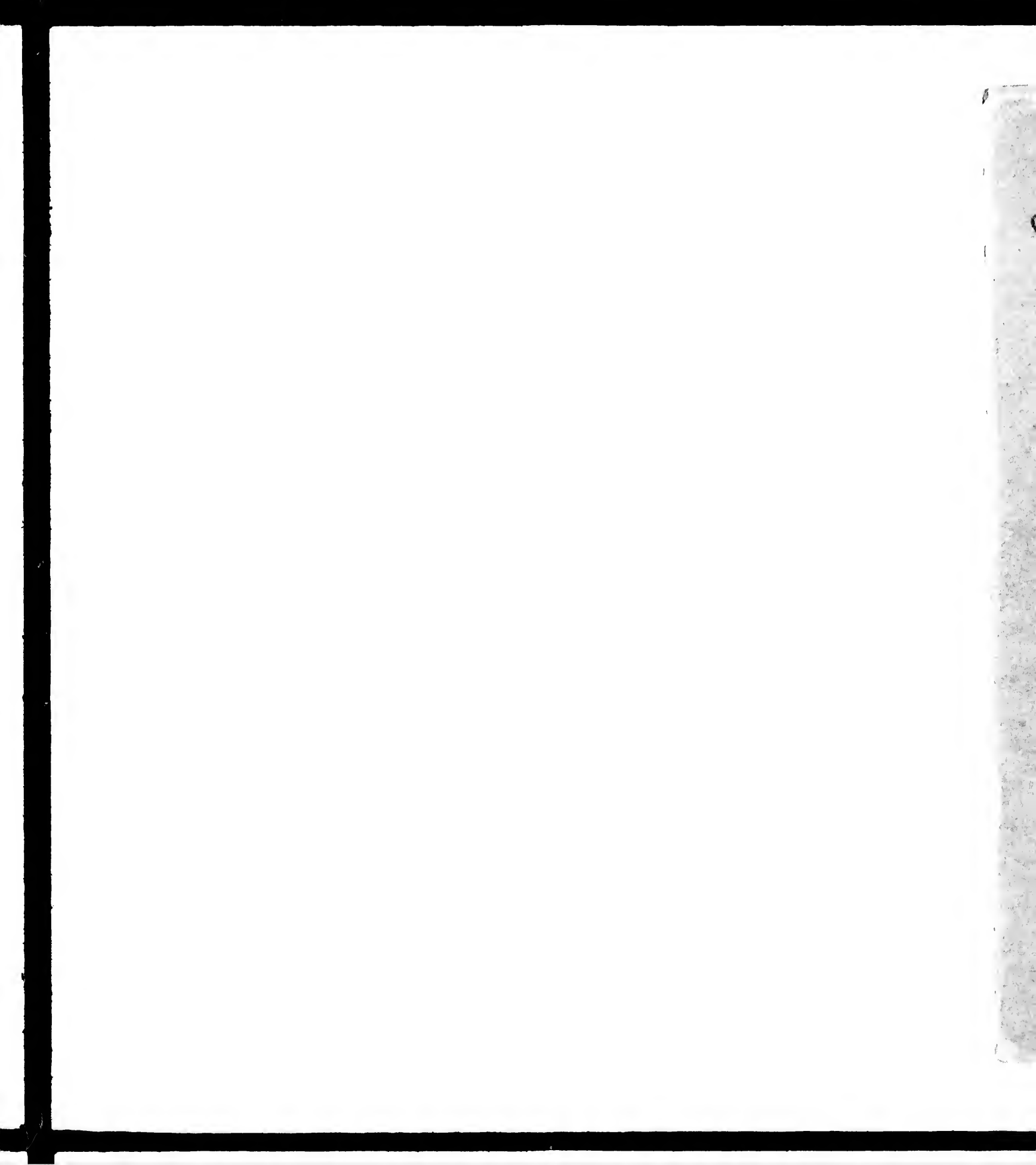
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EXPEDITION.

I.

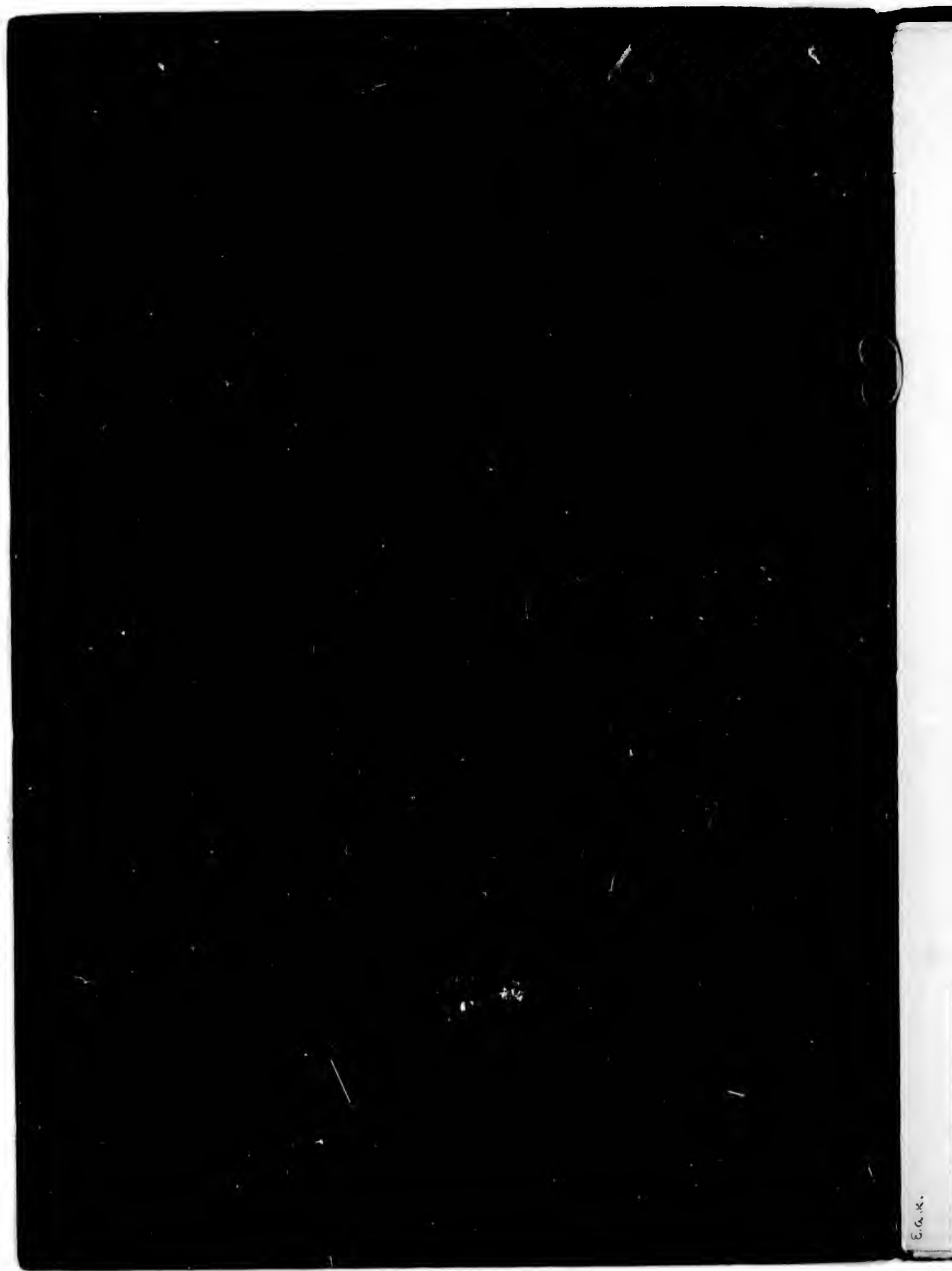
DESCRIPTIONS OF TWENTY-SIX NEW MAMMALS
FROM ALASKA AND BRITISH
NORTH AMERICA.

