

A REVIEW OF THE LARKS OF THE GENUS *OTOCORIS*.

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Among all the many and various groups of birds which have in recent years of ornithological activity become noted as conspicuous exponents of extreme geographical variation, none is more prominent than that comprising the horned larks. Possessed of an extremely plastic organization, and subjected to comparatively stationary conditions, these birds have responded to environment and other influential circumstances to a degree that has invested them with peculiar interest and instructiveness for the philosophical student, and at the same time has rendered their classification and identification a source of despair to the systematist. But the manner and degree of variation must be properly set forth before the full significance of these facts can be appreciated, and this should be the ultimate aim of systematic research—not, as seems only too often to be so considered, the mere facilitation of the determination of specimens in the cabinet.

With the few exceptions of cases in which the forms appear to be trenchantly defined, all of the horned larks, both Old World and American, grade insensibly into some other, often into several, so that with all the connecting links represented it frequently becomes a matter of considerable difficulty satisfactorily to segregate the forms represented by such series. If, however, it be remembered what an adaptability to both climate and physiographical conditions these birds possess, the fact of their great geographical variation seems hardly so surprising. They are found from the shores of the Arctic Ocean to the heart of the Tropics; from the level of the sea to the summits of lofty mountains, and from regions of excessive rainfall to the most arid deserts. They are preeminently birds of the open country, rarely, if ever, venturing into the depths of the forests, for the grassy savannas, cultivated fields, country roadsides, the bare or brushy deserts, and the stony mountain slopes are habitats much more to their taste. The largely granivorous nature of their food has undoubtedly much to do with their being so nearly resident, a condition that seems to exist quite generally throughout the genus. The northern forms,

however, are, at least to a considerable degree, migratory, but among many of the others, while there exists a greater or less individual inclination to wander during the winter, there is no regular nor well-defined movement.

Altitude, unaccompanied by other influences, appears to have little or no potency as a modifying agency, for the present material shows that, notwithstanding some statements to the contrary, there is no appreciable difference either in size or color between mountain birds and those from adjacent lowlands. Neither are the boundaries of the currently accepted faunal areas, except in very restricted application, of any value in circumscribing the ranges of the horned larks. In fact these birds, in many details of geographical distribution, seem to be quite anomalous. Why, for instance, is the form inhabiting the San Joaquin Valley, California, not the same as the one in the Sacramento Valley, as the similar conditions of climate and topography would lead us to expect?

Quite interesting, however, is a comparison of the distribution of the American horned larks with that of the song sparrows, a group of approximately equal dispersion and similar plasticity. There are of each of these groups twenty-one recognizable races in Mexico and North America.¹ Of these, four song sparrows and five horned larks are, during the breeding season, largely or entirely confined to Mexico; twelve of each are similarly peculiar to the United States; while five song sparrows and four horned larks are wholly or mainly British American and Alaskan.² It should be borne in mind that in Mexico and the United States the song sparrows are not quite so widely dispersed as the horned larks; that in British America and Alaska the horned larks appear to be entirely absent from the area in which the greatest differentiation occurs among the northern song sparrows—the Pacific coast south of Bering Sea. Although corresponding thus fairly well in general distribution, there is of course considerable divergence in minor details. Particularly in the arid regions there seems to be a marked tendency among the horned larks toward strong differentiation within very limited geographical areas, so that the degree of difference is no criterion at all for extent of range.

One peculiarity of widely dispersed types, the reduplication of forms in far separated localities, seems to be carried to the extreme among the horned larks—the American forms at least. The original case was mentioned by Dr. Dwight,³ but the present investigation has revealed at least five others in which the resultant bird is more like some distant race than any of those whose range is contiguous or nearest.

¹In this estimate no account is taken of *Melospiza c. juddi*, as it is not a tenable subspecies.

²Since the above was written two additional races of song sparrows have been described, both from the Pacific coast of the United States.

³Auk, VII, April, 1890, pp. 139, 144.

These cases are severally treated under their proper headings. That such a condition is brought about by the simple intergradation of two or more forms appears to be sometimes undoubtedly so; but this does not in every instance furnish a solution, and parallel evolution under peculiar environmental conditions presents a more tenable hypothesis.

From this feature of the group it may readily be surmised that the identification of specimens without regard to geography is, to say the least, liable to be difficult. Among the song sparrows the characters of the various races, though sometimes slight, are quite uniform and constant; but in the horned larks the problem is often exceedingly complicated by reason of sexual, seasonal, and local differences, together with excessive individual variation. Various more or less perfect intermediates are very perplexing, and no means of determination can possibly be of value except the actual comparison of specimens, coupled with an accurate knowledge of the relative value of the proper differential characters. Satisfactorily to present such information in printed diagnoses is manifestly out of the question, for characters that will serve to identify even typical examples of some of the more closely allied forms are frequently almost impossible to express intelligibly on paper. Generally speaking, the females of the various races are distinguished from each other by characters quite similar to those of the males, when due allowance has been made for sexual differences, so that one diagnosis will answer for both. Except in cases of very sharply defined forms the young birds in first plumage are not certainly distinguishable, owing to the great range of individual variation.

As Dr. Dwight has already stated,¹ the horned larks molt but once a year. This takes place usually about August, and thereafter, until into the winter, the birds continue in the blended plumage thus assumed, the upper surface more or less uniform, the yellow bright and deep, the black areas obscured by paler, and the breast often much streaked with dusky. Through the wearing away of the tips to the feathers the whole aspect of the bird becomes changed by spring or summer—the back becomes darker, the colors of the upper parts more sharply contrasted, the yellow fades perceptibly, the black areas become unclouded, and the breast loses its streaking.

Although the aggregate amount of material (2,150 specimens) reviewed in the course of the present investigation has been but slightly greater than that at Dr. Dwight's disposal when he treated the North American forms, yet a great deal of that now available consists of breeding specimens not examined by him, and has of course been indispensable to the proper understanding of the various races now recognized. Unfortunately, only a comparatively small number of Old World birds has been examined, though ah but four

¹ Auk, VII, April, 1890, p. 139.

forms are represented, and there are undoubtedly several additional races in Asia yet to be elucidated, to which may apply some of the names here, through lack of material, relegated to synonymy.

As in many other groups, there are cases in the horned larks where the type specimen of a described form does not represent the extreme development, and in fact is even an intermediate. Our treatment of all such cases is to refer the type to the form it most closely approaches, specimens from the region in which is shown the greatest degree of difference being arbitrarily considered as typical in such comparisons. Although the horned larks permit of almost infinite division, and the number of American races here admitted might easily be doubled, it has not been deemed advisable formally to separate any that do not present characters at least as good as those of forms heretofore current.

In the systematic treatment which follows there are recognized altogether 36 forms of *Otocorys*, of which all but 6 have subspecific rank, while 2 of the 6 may ultimately have to be reduced to this position. Of the total number 22 are from the American continent, the remaining 14 belonging to the Old World. They are here placed in what seems to be their natural relationship, but it is manifest that in a group like the horned larks, in which a form may be equally related to several others, any entirely satisfactory linear sequence is entirely out of the question. Equally difficult is the preparation of a satisfactory key, and although the one here presented has been prepared with care, it is confessedly but little more than a tabular exposition of the more salient characters. On the accompanying maps the lines have been drawn to indicate as closely as possible the distribution of the various forms, but in many cases where the exact limits of range are unknown the probable extent is of course subject to revision.

The more important of the recent articles on the genus *Otocorys* are as follows:

FINSCH, *Otocorys*, Abhandl. Nat. Ver. zu Bremen, 1870, pp. 341-352.

DRESSER, Genus *Otocorys*, in Birds of Europe, IV, 1874, pp. 385-402.

DUBOIS, Remarques sur les Alouettes du Genre *Otocorys*, Bulletin du Musée Royal d'Histoire Naturelle de Belgique, III, 1884, pp. 223-230.

HESSLAW, The Shore Larks of the United States and Adjacent Territory, Auk, I, July, 1884, pp. 254-268.

RIDGWAY, Genus *Otocorys* Bonaparte, in Manual of North American Birds, 1st ed., 1887, pp. 347-349, pl. xcvi, fig. 2.

DWIGHT, The Horned Larks of North America, Auk, VII, April, 1890, pp. 138-158, map.

SUARPE, *Otocorys*, in Catalogue of the Birds in the British Museum, XIII, 1890, pp. 528-550; 670-671.

RIDGWAY, Genus *Otocorys* Bonaparte, in Manual of North American Birds, 2d ed., 1896, pp. 347-349; 599, pl. xcvi, fig. 2.

The results embodied in the present revision have been based primarily on the collection of the U. S. National Museum, including that

of the Biological Survey, and to the authorities having these in charge the writer would express his obligations. He is furthermore indebted to the authorities of the American Museum of Natural History and the Academy of Natural Sciences of Philadelphia, who, through Dr. J. A. Allen and Mr. Witmer Stone, respectively, have made possible the examination of much valuable material. Mr. Robert Ridgway and Dr. Charles W. Richmond have been particularly courteous and helpful throughout the entire time covered by this paper's preparation; while the following other gentlemen the writer wishes to thank for their kindness in loaning specimens: Mr. William Brewster, Dr. Louis B. Bishop, and Dr. Jonathan Dwight, jr.

Genus OTOCORIS Bonaparte.

Eremophila BOIE, Isis, 1828, p. 322 (not *Eremophilus* Humboldt, 1811).

Phileremos BREHM, Handb. Vög. Deutschl., 1831, p. 312 (not *Phileremus* Latreille, 1809).

Brachonyx LESSON, Compl. de Buffon, VIII, 1837, p. 126 (part,¹ not of Schönhen, 1826).

Otocoris BONAPARTE, Nuovi Ann. Sci. Nat. Bologna, II, 1838, p. 407 (type, *Alauda cornuta* Wilson = *Otocoris alpestris* (Linnaeus)).

Philammus GRAY, List Genera Birds, 1840, p. 47.

Otocornis RÜPPELL, Syst. Uebers. Vög. Nord-Ost-Afr., 1845, p. 78.

Otocorys CABANIS, Mus. Hein., I, 1851, p. 121.

Otocoryx LICHTENSTEIN, Nomencl. Av. Mus. Berol., 1854, p. 38.

Chars. gen.—Bill short, stout, somewhat conoid, shorter than middle toe with claw; nostrils circular, completely covered by dense tufts of antrorse feathers; primaries apparently but nine, there being no visible spurious tenth (outer) primary; inner secondaries somewhat lengthened; tail moderate, nearly square; head not crested but furnished on each side with a curious, narrow, elongated feather tuft, analogous to those of some owls; feet typically alaudine; coloration mixed brown, rufous, cinnamon, pinkish, yellow, white, and black the jugulum always black.

Geographical range.—Nearly all of North America and Mexico; United States of Colombia (Bogota); almost the whole of Europe and Asia; northern Africa; Caffraria.

ANALYTICAL KEY TO THE SPECIES AND SUBSPECIES OF OTOCORIS, BASED ON ADULT MALES IN BREEDING PLUMAGE.

- I. Chin and upper throat black *berlepschi* (p. 879).
 II. Chin and upper throat not black.
 1. Black of jugulum not separated from that of ear-coverts.
 A. Wing averaging under 115 mm *bicornis* (p. 878).
 B. Wing averaging over 115 mm.
 a. Upper parts more grayish.
 b. Lighter above *penicillata* (p. 874).
 b'. Darker above *bulcanica* (p. 876).

¹ Lesson's genus included both *Brachonyx* of Swainson and *Phileremos* Brehm, as is shown by his synonymy and the species he treats.

- a'*. Upper parts more ochraceous.
- b*. Paler, more ochraceous above *diluta* (p. 877).
- b'*. Darker, more brownish above *oreodrarna* (p. 876).
2. Black of jugulum separated from black ear-coverts by a white or yellow interspace.
- A. Throat always white.
- a*. Wing averaging over 115 mm.
- b*. Wing averaging under 120 mm *cluesi* (p. 868).
- b'*. Wing averaging over 120 mm.
- c*. Back darker, sharply contrasted with nape *longirostris* (p. 867).
- c'*. Back paler, not sharply contrasted with nape.
- d*. Upper surface darker, more rufescent *perissa* (p. 869).
- d'*. Upper surface paler, more buffy *argalea* (p. 871).
- a'*. Wing averaging under 115 mm.
- b*. Back heavily streaked with dark brown *arctica* (p. 816).
- b'*. Back not heavily streaked with dark brown.
- c*. More ochraceous above; wing over 105 mm *sibirica* (p. 872).
- c'*. More rufescent above; wing under 105 mm *bilopha* (p. 873).
- B. Throat usually yellow or yellowish.
- a*. Wing averaging over 109 mm.
- b*. Back paler; horns long *atlas* (p. 866).
- b'*. Back darker; horns of moderate length.
- c*. Eyebrow white; throat pale yellow *hoyti* (p. 812).
- c'*. Eyebrow yellow; throat rich yellow *alpestris* (p. 807).
- a'*. Wing averaging under 109 mm.
- b*. Wing averaging under 100 mm.
- c*. Nape not decidedly rufescent.
- d*. Back dark grayish brown *giraudi* (p. 831).
- d'*. Back dark ochraceous brown *diaphora* (p. 807).
- c'*. Nape decidedly rufescent.
- d*. Back not sharply contrasted with nape.
- e*. Larger; nape more reddish *rubea* (p. 851).
- e'*. Smaller; nape more vinaceous *ocruca* (p. 854).
- d'*. Back sharply contrasted with nape.
- e*. Back brownish.
- f*. Paler, nape more cinnamomeous *ammophila* (p. 849).
- f'*. Darker, nape more vinaceous *actia* (p. 845).
- e'*. Back blackish.
- f*. Wing averaging under 95 mm *peregrina* (p. 841).
- f'*. Wing averaging over 95 mm.
- g*. Nape darker; no yellow below
black jugular crescent *insularis* (p. 839).
- g'*. Nape lighter; yellow extending
below black jugular crescent *strigata* (p. 837).
- b'*. Wing averaging over 100 mm.
- c*. Back little if any darker than nape, slightly or not at all streaked with blackish or dark brown.
- d*. Wing over 105 mm *occidentalis* (p. 855).
- d'*. Wing under 105 mm.
- e*. Nape and occiput more pinkish.
- f*. Upper parts much paler *leucansiptila* (p. 864).
- f'*. Upper parts much darker *aphrasta* (p. 860).
- e'*. Nape and occiput more cinnamomeous.
- f*. Back reddish cinnamon *adusta* (p. 858).
- f'*. Back pale ochraceous brown *pallida* (p. 863).

- c'. Back decidedly darker than nape, conspicuously streaked with blackish or dark brown.
- d. Upper parts paler.
 - e. More grayish above *cathymia* (p. 817).
 - e'. More ochraceous above *leucoloma* (p. 820).
- d'. Upper parts darker.
 - e. Wing averaging over 105 mm. *flava* (p. 810).
 - e'. Wing averaging under 105 mm.
 - f. Nape cinnamomeous *cinnamophila* (p. 849).
 - f'. Nape pinkish.
 - g. Back more blackish *merrilli* (p. 833).
 - g'. Back more brownish.
 - h. Nape paler; eyebrow white *pratensis* (p. 825).
 - h'. Nape darker; eyebrow yellowish *chrysoloma* (p. 842).

OTOCORIS ALPESTRIS ALPESTRIS (Linnæus).

Alauda alpestris LINNÆUS, Syst. Nat., 10th ed., I, 1758, p. 166.

Otocoris alpestris BONAPARTE, Iconogr. Faun. Ital. Ucc., 1841, p. 5.

Alauda corvina WILSON, Amer. Orn., I, 1808, p. 87.

Otocorys alpestris HENSHAW, Auk, I, July, 1884, p. 257 (part).

Otocoris alpestris DWIGHT, Auk, VII, April, 1890, p. 141 (part).—RIDGWAY, Man. N. Am. Birds, 2d ed., 1896, p. 348 (part).

Chars. sp..—Size large; colors above dark; throat and eyebrow deep yellow.

Measurements (15 males).—Wing, 108–113 (average, 111.5) mm.; tail, 66.5–75 (average, 71.8) mm.; exposed culmen, 11–13 (average, 12.2) mm.; tarsus, 22–25 (average, 24) mm.; middle toe, 13–14 (average, 13.5) mm.

Type locality.—Coast of [probably South] Carolina.

Geographical distribution.—In summer, northeastern British America, west to Hudson Bay, from Newfoundland, Labrador and the head of James Bay northward; accidental in Greenland; in winter, west to Manitoba and the Mississippi Valley; south regularly to Illinois, Ohio and the Carolinas, casually to Louisiana and the Bermudas.

Description.—*Adult male in breeding plumage*.—No. 111783, U.S. N.M.; Cloud Hills, Canada Bay, Newfoundland, August 2, 1887; F. A. Lucas and W. Palmer.—Upper parts warm sepia brown, darkest on rump, the feathers everywhere edged with pale brown; wings and middle pair of tail feathers the same; middle of crown, occiput, nape, bend of wing and upper tail-coverts cinnamomeous with a pinkish tinge; fore crown, cheeks and jugular crescent black; forehead, superciliary stripe, auriculars and throat primrose yellow; rest of under surface white, the sides tinged with brownish.

Adult female in breeding plumage.—No. 7429, U.S. N.M.; Cleveland, Ohio, April 1, 1851; J. P. Kirtland.—Resembling the adult male at same season, but colors generally duller; back darker with lighter edgings to the feathers; black of crown much mixed with

brown; nape cinnamon with little or no pinkish tinge, and extensively obscured by brownish; yellow of throat and head paler; breast and sides more shaded with brownish.

Adult male in winter plumage.—No. 1924, collection of Dr. A. K. Fisher; Far Rockaway Beach, Long Island, New York, February 7, 1885; A. K. Fisher.—Differs from the summer dress in being somewhat more deeply colored; in the more blended appearance of the upper surface, owing to the dull tips of the feathers; in the more pinkish cast of nape, upper tail-coverts and bend of wing; in the darker shade of yellow on throat and head; and in the conspicuous dusky markings on the breast.

Adult female in winter plumage.—No. 113165, U.S.N.M.; South Duxbury, Massachusetts, November 28, 1886.—Like the summer female, but with all the dark areas more uniform in coloration, due to the blending effect of dull tips to the feathers; yellow rather brighter, and dusky on breast and sides pronounced.

Young in first plumage.—No. 111760, U.S.N.M., Penguin Island, Newfoundland, July 24, 1887; F. A. Lucas and W. Palmer. Above deep sepia brown, most of the feathers spotted and margined with dull yellowish, buffy or ochraceous; tail much as in the adult; throat and breast dull yellowish, deepest on the latter, and more or less spotted with dusky; rest of under surface yellowish white.

True *alpestris* is distinguished from all the other races by its combination of large size, dark, rufescent upper surface, and deep yellow of throat and eyebrow.

The young are characterized by dark colors combined with a conspicuous yellow suffusion, this latter usually very noticeable below, often even posteriorly.

As was long ago pointed out by Dr. Cones,¹ the subspecific name *alpestris* belongs primarily to the bird from northeastern America, to which it is now for the first time definitely restricted. The *Alanda alpestris* of Linnaeus² was based entirely upon the *Alanda gutturoflavo* of Catesby,³ which latter, it has been suggested, might, in at least so far as locality is concerned, have been either the race now generally recognized as the typical one—that is, the bird from Labrador and Newfoundland,—or the more southern subspecies *praticola*. The question thus raised is readily answered by reference to Catesby's own statements as well as his accompanying figure. The latter represents a bird which from its very yellow throat and superciliary stripe and its very brownish upper parts would without hesitation be identified as quite typical of the northern form. The text, in so far as it is diagnostic, reads:

¹Birds of Colorado Valley, 1878, p. 189.

²Syst. Nat., 10th ed., I, 1758, p. 166.

³Nat. Hist. Carolina, I, 1731, p. 32, pl. xxxii.

The Crown of the Head is mixt with black and yellow feathers. Through the Eyes runs a stripe of yellow. From the Angle of the Mouth runs a black stripe, inclining downward; except which, the Throat and Neck are yellow. They frequent the Sand-Hills upon the Sea-shore of Carolina.

These remarks, save, of course, that regarding locality, do not well apply to what we now call *praticola*, which rarely, if ever, has the superciliary distinctly yellow, while the usually very pale yellow of the throat is confined chiefly to the central portion. Furthermore, *praticola*, compared with what we now know as *alpestris*, has the crown very gray, lacking the conspicuous yellow suffusion so characteristic of the latter. Although Catesby states that this species occurs in both Virginia and Carolina, his type undoubtedly came from the latter region, for he says in the introduction that none of his own work was done in Virginia. The only other name requiring consideration in this connection is *Alauda cornuta*,¹ which was, however, evidently founded upon the yellow-browed *alpestris* from the Middle Atlantic States, and is thus an undoubted synonym of the present form.

We know nothing of true *alpestris* during the breeding season, except as a littoral bird, though it possibly occurs at that time in suitable situations over most, if not all, of the region east of Hudson Bay. It is the breeding form at Moose Fort, Ontario, on the southern shore of James Bay, as a specimen in the U. S. National Museum attests, but this is the most southern as well as the most western summer record. The area of its transition to *hoyti* is likewise scarcely more than inferentially known. In winter *alpestris* wanders as far west as Manitoba, and south regularly to Missouri, Ohio, and South Carolina, being apparently most abundant in New England and on the coastal plain of the Atlantic States. There are several records for the Bermuda Islands,² but apparently only one for Greenland.³ It sometimes remains comparatively late in the spring, as is shown by examples from northern Ohio taken on the 1st of April. The single specimen from Wooster, Ohio, several years ago recorded as *alpestris*,⁴ proves upon closer examination to be nearer *praticola*.

As in most of the other races there is much variation in the color of the upper parts, independent of intergradation, some specimens being very reddish, others quite grayish and pinkish. The eyebrow in typical specimens appears always to be yellow, the throat quite uniformly so, paler, of course, in females and breeding males; this color in winter males not infrequently more or less conspicuously tinging the breast below the black jugulum.

¹ Wilson, Amer. Ornith., I, 1808, p. 87.

² Wedderburn, in Jardine's Contr. Orn., 1850, p. 36; Reid, Bulletin U.S.N.M., No. 25, 1884, pp. 177, 178.

³ Reinhardt, Ibis., 1861, p. 8.

⁴ Oberholser, Bull. Ohio Agric. Exper. Sta., Tech. Ser. I, No. 4, 1896, p. 297.

In all, 112 specimens have been examined, taken at the following localities, breeding records being designated by an asterisk:

District of Columbia.—Washington.

Illinois.—Mount Carmel; Maywood, Cook County.

Maine.—Portland.

Maryland.—Marshall Hall, Charles County.

Massachusetts.—South Duxbury; North Truro; Garnet Beach, Duxbury; Quincy; Chatham.

Minnesota.—Hibbing.

New Hampshire.—Hampton.

New York.—Sing Sing; Shinnecock Bay, Long Island; Far Rockaway Beach, Long Island; Timber Point, Long Island; Long Island City; Montauk Point; Shelter Island; Lockport.

North Carolina.—Raleigh.

Ohio.—Cleveland; Circleville.

Pennsylvania.—Carlisle; Chester County; Philadelphia.

Labrador.—Fort Chimo;* Davis Inlet.*

Manitoba.—Rat Portage.

Newfoundland.—Penguin Island;* Cloud Hills, Canada Bay.*

Northeast Territory.—Resolution Island, Hudson Strait.*

Ontario.—Moose Fort.*

OTOCORIS ALPESTRIS FLAVA (Gmelin).

Alauda flava GMELIN, Syst. Nat., I, 1788, p. 800.

Alauda nivalis PALLAS, Zoog. Rosso-Asiat, I, 1826, p. 519.

Phileremos striatus BREHM, Vogelfang, 1855, p. 122.

Phileremos rufescens BREHM, Vogelfang, 1855, p. 122.

Otocorys alpestris HENSHAW, Auk, I, July, 1884, p. 257 (part).

Otocorys alpestris DWIGHT, Auk, VII, April, 1890, p. 141 (part).—RINGWAY, Man. N. Am. Birds, 2d ed., 1896, p. 348 (part).

Chars. subsp.—Similar to *Otocorys alpestris alpestris*, but smaller; the nape, rump and bend of wing more pinkish.

Measurements (♂ males).—Wing, 105.5–111 (average, 107.9) mm.; tail, 68.5–73.5 (average, 70.6) mm.; exposed culmen, 9–11 (average, 10.1) mm.; tarsus, 21–23 (average, 21.9) mm.; middle toe, 11.5–12.5 (average, 11.9) mm.

Type locality.—Siberia.

Geographical distribution.—In summer the extreme northern parts of Sweden and Norway, northern Russia south in the eastern part to about latitude 55°, northern Siberia south locally to the region about Lake Baikal; in winter south to the British Isles (except Ireland), northern France, central Italy, Turkey, southern Russia, Turkestan and northern China.

Description.—*Adult male in breeding plumage*.—No. 111105, U.S.N.M.; Vardö, Norway, June 22, 1877.—Occiput, nape, upper tail-coverts and bend of wing pinkish cinnamonaceous; back, rump,

scapulars and wings sepia, edged with paler; two central tail-feathers like the back, rest of tail brownish black, the two outer feathers with exterior margins and tips of white; lores, cheeks, jugulum and fore part of crown black; throat and remainder of face pale yellow; rest of lower parts dull white; the sides washed with brownish and cinnamonaceous.

Adult female in breeding plumage.—No. 102993, U.S.N.M.; Lisistroy, Russia, May 19, 1876.—Similar to the male, but upper parts more uniform, the crown, nape and back much mixed with brownish or grayish; black of cheeks less pure, and colors generally duller.

Adult male in winter plumage.—No. 77767, U.S.N.M.; Heligoland, November, 1878; H. Gätke.—Similar to summer male, but all the upper parts much obscured by brownish tips to the feathers; throat deeper yellow; sides of the body more heavily washed with brownish; breast heavily spotted with dusky.

Female in winter plumage.—No. 147323, U.S.N.M.; France.—Like the summer dress, but the darker colors everywhere obscured by dull tips to the feathers; yellow areas darker; the breast conspicuously streaked with dusky; everywhere rather more deeply colored.

This race is, of course, most closely allied to true *alpestris*, but differs in its reduced size, this particularly affecting the bill, and in the noticeably more pinkish tinge of the cervix, upper tail-coverts and bend of wing. These differences obtain in the females as well as the males, and are observable in both winter and summer plumages. With regard to the other Old World forms of *Otocoris* no difficulties of identification should exist, since all the races of *penicillata* have the black of the throat united to that of the cheeks; *longirostris* and all its closely related forms have a pure white throat; and *atlas* is much paler above.

Probably lack of material caused both Mr. Henshaw and Dr. Dwight to consider the bird of Europe and Siberia identical with *alpestris* of northeastern America, in which view they have been followed by apparently all subsequent writers. Comparison of a sufficient series makes evident that it is quite as much entitled to recognition as some of the current forms. The very large, pale specimen from southern Russia upon which Mr. Henshaw particularly comments¹ has not been found, and it is possible that there lurks somewhere here a misidentification or mistake of locality. In connection with this Dr. Sharpe's remarks² should be consulted. The earliest and therefore proper name for the Old World form of *alpestris* is *Alauda flava* Gmelin,³ based wholly on the *Ceinture de Prêtre ou Alouette de Sibirie* of

¹Ank, I, July, 1884, p. 257.

²Cat. Birds Brit. Mus., XIII, 1890, p. 544.

³Syst. Nat., I, 1788, p. 800.

Buffon.¹ Other synonyms are *Aldaia nivalis* Pallas,² which refers principally to the Siberian bird; *Phileremos striatus* Brehm³ and *Phileremos rufescens* Brehm³ which apply to that of Europe.

A breeding bird from Vardö, Norway, is browner on the interseapular region than are the others in similar plumage, but is not otherwise different. The single Asian specimen, an adult male in perfect spring plumage from the island of Yeso, Japan, seems to be identical with the European examples, in so far as a single example can be relied upon for such determination; but it is, however, apparently rather more grayish above, as well as somewhat larger than any of the birds from Europe, and a good series from Asia might very possibly show the existence of two Old World races of *alpestris*, instead of the single one here recognized.

Thirteen specimens have been examined, representing the localities given below:

England.—Spurn, Yorkshire.

Hedgoland.—

Russia.—Krim; Lisistrov.*

Norway.—Vardö.*

France.—[No definite locality given.]

Japan.—Volcano Bay, Yeso.

OTOCORIS ALPESTRIS HOYTI Bishop.

Otocorys alpestris leucokema HENSLAW, Auk, I, July, 1884, p. 258 (part).

Otocorys alpestris leucokema DWIGHT, Auk, VII, April, 1890, p. 142 (part).—

RIDGWAY, Man. N. Am. Birds, 2d ed., 1896, p. 348 (part).

Otocorys alpestris hoyti BISHOP, Auk, XIII, April, 1896, p. 130.

Chars. subsp.—Similar to *Otocorys a. flava*, but larger, the throat paler yellow, the eyebrow white.

Measurements (15 males).—Wing, 104–115.5 (average 111.1) mm.; tail, 65.5–75 (average 70.5) mm.; exposed culmen, 10.5–13 (average 11.4) mm.; tarsus, 21–23.5 (average 22.3) mm.; middle toe, 11.5–13 (average 12.5) mm.

Type locality.—Cando, Towner County, North Dakota.

Geographical distribution.—In summer, British America from the west shore of Hudson Bay to the valley of the Mackenzie River, north to the Arctic coast, south to Lake Athabasca; in winter southward to Nevada, Utah, Kansas and Michigan, casually to Ohio and New York (Long Island).

Description.—*Adult male in breeding plumage*.—No. 31135, U. S. N. M.; Big Island, Great Slave Lake, British America [summer]; I. Reid.—

¹Hist. Nat. des Ois., V, 1778, p. 61.

²Zoog. Rosso-Asiat., I, 1826, p. 519.

³Vogelfang, 1855, p. 122.

Back and wings dark brown, edged with paler; occiput, nape and bend of wing pinkish vinaceous; upper tail-coverts vinaceous cinnamon; middle tail-feathers like those of back, the rest black, the outer pair margined and tipped with white; crown, lores, cheeks and jugular crescent black; forehead, superciliary and sides of throat dull white; center of throat very pale yellowish; remainder of lower parts dull white, the sides washed with brownish.

Adult female in breeding plumage.—No. 43258, U.S.N.M.; Franklin Bay, British America, July 9, 1864; R. MacFarlane.—Similar to to adult male, but back darker with paler edgings to the feathers, imparting a brighter, more mottled appearance; black of head much mixed with brown; nape more cinnamonaceous, and obscured by brownish; under surface duller, the black on jugulum less extensive and the chin paler yellowish.

Adult male in winter plumage.—No. 65884, U.S.N.M.; Souris River, North Dakota, Oct. 1, 1873; E. Coues.—Like the summer dress, but upper parts more blended by brownish tips to the feathers, the black of head much obscured; breast with some dusky spotting.

Adult female in winter plumage.—No. 65882, U.S.N.M.; Rivière de Laes, North Dakota, Sept. 13, 1873; E. Coues.—Plumage above duller and more uniform than in summer, the decided contrasts obscured; superciliary stripe and light areas of neck and throat washed with dusky, the black areas much obscured; throat rather more deeply yellow, breast and sides more heavily tinged with brownish.

Young in first plumage.—No. 51903, U.S.N.M.; Arctic coast east of Fort Anderson, July 3, 1865; R. MacFarlane. Head and back blackish sepia, varied with ochraceous and spotted with buffy white; nape buffy, barred with dark brown; wings and tail fuscous, margined with ochraceous; superciliary stripe buffy, poorly defined; cheeks dull brownish; throat yellowish white; breast buffy, spotted with dull brown; remainder of lower parts dull buffy white, the sides with markings of dull brown.

The most conspicuous character distinguishing *hoyti* from *alpestris* is the restriction and dilution of the yellow on the head and throat. In *hoyti* this color is usually pale and confined to the middle of the throat, the eyebrow being white, while in *alpestris* the throat, forehead and superciliary stripe are deep yellow, this color often suffusing the crown and occiput. The shade of the upper parts in *hoyti* averages rather less ferruginous brown, particularly in the females, but there is so much individual variation in this respect that the character is hardly of much value in identification. From *arcticola* the present form differs in the darker, more rufescent upper parts, and in the generally distinctly yellow throat. There should be no difficulty in

identifying any typical specimens, though of some intermediates it may not be so easy to dispose. In such cases, however, the more yellowish throat, darker back, or the more rufescent shade of nape, upper tail-coverts and bend of wing will serve to determine specimens that should be called *hoyti*.

The young of this form, as might be expected, resemble to a considerable extent the young of *alpestris*, but are somewhat more grayish above, particularly on the head and cervix, and considerably less tinged with yellow below.

This race has heretofore always been included in *leucolama*, so-called (= *arcticola*), but easily admits of intelligent diagnosis if comparison be made with typical specimens. The entire series upon which Dr. Bishop based his differentiation of this form¹ has been available for examination in the present connection. This series consists almost entirely of spring specimens from Towner County, North Dakota, and a large proportion of these are in various degrees intermediate between *hoyti* and *arcticola*. The type of *hoyti* is unfortunately one of these intermediate specimens and consequently does not represent what it seems now necessary to consider the typical bird; being, however, in its yellow throat and brownish upper parts without doubt referable to the race inhabiting the great central area of British America, to which consequently this name must be applied. This form breeds at Great Slave Lake and about Fort Resolution, and two May birds from Depot Island, Hudson Bay, are evidently the same. Two young birds in first plumage, from the Arctic Coast east of Fort Anderson should, without much doubt, be also accredited to *hoyti*, for they are much more ochraceous than would be expected in the young of *arcticola*. Then, too, a female from Franklin Bay, Northwest Territory, is apparently *hoyti*. How far to the southward the breeding range of *hoyti* must be extended toward that of *leucolama* and where it meets and mingles with *arcticola* are questions which the material now available does not answer.

In winter *hoyti* ranges southward into the Upper Mississippi Valley as far at least as Kansas, but keeps chiefly west of the river, and apparently is not common west of the plains. Camp Floyd, Utah, and Steamboat Valley, Nevada, are the westernmost records. The "large dark birds with white eyebrows and pale yellow chins" mentioned by Dr. Dwight¹ as being "found in winter in the Upper Mississippi Valley" belong, of course, to the present race. An adult male from Long Island City, Long Island, taken March 9, and another from Wooster, Ohio, are not typical *hoyti*, but are so large and have such very pale throats and eyebrows that they can not be called anything else. Although not examined, the specimen from Shelter Island, New

¹Auk, XIII, April, 1896, p. 130.

York, placed by Dr. Dwight¹ under *leucoloma* (= *arcticola*) probably belongs also to *hoyti*.

This race generally has a yellow throat, though pale, but examples occasionally occur which lack almost entirely any trace of this color. The eyebrow in typical specimens is nearly always white, though occasionally it, as well as the light area on the sides of the neck, are tinged with yellow. Considerable variation exists in the amount of dark streaking on the back, some birds being very broadly thus marked, others inconspicuously; this difference observable in the breeding season as well as in winter.

It may, perhaps, be well to call attention to an excusable mistake made by Dr. Dwight, chiefly because it undoubtedly contributed to his failure to recognize the present form as distinct from *arcticola*. In the U. S. National Museum collection are several breeding birds from Fort Reliance, Northwest Territory, which place Dr. Dwight located at the eastern extremity of Great Slave Lake, whereas it is, or rather was, for the post is now abandoned, on the Yukon River, not far east of the Alaskan boundary. The birds from Fort Reliance, on the Yukon, are typical *arcticola*, while those from the region of Great Slave Lake are equally characteristic of *hoyti*; so it may readily be seen that this error of nearly a thousand miles in the location of Fort Reliance very naturally obscured the evidences of geographical variation really existing.

Seventy-nine specimens of this form have been examined, representing the localities given below, breeding records as before being noted by an asterisk:

Iowa.—Sergeant Bluffs.

Kansas.—Fort Riley; Emporia; Marshall.

Michigan.—Grand Rapids.

Minnesota.—Madison.

North Dakota.—Rivière de Laes; Souris River; Towner County.

Nebraska.—Papillion; Platt Center.

Nevada.—Steamboat Valley.

New York.—Long Island City.

Ohio.—Wooster.

Utah.—Camp Floyd.

Alberta.—Calgary.

Assiniboia.—Indian Head.

Northwest Territory.—Fort Resolution;* Arctic coast east of Fort Anderson;* Big Island, Great Slave Lake;* Franklin Bay;* Depot Island;* Fort Chippewyan.* Lake Athabasca;* Grand Rapids; Fort Churchill;* Cape Eskimo.*

Saskatchewan.—St. Louis.

¹ Auk, VII, 1890, p. 143.

OTOCORIS ALPESTRIS ARCTICOLA, new subspecies.

Otocorys alpestris leucolama HENSILAW, Auk, 1, July, 1884, p. 258 (part; not of Coues).

Otocoris alpestris leucolama DWIGHT, Auk, VII, April, 1890, p. 142 (part).—RIDGWAY, Man. N. Am. Birds, 2d ed., 1896, p. 348 (part).

Chars. subsp..—Resembling *Otocoris a. hoyti*, but upper surface paler and more grayish, the throat pure white.

Measurements (15 males).—Wing, 108.5–114.5 (average, 111.5) mm.; tail, 67.5–74 (average, 70.7) mm.; exposed culmen, 10–12.5 (average, 11.3) mm.; tarsus, 21.5–24 (average, 22.7) mm.; middle toe, 12–13 (average 12.6) mm.

Type locality.—Fort Reliance, Yukon River, British America.

Geographical distribution.—In summer, Alaska (chiefly the interior), with the valley of the Upper Yukon River; in winter, south to Oregon, Utah and Montana.

Description.—*Adult male in breeding plumage*.—Type, No. 78565, U.S.N.M.; Fort Reliance, Yukon River, British America, May 7, 1879; E. W. Nelson. Back and wings fuscous, the feathers edged with paler brown; hind part of crown, occiput, nape, bend of wing and upper tail-coverts pinkish vinaceous; middle pair of tail-feathers like the back; the rest brownish black, the outer ones margined with whitish; fore part of crown, horns, lores, cheeks and jugular crescent black; forehead, superciliary, throat and remainder of lower parts dull white, the sides streaked with brown.

Adult female in breeding plumage.—No. 70869, U.S.N.M.; St. Michael, Alaska, June 1, 1876; Lucien M. Turner. Head, back, scapulars and rump blackish brown, the feathers margined with buffy; nape brownish gray with but a slight tinge of pink, and narrowly streaked with brown; wings fuscous, edged with buffy and ochraceous, the bend of wing with same cinnamonaceous admixture; tail like that of adult male, but more brownish; lores, cheeks and jugulum dull black; forehead, superciliary, throat and rest of lower surface dull white, the sides washed with brownish and streaked with darker.