BY

C. HART MERRIAM.

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DESCRIPTONS OF TWENTY-SIX NEW MAMMALS
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BY C. HART MERRIAM.

In the early spring of 1899 Mr. Edward H. Harriman of New York, in coöperation with the Washington Academy of Sciences, organized, at his own expense, an expedition to Alaska. He invited as his guests about twenty-five scientific men, representing various branches of research. The expedition sailed from Seattle May 30, on the iron steamship 'Geo. W. Elder,' especially chartered for the purpose, and was gone just two months. The details of the route and work were arranged by special committees, and the vessel was equipped and operated in such manner as to secure maximum results with a minimum expenditure of time.

Work was done at a large number of localities, from British Columbia to Bering Strait, and extensive collections were made, particularly in the fields of zoölogy and botany. The technical results will appear from time to time in these Proceedings, and later will be collected in a special report on the expedition. Mr. Harriman will provide the illustrations.

In studying the material brought back by the expedition, comparisons have been made with material collected by others in Alaska and adjacent parts of boreal America, and in some

instances new species from points outside of Alaska have been thus brought to light. In such cases the new species have been included in order to render the results more complete and useful.

The present paper comprises descriptions of twenty-six mammals believed to have escaped previous recognition. Papers on other subjects will follow in the near future.

The new mammals here described, with their type localities, are:

<i>Vulpes harrimani</i>	Kadiak Island, Alaska
<i>halleusis</i>	Hall Id., Bering Sea, Alaska
<i>Sorex glacialis</i>	Glacier Bay, Alaska
<i>tundrensis</i>	St. Michaels, Alaska
<i>personatus arcticus</i>	St. Michaels, Alaska
<i>alascensis shumaginensis</i>	Popof Id., Shumagin Ids., Alaska
<i>navigator alaskanus</i>	Glacier Bay, Alaska
<i>Spermophilus osgoodi</i>	Ft. Yukon, Alaska
<i>barrowensis</i>	Point Barrow, Alaska
<i>beringensis</i>	Cape Lisbourne, Alaska
<i>Microtus innuitus</i>	St. Lawrence Id., Bering Sea, Alaska
<i>yakutatensis</i>	Yakutat Bay, Alaska
<i>popofensis</i>	Popof Id., Shumagin Ids., Alaska
<i>abbreviatus fisheri</i>	St. Matthew Id., Bering Sea, Alaska
<i>macfarlani</i>	Ft. Anderson, north of Gt. Bear Lake
<i>Evotomys orca</i>	Orca, Prince William Sound, Alaska
<i>Dicrostonyx unalascensis</i>	Unalaska, Alaska
<i>nelsoni</i>	St. Michaels, Alaska
<i>richardsoni</i>	Ft. Churchill, Hudson Bay
<i>Lemmus alascensis</i>	Point Barrow, Alaska
<i>yukonensis</i>	Charlie Creek, Yukon River, Alaska
<i>Erethizon epixanthus myops</i>	Portage Bay, Alaska Peninsula
<i>Lepus othus</i>	St. Michaels, Alaska
<i>podadromus</i>	Stepovak Bay, Alaska Peninsula
<i>americanus dalli</i>	Nulato River, Alaska
<i>americanus macfarlani</i>	Ft. Anderson, north of Gt. Bear Lake, Arctic America.

VULPES HARRIMANI sp. nov. Kadiak Island Fox.

Type (skin) from Kadiak Island, Alaska. No. 99626 ad. U. S. National Museum, Biological Survey Collection. Purchased in July 1899, at Kadiak, by C. Hart Merriam. Skull of another specimen, from Uyak Bay, Kadiak Island, no. 98144 U. S. National Museum, Biological Survey Collection, July 1899, collected and presented by Geo. Bird Grinnell.

Characters.—Size largest of the known North American foxes; ears small; tail enormous, constricted at base, largest on basal

fourth and tapering thence to tip; color tawny yellow; fur of posterior half of back grizzled and much coarser than that on rest of body; black of fore and hind feet greatly reduced.

Color.—Nose to between eyes pale dull fulvous, grizzled with whitish; top of head from between eyes to nape buffy whitish, grizzled with yellowish fulvous; anterior half of back bright yellowish fulvous, the color extending down over sides and belly nearly to median line; posterior half of back coarsely grizzled buffy whitish and dull fulvous, reddest along median line; underparts yellowish fulvous except chin, throat, inguinal region, and a narrow strip on belly, which parts are grayish buffy; ears black; fore and hind legs and feet dull pale fulvous with an irregular black patch on dorsal surface of forefoot, and a much smaller one on hind foot; tail grizzled grayish and yellowish fulvous, the fulvous most marked on median line of upper surface, the black tipped hairs less abundant than in related species but sufficiently plentiful on basal fourth of dorsal surface to form an indistinct black patch or spot; tip inconspicuously white or buffy white.