Adult male in winter plumage.—No. 153227, U.S.N.M.; Osoyos, British Columbia, December 2, 1893; C. De B. Green. Very similar to the summer male, but head and nape much obscured by brownish tips to the feathers, the nape, bend of wing and superior tail-coverts more pinkish; the black areas more or less obscured by paler tips to the feathers; the breast with some dusky streaks.

Adult female in winter plumage.—No. 153228, U.S.N.M.; Okanagan, British Columbia, December 2, 1893; C. De B. Green. Similar to the summer female, but much paler and more grayish, the upper surface decidedly more uniform; the black areas much obscured by grayish tips to the feathers; breast much streaked with dusky and sides more deeply shaded with the same.

This form is one of the best marked of all the races of *Otocoris alpestris*, differing from the typical subspecies in its very much paler upper surface, more pinkish nape, upper tail-coverts and bend of wing, as well as in the pure white of throat and eyebrow. Comparisons with other forms are elsewhere made, so need not be repeated here.

This is the race to which, through misapprehension of the identity of Dr. Cones' type, the name *leucolaema* has, by common consent, been applied. Examination of the rediscovered type, however, proves it to belong to another race, as fully explained under its proper heading, and leaves the present subspecies without a name. So far as definite data are concerned, the breeding range of *arcticola* must be restricted to Alaska and the valley of the Yukon River. How far south it extends, or where it intergrades with *merrilli* does not appear from the specimens at hand. It remains in even southern British Columbia until into May, and a male from Sumas Prairie, British Columbia, possibly represents the form breeding in the mountains not far to the northward of the valley of the Fraser River.

In autumn and winter *arcticola* occurs in the northern United States, principally west of the Rocky Mountains, there taking to a great extent the place of the more eastern *hoyti*. No specimens have been examined from farther east than Fort Shaw, Montana; and the southernmost records are Fort Klamath, Oregon, and Salt Lake City, Utah.

This form is usually without yellow anywhere, though in winter there is not infrequently a faint wash of this color on the throat. The breeding specimens available are quite uniform, with the exception of a male from St. Michael, Alaska, which is noticeably more reddish on the upper parts. Even in winter there seems to be less individual variation than exists in many of the other subspecies.

Of this race 38 specimens have been examined, representing the following localities:

Alaska.—Fort Yukon; * St. Michael.*

Montana.—Chief Mountain Lake; Bozeman; Fort Shaw; Bitter Root Valley.

Oregon.—Fort Klamath.

Utah.—Salt Lake City; Ogden.

Washington.—Oyhut; Walla Walla.

British Columbia.—Chilliwack; Osoyos; Okanagan; Revelstroke; Sumas Prairie; Twin Buttes Mt., Ashnola River.

Northwest Territory.—Fort Reliance, Yukon River.*

Saskatchewan.—St. Louis.

OTOCORIS ALPESTRIS ENTHYMIA, new subspecies.

Chars. subsp.—Similar to *Otocoris a. arcticola*, but decidedly smaller, the upper surface paler, the throat usually yellow.

Measurements (15 males).—Wing, 101–107.5 (average, 104.8) mm.; tail, 67–75 (average, 70.4) mm.; exposed culmen, 10.5–12.5 (average, 11.3) mm.; tarsus, 21–23 (average, 21.8) mm.; middle toe, 11.5–13 (average, 12.1) mm.

Type locality.—St. Louis, Saskatchewan, British America.

Geographical distribution.—In summer, Saskatchewan, Assiniboia, with possibly southwestern Manitoba; also extreme northern North Dakota; in winter south to Colorado and Kansas, sometimes to Utah and even Arizona.

Description.—*Adult male in breeding plumage.* Type, No. 175258 U.S.N.M., St. Louis, Saskatchewan, April 10, 1893, back and wings fuscous brown, broadly margined with pale brownish gray and buffy; bend of wing, occiput and nape pinkish vinaceous; shorter upper tail-coverts pinkish cinnamon; middle tail feathers like the feathers of the back; rest of tail brownish black, the outer pair of feathers edged exteriorly with white; fore part of crown, horns, lores, cheeks and jugulum black; forehead, superciliary stripe, infra-auricular region and sides of throat yellowish white, chin and center of throat pale yellowish; rest of lower surface white, the sides washed with cinnamon and streaked with dark brown.

Adult female in breeding plumage.—No. 1446, collection of Louis B. Bishop; Towner County, North Dakota, April 22, 1895; Louis B. Bishop. Above sepia brown, the feathers with grayish white or buffy white margins which on nape occupy almost the entire width of the feathers, the dark color being reduced to narrow pale shaft markings; owing also to the breadth of these edgings the occiput shows only a few dark brown streaks in comparison with the back, where the dark centers of the feathers are conspicuous; rump and bend of wing cinnamon; wings and central tail-feathers edged with buffy ochraceous, this changing to whitish on the terminal portions of tail and flight feathers; black of the male's head replaced by brownish; superciliary white; throat white, very slightly tinged with yellow; jugular crescent restricted and obscured peripherally by white margins to the feathers; sides and flanks very slightly washed with cinnamon and narrowly streaked with dark brown.

Adult male in winter plumage.—No. 127373, U.S.N.M.; Spearfish, South Dakota, October 8, 1892; L. M. McCormick. Like the summer male, but upper parts more uniform; bend of wing more pinkish; black areas obscured by grayish; breast spotted with dusky; sides more heavily washed with cinnamon.

Adult female in winter plumage.—Similar to the breeding female, but paler, more grayish, and more uniform above, all the black areas much obscured by grayish, the breast marked with dusky.

Young in first plumage.—No. 2046, collection of Louis B. Bishop; Towner County, North Dakota, July 1, 1895; Louis B. Bishop. Upper

parts buffy ochraceous, each feather with a dark brown center and white terminal spot, excepting the upper tail-coverts, which are simply spotted distally with black; middle rectrices dull brown, broadly edged with buffy ochraceous, and tipped with whitish; remainder of tail feathers brownish-black, margined with white; wings fuscous, the lesser and median coverts, the tips of primaries and innermost secondaries edged with whitish, the rest of the wing margined exteriorly with buffy ochraceous; superciliary dull white; sides of head and neck white, mixed with brownish; lower parts dull white, the breast and jugulum washed with ochraceous and spotted with dusky; sides and flanks with scattered dusky markings.

Although most closely allied to *leucolama*, this form, when typical, can be easily distinguished by its paler, much more pinkish and grayish colors above, white eyebrow, and usually very pale yellow throat. Many intermediate examples are exceedingly difficult to determine: in such cases the best characters for identification consist in the paler and more grayish colors of *enthymia*. From *praticola* it differs in much lighter, more grayish coloration; from *arctica* in decidedly smaller size, very much paler upper surface, together with a yellow throat; from *giraudi* in larger size, conspicuously lighter upper parts, white superciliary and pallid throat.

The young of *enthymia*, though varying individually to a considerable extent in the depth and shade of color of the upper surface, still in typical specimens average throughout more grayish than *leucolama*, although some specimens, particularly those from intermediate localities, are almost, if not quite, indistinguishable. Young *enthymia* is so very much paler and more grayish than *praticola*, both on the upper surface and on the chest, that specimens of both are always easily identifiable. It is everywhere very much paler and less brownish than the young of either *hoyti* or *alpestris*, besides entirely lacking the conspicuous suffusion of yellow about the head and throat.

So far as is shown by the specimens at hand, *Otocoris alpestris* *enthymia* occupies, during the breeding season, a rather restricted area in North Dakota, Assiniboia, Saskatchewan, and possibly western Manitoba, filling a gap between the ranges of *praticola*, *hoyti*, and *leucolama*. In North Dakota and extreme eastern Montana it intergrades with *leucolama*. The winter range of *enthymia* includes Kansas and Nebraska, in both of which States it appears to be not very uncommon. A typical example from Fort Keogh, Montana, is a western winter record; while specimens from Santa Clara, Utah, and San Francisco Mountain, Arizona, probably show the extent of its wanderings to the southwest.

A series taken by Dr. Bishop during the breeding season in Towner County, North Dakota, is quite uniformly more brownish above, with more cinnamomeous nape than birds from farther north, being thus

differentiated toward *leucolama*. The eyebrow and forehead in all are pure white, which, together with the pale upper surface, impart a general appearance strikingly suggestive of some intermediates between *leucolama* and the southwest form *aphrasta*, though, of course, upon close inspection seen to be darker. The females of this North Dakota series appear to be less intermediate than the males, having, on the light areas above, very little of the buffy tinge of *leucolama*. They are also paler and more grayish than the same sex of *prativala*. The throat of typical *enthymia* is usually pale yellow, but even in winter is occasionally pure white.

The writer is indebted to the kindness of Dr. Louis B. Bishop, of New Haven, for the privilege of describing the present race. It is but fair to state that he some time ago noticed its distinctness from the Colorado bird, and had in mind its formal separation; nevertheless he generously waived his claim and placed his material at my disposal.

Sixty-seven specimens have been examined, from the following localities, breeding records being indicated by an asterisk:

Arizona.—San Francisco Mountain.

Colorado.—Loveland.

Kansas.—Pendennis; Ellis.

Montana.—Fort Keogh; Miles City; Fort Union.

Nebraska.—Valentine.

North Dakota.—Dickinson; Cando; * Rock Lake, Towner County.*

South Dakota.—Spearfish.

Utah.—Santa Clara.

Wyoming.—Laramie.

Assiniboia.—Indian Head.*

Saskatchewan.—St. Louis.*

OTOCORIS ALPESTRIS LEUCOLÆMA (Coues).

Eremophila alpestris b. *leucolama* COUES, Birds Northwest, 1874, p. 38.

Otocoris alpestris leucolama STEINER, Proc. U. S. Nat. Mus., V, 1882, p. 34.

Otocoris alpestris arenicola HENSHAW, Auk., I, July, 1884, p. 265.

Otocoris alpestris arenicola DWIGHT, Auk., VII, April, 1890, p. 146.—RIDGWAY, Man. N. Am. Birds, 2d ed. 1896, pp. 348-349.

Chars. subsp.—Similar to *Otocoris a. enthymia*, but more ochraceous above, the eyebrow usually yellowish.

Measurements (15 males).—Wing, 101-110 (average, 105.8) mm.; tail, 68-77 (average, 71.5) mm.; exposed culmen, 10-13 (average, 11.5) mm.; tarsus, 20.5-23 (average, 21.8) mm.; middle toe, 11-12 (average, 11.7) mm.

Type locality.—Fort Randall, South Dakota.

Geographical distribution.—In summer, western United States from central Dakota, western Kansas and western Nebraska to Idaho and Nevada, north on the eastern side of the Rocky Mountains to Alberta;

in winter, south to Texas, Chihuahua, Sonora and southeastern California.

Description.—*Adult male in breeding plumage.*—No. 139817, U.S.N.M., Biological Survey Collection; Loveland, Colorado, July 24, 1895; E. A. Preble. Back, wings and middle pair of tail-feathers fuscous, edged with buffy; rest of tail brownish black, the outer pair of feathers margined with white; occiput, cervix, bend of wing and upper tail-coverts pinkish cinnamon; fore crown, horns, lores, cheeks and jugulum black; superciliary stripe, forehead and auriculars white, the last somewhat grayish; throat yellowish white; rest of lower surface white, the sides and flanks shaded with cinnamon.

Adult female in breeding plumage.—No. 139797, U.S.N.M., Biological Survey Collection; Big Butte, Idaho, July 18, 1890; V. Bailey and B. H. Dutcher. Similar to the adult male, but cervix, bend of wing and upper tail-coverts cinnamon without pinkish tinge, the first narrowly streaked with brownish; black of head replaced by brownish and buffy; tail more brownish; superciliary stripe and auriculars buffy; sides and flanks with dusky streaks.

Adult male in winter plumage.—No. 139790, U.S.N.M., Biological Survey Collection; Burlington, Colorado, November 20, 1894; C. P. Streater. Like the summer male, but upper parts more uniform, the cinnamonaceous areas more pinkish, this on occiput and cervix almost hidden by the grayish tips of the feathers; superciliary stripe yellowish; throat deeper yellow; black areas obscured by paler; breast marked with dusky; sides and flanks more deeply colored.

Adult female in winter plumage.—No. 67600, U.S.N.M.; Three Buttes, Montana, August 31, 1874; Dr. E. Coues. Similar to the summer female, but upper parts more uniform and more buffy ochraceous; all the black areas obscured; breast strongly tinged with buff and spotted with pale dusky.

Young in first plumage.—No. 139816, U.S.N.M., Biological Survey Collection; Loveland, Colorado, July 23, 1895; E. A. Preble. Upper parts dull brownish ochraceous, each feather with a subterminal bar of sepia, and a terminal spot or bar of white or buffy; wings and tail fuscous, margined with buffy and ochraceous; superciliary stripe buffy; sides of head grayish brown, spotted with buffy whitish; throat white, spotted with dusky; jugulum buffy ochraceous spotted with dusky; sides and flanks buffy, marked with dusky; remainder of lower surface white.

This form may be distinguished from *praticola* by the markedly more cinnamonaceous tint of cervix, upper tail-coverts and bend of wing, as well as by the paler color of the back, where the blackish of *praticola* is replaced by sandy brown. From *arcticola* it differs in reduced size, usually yellow throat, nape more tinged with cinnamonaceous, lighter and brownish instead of blackish back; from *giraudi* in larger

size, generally paler throat, together with paler, much more brownish upper surface; from *merrilli* in larger size and lighter, more brownish coloration.

Otocoris alpestris leucolæma in first plumage is hardly to be confounded with the same condition of either *pratricula* or *merrilli*, being so much paler, more ochraceous on both the jugulum and the upper parts; and this pallor will serve to distinguish it from also *alpestris* and *hoyti*. It is much more grayish above and usually paler than *actia*, but some specimens would be difficult to separate without knowing the localities. Compared with *adusta* and *ovaceae*, young *leucolæma* is, of course, decidedly more grayish on the upper surface.

Ever since Mr. Henshaw published his treatise on the American horned larks¹ the name *leucolæma* Coues² has, by almost all writers except Dr. Coues himself, been applied to the form which breeds in Alaska. How such an identification came to be made is not quite clear, but it has apparently been accepted without question. Speaking of what he considered *leucolæma*, Mr. Henshaw has this to say:³ "It has been supposed to breed along our northern frontier in Montana, etc., and Colorado even has been assigned as its summer habitat. So far as is shown by the specimens at hand, however, it does not spend the summer anywhere within our frontier, all of the summer specimens from Montana, Dakota and Colorado, which have been called *leucolæma*, being referable to the next form. The only region where the specimens at hand absolutely prove that it breeds is Alaska, where it was taken by both Mr. Nelson and Mr. Turner." When this was written the type of *leucolæma* was not accessible, but there were in the United States National Museum specimens taken by Dr. Coues at the same time, at the same place as the type, and which, moreover, bore his identification as "*leucolæma*." Dr. Coues' original description, as well as the remark he makes on the preceding page, where he calls *leucolæma* a "pale race, breeding on dry interior plains of the West," together with the synonymy cited, and his subsequent remarks on the subject in "Birds of the Colorado Valley,"⁴ all apply better to the form for which they were intended than to the Alaskan bird, to which Mr. Henshaw restricted the name. The only circumstance that seems to point toward the correctness of the identification made by Mr. Henshaw is the statement in the original description that *leucolæma* is "not smaller than typical *alpestris*." This is fully explained, however, by the fact that the specimens Dr. Coues had in hand when describing *leucolæma*, and which have been above mentioned as the ones bearing his identification, are of rather exceptional size for the Colorado and Montana race, and really are as large as some examples of *alpestris*. The type of *leucolæma*, which is now in the

¹ Auk, I, July, 1884, pp. 254-268.

³ Auk, I, 1884, p. 258.

² Birds Northwest, 1874, p. 39.

⁴ 1878, pp. 186-190.

United States National Museum, proves beyond a doubt what was already more than surmised—that this name must be used for the *Otocoris* inhabiting Colorado, Wyoming, Montana, and adjacent territory, which Mr. Henshaw described as *arenicola*.¹ The type of *arenicola* came from Denver, Colorado, being apparently of the form breeding at that place, and although inclining somewhat toward the race from Assiniboia is much nearer *leucolama*. The two additional males from Fort Randall, collected by Dr. Coues on March 8 and 12, 1873, respectively, and mentioned above, are substantially identical with the type, though considerably larger. These three specimens, notwithstanding the late date, possibly do not represent the breeding birds of the region, for they appear more closely to resemble examples from northern Colorado. The breeding birds from western Kansas and Nebraska, eastern Montana, extreme eastern Wyoming, central and western South Dakota are intermediate between *leucolama* and *enthymia*, though nearer the former, being in color above somewhat more brownish than *enthymia*, this evident both on the nape and back. Some specimens from Dickinson, North Dakota, are essentially similar. The area of inoculation with *praticola* is not illustrated by the material at hand, but it must of necessity be limited, for examples from Pendennis, Kansas; Ellsworth, Sidney, and Alliance, Nebraska, show practically no approach to the eastern race, while *praticola* from Strong, Kansas, is very far from intermediate. Specimens from northwestern Montana approach *merrilli* in the darker upper surface, but most of them appear to be nearer the present form. The same tendency is evident in birds from Big Butte, Idaho, and Elko, Nevada, though to a less extent. A single adult breeding male from Roswell, New Mexico, seems to be typical *leucolama*, but similar examples from both Alpine and Amarillo, Texas, are somewhat more rufescent above. Birds from central and southwestern Nevada average decidedly smaller and somewhat more grayish on the back than those from central Colorado, showing thus an approach to *ammophila*, while more to the southward in Nevada the tendency seems to be toward *leucosiptila*, since some specimens are almost indistinguishable from those of eastern Colorado and western Kansas, intermediate between *leucolama* and *enthymia*. The birds examined from Antelope Island, Great Salt Lake, Utah, are conspicuously redder than those from the surrounding region, being thus curiously similar to *occidentalis*, though separated from this form by a wide area.

How far to the northward of the United States the range of *leucolama* extends can not be definitely determined from the material at present available, but a very typical autumnal specimen from Calgary, Alberta, shows that it reaches at least this latitude; and specimens

¹Auk, I, July, 1884, p. 265.

from Medicine Hat, Assiniboia, also belong to this race. Many of the winter birds from Texas and New Mexico are intermediates between *leucolama* and *occidentalis*, though occurring with them are typical examples of both these forms. The winter range of *leucolama* includes also northern Mexico, though the birds found there seem to have come from an area of transition from *leucolama* to *leucansiptila*.

The eyebrow is frequently, the throat occasionally, without a trace of yellow, but both are sometimes deeply yellow; this color also appearing, though rarely, below the black jugular area, as is the case in a few autumnal specimens from southern Montana. Some winter birds have heavy dusky spotting on the breast, while others lack it almost entirely. In worn plumage the back not infrequently is conspicuously blackish, owing to the abrasion of the pale tips of the feathers. In this condition specimens may be distinguished from *merrilli* by the lighter color of the other portions of the upper surface. A difference among specimens of *leucolama*, which is purely individual, consists in the occasional reddening of the upper surface, most conspicuously on the nape, rump and bend of the wing to such a degree that the difference between this phase and the normal one is greater than that existing between some of the different races, thus forcibly demonstrating the desirability, and sometimes even necessity, of a series of specimens for the determination of *Otocoris* from any given locality. Then, too, the range of *leucolama* is so extensive and covers areas of so great physiographic diversity that intermediates between it and the various races with which it intergrades, though still unquestionably to be referred to it, are often far more different from each other than are the examples of some of the recognizable forms, particularly those occupying contiguous areas. This race, more than any other, has also a tendency to develop various slight exceedingly local differences which seem entirely independent of subspecific relationship or intergradation.