Cranial characters.—Skull large and massive; *postorbital processes only slightly developed* (much less prominent than in any other known species); frontal sulcus very deep and reaching forward over posterior third or half of nasals; palate and maxillaries broad; bullæ large. Dentition heavy; premolars more robust than in related species.

Measurements.—Type specimen [a dry skin]; total length 1260; tail vertebrae [approximate] 450; tail to end of hairs 550; greatest diameter of tail, hairs laid naturally 160; greatest diameter of tail, hairs spread, 250.

Cranial measurements.—Skull no. 98144 from Uyak Bay, Kadiak Island: basal length 140; zygomatic breadth 77; palatal length 74.5; postpalatal length 65; breadth across postorbital processes 33; interorbital breadth 27.5; postorbital constriction 22.5; greatest breadth of rostrum over roots of canines 26.3; lateral series of teeth (from front of canine to back of last molar) 66.

VULPES HALLENSIS sp. nov. Hall Island Arctic Fox.

Type from Hall Island, Bering Sea. No. 98067 ♀ old, U. S. National Museum, Biological Survey Collection. July 14, 1899. C. Hart Merriam. Orig. no. 2177. (Shot by W. B. Devereux.)

Characters.—Externally similar in general to *V. lagopus*. Skull shorter and broader.

Color.—Head sooty, grizzled between eyes and on sides of face with whitish hairs; back (rather narrowly), shoulders, and upper surfaces of legs sooty brown; sides and underparts buffy; chin and anterior part of throat dusky grayish; ears dusky, edged with buffy

white; sides of nose and extreme tip of chin whitish; ankles and hind feet dusky, sprinkled or grizzled with whitish hairs; tail strongly bicolor; above dusky at base like back, becoming yellowish buff distally; below, yellowish white.

Cranial characters.—Compared with *Vulpes lagopus* from Lapland, the skull is *shorter* both anteriorly and posteriorly (rostrum shorter, and also base of skull behind molars); the bullæ larger, with an inflated posterior projection pushing out behind the meatus tube and directed outward as well as backward, giving a semicircular curve to the axis of the bullæ (viewed from below); meatus tube more sharply defined; basioccipital narrower between bullæ. Lower premolars (especially 2d and 3d) smaller; 4th upper premolar and 1st molar more robust. Ratio of zygomatic breadth to basal length of skull 66.8. [In a Lapland skull this ratio is 58.]

Measurements.—(Measured in flesh by C. H. M.) Total length 825; tail vertebræ 290; hind foot 140.

Cranial measurements.—Basal length 114; zygomatic breadth 69; palatal length 61; postpalatal length 53.5.

SOREX GLACIALIS sp. nov. Glacier Bay Shrew.

Type from Point Gustavus, on east side of entrance to Glacier Bay, Alaska. No. 97709 ♂ ad. U. S. National Museum, Biological Survey Collection. June 12, 1899. A. K. Fisher. Orig. no. 2056.

Similar to *S. longicauda* but with decidedly smaller fore and hind feet (hind foot 14 or less instead of 15 +), much smaller skull and teeth, and smaller and less conspicuous ears; upperparts darker, underparts whiter and lacking the brownish fulvous wash which is conspicuous in *longicauda*.

Color.—Upperparts dark dusky brown; underparts abruptly whitish with distinct line of demarkation on side of face and neck; tail above and at tip all round, brownish dusky; below buffy.

Cranial characters.—Skull and teeth as in *longicauda* (3d unicuspid smaller than 4th) but skull smaller and shorter, and molari-form teeth much smaller.

Measurements.—Type specimen: total length 122; tail vertebræ 52; hind foot 14. Another male from type locality: total length 123; tail vertebræ 53; hind foot 13.5.

SOREX TUNDRENSIS sp. nov. Tundra Shrew.

Type from St. Michaels, Alaska. No. 99286 U. S. National Museum, Biological Survey Collection. Sept. 13, 1899. W. H. Osgood. Orig. no. 902.

Characters.—Size large; tail rather short; coloration strikingly peculiar: bicolor in winter; tricolor in summer; the drab brown of back restricted to a sharply defined dorsal area in strong contrast to paler color of sides, which in winter is silvery, in summer overlaid with a brownish wash. The only related species having the same pattern is the larger and very much darker *S. richardsoni*, whose sides are never silvery.

Color.—*Summer pelage* (tricolor): top of head and broad dorsal area brown (usually drab brown); flanks and sides abruptly paler, usually pale buffy brown; underparts soiled whitish; tail above brown, becoming dusky all round at tip, below buffy. *Winter pelage* (bicolor): dorsal area drab brown, darkest posteriorly; flanks, sides, and underparts silvery whitish in striking contrast. Owing to the much greater length of fur in winter the animal appears larger.

Cranial characters.—Skull and teeth (3d unicuspid larger than 4th) as in *S. richardsoni*, but slightly smaller; constriction slightly broader; large premolar and unicuspidate series smaller and shorter.

Measurements.—Type specimen: total length 108; tail vertebrae 32; hind foot 13. Average of ten adults from type locality: total length 108; tail vertebrae 32; hind foot 13 (the same as the type).

SOREX PERSONATUS ARCTICUS subsp. nov. Arctic Shrew.

Type from St. Michaels, Alaska. No. 99305 ♀ ad. U. S. National Museum, Biological Survey Collection. Sept. 14, 1899. W. H. Osgood. Orig. no. 910.

Similar to *personatus* but slightly larger; tail larger; color much paler, particularly on underparts, which in both summer and winter pelages are conspicuously whiter. In summer pelage the upperparts are pale drab brown, the underparts ashy whitish. In winter pelage the fur is much longer and fuller; the upperparts dusky brownish with a fine 'pepper and salt' appearance; the underparts (encroaching on flanks) silvery whitish with only the palest buffy suffusion, and this sometimes absent. The skull is slightly longer than in *personatus*; the unicuspidate teeth decidedly larger.