Specimens to the number of 560 have been examined, these representing the localities given below, breeding birds being designated by an asterisk:

Arizona.—San Francisco Mountain; White Mountains; Wilcox; Fort Verde.

California.—White Mountains;* McGill Peak; Stockton; Keeler.

Colorado.—Loveland;* Clear Creek;* Cortez; Burlington; Denver;* Arlington; Fort Logan; Colorado Springs;* Ramah (El Paso County);* Aiken's Ranch (El Paso County); Turkey Creek (El Paso County); Pueblo; Fort Garland;* Routt County; Eagle County; Mount Rose;* Summitville.*

Idaho.—Blackfoot;* Montpelier;* Big Butte;* Birch Creek.*

Kansas.—Pendennis;* Garden City; Winona; Ellsworth;* Riley.*

Montana.—Blackfoot;* Miles City; Hillsdale;* Pryor Mountains;* Willow Creek;* Helena;* Pass Creek;* Moreland;* Frenchman's River;* Gallatin River; Gallatin Station; Gallatin County;* Two Forks of Milk River;* Clark's Fork;* Fort Custer;* Chief Mountain; Porcupine River;* Fort Keogh;* Fort Union; Dryhorse Spring; Sunday Creek; Madison River; Three Buttes;* Fort Shaw.

Nebraska.—Valentine;* Sidney;* Omaha; Harrison; Alliance;* Wood River; Havellington.

Nevada.—Arc Dome, Toyabe Mountains;* Monitor Valley, 50 miles north of Belmont;* Elko;* Wadsworth;* Big Smoky Valley, opposite Arc Dome;* Ione Valley;* Cloverdale;* Indian Spring Valley;* Osobb Valley;* Steamboat Valley; Tule Canyon;* Franklin Lake;* Panaca;* Pahrump Valley; Smoky Creek;* Washoe Valley; Truckee Meadows.

New Mexico.—Fort Wingate; Fort Massachusetts; Deming; Silver City; Carlsbad (=Eddy); Albuquerque; Roswell;* Santa Fe; La Plata; Fort Thorn; Aztec.

North Dakota.—Dickinson; Big Bend of Heart River;* Fort Rice.*

Oklahoma.—Beaver River; Fort Reno; Tepee Creek.

South Dakota.—Buffalo Gap;* Rapid City;* Belle Fourche; Fort Randall; Corral Draw, Pine Ridge Indian Reservation;* Spearfish;* Armour;* White;* Sturgis;* Black Hills.

Texas.—Laredo; Washburn;* Comanche County; Henrietta;* El Paso; Del Rio; Sierra Blanca; Cook County; Fort Davis;* Marfa;* Gainesville; Amarillo;* Sherwood;* Marathon;* Alpine;* Dimmitt;* San Angelo.

Utah.—Antelope Island, Great Salt Lake;* Salt Lake City;* Ogden;* Fairfield;* Nephi; Uncompahgre Indian Reservation;* Kelton; Santa Clara; Beaver;* West Weber.

Wyoming.—Laramie; Bridger's Pass;* Green River Basin;* Fetterman;* Fort Bridger;* Cheyenne; Sheridan;* Newcastle;* Gilmer; Clearmont;* Wyoming Mountain,* Laramie Peak.*

Alberta.—Calgary.

Assiniboia.—Medicine Hat.

Chihuahua.—White Water; Chihuahua; San Diego.

Sonora.—Animas Valley (United States and Mexican Boundary Line).

OTOCORIS ALPESTRIS PRATICOLA Henshaw.

Otocorys alpestris praticola HENSHAW, Auk, I, July, 1884, p. 264.

Otocorys alpestris praticola DWIGHT, Auk, VII, April, 1890, p. 144.—RIDGWAY, Man. N. Am. Birds, 2d ed., 1896, p. 348.

Chars. subsp.—Resembling *Otocorys a. leucolaema*, but darker, less ochraceous above, the superciliary stripe usually without yellow.

Measurements (15 males).—Wing, 100–108 (average, 104.2) mm.; tail, 67–73 (average 69.5) mm.; exposed culmen, 10–12 (average, 11.2)

mm.; tarsus, 20.5–22.5 (average, 21.6) mm.; middle toe, 11–12 (average, 11.7) mm.

Type locality.—Richland County, Illinois.

Geographical distribution.—In summer, southern Canada from Manitoba to the north shore of the Gulf of St. Lawrence, together with the northeastern United States from Maine, Long Island and Pennsylvania west to eastern Kansas and Nebraska; in winter, south to the Carolinas, Kentucky and Texas, casually west to Colorado, and even Arizona.

Description.—*Adult male in breeding plumage.*—Type, No. 90763 U.S.N.M.; Richland County, Illinois, May 16, 1883; R. Ridgway.—Center of crown, occiput, nape, superior tail-coverts and bend of wing pinkish vinaceous, rather more cinnamonaceous on the two last; back, wings and two middle tail-feathers fuscous, edged with buffy; rest of tail brownish black, the outer pair of feathers with whitish external margins; fore part of crown, horns, lores, cheeks and jugular crescent black; forehead and superciliary stripe dull white; throat and sides of upper jugulum pale primrose yellow; rest of lower parts white, the sides shaded with cinnamon and streaked with dull brown.

Adult female in breeding plumage.—No. 121861, U.S.N.M.; Green Bay, Wisconsin, June 18, 1890; C. W. Richmond.—Above sepia brown narrowly streaked with buffy, the nape dull buffy ochraceous streaked with fuscous, the rump dull cinnamon; wings fuscous, margined with buffy, and on bend of wing with cinnamon; middle pair of tail-feathers like wings, the rest brownish black, the outer pair edged externally with whitish; forehead and superciliary dull white; lores and cheeks blackish, mixed with brownish; throat pale yellow; black of jugulum less extensive than in the male; remainder of lower surface dull white, the sides cinnamon streaked with dark brown.

Adult male in winter plumage.—No. 150628, U.S.N.M.; Washington, District of Columbia, February 3, 1895; R. S. Matthews.—Similar to the breeding male, but colors above duller, more blended, the pinkish of nape almost entirely obscured; black areas with grayish tips to the feathers; bend of wing more pinkish; yellow of throat deeper; breast much streaked with dusky.

Adult female in winter plumage.—No. 117373, U.S.N.M.; Chester, South Carolina, December 7, 1889; L. M. Loomis.—Like the summer female, but paler and more ochraceous above; black areas much obscured; throat paler yellow, breast heavily marked with dusky; sides more deeply tinged with cinnamonaceous.

Young in first plumage.—No. 162497, U.S.N.M.; Port Clinton, Ohio, July 10, 1893; E. M. Hasbrouck.—Above very dark brownish black, anteriorly with streaks, posteriorly bars of ochraceous, and spots of buffy white and ochraceous; wings sepia, margined with buffy white and ochraceous; tail sepia, edged exteriorly with ochraceous

and buffy white; an ill-defined superciliary stripe dull white; throat white with slight yellowish tinge; jugulum and upper breast buff, spotted and streaked with sepia; sides of body buffy, streaked with sepia; rest of under surface white with a faint buffy wash.

Otocoris alpestris praticola resembles *O. a. arctica* but is considerably smaller; more brownish above, the cervix, upper tail-coverts and bend of wing more cinnamonaceous; the throat pale yellow. From *alpestris*, *praticola* differs in its smaller size, more grayish and pinkish coloration and white eyebrow. It is distinguishable from *hoyti* by smaller size, more grayish and pinkish color above.

The young of *praticola* are very dark, much more so than even *alpestris* or *hoyti*, and are also everywhere much less tinged with yellowish than either. This is of course only the *average* condition, for within the great range of individual variation may be found specimens which very closely approach *hoyti*, both above and below, while the very dark, almost black upper parts of some examples exhibit fully as much individual divergence as do the adults.

This race is quite uniform over its entire range, the chief variations being individual. Breeding specimens from Strong, Kansas, are very dark and very brownish, both on the back and nape, and can be well matched by far eastern examples. Three spring birds from Sallisaw, Indian Territory, together with a winter specimen from Gainesville, Texas, and one from London, Nebraska, incline slightly toward *leucolæma* in the paleness of the anterior upper parts, but they possibly do not represent the breeding birds of their respective localities. A female from Boggy Creek, Manitoba, shows a decided approach to *enthymia* in the paler, less buffy shade of the light portions of the upper surface, as well as in the somewhat more grayish color of the dark areas; and another female from Carberry, Manitoba, is even more decidedly intermediate, although, so far as it is possible to judge from the single specimen, is nearer the present form. Similar remarks apply to an adult male from St. Vincent, northwestern Minnesota. Examples from Elk River, Minnesota, are less deeply brown on the interseapular region than the majority of those from the more eastern States, but aside from this are not conspicuously different. An adult female from Towner County, North Dakota, taken on May 20, 1896, is undoubtedly *praticola*, although taken at what surely should be the breeding season in this, the home of *enthymia*. Dr. Bishop probably advances the correct explanation in suggesting it to be a barren female, as its presence so far from its own breeding grounds seems hardly to be explained on any other hypothesis. The exact transition area between *praticola* and *alpestris* is not now definitely determinable, though inferentially known to be probably somewhat circumscribed, but specimens in all degrees of intergradation occur to cause trouble in identification throughout at least portions of the winter range of

praticola, notably in South Carolina, Ohio and Missouri. The western limit of its winter wanderings is shown by a typical male from Fort Verde, Arizona.

Individuals vary much in the shade and intensity of the color of the nape, rump and bend of the wing, these differences also conspicuous on all the light areas of the upper parts. The eyebrow is usually white, though occasionally tinged with yellow; the throat, on the other hand, is rarely without at least a trace of this color.

Specimens to the number of 410 have been available for examination, these coming from the following localities, breeding records being marked by an asterisk:

Arizona.—Fort Verde.

Colorado.—Denver.

District of Columbia.—Washington.

Illinois.—Chicago; * Calumet; * Richland County; * Mount Carmel; * Riverdale; * West Northfield; * Sugar Creek Prairie; * Waukegan; * Mason County; Jacksonville; Noble.*

Indiana.—Indianapolis; Lake County.*

Indian Territory.—Sallisaw; Boggy River.

Iowa.—Iowa City; Sioux City; * Des Moines; Delaware Township, Polk County; * Johnson County; Decorah.

Kansas.—Big Blue River; * Turkey Creek; * Strong; * Manhattan.*

Kentucky.—Lexington.

Michigan.—Ann Arbor; * Detroit; Cadillac.*

Minnesota.—Fort Snelling; * Elk River; * Zumbrota; Round Lake; Saint Vincent.*

Missouri.—"State of Missouri"; * Carthage.

Nebraska.—London; Omaha; Wood River.

New York.—Locust Grove; Lockport; * Syracuse; * Glasco, Ulster County; * Peterboro; * Sacket Harbor; * Moose River, Lewis County; Kenwood, Madison County; * Onedia County.*

North Carolina.—Raleigh.

North Dakota.—Towner County.

Ohio.—Port Clinton; * Wooster.*

Pennsylvania.—Erie; * Tidioute; Chester County; Athens.*

South Carolina.—Chester.

Texas.—San Antonio; Gainesville; Cook County; Dallas.

Virginia.—Arlington.

Wisconsin.—Green Bay; * Dane County; * Milwaukee; * Racine; * Palmyra; * Grand Rapids; Camp Douglas.*

Labrador.—Chateau Bay.*

Manitoba.—Carberry; * Rat Portage; Boggy Creek, Big Plain.

Ontario.—Windsor; Ottawa; * Lorne Park, Peel County; * Kingston; * Bracebridge; Toronto.*

Quebec.—Gatineau Point.*

OTOCORIS ALPESTRIS DIAPHORA, new subspecies.

Chars. subsp..—Similar to *Otocoris a. praticola*, but smaller, the back less blackish, more ochraceous.

Measurements (7 males).—Wing, 96.5–103 (average, 99.4) mm.; tail, 64.5–70.5 (average, 67.5) mm.; exposed culmen, 11–12 (average, 11.3) mm.; tarsus, 21–22.5 (average, 21.7) mm.; middle toe, 11–12 (average, 11.4) mm.

Type locality.—Miquihuana, Tamaulipas, Mexico.

Geographical distribution.—In summer, southern Tamaulipas, Mexico, south to Hidalgo; in winter (casually?) to Oaxaca.

Description.—Type, adult male in breeding plumage, No. 158830, U.S.N.M., Biological Survey Collection; Miquihuana, Tamaulipas, Mexico, June 8, 1898; E. W. Nelson and E. A. Goldman. Back, rump and wings dusky brown, all the feathers margined with paler, the bend of the wing dark vinaceous cinnamon; occiput, cervix and upper tail-coverts dull pinkish vinaceous with a slight cinnamon tinge, the longest tail-coverts brownish; tail brownish black, excepting the middle feathers, which are rather light brown, the outermost pair of rectrices distally margined on exterior webs with dull white; forehead, superciliary stripe and auriculars white; crown, "horns," lores and cheeks black; sides of neck and breast like the cervix; thighs and streaks on sides and flanks pale brownish; chin and throat deep primrose yellow; jugular crescent black; remainder of lower parts white.

Adult female in breeding plumage.—No. 158828, U.S.N.M., Biological Survey Collection; Miquihuana, Tamaulipas, Mexico, June 9, 1898; E. W. Nelson and E. A. Goldman. Upper surface dusky brown, more blackish on the back; the feathers all edged with buffy, this deepest on nape and upper tail-coverts, where it occupies the greater portion of the feathers; tail brownish black, the middle pair of feathers dusky brown, the terminal two-thirds of outer webs of outermost pair margined with white; wings dusky brown, edged with paler, the lesser and median coverts pale cinnamon; superciliary stripe dull white; auriculars and subocular region brownish gray; sides of neck and breast pinkish buff, this color also tinging the sides and flanks, which are slightly streaked with dusky; chin and throat primrose yellow; jugular crescent black, though smaller than in the male; rest of the under surface dull white.

Adult male in winter plumage.—No. 144955, U.S.N.M., Biological Survey Collection; Tamazulapam, Oaxaca, Mexico, November 14, 1894; E. W. Nelson and E. A. Goldman. Like the breeding plumage, but the colors above softer and more blended, the nape more pinkish, though this color is almost entirely obscured by the brownish edgings of the feathers; bend of wing and upper tail-coverts more pinkish; breast somewhat streaked with dusky; forehead and superciliary primrose

yellow instead of almost white; throat of deeper yellow; all the black areas more or less varied by brownish tips to the feathers.

Adult female in winter plumage.—No. 144971, U.S.N.M., Biological Survey Collection; Real del Monte, Hidalgo, Mexico, March 10, 1891; C. P. Streater. Similar to the same sex in breeding dress, but upper surface rendered more uniform by the broad unabraded paler edgings of the feathers; rump and bend of wing darker; forehead, superciliary stripe, and in fact most of the head more or less tinged with yellowish; throat deeper yellow; black of jugulum obscured by grayish tips of the feathers; breast washed and streaked with gray.

Young in first plumage.—No. 158831, U.S.N.M., Biological Survey Collection; Miquihuana, Tamaulipas, Mexico, June 9, 1898; E. W. Nelson and E. A. Goldman. Above dull buffy grayish, every feather with a subterminal black area and a white apical spot, these largest on the back; tail as in the adult; wings sepia, edged with whitish and buffy; auriculars mixed grayish and whitish; lower surface white, the jugulum shaded with buff and obscurely spotted with grayish.

This form is throughout paler than *chrysolema*, with a more pinkish cervix, besides being considerably smaller. It differs from *aphrasta* in being much less cinnamonaceous above, the back quite blackish, and in sharp contrast to the nape; from *actia* and *ouacae* in paler, much more pinkish and grayish colors above; from *ammophila* in more grayish back, much more pinkish cervix, upper tail-coverts and bend of wing; from *occidentalis* in smaller size and less rufescent upper surface; from *leucolama* in smaller size, darker, less ochraceous upper parts and usually brighter yellow throat; from *enthymia* in yellow throat, smaller size, much darker, more brownish upper surface; from *giraudi* in the very much more brownish tone of the upper surface. In fact, *diaphora* seems to be in color most like *praticola*, from which, however, it may be separated by its less blackish back; being, moreover, decidedly smaller.

The young of *diaphora* can, by their very gray upper parts, be easily distinguished from the young of *actia*, *ouacae*, *alusta*, and *aphrasta*; and from *merrilli* and *praticola* the pale grayish instead of blackish tone of the upper surface almost as widely separates them. They are exceedingly close to *enthymia*, however, as well as to *leucolama*, though they average somewhat more grayish above than the latter.

The specimens upon which this new form is based are breeding birds from Miquihuana, Tamaulipas, Mexico, and since it seems impossible to reconcile their characters with any of the other races, it becomes necessary to give them a subspecific name. One of the males is uniformly more cinnamonaceous above than the others, thus verging slightly toward the appearance of *aphrasta*; but aside from this there seems to be in this series no individual differences worthy of mention.

Birds from the State of Hidalgo average larger and rather darker, an approach to *chrysolæma*; and though two spring examples from Irolo, Hidalgo, resemble *chrysolæma* very closely, others from the same locality are sufficiently near *diaphora* to indicate the proper reference of all to that form. This race probably does not wander far in winter, and possibly is resident except for an occasional straggler. At least such would appear to be the case, for out of a large series of winter birds from the State of Mexico none are referable here. A November male, however, taken at Tamazulapam, in northern Oaxaca, seems without much doubt to belong to *diaphora*, as it is altogether too pale and too pinkish for any of the other forms of the region.

Fourteen specimens have been examined, from the following localities:

Tamaulipas.—Miquihuana.*

Hidalgo.—Irolo;* Tula;* Pachuca;* Real del Monte.*

Oaxaca.—Tamazulapam.

OTOCORIS ALPESTRIS GIRAUDI Henshaw.

Otocorys alpestris giraudi HENSHAW, Auk, I, July, 1884, p. 266.

Otocorys alpestris giraudi DWIGHT, Auk, VII, April, 1890, p. 145.—RIDGWAY, Man. N. Am. Birds, 2d ed., 1896, p. 349.

Chars. subsp.—Like *Otocorys a. diaphora*, but smaller, the upper surface decidedly more grayish.

Measurements (15 males).—Wing, 92–102 (average, 96.8) mm.; tail, 56.5–66 (average, 62.2) mm.; exposed culmen, 9.5–11 (average, 10.5) mm.; tarsus, 20.5–22.5 (average, 21.8) mm.; middle toe, 10.5–12 (average, 11.1) mm.

Type locality.—Corpus Christi, Texas.

Geographical distribution.—Coast region of Texas and northeastern Tamaulipas, from Galveston Bay to the mouth of the Rio Grande. Apparently resident.

Description.—*Adult male in breeding plumage*.—No. 128060, U.S.N.M.; Galveston, Texas, April 1, 1891; J. A. Singley.—Back, wings and middle pair of tail-feathers fuscous, edged with buffy grayish; remainder of tail brownish black, the outer pair of feathers margined externally with whitish; occiput, nape, bend of wing and superior tail-coverts pinkish cinnamon; crown, horns, lores, cheeks and jugulum black; forehead, auriculars, superciliary stripe and sides of lower throat yellowish white; chin and throat pale primrose yellow; rest of lower parts white, the breast washed with yellow, the sides shaded with cinnamon and streaked with dark brown.

Adult female in breeding plumage.—No. 128063, U.S.N.M.; Galveston, Texas, March 20, 1891; J. A. Singley.—Very similar to the male, but nape and occiput dull buff, streaked with fuscous; black of head replaced by brown and buffy.

Adult male in winter plumage.—No. 6464, Hoopes Collection, Acad. Nat. Sci. Phila.; Brownsville, Texas, October 18, 1896; F. B. Armstrong.—Upper surface quite uniformly but rather obscurely streaked, the black forehead and pinkish of the nape almost entirely hidden; streaking on chest below the pectoral crescent much more conspicuous than in summer, and largely confluent; all the black areas much obscured by pale tips to the feathers; the entire plumage, except for black or white portions, much more grayish or pinkish than in summer.

Adult female in winter plumage.—No. 6466, Hoopes Collection, Acad. Nat. Sci. Phila.; Brownsville, Texas, October 23, 1896; F. B. Armstrong.—Similar to the summer female, but everywhere more grayish; the streaking above more uniform; the breast below the black marked with broad confluent streaks of dusky; all the colored portions, even the yellow of the throat, much obscured by the grayish tips of the feathers. In this condition the female much resembles the male of like season, although very different in summer, when by wear the distinctive marks of the male become accentuated.

Young in first plumage.—Male, No. 27344, Acad. Nat. Sci. Phila.; Corpus Christi, Texas, June 1, 1891; S. N. Rhoads.—Above buffy ochraceous, the feathers with dark brown centers, and spotted terminally with white or buffy; wings and outer tail feathers margined with whitish; superciliary stripe buffy white; lower surface dull white, the breast shaded with buffy and spotted with dusky.

This race is quite similar to *praticola*, though considerably more grayish, rather smaller, and with the yellow of throat usually deeper and suffusing also the superciliary stripe. In winter plumage the dark streaking on the breast is frequently heavier. It is fully as gray above as *arcticola*, but is of course easily distinguishable by its reduced size and yellow of throat and eyebrow. It is so much smaller and more grayish than either *hoyti* or *alpestris* that it does not need special comparison.

The young of this race seem to be, so far as can be judged from the limited material examined, much paler and more grayish than the young of *praticola*. From *leucolema*, to which they bear more resemblance, they seem to differ in somewhat less ochraceous tone of the upper parts, though doubtless some specimens would prove very nearly if not quite indistinguishable.

So far as actual specimens go, *giraudi* seems to be resident in an isolated area on the coast of southeastern Texas, crossing into Mexico only at the mouth of the Rio Grande. From the breeding area of *leucolema*, which is geographically the nearest of the northern races, it is separated by a distance of at least 300 miles; but in regions not yet satisfactorily explored it possibly intergrades with *diaphora*, which approaches its range more closely than any other form. This last geographical consideration might be sufficient reason for refusing

giraudi specific rank, even did there not exist internal evidence of its imperfect segregation. Some males are difficult to distinguish from *praticola*, while the females are occasionally, except for size, just like the corresponding sex of *arctica*. Furthermore, there occur specimens of *giraudi* which can be closely matched by birds from Quincy, California, intermediates between *leucolama* and *merrilli*.

As above indicated, *Otocoris a. giraudi*, though an excellent subspecies, exhibits considerable individual variation, being sometimes quite brownish above, particularly on the anterior portions. In some specimens all the yellow parts are of a deep shade, while in others the throat is very pale and the superciliary stripe and auriculars almost white. There is frequently no yellow on the breast below the black jugular patch, even in males. The thighs are usually deep buff, tinged or not with clear yellow.

Eighty-two specimens have been examined, these representing the following localities, breeding records marked by an asterisk:

Texas.—Point Isabel*; Brownsville*; Refugio; Galveston*; Padre Island; Corpus Christi*; Nueces County; Rockport; Cameron County*; Matagorda Island; Port Lavaca; Indianola; Refugio County*.

Tamaulipas.—Bagdad.

OTOCORIS ALPESTRIS MERRILLI Dwight.

Otocoris alpestris arenicola HENSHAW, Auk, I, July, 1884, p. 529 (part).

Otocoris alpestris merrilli DWIGHT, Auk, VII, April, 1890, p. 153.—RIDGWAY, Man. N. Am. Birds, 2d ed., 1896, p. 599.

Chars. subsp.—Similar to *Otocoris a. giraudi*, but considerably larger, the back more blackish, the nape darker, more rufescent.

Measurements (15 males).—Wing, 98.5–106 (average, 102.9) mm.; tail, 64–72 (average, 69) mm.; exposed culmen, 10–12.5 (average, 11) mm.; tarsus, 20.5–22.5 (average, 21.6) mm.; middle toe, 11–12 (average, 11.5) mm.

Type locality.—Fort Klamath, Oregon.

Geographical distribution.—In summer, northwestern United States, and southern British Columbia, from northeastern California and northwestern Nevada, northward through Oregon and Washington east of the Cascade Mountains to British Columbia and extreme northern Idaho; in winter south to central California.

Description.—*Adult male in breeding plumage*.—Type, No. 19516, collection of William Brewster; Fort Klamath, Oregon, July 1, 1887; Dr. J. C. Merrill.—Above dull sepia, somewhat streaked with whitish; occiput, nape, bend of wing, sides of neck and breast together with upper tail-coverts pinkish cinnamon, rather paler on the last mentioned; two central tail-feathers light brown; the rest black, the outer ones edged externally with white. Fore part of crown, horns, nasal plumes,

lores, subocular region, fore part of auriculars and jugular crescent black; forehead, superciliary stripe and posterior portion of auriculars pale yellowish, the last tinged with brownish; throat Naples yellow; remainder of lower parts dull white.

Adult female in breeding plumage.—No. 19538, collection of William Brewster; Fort Klamath, Oregon, May 23, 1887; Dr. J. C. Merrill.—Above sepia, the feathers with buffy whitish edgings, these most numerous on cervix; crown streaked with pale brown; bend of wing and upper tail-coverts pinkish cinnamon; no black on head, that of the male replaced by brownish; superciliary stripe dull white; throat pale yellow; rest of under surface dull white; the sides tinged with cinnamon and streaked with dark brown.

Adult male in winter plumage.—No. 88358, U.S.N.M.; Fort Walla Walla, Washington, February 4, 1882; C. E. Bendire.—Similar to the breeding male, but upper parts duller, more uniform and more ochraceous in cast, the nape scarcely showing its pinkish color; all black areas somewhat obscured; yellow of throat rather deeper; streaks on breast more conspicuous; sides more heavily washed with brownish.

Adult female in winter plumage.—No. 89560, U.S.N.M.; Fort Klamath, Oregon, October 2, 1882; C. E. Bendire.—Resembling the summer dress of female, but paler, more uniform, and more ochraceous above, all the black areas much obscured; yellow of throat paler; breast and sides more heavily washed with brownish and buffy.

Young in first plumage.—Male, No. 19524, collection of William Brewster; Fort Klamath, Oregon, July 1, 1887; Dr. J. C. Merrill.—Above sepia, spotted, with white, these markings more transverse posteriorly; wings brown, edged with whitish and buffy; tail dark brown, the central feathers paler, all tipped and the outer ones margined externally with white; sides of head sepia mixed with whitish; lower parts white, the breast with markings of dusky.

Notwithstanding its geographical position, the present form is apparently more closely allied to *praticola* than to any of the others. In size it is practically the same and in color it differs only in the darker upper surface—particularly the back, which is more blackish—and in the usually yellow eyebrow. Birds occur, however, principally in areas of inoculation with *leucolama*, which with difficulty could be distinguished from some examples of *praticola*. Compared with *arctica*, whose range probably meets that of *merrilli* somewhere in British Columbia, the latter is much smaller, darker above, with the throat at least, the eyebrow frequently, tinged with yellow. From both *alpestris* and *hoyti* its lesser size and blackish back furnish easy means of separation.

The young of *merrilli* are not with certainty distinguishable from specimens of *praticola* of the same age. The specimen described by

Dr. Dwight¹ as typical of the young of this race is much more grayish above than any of the others we have examined.

The northernmost records of *merrilli* are Ashcroft and Kamloops, British Columbia, and these specimens are practically identical with the type. To the eastward its range includes northern and western Idaho. An August bird from Post Falls, Idaho, is duller and browner above than typical specimens, yet showing no decided approach to *leucolama*. Breeding examples from Steens Mountains in southern Oregon have the lighter portions of the upper surface considerably suffused with reddish, and the back is more brownish black than ordinary birds, thus strongly resembling *strigata* in color, though sufficiently different in size. Birds from Fort Harney, Oregon, are quite similar to those from the Steens Mountains. A male from Mountain City, Nevada, shows an approach to *leucolama* in the color above, but is decidedly *merrilli*. This determines the ranges of these two forms at this point to be less than 100 miles apart, *leucolama* being the horned lark breeding at Elko. Breeding birds from Fort Crook and Madelin Plains, California, are practically typical *merrilli*.

Summer specimens from the vicinity of Carson and Pyramid Lake, Nevada, are noticeably paler than typical *merrilli*, thus being exceedingly similar to *praticola*, to which form Dr. Dwight has referred the birds from Carson.² The males are practically indistinguishable, either in size or color, from *praticola*, but the females average somewhat paler. This difference is so slight, however, that were the birds from an area contiguous to the region inhabited by *praticola*, they would unhesitatingly be considered as belonging to that race; but geographically situated as they are, practically between the ranges of *leucolama* and *merrilli*, it seems much more rational to consider them intermediates between these forms, and as such to refer them to the one which they seem more closely to resemble. The only alternatives are to recognize them by name, which does not seem advisable in view of their practical identity with *praticola*, or to call them *praticola*, with explanation of the divided range thus assigned to the latter. Quite similar are a few birds from Quincy, California, though darker above, and with the yellow on head and throat very bright, usually also appearing below the black jugular patch, in one male lightly suffusing the entire lower surface. Very puzzling indeed are three specimens—an adult female in molt, with two young in first plumage—from Summit, Nevada County, California, all taken by Mr. Belding on August 16, 1885. One of the immature birds was identified by Dr. Dwight as *merrilli*; the other he called *strigata*; while the female was considered by him to be an intermediate between *merrilli* and *strigata*. The incongruity of these determinations is at once manifest, for the two young were surely from a nest in that immediate vicinity, while the female, still pos-

¹ Auk, VII, 1890, p. 153.

² Idem, p. 144.

sessing portions of her worn breeding plumage, had evidently reared her brood not far away, and was even not impossibly the parent of these two young. But it is perhaps easier to say what these three birds are not than to determine what they really are. They are altogether too dark for *leucolama* or *actia*, and therefore can not be referred to either of these forms. The young birds very closely resemble *merrilli*, and are thus altogether too grayish to be *rubca*. The adult female, however, though showing some tendency toward *merrilli* in the pinkish tinge to the upper tail-coverts and bend of the wing, as well as in the rather darker color of the back, is otherwise so rufescent and moreover so small that it seems scarcely to be disposed of satisfactorily by reference to that form. A breeding male from the same vicinity, however, is quite the same as specimens of *strigata* from the coast region of Oregon and Washington; and a sufficient series would undoubtedly prove all the birds from about Lake Tahoe to be of the same kind. We have thus here a curiously complicated condition: True *merrilli* from northeastern California produces, by infusion of *rubca* and *actia* on the summit of the Sierra Nevada in California, a bird apparently just like *strigata*; while over on the east slope of the same range, only a short distance away, by intergradation with *leucolama*, it becomes indistinguishable from *praticola*.

During the winter *merrilli* ranges southward in California as far as the latitude of San Francisco Bay, and in Nevada probably to at least the central portion of the State.

Specimens vary considerably in the shade of the nape, in the clearness of color on the black dorsal area, as well as in the intensity and distribution of the yellow which sometimes, particularly in winter, is very bright and suffuses the entire head, tinging also even the lower surface posterior to the black jugular area, as in *strigata*.

Ninety-six specimens examined, from the following localities:

California.—Montague;* Vinton, Sierra Valley;* Tule Lake;* Fort Crook;* Mount Shasta; Gridley; Marysville; Stockton; Beber;* Bald Mountain, Shasta County; Madelin Plains;* Enterprise; Quincy; Summit (Donner).*

Idaho.—Post Falls.*

Montana.—Tobacco Plains.*

Nevada.—Mountain City;* Carson;* Washoe Lake;* Pyramid Lake.*

Oregon.—Camp Harney; Wapinitia;* Heppner;* Steens Mountains;* Rock Creek;* Antelope;* Grand Ronde Valley;* Christmas Lake;* Willows Junction;* Barren Valley; Detroit; The Dalles; Fort Klamath.*

Washington.—Spokane Falls;* Fort Walla Walla; Touchet; Sunnyside.*

British Columbia.—Chilliwack; Kamloops;* Osoyos; Ashcroft;* Sumas Lake.

OTOCORIS ALPESTRIS STRIGATA Henshaw.

Otocorys alpestris strigata HENSHAW, Auk, I, July, 1884, p. 267.

Otocorys alpestris strigata DWIGHT, Auk, VII, April, 1890, p. 151 (part).—RIDGWAY, Man. N. Am. Birds, 2d ed., 1896, p. 349.

Chars. subsp.—Quite similar to *Otocorys a. merrilli*, but smaller; less grayish above and more yellowish below.

Measurements (14 males).—Wing, 96–101 (average, 98) mm.; tail, 61.5–68.5 (average, 65.8) mm.; exposed culmen, 10–12.5 (average, 11.3) mm.; tarsus, 19.5–22 (average, 20.8) mm.; middle toe, 10.5–12.5 (average, 11.4) mm.

Type locality.—Fort Steilacoom, Washington.

Geographical distribution.—In summer the States of Oregon and Washington west of the Cascade Mountains; in winter to eastern Oregon and Washington, south to northern California.

Description.—*Adult male in breeding plumage.*—Type No. 8734 U.S.N.M.; Fort Steilacoom, Washington, April 15, 1856; Dr. George Suckley. Back and scapulars dull black, the feathers edged with buffy and ochraceous, imparting a streaked appearance; occiput and nape deep cinnamon rufous; bend of wing and upper tail-coverts the same but rather paler; two central tail feathers dark brown, edged with paler, the remainder of tail brownish black, the outer pair of feathers margined externally with white; wings fuscous, edged with buffy and ochraceous; forepart of crown, horns, lores, cheeks and jugulum black; forehead, superciliary stripe and throat primrose yellow; sides of body heavily washed with cinnamonaceous, and streaked with brown; rest of lower parts dull white, washed with yellow, most conspicuously on anterior portions.

Adult female in breeding plumage.—No. 8733, U.S.N.M.; Fort Steilacoom, Washington, March 20, 1856; Dr. George Suckley. Very similar to the adult male, but black of head mixed with brownish; occiput and nape cinnamon buff, streaked with dark brown; yellow of under surface paler; breast narrowly streaked with dusky.

Adult male in winter plumage.—No. 139899, U.S.N.M., Biological Survey collection; Colton, Washington, August 24, 1895; A. H. Howell. Similar to the summer plumage, but upper parts duller and more uniform, owing to the brownish tips to the feathers; nape paler cinnamonaceous, but this color almost entirely hidden; crown, cervix and sides of neck with considerable yellowish suffusion; all the black areas obscured by yellowish; yellow of superciliary, throat and lower surface much deeper; sides more washed with brownish; breast with considerable dusky marking.

Adult female in winter plumage.—No. 103587, U.S.N.M.; Albany, Oregon, January 22, 1881; H. W. Henshaw. Similar to the summer dress, but duller and more uniform above, the general effect darker; yellow areas rather more deeply colored; breast heavily marked with dusky.

Young in first plumage.—"♀ juv. (No. 5080, collection of G. S. Miller, Jr., Salem, Marion Co., Oregon, June 29, 1890; Allen Rhodes collector): Plumage of dorsal surface seal brown, the feathers everywhere edged with ochraceous-buff, which color is most conspicuous on the upper tail-coverts, rump, cervix, remiges and wing-coverts; interscapulars, scapulars and some of the tertials and wing-coverts tipped with dirty white; rectrices slightly darker than remiges and general dorsal surface, the outer pair tipped and edged externally with dirty white, the inner pair much suffused with ochraceous-buff; ventral surface pure white; chin and throat slightly marked with dusky; jugulum, sides, and flanks ochraceous-buff, flecked, especially on the jugulum, with obscure brownish; cheeks, lores and forehead mixed brown and whitish."¹

This race differs from *merrilli* in much smaller size, deeper and more extended yellow suffusion below, and in the decidedly more brownish color of the upper parts. In autumn and winter, when *merrilli* is often brownish above and shows sometimes as much yellow below as *strigata*, size is the best means of identification. In color it much resembles *alpestris*, but in summer the back is more blackish, in winter the yellow suffusion is more extensive, while its smaller size will of course distinguish it at all seasons. It differs from *hoylei* as from *alpestris*, with the additional character of a deep yellow eyebrow.

According to Mr. Miller,² the young of this race most closely resemble those of *praticola*, and in fact are apparently the same except for the brighter hue of the buffy portions of the plumage. Compared with the young of *merrilli*, they are said to be considerably more ochraceous.

This form of *Otocoris* occupies, during the breeding season, the narrow strip of country west of the Cascade Mountains in Washington and northern Oregon, reaching farther eastward only through the valley of the Columbia River. There seems to be no evidence to support the inclusion of British Columbia in its range, for all the horned larks from that region examined have proved to be *merrilli*. Breeding specimens from both sides of the Columbia River in the vicinity of The Dalles, Oregon, approach *merrilli*, but are smaller and less grayish than that form, seeming thus, without doubt, referable to the present race. In winter *strigata* moves both east and south—in the former direction as far as eastern Washington and north central Oregon; in the latter apparently as far as San Francisco, California, but specimens taken at this place usually seem more or less intermediate between *strigata* and *actia*, and may have come from the Sierra Nevada near Summit, California.³ Dr. Dwight's statement⁴ that *strigata* is resident seems, however, to require some modification.

¹ Miller, Auk, VIII, 1891, p. 314.

² See page 835, under *O. a. merrilli*.

³ Auk, VIII, 1891, p. 314.

⁴ Auk, VII, 1890, p. 152.

There is much variation in the amount and intensity of the yellow in this race, which color is seemingly seldom, if ever, wholly lacking in either sex. In the males it is usually present to a greater or less degree on the breast, often tinging the remainder of the lower surface in worn as well as unworn plumage. The shade of the nape is also quite variable, even in birds of similar season from the same locality.

Twenty-eight specimens have been examined, from the subjoined localities:

California.—Red Bluff; San Francisco.

Oregon.—Umatilla; The Dalles;* Forest Grove;* Albany; McCoy; Salem;* Corvallis.*

Washington.—South Tacoma;* Colton; Ridgefield;* Fort Steilacoom;* Hillburst;* Rockland;* North Dalles;* Shoalwater Bay.*

OTOCORIS ALPESTRIS INSULARIS Townsend.

Otocoris alpestris strigata DWIGHT, Auk, VII, April, 1890, p. 151-152 (part).

Otocoris alpestris insularis TOWNSEND, Proc. U. S. Nat. Mus., XIII, 1890, p. 140.—RIDGWAY, Man. N. Am. Birds, 2d. ed., 1896, p. 599.