Contrasted with subspecies *streatori*, which it resembles in size, it differs markedly in coloration, being very much paler both above and below, and lacking entirely the brownish fulvous wash on the underparts.

Measurements.—Type specimen: total length 108; tail vertebrae 39; hind foot 12. Average of ten adults from type locality: total length 103; tail vertebrae 37; hind foot 12.

SOREX ALASCENSIS SHUMAGINENSIS subsp. nov.

Shumagin Islands Shrew.

Type from Popof Id., Shumagin Islands, Alaska. No. 97993 ♂ ad. U. S. National Museum, Biological Survey Collection. July, 1899. DeAlton Saunders. Orig. no. 2210 (Fisher catalogue).

Similar to *S. alascensis* but slightly smaller and paler; upperparts more pepper and salt; underparts much whiter and without the brownish or fulvous wash; flanks showing a tendency to the development of a pale buffy-fulvous band.

Cranial characters.—Skull and teeth as in *alascensis* (3d unicuspid much smaller than 4th) but slightly smaller.

Measurements.—Type specimen: total length 112; tail vertebræ 42; hind foot 14.

Subgenus NEOSOREX.

SOREX NAVIGATOR ALASKANUS subsp. nov.

Alaska Water Shrew.

Type from Point Gustavus, Glacier Bay, Alaska. No. 97713 ♂ ad. U. S. National Museum, Biological Survey Collection. June 12, 1899. A. K. Fisher. Orig. no. 2058.

Similar to *navigator* but smaller; skull shorter and more massive; interpterygoid fossa shorter; braincase less abruptly inflated behind constriction; constriction broader; sagittal crest much more highly developed and appearing in relatively young skulls; tooth row shorter.

Color.—Upperparts plumbeous or slate gray with a decided 'pepper and salt' appearance; underparts and feet whitish; tail above and at tip all round, dusky; below whitish.

Measurements.—Type specimen: total length 145; tail vertebræ 65; hind foot 18.5. Another male from type locality: total length 160; tail vertebræ 72; hind foot 19.

SPERMOPHILUS OSGOODI sp. nov. Fort Yukon Spermophile.

Type from Fort Yukon, Alaska. No. ~~12710~~ 1635 ♂ ad. U. S. National Museum. April 29, 1877. L. M. Turner. Original no. 1635.

Characters.—Size rather large; tail longest of the group, and very red below; nose patch extending over top of head; belly very red in summer pelage; dorsal vermiculations tending to break into spots.

Color.—*Summer pelage*: Whole top of head (from nose to ears) deep ferruginous; neck, shoulders, and sides, grayish, becoming deep fulvous on flanks; dorsal area fulvous, irregularly spotted with whitish; underparts, including sides of face, fore and hind legs and feet varying from deep fulvous to ferruginous. *Winter pelage*: Similar, but

gray of neck and shoulders clearer and pushing forward on sides of face nearly to eye; dorsal vermiculations less broken into spots; thighs and flanks intense ferruginous: deep rusty of underparts interrupted by areas of grizzled grayish and fulvous.

Cranial characters.—Skull large and heavy like that of *barrowensis*, from which it differs in the greater length of premaxillæ: in *barrowensis* the premaxillæ fall short of the nasals; in *osgoodi* they surpass the nasals.

Remarks.—*S. osgoodi* differs from all its relatives in the large size of the red nose patch, which covers the whole top of the head, the presence (normally) of a fulvous dorsal area, the intensity of the red on the belly (rusty-red instead of fulvous), and the great length of the tail. The thighs are usually as red¹ as in *columbianus* and *erythrogluteus*, thus differing markedly from all other known Alaska forms. I have named this striking and handsome species in honor of my assistant, Wilfred H. Osgood, who, during his recent trip down the Yukon, recognized it as new and obtained a fine series, which series, unhappily, was afterwards lost as a sequel to the capsizing of his boat in the great river.

SPERMOPHILUS BARROWENSIS sp. nov.
Point Barrow Spermophile.

Type from Point Barrow, Alaska. No. $\frac{4404}{37824}$ ♂ ad. U. S. National Museum.

Characters.—Size largest of the known forms (hind foot 62 mm.); coloration (in May, left-over winter pelage) pale; prevailing tints buffy; back indistinctly spotted; skull large and massive.

Color.—Nose patch rather pale fulvous (not chestnut or ferruginous), fading on top and back of head to buffy fulvous; neck and sides buffy, grizzled with black hairs; back buffy fulvous irregularly speckled with whitish (the spotting partly due to wear); underparts, including legs and feet, buffy, palest on throat and around mouth, deepest on pectoral region, belly, and upper sides of hind foot; eyelids whitish; tail above, buffy, grizzled with black; below buffy fulvous, bordered with black and edged with buffy.

Cranial characters.—Skull largest of the group, though only slightly larger than that of *S. osgoodi* from Fort Yukon; rostrum broad; frontal shield broad, its orbital margin strongly thickened and elevated, but not noticeably notched by supraorbital foramen; zyg-

¹An October specimen has the red thighs partly overlaid and concealed by a superficial grizzling of buffy gray and black.

omata convergent, the anterior angle thickened but hardly apparent from above; jugal broad, but less expanded than in the much smaller *kadiacensis*; temporal impressions obsolete; bullæ large; meatus tube short and without distinct 'neck'; underjaw rather delicate, the angle strongly inflected but not massive as in *kadiacensis*. Molariform teeth large and heavy.

In cranial characters *S. barrowensis* is very close to *osgoodi*, both having large, broad, and massive skulls with faint or obsolete temporal impressions. In *barrowensis* the ascending arms of the premaxillæ are short, ending anterior to the nasal endings; in *osgoodi* they are long, passing the nasals. The unfortunate absence of an authentic skull of *S. empetra* prevents comparison with that species.