Chars. subsp.—Like *Otocoris a. strigata*, but darker, somewhat less ochraceous above, less yellowish on breast and abdomen.

Measurements (15 males).—Wing, 95-101 (average, 97.1) mm.; tail, 60-68 (average, 64.4) mm.; exposed culmen, 10-13 (average, 11.3) mm.; tarsus, 21-23 (average, 22) mm.; middle toe, 11-13 (average, 11.9) mm.

Type locality.—San Clemente Island, California.

Geographical distribution.—The Santa Barbara Islands, California. Apparently resident.

Description.—*Adult male in breeding plumage*.—No. 117652, U.S.N.M.; San Clemente Island, California, May 8, 1888; C. H. Townsend.—Back, wings and two middle tail-feathers sepia, edged with buffy and ochraceous; rest of tail brownish black, the outer pair of feathers margined exteriorly with white; occiput, cervix, bend of wing and upper tail-coverts deep cinnamon rufous; crown, horns, lores, cheeks and jugulum black; forehead, superciliary stripe, auriculars, chin and throat pale yellow; rest of lower surface white, the sides and flanks tinged with cinnameous and streaked with dusky.

Adult female in breeding plumage.—No. 139946, U.S.N.M., Biological Survey Collection; San Miguel Island, California, June 24, 1892; C. P. Streater.—Similar to the male, but cervix, occiput and upper tail-coverts pale cinnamon, the two first streaked with fuscous; bend of wing less deeply and less extensively cinnamon rufous; black of top and sides of head replaced by dark brown mixed with buffy; yellow of throat and head rather paler; breast washed with cinnamon.

Adult male in winter plumage.—No. 134809, U.S.N.M.; San Clemente Island, California, August 28, 1894; Dr. Edgar A. Mearns.—Like the summer male, but upper surface rather paler and more

uniform, owing to the blending effect of light edgings of the feathers; cervix, bend of wing and upper tail-coverts paler and more pinkish; black areas obscured; yellow of head and throat deeper; breast heavily streaked with dusky and cinnamonaceous.

Adult female in winter plumage.—No. 134813, U.S.N.M.; San Clemente Island, California, August 28, 1894; Dr. Edgar A. Mearns.—Similar to the breeding dress, but upper parts paler and more uniform; the yellow of head and throat deeper; the black areas obscured by lighter; the breast tinged with cinnamon and heavily streaked with dusky.

Young in first plumage.—Male, No. 47, collection of F. S. Daggett; Santa Barbara Island, California, May 14, 1897.—Upper parts warm bistre, paler on the head, where spotted with darker brown and with buffy; hind neck much mixed with buffy; back and scapulars spotted terminally with buffy white; rump deep ochraceous, somewhat mixed with dark brown; tail clove brown, excepting the two central feathers, which are lighter and rufescent. Wings broadly edged externally with ochraceous, most of the coverts tipped with whitish. Superciliary stripe and ocular region dull yellowish white; cheeks light grayish brown; jugulum and upper breast dull ochraceous, with spots of dusky; remainder of lower surface dull white with a decided wash of yellowish.

Notwithstanding Dr. Dwight's statement¹ that he could not distinguish the Santa Barbara Islands birds from *strigata*, they constitute an easily recognizable race which, though curiously enough most closely allied to *strigata*, yet differs in the darker color above, particularly on cervix and bend of the wing; in the more grayish tone of the back and scapulars; the absence of yellow on the breast; and the much more conspicuous streaking on this part. All these characters, with the exception of the color of the cervix and bend of wing, are much more striking in autumn and winter than in summer. At the former seasons the yellow suffusion on the occiput and cervix of *strigata* is quite marked, this being an additional point of difference between the two races. From *merrilli* the island bird differs in smaller size and much more reddish coloration; while from *actia* of the adjacent mainland it may be separated by its conspicuously darker coloration throughout.

The young of *insularis*, which appear here to be described for the first time, are, when due allowance has been made for the very considerable range of individual difference, much darker, and, particularly on the wings, somewhat less ochraceous above than the young of *actia*; the breast is usually more dingy, and the remainder of the lower surface is washed with dull yellowish instead of being nearly pure white. Compared with a limited series of the young of *merrilli*, they are

¹Auk, VI, 1890, p. 152.

lighter, more ochraceous on the upper parts as well as across the breast, and on the abdomen dull yellowish or buffy tinged instead of soiled white.

Birds from the islands of San Miguel, Santa Rosa, and Santa Cruz, as compared with those from the more southern islands, appear to average slightly darker above, both on the nape and back, but this difference is too slight and inconstant to be worthy of more than passing notice. These dark birds represent the maximum differentiation of *insularis*, while the birds with rather paler napes and more brownish, less blackish backs, carried to apparently the greatest extreme on Santa Catalina Island, incline toward *actia*, and indicate the mainland origin of this insular form. That *insularis* should have been differentiated toward *strigata* is, however, an interesting case of parallel development. By reason of the evident approach to *actia* from island to island, which would in a continental distribution culminate in complete inosculation, and the noticeable resemblance to *strigata*, it seems advisable to consider *insularis* as a subspecies in spite of its island habitat.

The amount of individual variation in *insularis* is great, even in birds from the same island, and consists chiefly in the shade of the upper parts. The yellow about the head and on the throat varies considerably in its intensity, and not infrequently tinges the breast below the jugular crescent, although, in so far at least as present material indicates, never suffuses the entire lower surface. The feathers of the tibia are often even quite strongly tinged with yellow.

One of the males from San Nicolas Island exhibits a curious malformation of the bill. The maxilla is apparently of normal shape and size, but the mandible is almost twice as long as it should be, besides being curved sharply downward, and considerably deflected to the right.

Seventy-two specimens have been examined, all from the following islands of the Santa Barbara group:

California.—San Clemente Island; * Santa Cruz Island; * San Miguel Island; * Santa Rosa Island; * Santa Barbara Island; * San Nicolas Island; * Santa Catalina Island. *

OTOCORIS ALPESTRIS PEREGRINA (Sclater).

Otocorys peregrina SCLATER, Proc. Zool. Soc. Lond., 1855, p. 110, pl. cil.—SHARPE, Cat. Birds Brit. Mus., XIII, 1890, p. 547.

Otocoris alpestris chrysolana DWIGHT, Ank, VII, April, 1890, p. 149-150 (part).

Otocorys alpestris var. *peregrina* DUBOIS, Synopsis Avium, Pt. 7, 1901, p. 452.

Chars. subsp.—Similar to *Otocoris a. insularis*, but very much smaller.

Measurements (one male).—Wing, 92; tail, 63; exposed culmen, 10.5; tarsus, 21.5; middle toe, 11.5 mm.

Type locality.—Bogota, Colombia.

Geographical distribution.—Vicinity of Bogota, Colombia. Evidently resident.

Description.—*Adult male in winter plumage.*—No. 24939, U.S.N.M.; Bogota, Colombia; L. de Geofroy. Back dull dark brown, irregularly streaked with ochraceous and buffy; wings and two middle tail-feathers fuscous, margined with ochraceous and reddish cinnamon; rest of tail brownish black, the outer pair of feathers margined externally with buffy white; bend of wing dark pinkish vinaceous; occiput, cervix and upper tail-coverts pinkish vinaceous, much streaked, and overlaid with brownish; fore part of crown, horns, lores, cheeks and jugulum black, more or less obscured by paler tips to the feathers; forehead, superciliary stripe, auricular region and throat pale primrose yellow; breast heavily shaded and streaked with dusky; sides dull cinnamonaceous, streaked with dark brown; rest of lower surface white.

Adult female in breeding plumage.—No. 147326, U.S.N.M.; Bogota, Colombia.—Upper surface sepia, streaked with buffy and ochraceous, the nape buffy, streaked with dark brown, the shorter upper tail-coverts reddish cinnamon; wings and middle tail feathers fuscous, margined with buffy and reddish cinnamon; rest of tail brownish black, the exterior pair of feathers margined externally with buffy white; bend of wing rufous; sides of head mixed brownish, yellowish, and buffy; forehead, superciliary stripe and throat pale yellow; jugulum dull black; breast buffy, streaked with brown; sides of body brownish gray, streaked with dark brown; rest of under parts white.

This race is similar to *chrysolæma*, but considerably smaller and more conspicuously streaked below; the cervix and bend of wing less pinkish. From *oaxacæ* it may be distinguished by its much darker, less rufescent colors above, heavier streaking below, as well as by somewhat smaller size.

Although not recognized by Dr. Dwight, this form of *Otocoris* is quite distinct. Notwithstanding that its range is a rather restricted one, and that it has no relative geographically nearer than Oaxaca, the differences between it and the other races are such as to make a trinomial best expressive of its relationship.

The only specimens that have been seen are from the vicinity of Bogota, Colombia.

OTOCORIS ALPESTRIS CHRYSOLÆMA (Wagler).

Alauda chrysolæma WAGLER, Isis, 1831, p. 530.

Otocoris alpestris chrysolæma STEINER, Proc. U. S. Nat. Mus., V, 1882, p. 34.

Alauda minor GIRAUD, Sixteen Species North Amer. Birds, 1841, p. 33 (not of Gmelin).

Otocorys alpestris chrysolæma HENSLOW, Auk, I, July, 1884, p. 260.

Otocoris alpestris chrysolæma DWIGHT, Auk, VII, April, 1890, p. 149 (part).—RIDGWAY, Man. N. Am. Birds, 2d. ed., 1896, p. 349 (part).

Chars. subsp.—Resembling *Otocoris a. peregrina*, but larger; lighter above, with the nape more pinkish.

Measurements (15 males).—Wing, 98.5–106.5 (average, 102.9) mm.; tail, 64–71.5 (average, 68.8) mm.; exposed culmen, 10–12 (average, 10.9) mm.; tarsus, 20–23.5 (average, 21.4) mm.; middle toe, 10.5–12 (average, 11.2) mm.

Type locality.—“Mexico:” probably the valley of Mexico or vicinity.

Geographical distribution.—Mexico, from Puebla and central Vera Cruz to Zacatecas and eastern Jalisco. Nearly or quite resident.

Description.—*Adult male in breeding plumage.*—No. 71212, U.S.N.M.; Valley of Mexico, Mexico. Back, wings and middle tail-feathers fuscous, edged with buffy and cinnamon; remainder of tail brownish black, the outer pair of feathers margined with white; occiput, cervix, bend of wing and upper tail-coverts deep pinkish vinaceous with a cinnamon tinge; crown, horns, lores, cheeks and jugulum black; forehead, superciliary stripe, auriculars, chin and throat pale yellow, deepest on the two last; rest of lower parts white, the sides streaked with pinkish cinnamon.

Adult female in breeding plumage.—No. 145013, U.S.N.M., Biological Survey Collection; Atlixco, Puebla, July 26, 1893; E. W. Nelson. Resembling the adult male in summer dress, but black of crown and sides of head replaced by mixed brown and blackish; occiput and cervix pale cinnamon buff streaked with fuscous; bend of wing less extensively pinkish vinaceous; yellow of head and throat somewhat paler; black area of jugulum smaller.

Adult male in winter plumage.—No. 145015, U.S.N.M., Biological Survey Collection; Salazar, Mexico, Mexico, October 23, 1892; E. W. Nelson. Similar to the summer plumage, but upper surface quite uniform, the black of crown and the vinaceous of cervix almost entirely obscured by brownish tips to the feathers; yellow of head and throat deeper; black jugular crescent obscured by pale yellow and buffy; breast heavily streaked with dusky.

Adult female in winter plumage.—No. 144970, U.S.N.M., Biological Survey Collection; Salazar, Mexico, Mexico, October 24, 1892; E. W. Nelson. Like the summer garb, but darker and more uniform above; yellow of throat and head deeper; black jugular crescent obscured by paler; breast heavily streaked with dusky.

Otocoris a. chrysolæma resembles *strigata*, but is of larger size and more grayish color above, the nape more pinkish, the yellow of throat rarely showing below the back pectoral area, and in winter the streaks on breast more conspicuous. The present race is even more nearly like *insularis*, from which it differs chiefly in larger size and rather more brownish coloration. From *merrilli* it is distinguished by much more brownish color above and deeper yellow of throat and eyebrow.

The earliest name for any of the Mexican horned larks is *Alauda chrysolæma*,¹ and although the locality given is simply “Mexico,” the

¹ Wagler, Isis, 1831, p. 530.

specimens on which it was based came probably from the vicinity of the Valley of Mexico, and to the race from this region Mr. Nelson has lately restricted this name.¹ The type of *Alauda minor* Giraud² is in the U. S. National Museum, and has been carefully examined and compared. That it does not belong to the race *giraudi* is absolutely certain, notwithstanding Mr. Henshaw's statement to the contrary.³ It agrees with Giraud's original description, but is altogether too dark as well as too rufescent for the Texas form, and seems to be the same as birds from Puebla and Vera Cruz. The name, however, is unavailable in any case, being preoccupied by *Alauda minor* Gmelin (= *Anthus trivialis*).⁴ The discovery that at least one of Giraud's famous "sixteen species of Texas birds" surely did not come from that State is exceedingly interesting and suggestive. This race has no other synonyms, since *Alauda glacialis* of Lichtenstein⁵ is a *nomen nudum*.

A number of males from Salazar and the valley of Toluca, both in the State of Mexico, have the cervix somewhat more pinkish than obtains in most of the specimens of a large series from Ajusco, in the same State; the females also, from the first-mentioned localities, appear to be duller or less conspicuously ochraceous, although this may be largely seasonal. The birds from Tlaxcala, Puebla, and central Vera Cruz differ somewhat from those of the State of Mexico in being rather smaller, paler and more rufescent on the upper parts. They are thus to some extent intermediate between *chrysolama* and *oaxaca*, though very much nearer the former. If comparison be instituted between these specimens and typical *actia* from California, however, it will be at once seen that they are exceedingly similar and, to say the least, difficult to distinguish, forming another of those perplexing cases of forms reduplicated by apparent intergradation of two or more others. To call these *actia*, or to call them typical *chrysolama* together with all the California birds and rename the race from the State of Mexico, or to give them a separate designation, would serve simply to increase the difficulty, so the only logical course is to consider them aberrant examples of *chrysolama*.

While referring to this race a breeding specimen from Silao, Guanajuato, it should be stated that in color and size it almost exactly matches examples from Tlaxcala, differing thus from birds of the valley of Mexico, which occupy an intervening area, and was probably produced by the intergradation of true *chrysolama* with *aphrasta*, plus possibly some infusion of *diaphora*. Two August specimens in fresh plumage, one from Mesquitic, Jalisco, the other from Plateado, Zacatecas,

¹ Auk, XIV, Jan. 1897, p. 55.

² Sixteen Species North Amer. Birds, 1841, p. 33.

³ Auk, I, July, 1884, p. 260.

⁴ Syst. Nat., I, 1788, p. 793.

⁵ Preis-Verz. Mex. Vög., 1830, p. 2, No. 59.

apparently also belong here, being much darker than either *aphrasta* or *diaphora*.

This is one of the dark races, particularly in winter. In the deep yellow color of the throat and eyebrow *chrysolæma* is very uniform; in winter plumage the breast just below the black jugular crescent is frequently tinged, though never extensively, with the same. The feathers of the tibia, particularly those of the lower portion, are also often conspicuously yellow. The upper surface varies much in color, in some specimens being very dark, with back and cervix strongly contrasted; in others much lighter, the cervix more pinkish in shade, the back only inconspicuously streaked and showing a tendency toward complete obliteration of the line of demarcation between it and the cervix.

Fifty-seven specimens examined, from the localities given below, those marked by an asterisk indicating records of breeding:

Guanajuato.—Silao.*

Jalisco.—Mesquitic.

Mexico.—Valley of Mexico; * Ajuseco; Salazar; Valley of Toluca; Amecameca.

Puebla.—Puebla; Atlixco; * San Martin; * Chalchicomula.*

Tlaxcala.—Apexoco; * Huamantla.*

Vera Cruz.—Perote; * Mirador [40 miles west].*

Zacatecas.—Plateado.

OTOCORIS ALPESTRIS ACTIA, new subspecies.

Alauda rufa AUDUBON, Birds Amer., VII, 1844, p. 353, pl. cccxcvii (not of Gmelin).

Otocorys alpestris rubens HENSHAW, Auk, I, July, 1884, p. 260 (part).

Otocorys alpestris chrysolæma DWIGHT, Auk, VII, April, 1890, p. 149 (part).—RIDGWAY, Man. N. Am. Birds, 2d ed., 1896, p. 349 (part).

Otocorys alpestris pallida DWIGHT, Auk, VII, April, 1890, p. 154 (part).

Chars. subsp..—Similar to *Otocorys a. chrysolæma*, but upper surface paler, more rufescent; yellow of throat and head of not so deep a shade.

Measurements (15 males).—Wing, 94–102.5 (average, 99.1) mm.; tail, 62–70 (average, 65.9) mm.; exposed culmen, 10–12.5 (average, 11) mm.; tarsus, 20–21.5 (average, 20.8) mm.; middle toe, 10.5–12 (average, 11.5) mm.

Type locality.—Jacumba, San Diego County, California.

Geographical distribution.—Coast region of northern Lower California and of southern California north to San Francisco Bay, including the San Joaquin Valley.

Description.—*Adult male in breeding plumage*.—Type, No. 133678, U.S.N.M.; Jacumba, San Diego County, California, May 23, 1894; Edgar A. Mearns. Back sepia, with a rufous wash, and streaked with ochraceous; occiput, cervix, bend of wing and upper tail-coverts

pinkish cinnamon rufous; wings and two middle tail-feathers fuscous, margined with buff, cinnamon and ochraceous; forepart of crown, horns, lores, cheeks and jugulum black; forehead, superciliary stripe, auriculars, chin and throat pale yellow; sides of body pale cinnamon brownish, streaked with dark brown; rest of under parts white.

Adult female in breeding plumage.—No. 163477, U.S.N.M.; Santa Cruz, California, March 26, 1898; R. C. McGregor. Back and head sepia, streaked with buffy and ochraceous; nape cinnamon, streaked with dark brown; bend of wing and upper tail-coverts cinnamon rufous; wings and two middle tail-feathers fuscous, edged with buff and ochraceous; rest of tail brownish black, the outer pair of feathers margined with dull white; forehead, superciliary stripe, infra-auricular region, chin and throat pale yellow; sides of head mixed brownish, grayish and buffy; jugulum black; breast washed with cinnamon; sides shaded with the same color, and streaked with dark brown; remainder of lower surface white.

Adult male in winter plumage.—No. 134321, U.S.N.M.; San Diego, California, September 1, 1894; Dr. Edgar A. Mearns. Similar to the summer male, but duller and less reddish above, the colors more blended; nape, occiput, bend of wing and upper tail-coverts more pinkish; black areas obscured by grayish or brownish tips; breast spotted with dusky.

Adult female in winter plumage.—No. 134322, U.S.N.M.; San Diego, California, September 1, 1894; Dr. Edgar A. Mearns. Resembles the summer female, but is darker, duller and more uniform above—all the decided markings toned down; breast heavily washed with buffy and conspicuously streaked with dusky.

Young in first plumage.—No. 133966, U.S.N.M.; last monument on Mexican and United States boundary line, at Pacific Ocean, in San Diego County, California, July 14, 1894; Frank X. Holzner.—Back and head sepia, streaked and spotted with buffy and ochraceous; cervix ochraceous, barred with dull rufescent brown; wings and two middle tail-feathers fuscous, margined with buffy and ochraceous; rest of tail brownish black, the outer pair of feathers edged with white; sides of head mixed brownish and buffy; throat yellowish white, with few spots of dusky; breast deep buff, heavily spotted with dusky; sides of body shaded with cinnamon buff; rest of under surface dull white.