Remarks.—Compared with skins of *empetra* from Hudson Bay *barrowensis* is much larger and paler with a decidedly more marked tendency to spotting, the whitish dorsal vermiculations being more distant and more distinctly broken into spots. Compared with *S. beringensis* from Cape Lisbourne, *S. barrowensis* is not only larger and paler, but differs in the following particulars: ground color of back grayish buffy instead of fulvous; dorsal whitish bands narrower, more numerous, and less broken into spots; fulvous of nose patch and underside of tail much paler; upperside of tail grizzled buffy instead of fulvous and black; black border of tail absent except at and near tip; sides of head buffy instead of buffy gray; dorsal area not well defined.

SPERMOPHILUS BERINGENSIS sp. nov.

Cape Lisbourne Spermophile.

Type from Cape Lisbourne (Coal Veins), Alaska. No. 15253 ♂ ad. U. S. National Museum, May 1885. H. D. Wolfe.

Characters.—Similar to *S. empetra* from Hudson Bay but back more strongly fulvous, with the whitish dorsal vermiculations broken into distinct and distant spots; tail (apparently) longer and deeper fulvous, or even ferruginous; nose patch larger and less defined.

Color.—*Summer pelage* (worn): Entire animal fulvous; becoming ferruginous on nose patch and underside of tail; palest on back; back distinctly spotted with buffy-whitish; tail broadly bordered with black. *Winter pelage*: Nose patch brighter rusty, and in more abrupt contrast to surrounding parts, which are buffy grayish; sides of face and neck buffy grayish; back deep fulvous, sparsely sprinkled with whitish spots; sides and underparts buffy to buffy fulvous.

Remarks.—This species differs from all others in the distinctness

of the spotting, and in the large size and relative broad spacing of the spots. It differs from *barrowensis* in smaller size and much greater intensity of the fulvous markings. The nose patch is bright ferruginous instead of pale fulvous; the dorsal area fulvous and well defined, and the underside of tail rusty instead of fulvous, with the black border reaching back along the sides [in *barrowensis* it hardly extends beyond the tip]. The sides of the face are distinctly *grayish* instead of *buff*, and the fur on these parts is much longer and more fluffy, giving the head a very different expression. The dorsal spots are decidedly larger and farther apart.

MICROTUS INNUITUS sp. nov. Inuit Vole.

Type from St. Lawrence Id., Bering Sea. Skull no. 99373 ad. U. S. National Museum, Biological Survey Collection. July 13, 1899. C. Hart Merriam.

Characters.—External characters unknown.

Cranial characters.—Skull conspicuously different from any known species. Size large (considerably larger than *unalascensis*, somewhat larger than *abbreviatus* from Hall Island, and nearly double the size of *operarius* from St. Michaels); cranium angular and strongly marked by muscular impressions; zygomata heavy and broadly bowed outward, their anterior roots (seen from above) standing outward and forward; the jugals slightly expanded and parallel; braincase large, squarely truncate anteriorly; nasals large, long and cuneate; rostrum large and massive, with prominent lip at anterior border of antorbital foramen; incisive foramen constricted posteriorly; *audital bullæ large* (much larger than in any other known species from the region about Bering Sea); incisors produced and *strongly protruding*; molars of same size as in *abbreviatus*; m^2 with 3 closed triangles; m_1 with 4 closed triangles (2 on each side).

Measurements.—Total length unknown; tail vertebræ 43-45; hind foot 22-24. Skull (type): basal length 32.5; zygomatic breadth 19.5; mastoid breadth 15.5; nasals 9; molar series 7.2.

Remarks.—During our brief stop at Northeast Cape on St. Lawrence Island, on the afternoon of July 13, several of these voles were seen but no fresh specimens were secured. The borders of a long slough or series of ponds on the tundra were cut up by an interlacing network of their deeply worn trails and tunnels near which I gathered a pocketful of pellets containing their remains, doubtless dropped by owls or jaegers. From these pellets a dozen more or less perfect skulls and many parts of skeletons were obtained. The skull is easily

recognized by its large size, broadly spreading zygomata, large bullæ, and strongly protruding upper incisors.

MICROTUS YAKUTATENSIS sp. nov. Yakutat Vole.

Type from north shore of Yakutat Bay, Alaska. No. 98005 ♂ ad. U. S. National Museum, Biological Survey Collection. June 19, 1899. C. Hart Merriam. Orig. no. 2101.

Characters.—Size rather large; tail very short; coloration grayish brown or bister; feet and underparts whitish. Similar to *sitkensis* but feet smaller; *tail much shorter*; upperparts less fulvous; underparts and feet whitish instead of dark. Cranial characters as in *sitkensis*.

Color.—Upperparts bister or grayish brown, intimately mixed with black hairs (which sometimes form a darker area along median line from occiput to shoulders), and grizzled with buffy fulvous; underparts whitish or buffy whitish, the plumbeous of underfur showing through; fore and hind feet whitish; tail sharply bicolor, narrowly blackish above, broadly whitish or buffy beneath.

Cranial characters.—Skull like that of *sitkensis* but differing slightly; nasals somewhat longer; jugals slightly larger.

Measurements.—Type specimen: total length 172; tail vertebræ 38; hind foot 21. Average of ten adults from type locality: total length 165; tail vertebræ 37; hind foot 21.

MICROTUS UNALASCENSIS POPOFENSIS subsp. nov.
Popof Island Vole.

Type from Popof Id., Shumagin Islands, Alaska. No. 97956 ♂ ad. U. S. National Museum, Biological Survey Collection, July 16, 1899. W. E. Ritter. Orig. no. 2200 (Fisher catalogue).

Characters.—Size, external appearance, and coloration similar to *unalascensis* and *kadiacensis*, but cranial characters differing from both: contrasted with *unalascensis* the anterior end of frontal is less broadened and fails to develop a lachrymal tubercle; audital bullæ smaller and less inflated; incisive foramina larger and more broadly open anteriorly; zygomata more sharply elbowed at anterior base (as seen from above); jugal narrower. Contrasted with *kadiacensis* the anterior end of frontal is narrower and fails to develop a lachrymal tubercle; bullæ more inflated, blunter, and more rounded anteriorly; molars slightly larger.

In young specimens (and one adult, apparently in left-over winter pelage) the fur is longer and softer, the upperparts are more buffy fulvous, and the white of the underparts is washed with yellowish buff.

Measurements.—An adult female from type locality: total length 188; tail vertebrae 43; hind foot 22.

MICROTUS ABBREVIATUS¹ FISHERI subsp. nov.