This California subspecies may be most readily distinguished from true *chrysolama* of the Valley of Mexico by the much paler yellow of the head and throat, in addition to the lighter, more rufescent color of the upper surface. It averages smaller, and the cinnamonaceous portions of the plumage have usually less pinkish tinge. The differential color characters are, as is quite often the case among the races of *Otocoris alpestris*, much more strongly marked in autumn and winter than in summer specimens. In this case it is due in a measure to the fact that

winter examples of *actia* are not so very different from spring birds, while those of *chrysolama* are much darker and more richly colored. In size, however, there seems to be quite a substantial difference, as may be seen by the accompanying measurements. The deeper yellow of the throat and head of *chrysolama*, while not in spring and summer a perfectly constant character, though, however, an excellent average one, is very pronounced during the remainder of the year. The difference in the pinkish tinge of the two races is perhaps most evident on the lesser and median wing-coverts and on the sides of the neck and breast. The foregoing remarks are based entirely on the males. Autumnal females of *actia* are decidedly paler and more rufescent on the upper surface than corresponding examples of *chrysolama*, and the yellow of the throat and head is not so deep. From *rubra*, with which it intergrades in central California, *actia* differs in the much more pinkish tint of cervix, rump and bend of wing, as well as in its more grayish back which is usually in more or less abrupt contrast to the color of the nape. Some specimens, particularly fall and winter females, are difficult to separate from *strigata*, but in such doubtful cases the less extent and less intensity of the yellow on head and under parts, the paler, more buffy tinge above, together with the much less blackish back, will generally suffice for identification. From *merrilli* any questionable birds may be distinguished by the more rufescent or brownish coloration, combined with smaller size. Compared with Mr. Nelson's *oaxaca* it has usually paler yellow on the head and throat, and is much less reddish on the back and cervix. It holds thus in color an intermediate position between *chrysolama* and *oaxaca*, although the former occupies the intermediate geographic area.

As in the other forms, the young of *actia* show much variation, both in depth of color and in the amount of ochraceous suffusion. They differ from the young of *merrilli* in paler general coloration, in the browner, less blackish shade of the dark areas, and in the much more ochraceous tint of all the lighter portions of the upper parts.

Dr. Dwight, in his review of the North American horned larks, considered that the birds breeding in the southwestern coast region of California, although occupying a disconnected area, were directly referable to the Mexican form, *Otocoris a. chrysolama*.¹ Such a condition, moreover, would not be at all surprising, for similar instances are not by any means rare in this genus. Dr. Dwight had only a few Mexican specimens, and these seemed to indicate the correctness of his conclusion; but since then there has been accumulated a large series in the collection of the United States Biological Survey, chiefly through the efforts of Mr. E. W. Nelson, which series at last renders it possible to separate the California bird, partly on differences mentioned by Dr. Dwight but not by him considered diagnostic.

¹Auk, VII, 1890, p. 150.

The supposed type of Audubon's *Alauda rufa*,¹ with which his plate and description agree, has been examined, and belongs evidently to the Californian race, rather than to *chrysolema* proper. This name, however, is not available for the form in question, being preoccupied by *Alauda rufa* Gmelin² (= *Anthus rufus*).

A considerable series of breeding horned larks from the vicinity of Milton, California—which it will be noticed is only about 20 miles east of Stockton, the reputed type locality of *rubca*—and several winter specimens from Valley Springs, Calaveras County, California, are variously and quite perplexingly intermediate between *actia* and *rubca*. Some of the specimens from Milton, if examined alone, are apparently nearer *rubca*; others from the same place are undoubtedly closer to *actia*; while still others are intermediate between these two extremes—and all breeding in one locality. Taken as a whole, together with those from Valley Springs above mentioned, they seem to average rather nearer *actia*. Breeding birds from elsewhere in Calaveras County are also to be referred to *actia*, as apparently must also be a June female from Stockton. A single male from Chinese Camp, California, though to some extent resembling *rubca* in the ruddiness of the upper parts, seems to be nearer the present race: while an example from Fresno, California, is quite typical. Thus it appears that the horned lark of the San Joaquin Valley is *actia*—not *rubca*, as Dr. Dwight surmised would prove to be the case.³

A July specimen from Kernville, California, shows only a slight approach to *ammophila*; but a breeding male from Tehachapi, California, is decidedly intermediate, though nearer *actia*, being moreover curiously similar to *adusta*. The birds from the western part of the Mexican border of California are identical with those of the coast region north toward San Francisco; but some specimens from San Fernando, Lower California, are slightly paler, yet referable clearly to *actia*; and birds from the vicinity of San Francisco Bay average larger and darker, more reddish above. A pair of adult breeding *Otocoris* from Santa Rosalia Bay, Lower California, are considerably paler and smaller than typical *actia*, being, in fact, exceedingly similar to some specimens of *ammophila*, from the range of which form their locality is isolated by the interposition of the area inhabited by *actia*. These two specimens were called *pallida* by Dr. Dwight,⁴ but they differ from that race in their much smaller size; darker, less uniform color above; more pinkish nape; more brownish back; and more blackish rump. So far as the material at hand indicates, *actia* is almost entirely resident, for there are no specimens which can be positively stated to be out of its breeding range.

Possibly in none of the horned larks is purely individual variation

¹Birds America, VII, 1843, p. 353, pl. cccxcvii.

³Auk, VII, 1890, p. 151.

²Syst. Nat., I, 1788, p. 792.

⁴Idem, p. 155.

more marked than in the present form. Particularly is this noticeable in the color of the upper surface; for from the gray and pink tints of some specimens to the reddish and cinnamon shades of others, from the pallid appearance of some to the deep colors of others, there seems to be almost more latitude than can possibly be reconciled to the idea of subspecific identity; yet such is undoubtedly the fact, as breeding specimens from identical localities attest. Some incidental mention of these variations has been made in the comparisons of *actia* with other forms. The yellow of the head and throat is rarely of a deep shade, though this color is seldom entirely absent from the latter; but the eyebrow is frequently white. The thighs are sometimes tinged with yellow.

In all, 238 specimens of this form have been available, geographically distributed as follows, the breeding records shown by an asterisk:

California.—Jacumba (United States and Mexican boundary line);* Pacific Ocean at the United States and Mexican boundary line;* Santa Barbara;* Calaveras County;* Tehachapi;* Stockton;* Milton;* San Diego;* Chinese Camp;* Valley Springs, Calaveras County;* Fresno;* Santa Cruz;* Laguna, San Diego County (United States and Mexican boundary line);* Haywards;* Poway; San Simeon; San Francisco; Riverside; Elmira;* Fort Tejon; Nicasio;* Kernville;* Berryessa;* Milpitas;* Monterey County;* Cameron Ranch, San Diego County;* Los Angeles;* Los Gatos;* Ballena;* Beaumont;* San Jacinto Mountains;* San Jacinto Valley;* Pacific Beach;* Santa Ysabel, San Diego County; Dalzura;* Banning;* Twin Oaks;* Port Ballona;* Alhambra;* San Bernardino Valley; Pasadena;* Campbell's Ranch, Laguna Mountains, San Diego County.

Lower California.—San Fernando;* Nashoguerro Valley (United States and Mexican boundary line);* San Ysidro Ranch (United States and Mexican boundary line);* Santa Rosalia Bay.*

OTOCORIS ALPESTRIS AMMOPHILA, new subspecies.

Otocoris alpestris arnicola FISHER, North Am. Fauna, No. 7, 1893, p. 66 (part).

Otocoris alpestris chrysolæma FISHER, North Am. Fauna, No. 7, 1893, p. 67 (part).

Chars. subsp..—Like *Otocoris a. actia*, but very much paler above.

Measurements (15 males).—Wing, 96–103.5 (average, 100.2) mm.; tail, 65–72 (average, 67.7) mm.; exposed culmen, 10–12.5 (average, 11.4) mm.; tarsus, 19–22.5 (average, 21.1) mm.; middle toe, 10–12.5 (average, 11.4) mm.

Type locality.—Coso Valley, southeastern California.

Geographical distribution.—In summer, the Mohave Desert, north to Owens Valley, California; in winter, south to the Mexican boundary line.

Description.—*Adult male in breeding plumage*.—Type, No. 139892, U.S.N.M., Biological Survey Collection; Coso Valley, California, May

11, 1891; T. S. Palmer. Back and scapulars sepia, rather darker posteriorly, streaked with buffy; wings and middle tail-feathers fuscous, margined with buffy and cinnamon; rest of tail brownish black, edged exteriorly with white; occiput, cervix, bend of wing and upper tail-coverts pinkish cinnamon rufous; horns, crown, lores, cheeks and jugular crescent black; forehead, superciliary stripe, auriculars, chin and throat pale yellow; sides and flanks tinged with cinnamon and obsoletely streaked with dusky; rest of lower surface white.

Adult female in breeding plumage.—No. 139875, U.S.N.M., Biological Survey Collection; Coso Valley, California, May 11, 1891; A. K. Fisher. Similar to the adult male, but cervix pale cinnamon, streaked with brownish; crown and occiput fuscous, streaked with pale cinnamon; bend of wing and upper tail-coverts much paler and less pinkish; black of head replaced by brownish; auriculars brownish gray; yellow of head and throat rather paler; black jugular crescent smaller.

Adult male in winter plumage.—No. 139871, U.S.N.M., Biological Survey Collection; Granite Springs, California, January 13, 1891; A. K. Fisher. Very similar to the summer dress, but upper parts duller and more uniform; the cervix, bend of wing, sides of neck and breast, and upper tail-coverts much more pinkish, the black areas tipped with grayish.

Adult female in winter plumage.—No. 139888, U.S.N.M., Biological Survey Collection; Keeler, California, December 28, 1890; E. W. Nelson. Exceedingly similar to the summer female, but rather paler and more ochraceous above, the bend of wing and upper tail-coverts darker and more vinaceous, the yellow of throat and head rather deeper, the breast sparingly streaked with dusky.

Young in first plumage.—No. 139881, U.S.N.M., Biological Survey Collection; Owens Valley, California, July 20, 1891; F. Stephens. Above sepia, mixed with buffy ochraceous, spotted with pale buffy and white; wings and tail sepia, edged with buffy and ochraceous buff, the middle tail-feathers paler than the others; sides of head and neck mixed grayish, brownish and buffy; throat white, washed with sulphur yellow; jugulum and upper breast pale buff, spotted with dusky; remainder of lower surface white, the sides faintly tinged with dull buff.

From *actia* the present subspecies may be easily distinguished by its very much paler color above, while its decidedly smaller size, conspicuously more cinnamonaceous shade of nape, upper tail-coverts and bend of wing render it readily separable from *leucolæma*. Compared with *occidentalis* it is paler, of smaller size, with the cervix, upper tail-coverts, and bend of wing more cinnamonaceous, the upper surface less uniform. It is somewhat smaller than *adusta* and paler, particularly in winter, with the back scarcely or not at all reddish, the demarcation line between cervix and back usually well marked. From *ouvacæ* it differs in larger size, much paler colors, and less reddish back.

The young of *ammophila* differ markedly from the young of *actia* in their paler, much more grayish upper parts; being practically indistinguishable from *leucolæma* of the same age.

This desert race seems to be most typical in the region immediately southwest of Death Valley, California, whence a good series of specimens was brought back by the Death Valley expedition of 1891. The breeding birds in this series were identified as *arenicola* [= *leucolæma*], the winter specimens as *chrysolæma* [= *actia*].¹ No material indicates whether or not it inhabits Death Valley, but it apparently comes no farther east in the breeding season. Its northern limit is Owens Valley, California, but the southern extent of its range can not now be definitely determined. Birds from the Mojave Desert differ little, if any, from typical specimens, but the range of *ammophila* is circumscribed on the west by the mountains defining the valley of the San Joaquin River, as is shown by the horned larks from Tehachapi and Kernville, which are referable to *actia*. Examples from Owens Valley (Keeler, etc.) seem to verge somewhat toward *leucolæma*.

The eyebrow is usually, the throat nearly always distinctly yellow, though both are sometimes, particularly in females and summer birds, almost without trace of this color. The shade of the nape is quite variable, being occasionally decidedly pinkish, and its trenchant definition from the dorsal area is frequently obliterated by the backward extension of the cinnamon tinge of the nape.

Forty-two specimens have been examined, from the subjoined localities:

California.—Argus Mountains; * Granite Springs; Coso Valley; * Keeler; * North base of Granite Mountains, Mohave Desert; * Mohave; Daggett; 25 miles southwest of Mohave; * Borax Flat; * Olanche; * Perognathus Flat, Panamint Mountains; * Ash Creek, Owens Lake; * Bongo Spring, San Diego County; Santa Ysabel, San Diego County; Calico; Darwin.*

OTOCORIS ALPESTRIS RUBEA Henshaw.

Otocorys alpestris rubens HENSHAW, Auk, I, July, 1884, p. 267.

Otocorys alpestris rubea DWIGHT, Auk, VII, April, 1890, p. 150.—RIDGWAY, Man. N. Am. Birds, 2d ed., 1896, p. 349.

Chars. subsp.—Similar to *Otocorys a. ammophila*, but darker, the cervix and back much more distinctly reddish.

Measurements (15 males).—Wing, 94.5–105 (average, 99.6) mm.; tail, 64.5–71 (average, 67.2) mm.; exposed culmen, 10–12 (average, 11) mm.; tarsus, 20–23.5 (average, 21.7) mm.; middle toe, 10.5–13 (average, 11.8) mm.

Type locality.—Stockton, California.

Geographical distribution.—The Sacramento Valley, California.

¹See Fisher, North American Fauna, No. 7, 1893, pp. 66–67.

Description.—*Adult male in breeding plumage.*—No. 98402, U.S.N.M.; Red Bluff, California, April 12, 1884; Charles H. Townsend.—Back fuscous, much suffused and mixed with dull reddish cinnamon, producing a rather uniform effect; occiput, nape, bend of wing and superior tail-coverts brick red; wings fuscous, margined with reddish cinnamon and buffy; two middle tail-feathers similar to the back; rest of tail brownish black, the outer pair of feathers margined externally with buffy white; fore part of crown, horns, lores, cheeks and jugulum black; forehead, superciliary stripe, auriculars, chin and throat pale primrose yellow; remainder of lower surface white, the sides tinged with reddish cinnamon and somewhat streaked with dusky.

Adult female in breeding plumage.—No. 98413, U.S.N.M.; Red Bluff, California, April 12, 1884; Charles H. Townsend.—Similar to the adult male at the same season, but back rather less uniform; occiput dull brownish, streaked with darker; nape dull pinkish cinnamon, broadly streaked with brown; black of crown replaced by dark brownish; black of cheeks and lores much mixed with brown.

Adult male in winter plumage.—No. 124407, U.S.N.M.; Gridley, California, January 25, 1891; L. Belding.—Similar to the summer male, but darker, duller and more uniform above; the yellow of throat and head deeper; breast tinged with yellow of throat; sides of body darker.

Adult female in winter plumage.—No. 139862, U.S.N.M., Biological Survey collection; Willows, California, January 4, 1894; C. P. Streater.—Like the female in summer, but everywhere darker, the breast shaded with brownish and somewhat streaked with dusky.

This form is easily distinguishable from all the other horned larks by the peculiar color of the occiput and cervix, which is a bright brick red with very little tinge of pinkish, particularly in summer; the remainder of the upper surface is much suffused with the same shade, further differentiating *rubca* from both *insularis* and *strigata*, which races in other respects it closely resembles.

The type of *rubca* is an adult male, evidently in breeding plumage, collected by Mr. Belding, supposedly at Stockton, California. This locality, however, is queried on the label, and there seems now much reason to believe that this specimen did not come from Stockton at all, for the horned larks breeding there, though not typical *actia*, are nearer that form than to *rubca*; yet heretofore they have been referred to *rubca*, probably on the strength of the type. This bird in all probability came from some locality in the Sacramento Valley north of Stockton, as it is a specimen very typical of the race inhabiting the region about Red Bluff and Mount Lassen, California, and which passes current under the proper name of *rubca*. Mr. Henshaw in his original description included both *rubca* and *actia* of the present review.¹

¹Auk, I, July, 1884, p. 260.

The present race appears to be strictly resident, occupying a comparatively circumscribed area in the region drained by the Sacramento River, passing south into *actia* at about the latitude of San Francisco, and northeastward into *merrilli*. Comparatively few of the specimens here referred to *rubca* show indication of intergradation with any of the other forms, but a number of intermediates that more closely approach *merrilli* and *actia*, respectively, are discussed under those races. Several spring birds from Gridley appear to incline somewhat in the direction of *actia*, this being especially the case with the females, all of which were determined by Dr. Dwight to be *strigata*; but the general cast of the plumage, particularly on the nape, bend of wing and upper tail-coverts, seems to indicate by lack of sufficient brownish tinge that these examples are correctly identified as *rubca*.

An adult male horned lark purporting to have been collected by Xantus at Tonila, Jalisco, Mexico, appears to be absolutely indistinguishable from specimens of *rubca* taken in the Sacramento Valley, and not like either *chrysolama* from the Valley of Mexico or *oaxaca* from the State of Oaxaca. The ostensible locality is possibly erroneous, this suspicion being strengthened by the fact that the specimen is labeled "Oct.," though it is evidently in breeding plumage. On the other hand, the fact that the breeding horned lark of the city of Durango, Durango, Mexico, shows a decided approach to this ruddiness of plumage renders possible and really almost probable that the *Otocoris* from still farther south is fully as reddish as *rubca*. Should future investigation prove this to be the case, it will add another to the already considerable list of instances of reduplication of forms in this genus.

The throat in *rubca* is usually pale, scarcely ever very deep yellow, sometimes almost white; the eyebrow, particularly in summer females, is not infrequently without a trace of yellow. The breast for a short distance below the black is occasionally, especially in winter, tinged with yellow; the thighs also, though rarely, show some of this color. One newly molted example, from Bald Mountain, Shasta County, California, has the entire under surface strongly suffused with yellow. In some specimens the reddish color of the nape is much spread over the back, in others it is posteriorly confined to the nape, with a well-defined line of demarcation between it and the color of the back; occasionally, and this particularly in worn summer birds, the occiput and nape have a distinct pinkish tinge.

Thirty-nine specimens of this race have been examined, representing the following localities:

California.—Red Bluff;* Mount Lassen;* Placer County;* Yuba County; Gridley;* Marysville; Bald Mountain, Shasta County; Stockton; Willows; Santa Cruz; Battle Creek.

OTOCORIS ALPESTRIS OAXACÆ Nelson.

Otocoris alpestris pallida DWIGHT, Auk, VII, April, 1890, p. 154-155 (part).

Otocoris alpestris oaxacæ NELSON, Auk, XIV, Jan., 1897, p. 54.

Chars. subsp..—Similar to *Otocoris a. rubea*, but rather smaller, the nape and bend of wing somewhat pinkish, the back less reddish.

Measurements (10 males).—Wing, 94.5-99 (average, 96.8) mm.; tail, 58-66 (average, 61.3) mm.; exposed culmen, 11-12 (average, 11.5) mm.; tarsus, 21-23.5 (average, 21.9) mm.; middle toe, 10.5-13 (average, 11.9) mm.

Type locality.—San Mateo del Mar, Oaxaca, Mexico.

Geographical distribution.—Southern Oaxaca, Mexico. Resident.