St. Matthew Island Vole.

Type from St. Matthew Id., Bering Sea. No. 97976 ♂ ad. U. S. National Museum, Biological Survey Collection. July 15, 1899. A. K. Fisher. Orig. no. 2189.

Characters.—Similar to *M. abbreviatus* but yellow suffusion even more intense, particularly on belly; nasals and rostrum (above) decidedly longer; zygomata more strongly bowed outward; bullae broader, less pointed anteriorly, and less flattened on outer side.

¹ Since the original description of *Microtus abbreviatus* was based on a poor alcoholic specimen and does not fairly present the characters of the species, I have drawn up the accompanying description from a series of adults collected by me at the type locality:

MICROTUS ABBREVIATUS Miller.

Hall Island Vole.

Type from Hall Island, Bering Sea.

Characters.—Size large; ears rather small; tail exceedingly short, thick and densely covered with long hairs; fur long, full and soft; appearance lemming-like; color deep yellowish gray unlike any other *Microtus* known to me, except the closely allied form from the adjacent St. Matthew Id.

Color.—Upperparts uniform deep yellowish gray, intimately but inconspicuously mixed with black hairs, becoming light ochraceous buff or bright buff on the sides, and darkening to grayish fulvous on head; underparts whitish, strongly washed with yellowish buff; fore and hind feet whitish, washed with buffy; tail bicolor, dusky above, overlaid with long buffy hairs, buffy below. *Young*; upperparts yellowish or buffy brown; underparts plumbeous washed with buffy ochraceous.

Cranial characters.—Skull large (largest of the Bering Sea species except *innuitus* from St. Lawrence Id.); zygomata moderately bowed outward, their outer sides parallel; jugal only slightly if at all expanded; frontal 'pinched in' between orbits, its muscular impressions uniting in a low ridge along median line; braincase large and broad; interparietal in adults pentagonal, the anterior border straight with a pointed projection on median line; the hinder border produced posteriorly so as to be broadly triangular, forming two sides; bullae of moderate size, pointed anteriorly and flattened on outer side; incisive foramina shortly open anteriorly, broadly constricted posteriorly; antorbital foramen without protruding anterior lpp; incisors not protruding as in *innuitus*: molars of medium or rather large size; m^2 with only 2 completely closed triangles; m_1 with 5 closed triangles.

Measurements.—Adult male: total length 170; tail vertebrae 29; hind foot 24. Average of 3 females: total length 156; tail vertebrae 25; hind foot 23.2. Skull of male adult (97981): total length, 30.3; zygomatic breadth 18; mastoid breadth 14; nasals 8.8; molar series 7.

Measurements.—Type, ♂ ad.: total length 178; tail vertebrae 32; hind foot 24. Average of 5 females from type locality: total length 166; tail vertebrae 26.5; hind foot 22.5. Skull of type: basal length 31.5; zygomatic breadth 19; mastoid breadth 14; nasals 9.8; molar series 7.3.

MICROTUS MACFARLANI sp. nov. MacFarlane Vole.

Type from Fort Anderson, north of Great Bear Lake, Arctic America. No. $\frac{9155}{37347}$ ad. U. S. National Museum. R. MacFarlane. Orig. no. 3179.

Characters.—Size medium or rather large; tail short. Similar externally to *operarius* but (apparently) larger; tail decidedly shorter; skull larger; molars small.

Color.—Upperparts uniform dull fulvous brown mixed with black hairs; underparts whitish, washed with buffy; hind foot brown with more or less whitish on toes; tail sharply bicolor, dusky above, soiled whitish below.

Cranial characters.—Skull similar to that of *operarius* but braincase broader; zygomata with outer sides longer and parallel (not broadest in middle); bullae much more fully and roundly inflated; nasals shorter; mandible decidedly larger; incisors decidedly thicker (anteroposteriorly); molar series slightly if at all longer. Compared with *yakutatensis* the skull is shorter, flatter, and somewhat smaller; with molars decidedly smaller.

Measurements.—No measurements of fresh specimens are available. In the dry skin of the type the hind foot measures 18.5 and the tail approximately 32.

EVOTOMYS ORCA sp. nov. Orca Evotomys.

Type from Orca, Prince William Sound, Alaska. No. 98028 ♀ ad. U. S. National Museum, Biological Survey Collection. June 28, 1899. A. K. Fisher. Orig. no. 2139.

Characters.—Size medium; coloration dark; feet and tail dusky.

Color.—Dorsal area dark chestnut or hazel; sides yellowish or buffy drab, intimately mixed with black hairs and darkest on rump; face very dark, grizzled with buffy-gray and black; underparts deep buffy or buffy ochraceous, the plumbeous underfur showing through; hind feet dusky; tail above dusky from base to tip, below buffy.

Cranial characters.—Skull similar to that of *dawsoni* (with large subquadrate braincase and strongly developed postorbital crest of squamosal) but with decidedly smaller bullae and decidedly larger incisors, particularly the upper ones. The underjaw is thicker and the angular process less flaring.

Measurements.—Type: total length 138; tail vertebræ 30; hind foot 20. Average of 6 specimens from type locality: total length 140; tail vertebræ 32; hind foot 20.

Remarks.—The coloration varies somewhat, and the differences are probably seasonal. The type, which appears to be in fresh summer pelage, is in the darkest stage. Other specimens, apparently in left-over winter pelage, or in the molt, are paler, but still have the characteristic dark feet and tail. In 6 out of the 7 specimens secured by us in Prince William Sound, the underparts are strongly suffused with buffy ochraceous; in one only they are whitish (no. 98035).

DICROSTONYX UNALASCENSIS sp. nov.

Unalaska Lemming.

Type from Unalaska, Alaska. No. 99622 ad. U. S. National Museum, Biological Survey Collection. July 8, 1899. C. Hart Merriam. Found in owl pellets.

Characters.—Size rather large, equalling or exceeding *D. hudsonius* from Labrador; external characters unknown. Skull large and broad with subquadrate braincase, broadly spreading rounded zygomata, broadly sulcate frontal, and prominent peg-like postorbital processes of squamosal.

Compared with *D. hudsonius* from Chimo, Ungava, the anterior angle of the zygoma is less expanded, jugal longer, angle of mandible broader and more strongly everted, bullæ much larger; upper incisors much broader; m^1 with 3 (instead of 2) closed triangles on inner side in addition to posterior (or heel) loop; m^2 with 2d loop on inner side normal and separated by full interspace from anterior crescent of m^2 , and with posterior (heel) loop on outer side complete. In *hudsonius* the 2d loop on inner side is narrowed or flattened and in contact with m^2 , and the posterior loop on outer side is absent or reduced to a small remnant.

DICROSTONYX NELSONI sp. nov. White Tundra Lemming.

Type from St. Michaels, Alaska. No. $\frac{54488}{11888}$ ♀ yg. ad. Merriam Collection.

Characters.—Size rather small; a dark dorsal stripe present in summer pelage; winter pelage white.

Color.—Type specimen in change from winter to summer pelage (date unknown): Upperparts from halfway between nose and eyes to rump finely mixed chestnut and yellowish white (hairs with chestnut tips and a broad subapical zone of yellowish or buffy) becoming

darker posteriorly; rest of animal (including nose, cheek, feet and tail) yellowish white with indistinct fulvous markings as follows: a patch on each side posteriorly, one on pectoral region, reaching up on sides of neck to ears, and a ring around (but not reaching) base of tail; a dark brownish median stripe reaching from middle of back to ring around tail.

Cranial characters.—Skull similar to that of *unalascensis* in general form, form of zygoma and jugal, and in enamel pattern, but smaller, and differing from all known species in the bullæ, which are very *small and narrow*; incisive foramina short; molars small and rather narrow, but not quite so narrow as in *richardsoni*.

Measurements.—Type specimen (measured from alcohol by C. H. M.): total length 118; tail vertebræ 13; hind foot 18.

DICROSTONYX RICHARDSONI sp. nov. Churchill Lemming.

Type from Fort Churchill, Hudson Bay. No. $\frac{5418}{8184}$ ♂ ad. Merriam Collection. July 1859. W. MacTavish.

Characters.—Size large; fur long and silky; 3d nail of forefoot much larger than 4th; *bullæ broadly rounded and somewhat depressed*.

Color.—Type specimen in winter pelage: silky white all over.

Cranial characters.—Skull large; zygomata very broad and squarely spreading; rostrum and nasals long, frontals rather narrow inter-orbitally; *bullæ depressed, broadly and roundly inflated*. Molar series *narrow*; enamel pattern as in *nelsoni* and *unalascensis* (not as in *hudsonius*).

This species resembles *nelsoni* but differs from all others in the small size and narrowness of the molar teeth, and is distinguishable at a glance from *all* known species by the broadly rounded and rather depressed bullæ.

Measurements.—Type specimen (measured from alcohol by C. H. M.): total length 143; tail vertebræ 14; hind foot 20.

LEMMUS ALASCENSIS sp. nov. Point Barrow Lemming.

Type from Point Barrow, Alaska. No. $\frac{5419}{8185}$ ♀ ad. Merriam Collection.

Characters.—Size medium (slightly smaller than either *lemmus* or *nigripes*); ears smaller than in *nigripes*; feet and nose pale.

Color.—Type specimen (in alcohol) from Point Barrow, and a skin (alcoholic) from St. Michaels: entire animal golden fulvous, darkest on head, where it is mixed with black hairs; brightest on sides, where it is almost orange fulvous; palest on feet and around mouth.

Cranial characters.—Skull similar to that of *L. lemmus* but slightly smaller; braincase smaller and less flattened; zygomata less widely spreading; angle of mandible much less everted; upper incisors heavier (broader). Compared with *nigripes* from the Pribilof Islands the differences are more marked: skull decidedly smaller and less massive; nasals much shorter and smaller; rostrum more slender; frontals not elevated into tubercles anteriorly; *bullæ* larger (more broadly inflated); angle of jaw much smaller and less everted. Molar series shorter.

Measurements.—Type specimen (measured from alcohol by C. H. M.): total length 115; tail vertebræ 15; hind foot 18.

LEMMUS YUKONENSIS sp. nov. Yukon Lemming.

Type from Charlie Creek, Yukon River, Alaska. No. 98849 ♀ ad. U. S. National Museum, Biological Survey Collection. Aug. 9, 1899. W. H. Osgood. Orig. no. 769.

Characters.—Size small, ears relatively large; general color dark anteriorly, with bright fulvous or rufous rump and flanks; *audital bullæ* immense.

Color.—Head, shoulders, and anterior half of back grayish brown, grizzled with black and yellowish fulvous, darkest on top of nose; rump and hinder part of back rich rusty fulvous or orange fulvous; lower sides and belly golden fulvous; deepest and brightest on flanks; sides of nose grayish or grayish brown; a band of golden fulvous on lower part of face from nose to below ear; fore and hind feet dusky; tail bicolor, dusky above, buffy below.

Cranial characters.—Skull very different from any species known to me: braincase (seen from above) large, broad, and *produced posteriorly* to cover the enormously enlarged bullæ; frontal narrow interorbitally, with a narrow median sulcus, but not 'pinched in' as in *L. alascensis*; rostrum small; zygomata squarely set but not widely spreading, the sides parallel; interparietal large, usually pentagonal; incisive foramina rather short; *bullæ* remarkably large and strongly inflated.

Measurements.—(From well made dry skin:) total length 130; tail vertebræ 17; hind foot 19.5.

ERETHIZON EPIXANTHUS MYOPS subsp. nov.

Alaska Porcupine.

Type from Portage Bay, Alaska Peninsula. No. 59140 ♀ old, U. S. National Museum. September 1893. Chas. H. Townsend.

Characters.—Similar to *E. epixanthus* but tail and hind feet shorter; body, flanks and sides of tail even yellower; face whiter from more abundant admixture of yellowish white hairs on sides of face and between eyes, so that the fore part of head appears almost grayish instead of sooty.

Cranial characters.—Compared with typical *epixanthus* from California the skull as a whole is much shorter, broader, and more rounded (less angular); occipital and sagittal crests absent or much less developed; zygomata bowed strongly outward [instead of subtriangular], the outer side convex outward [not flat]; braincase short, broad between posterior roots of zygomata, and tapering posteriorly so that the breadth between squamosals anteriorly is much greater than breadth of occiput [instead of subequal]; outer wall of antorbital vacuity (seen from the side) nearly straight and vertical [instead of strongly concave].

Remarks.—An immature female collected at Stepovak Bay, Alaska Peninsula, July 9, 1899, by Charles Palache is the yellowest porcupine I ever saw. It measured 630 mm in total length.

LEPUS OTHUS sp. nov. Tundra Polar Hare.

Type from St. Michaels, Alaska. Skull no. 15883 U. S. National Museum. L. M. Turner.

Characters.—Size very large (hind foot 174); winter pelage white all over except extreme tips of ears, which are black.

Cranial characters.—The skull of *Lepus othus* is so large, broad, and massive that it does not require comparison with the *glacialis* series from eastern Arctic America, but only with *tshuktshorum* from the region about Plover Bay, Siberia. From *tshuktshorum* it differs in the following particulars: frontals slightly broader interorbitally; nasals narrower and less flattened; supraoccipital shield narrower, *much longer than broad* [in *tshuktshorum* decidedly broader than long]; *jugal decidedly narrower* (less expanded vertically), longer posteriorly (protruding farther behind squamosal root of zygoma), and with muscular impression on outer face decidedly narrower anteriorly; basioccipital narrower; incisive vacuity smaller.

Cranial measurements.—Type specimen: basal length 86.5; zygomatic breadth anteriorly 49; at widest point 52; postpalatal length 46.5; greatest breadth across postorbital processes 39; greatest breadth of nasals posteriorly 22; anteriorly 20.

LEPUS POADROMUS sp. nov. Peninsula Arctic Hare.

Type from Stepovak Bay, Alaska Peninsula. No. 98068 U. S. National Museum, Biological Survey Collection. July 8, 1899. C. Hart Merriam. (Shot by Charles Palache.) Orig. no. 2207 (Fisher catalogue).

Characters.—Size smaller than *Lepus othus* from St. Michaels, but larger than the members of the *glacialis* series from eastern Arctic America; ears about as in *L. othus*, but hind feet and tail shorter; color in summer pelage *grizzled gray* with a fulvous tinge on head.

Color.—Nose and head dull fulvous with a buffy ring around eye; cheeks dull fulvous, grizzled with longer hairs tipped with black and buffy; ears grizzled fulvous and black on anterior face, becoming white posteriorly, and narrowly edged with white except on basal third of anterior margin, which is grizzled fulvous and black like rest of anterior face; back, sides, and outer surface of hind legs gray, grizzled with buffy and black; forelegs grizzled grayish fulvous, becoming pale dull fulvous on dorsal surface of feet and mixed with white hairs about toes; hind feet mainly white; tail hoary or grayish white, becoming dusky along median line above; chin and lips whitish; throat with a broad grayish collar; pectoral region, strip down belly, and inner sides of legs, whitish.

Cranial characters.—Compared with its nearest known relative, *L. othus* from St. Michaels, the rostrum, nasals, braincase, palatal bridge, and incisive vacuity are narrower, the frontal breadth remaining essentially the same; nasals in particular *much narrower* and more arched transversely; pterygoids broader; hamular processes more produced and hooked; angular process of underjaw with everted edge much broader posteriorly.

Remarks.—*Lepus poadromus*, compared with a skin of *tshuk-tshorum* from Arikamchichi Island (No. 3384 U. S. Nat. Mus.) has the fulvous of the nose and head very much darker. Unfortunately no skins of *L. othus* in summer pelage are available for comparison.

Measurements.—(From dry skin of type:) Hind foot 152; ear from notch 80.

Cranial measurements.—Basal length 82; zygomatic breadth anteriorly 47.5; postpalatal length 43; greatest breadth across post-orbital processes 37; greatest breadth of nasals posteriorly 20; anteriorly 16.

LEPUS AMERICANUS DALLI subsp. nov. Dall's Varying Hare.

Type (skull) from Nulato River, Alaska, no. 7579. U. S. National Museum. W. H. Dall.

Characters.—External characters unknown.

Cranial characters.—Skull large; nasals long and slender; posterior part of mandible large. Compared with typical *americanus* from Ungava, Hudson Strait, the skull of *dalli* is very much larger (basal length 65 mm. or more instead of 61 or less): rostrum, nasals, and incisive vacuity decidedly longer; jugal longer and somewhat broader (vertically); mandible very much larger and more expanded posteriorly; molariform teeth larger.

Remarks.—Superficially the skull of *dalli* resembles that of subspecies *virginianus* from Ossipee, New Hampshire, much more closely than typical *americanus*; the agreement in size is better and both have rather long, slender nasals. But *dalli* has a much broader braincase, longer and heavier zygomata, broader jugals, and differs in other particulars. Compared with its geographical neighbor, *L. macfarlani* from Fort Anderson, it may be distinguished at a glance by its slender nasals and rostrum, longer zygomata, and larger mandible.

Cranial measurements.—Type skull: Basal length 65; zygomatic breadth anteriorly 37.5; at middle 38; postpalatal length 33.5; frontal breadth across middle of postorbital processes 21; breadth of nasals posteriorly 15; anteriorly 11.

LEPUS AMERICANUS MACFARLANI subsp. nov.
MacFarlane Varying Hare.

Type (skull) from Fort Anderson, north of Great Bear Lake, Arctic America. No. 14467 U. S. National Museum. R. MacFarlane.

Characters.—External characters unknown.

Cranial characters.—Skull similar to that of typical *americanus* from Hudson Strait but very much larger and heavier; nasals very broad (anteriorly as well as posteriorly); braincase less flattened; supraoccipital shield narrower and tapering posteriorly; mandible, molariform teeth, and lower incisors decidedly larger. Compared with *dalli* from Nulato River the nasals are very much broader and blunter; rostrum broader and more massive; braincase higher (almost ridged along median line) and much less flattened; supraoccipital shield narrower posteriorly (more tapering); mandible somewhat smaller.

Cranial measurements.—Basal length 67; zygomatic breadth anteriorly 38.5; at middle 41; postpalatal length 34.5; frontal breadth across middle of postorbital processes 21; breadth of nasals posteriorly 17.5; anteriorly 14.

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