Description.—*Adult male in breeding plumage*.—Type, No. 145003, U.S.N.M., Biological Survey collection; San Mateo del Mar, Oaxaca, Mexico, May 15, 1895; E. W. Nelson and E. A. Goldman. Back dull rufous brown, streaked with darker; occiput, cervix, bend of wing and upper tail-coverts deep cinnamon rufous, with a decided pinkish tinge, this color gradually merging with the brown of the back, leaving no line of demarcation; wings and two middle tail-feathers fuscous, margined with buffy and cinnamon; rest of tail brownish black, the two outer feathers edged with buffy; forepart of crown, horns, lores, cheeks and jugulum black; forehead, superciliary stripe, auricular region, chin and throat yellow, brightest on the last mentioned; sides of body pinkish cinnamon; rest of under surface dull white.

Adult female in breeding plumage.—No. 145001, U.S.N.M., Biological Survey collection; San Mateo del Mar, Oaxaca, Mexico, May 14, 1895; E. W. Nelson and E. A. Goldman. Similar to the male, but differs in the less rufescent, less uniform back; in lack of black on crown, this being replaced by deep ochraceous streaked with blackish; in having the occiput and nape buffy ochraceous, streaked with dark brown, the bend of the wing less extensively cinnamon rufous, and the black of the sides of head replaced by buffy and brownish.

Young in first plumage.—No. 145004, U.S.N.M., Biological Survey collection; San Mateo del Mar, Oaxaca, Mexico, May 16, 1895; E. W. Nelson and E. A. Goldman. Above deep cinnamon, each feather with a subterminal spot of sepia and a terminal one of buffy or ochraceous, these markings small on the head, but large on the lower back, where the terminal buffy ones become broad edgings; tail much as in the adult; wings fuscous, edged with buff, cinnamon and ochraceous; sides of head mixed buffy and brownish; breast and sides buffy, finely spotted with dusky; remainder of lower surface dull buffy white.

In the color of the upper parts this form is much like *rubea*, but the cervix, upper tail-coverts and bend of wing are darker and more pinkish, the back less rufescent; the measurements indicate a smaller

bird. From *chrysolama* it differs in conspicuously more rufescent, more uniform colors above, and in smaller size.

The young of *oaxaca* resemble those of *actia*, but are everywhere, even on the under surface, more strongly tinged with ochraceous; the crown seems to be less blackish.

It is certainly strange that there should be any notable local variation in the horned larks from a locality close to the city of Oaxaca, whence come specimens apparently inseparable from *Otocoris alpestris oaxaca*, a locality, moreover, which lies practically between the city of Oaxaca and San Mateo, the type locality of *oaxaca*; yet the differences exhibited by the horned larks from Mitla, Oaxaca, are scarcely reconcilable with ordinary range of individual variation, neither can they be considered as the result of abrasion during the breeding season. The series from this place was taken in June, only a few days later than the specimens from the city of Oaxaca, so that these birds are strictly comparable. The specimens from Mitla are, so far as color is concerned, not in any degree intermediate between the only two subspecies whose areas of distribution can by the slightest possibility be contiguous, being much paler than either *oaxaca* or *chrysolama*. They are much more rufescent above than the latter, and agree in size with the former. They are almost perfectly identical with the non-typical examples of *actia* from Santa Rosalia Bay, Lower California, which are in turn almost inseparable, though geographically isolated, from *anemophila*. In view of this condition of affairs it seems best to consider these Mitla specimens as belonging to *oaxaca*, which form they more nearly approach than to *chrysolama*. A female from the type locality of *oaxaca*, worn and faded almost beyond recognition, is in the U. S. National Museum collection, and is probably the specimen which Dr. Dwight referred provisionally to *pallida*.¹

A series of eight males from the type locality exhibits no important individual variations, the chief differences observable being the somewhat more pinkish nape or less reddish back of some specimens. The eyebrow, even in females, appears never to lack a tinge of yellow, while the feathers of the tibia, at least in summer, show rarely any noticeable trace of this color.

Twenty-one specimens have been examined, from the localities which follow:

Oaxaca.—San Mateo del Mar,* Oaxaca,* Mitla.*

OTOCORIS ALPESTRIS OCCIDENTALIS (McCall).

Otocoris? occidentalis MCCALL, Proc. Acad. Nat. Sci. Phila., June, 1851, p. 218.

Otocoris alpestris occidentalis STONE, Proc. Acad. Nat. Sci. Phila., 1899, p. 21.

Eremophila alpestris b. *leucolama* COUES, Birds Northwest, 1874, p. 38 (part).

Otocorys alpestris arenicola HENSHAW, Auk, I, July, 1884, p. 259 (part).

Otocoris alpestris adusta DWIGHT, Auk, VII, April, 1890, p. 148 (part).—RIDGWAY, Man. N. Am. Birds, 2 ed., 1896, p. 599 (part).

¹Auk, 1890, VII, p. 155.

Chars. subsp..—Resembling *Otocoris a. oaxacæ*, but larger and decidedly paler, less rufescent above.

Measurements (15 males).—Wing, 103.5–110.5 (average, 106.4) mm.; tail, 67–75 (average; 71.4) mm.; exposed culmen, 10–13 (average, 11.2) mm.; tarsus, 20–23 (average, 21.8) mm.; middle toe, 10.5–12.5 (average, 11.6) mm.

Type locality.—Santa Fe, New Mexico.

Geographical distribution.—In summer, central New Mexico, west to central Arizona; in winter, south to northern Sonora and Chihuahua, Mexico, and southeast to Texas.

Description.—*Adult male in breeding plumage*.—No. 68800, U.S.N.M.; Santa Fe, New Mexico, June 19, 1874; J. T. Rothrock. Occiput, cervix, bend of wing and upper tail-coverts deep vinaceous cinnamon; back fuscous, streaked with buffy and vinaceous, and anteriorly passing gradually into the color of the cervix; wings and two middle tail-feathers fuscous, margined with buffy and vinaceous; rest of tail brownish black, edged externally with whitish on two outer pairs of feathers; crown, horns, cheeks and jugulum black; forehead, superciliary stripe, auriculars, chin and throat pale yellow, remainder of lower surface dull white, the sides and flanks shaded with pinkish cinnamon.

Adult female in breeding plumage.—No. 68801, U.S.N.M.; Santa Fe, New Mexico, June 19, 1874; J. T. Rothrock. Head and back sepia, streaked with buff; cervix cinnamon with narrow streaks of sepia; otherwise similar to the summer male, excepting that the sides of body, bend of wing and upper tail-coverts are less vinaceous, the black of head is replaced by brownish, and the yellow is paler.

Adult male in winter plumage.—No. 127591 U.S.N.M.; Lochiel, Pima County, Arizona, November 25, 1892; Frank X. Holzner. Very similar to the summer male, but more uniform above, the colors paler and more blended, owing to the broad tips of the feathers; yellow of head and throat rather deeper; black areas more or less obscured by light tips; breast sparingly and obscurely spotted with dusky.

Adult female in winter plumage.—No. 151866, U.S.N.M.; Chihuahua, Chihuahua, November 7, 1888; M. Abbott Frazar. Very much like the breeding dress, but paler and more uniform above, the jugular crescent much obscured by grayish, the breast shaded with buff and obsoletely streaked with brownish.

Young in first plumage.—Type of species, No. 14883, Academy of Natural Sciences, Philadelphia; Santa Fe, New Mexico, July 1850; Col. Geo. A. McCall.¹

¹The type is so badly faded and otherwise so much damaged that the original description is here given instead of one taken directly from the specimen. Notwithstanding its condition, the type agrees well with a young bird from San Francisco Mountain, though somewhat darker above and with a longer bill.

Its length (when killed) was $7\frac{7}{10}$ inches; alar stretch, 11 inches; wing, from flexure, $3\frac{7}{10}$; above, light brown, each feather being dark dusky near the tip, the extreme tip white—giving the appearance of a mixture of light and dark brown, thickly speckled with white; in this respect resembling the young of the *Shore Lark*; the greater and lesser wing-coverts broadly edged with yellowish white, and tipped with pure white, forming two distinct bars, most apparent when the wing is extended; the second primary longest, the third shorter than the first, the outer vane of the latter white; remaining wing feathers edged with whitish, broadest on the tertials; tail of twelve feathers, even, the two middle ones light brown, edged with whitish, the remainder dark dusky, the two exterior ones being white on the outer vanes; all the under parts pale brownish white, most clear at the lower extreme; bill slender and slightly curved, of a horn color above, and lighter below; eyebrows, extending back of the eyes, whitish; irides dark hazel; legs and feet nearly black.¹

From *adusta*, to which it is most closely allied, *occidentalis* differs in its much larger size and decidedly less ruddy colors above, the nape being more pinkish, the back more dusky. It is distinguished from *oaucæ* by much paler, less rufescent colors above, and by decidedly larger size; from both *actia* and *chrysolæma* by greater size, together with paler, more brownish coloration. Although of the same dimensions as *leucolæma*, this form may be separated by the darker, more cinnamonaceous or rufescent shade of the entire upper surface, this in summer being particularly noticeable on the cervix; and these characters will serve to determine even doubtful specimens at all seasons.

Mr. Henshaw considered² the *Otocoris occidentalis* of McCall¹ to be indeterminable, but a careful comparison of the original description with a young horned lark seems to leave little or no doubt as to its identity. Dr. Dwight says nothing upon the subject, but evidently accepts Mr. Henshaw's conclusion.³ Since then, however, the type of *occidentalis* has come to light in the museum of the Academy of Natural Sciences, Philadelphia, and the question is thus definitely settled. The chief discrepancy emphasized by Mr. Henshaw was that McCall stated the whole of the under surface to be whitish, but this remark, as can clearly be seen with specimens of both young *occidentalis* and *alpestris* for comparison, was intended merely to suggest the general effect of the lower surface as contrasted with the strongly yellowish tinge of young *alpestris*.

The geographical variation exhibited by this race has hitherto been obscured, since Dr. Coues included *occidentalis* in his *leucolæma*; Mr. Henshaw referred it to *arenicola*, and Dr. Dwight to *adusta*; but the form is well worthy of recognition.

Some of the specimens from northern New Mexico, the vicinity from which came the type, incline towards *leucolæma*, but as a whole the birds from this region are much nearer what may abstractly be considered to represent typical *occidentalis*. Examples from Fort

¹Proc. Acad. Nat. Sci. Phila., June, 1851, p. 218.

²Auk, I, July, 1884, p. 259.

³Auk, VII, April, 1890, p. 146.

Verde, Arizona, are typical, that is, they represent the extreme differentiation of the race; and breeding birds from the Little Colorado River and San Francisco Mountain are to be referred here. These localities comprise all in Arizona from which breeding specimens have been seen, but the summer distribution of *occidentalis* may with reasonable safety be held to be the Territories of Arizona and New Mexico, excepting the southern and extreme western parts of the former, and the eastern and far southern portions of the latter. *O. a. leucolema*, however, possibly encroaches on the northwestern corner of Arizona, but just how far the present material does not indicate.

In winter *occidentalis* occurs in Texas and also moves to the southward into the central portions of northern Mexico, as far as the city of Chihuahua, being found there in company with *aphrasta*, *adusta*, and *leucolema*. The large number of intermediates causes considerable trouble in the identification of winter horned larks from northern Mexico.

Sixty-five specimens have been examined, from the following localities:

Arizona.—Big Chino Valley, near La Ventana ranch, Pima County (United States and Mexican boundary line); Buenos Ayres, Pima County (United States and Mexican boundary line); San Pedro River; Willcox; San Francisco Mountain;* Lochiel, Pima County; Fort Verde;* Little Colorado River.*

New Mexico.—Albuquerque;* Fort Wingate;* Grafton; Zuni; Santa Fe;* Fort Bayard; Silver City.

Texas.—Marfa; El Paso; Laredo; Sierra Blanca; Comanche; Henrietta.

Chihuahua.—San Luis Spring, Animas Valley (United States and Mexican boundary line); Chihuahua; San Diego.

Sonora.—La Noria, Santa Cruz River (United States and Mexican boundary line).

OTOCORIS ALPESTRIS ADUSTA Dwight.

Otocoris alpestris adusta DWIGHT, Auk, VII, April, 1890, p. 148.—RIDGWAY, Man. N. Am. Birds, 2d ed., 1896, p. 599 (part).

Chars. subsp.—Similar to *Otocoris a. occidentalis*, but much smaller, the upper surface more reddish.

Measurements (15 males).—Wing, 97–105.5 (average, 102.4) mm.; tail, 65–73 (average, 68.8) mm.; exposed culmen, 10–12 (average, 10.8) mm.; tarsus, 20.5–22 (average, 21.2) mm.; middle toe, 10–12 (average, 11.3) mm.

Type locality.—Camp Huachuca, Arizona.

Geographical distribution.—In summer, the central part of extreme southern Arizona; in winter, northern Sonora and Chihuahua, Mexico.

Description.—Adult male in breeding plumage.—Type, No. 23575,

collection of William Brewster; Camp Huachuca, Arizona, February 21, 1887; J. C. Cahoon. Upper parts almost uniform vinaceous cinnamon, the occiput, nape, bend of wing and upper tail-coverts more pinkish; tail, excepting the two middle feathers, black, the exterior rectrices edged with white. Forehead, horns, nasal plumes, lores, suborbital region, anterior auriculars, and jugular crescent black; forehead, superciliary stripe and hinder part of auriculars maize yellow, palest on the last; throat Naples yellow; rest of lower surface white, but the flanks, sides of breast and body vinaceous cinnamon, more pinkish on the sides of breast.

Adult female in breeding plumage.—No. 23588, collection of William Brewster; Camp Huachuca, Arizona, March 2, 1887. Similar to the male, but pale cinnamon above, streaked with darker, duller brown, most heavily so on occiput and back; no black on head, this color replaced by dull brownish; superciliary stripe and auriculars creamy white, the latter somewhat mingled with brownish; throat paler yellow, jugular crescent restricted.

Adult male in winter plumage.—No. 127334, U.S.N.M.; Santa Cruz River, Sonora, Mexico, November 6, 1892; Frank X. Holzner. Very much like the breeding dress, but back not so reddish; upper parts more uniform; black areas somewhat obscured; breast slightly spotted with dusky.

Adult female in winter plumage.—No. 144984, U.S.N.M., Biological Survey collection; Chihuahua City, Chihuahua, November 2, 1893; E. A. Goldman. Similar to the summer female, but upper surface more uniform and more pinkish; yellow of throat and head deeper; black areas more obscured; breast tinged with buffy and spotted with dusky.

Young in first plumage.—No. 139902, U.S.N.M., Biological Survey collection; Fort Huachuca, Arizona, May 22, 1892; A. K. Fisher. Upper surface bright ochraceous, more brownish on head and back, mottled with sepia and spotted with buffy; superciliary stripe deep buff; sides of head ochraceous, mixed with brownish; throat pale buffy; jugulum buff, spotted with dusky; sides washed with buff; rest of lower parts creamy white.

Although resembling *ovarace* in general appearance, *adusta* is much lighter above and more reddish on the back; the yellow of the throat is usually paler and the size greater. From *rubea* this race is distinguished by paler, more uniform upper parts, and more pinkish cervix; from *actia* by the conspicuously lighter and more uniform upper surface, the nape especially being very pale, and the back reddish instead of blackish.

The young of this race are apparently nearest like those of *ovarace*, but are even more deeply ochraceous. Some specimens are, however, almost indistinguishable. From *actia* the young of *adusta* differ in

rather paler, decidedly more ochraceous coloration, particularly above, and in the less blackish crown.

This subspecies occupies, in the breeding season, a very restricted area, more restricted, in fact, than most of the other continental forms; and to this is due, of course, its comparative rarity. It is only in part intermediate between *occidentalis* and *aphrasta*, and is one of the best defined of the races of *alpestris*. Breeding birds from the type locality are remarkably uniform and represent the extreme of differentiation, while nearly all those from other places show more or less indication of intergradation with surrounding forms. Specimens from the Santa Rita Mountains, Arizona, are generally larger and paler, and seem thus to incline somewhat toward *leucansiptila*. A June female from Oracle, Arizona, appears to be quite typical, though a good series might show the breeding horned larks from this locality to be somewhat aberrant. A young bird from Oracle strengthens this supposition, although, as we have already intimated, no great amount of reliance can be placed upon the identification of a single young individual. In autumn and winter *adusta* wanders to the southward, as far, at least, as the city of Chihuahua, Mexico, but does not seem to range much to the east or west.

Considerable individual variation is evident, consisting chiefly in the more or less scorched appearance of the back. The throat varies from a deep primrose yellow to occasionally almost white. Females exhibit a similar difference, observable in the depth of the cinnamon suffusion pervading the entire upper surface; the back and head are sometimes almost uniform, while in many cases the former is quite dark owing to broad brown centers of the feathers, there being then a noticeable contrast between the head and back.

Thirty-seven specimens have been examined, these representing the localities given below:

Arizona.—Fort Huachuca;* San Pedro River (United States and Mexican boundary line); Santa Rita Mountains;* Oracle;* Greaterville.*

Chihuahua.—Chihuahua City.

Sonora.—Santa Cruz River (United States and Mexican boundary line).

OTOCORIS ALPESTRIS APHRASTA, new subspecies.

Chars. subsp.—Like *Otocoris alpestris adusta*, but back less reddish, cervix and bend of wing more pinkish.

Measurements (15 males).—Wing, 99–104.5 (average, 102) mm.; tail, 64–72 (average, 68.5) mm.; exposed culmen, 10.5–12 (average, 11.2) mm.; tarsus, 20.5–22.5 (average, 21.3) mm.; middle toe, 10–12 (average, 11.1) mm.

Type locality.—Casas Grandes, Chihuahua, Mexico.

Geographical distribution.—Extreme southeastern Arizona, the southwest corner of New Mexico, together with the Mexican States of Chihuahua, Coahuila and Durango. Nearly or quite resident.

Description.—*Adult male in breeding plumage.*—Type, No. 165133, U.S.N.M., Biological Survey collection; Casas Grandes, Chihuahua, Mexico, May 13, 1899; E. W. Nelson and E. A. Goldman. Back and rump brownish cinnamon, the feathers with darker centers; occiput, cervix, bend of wing and upper tail-coverts pinkish vinaceous, tinged with cinnamon; wings and middle pair of tail-feathers fuscous, edged with color of back; rest of tail brownish black, the outer pair of feathers margined with white; lores, cheeks, crown, horns and jugulum black; forehead, auriculars and superciliary stripe dull white washed with yellow; throat pale yellow; sides and flanks cinnamon; rest of lower surface white.

Adult female in breeding plumage.—No. 124524, U.S.N.M., San Diego, Chihuahua, Mexico, June 5, 1891. Upper surface sepia brown, streaked with buffy, this little evident on back; cervix, bend of wing and upper tail-coverts cinnamon, the first streaked with dusky; wings fuscous, edged with paler; tail, excepting the two middle feathers, blackish brown, the outermost feathers margined externally with white; sides of head brownish gray, mixed with dark brown on cheeks; forehead and superciliary stripe white; throat pale yellowish; narrow jugular crescent black; sides washed with cinnamon, and obscurely streaked with dusky; remainder of lower surface white.

Adult male in winter plumage.—No. 163964, U.S.N.M., Biological Survey collection; Parral, Chihuahua, September 12, 1898; E. W. Nelson and E. A. Goldman. Similar to the breeding male, but upper parts more pinkish and more grayish, the colors more blended; the whole head and throat suffused with yellow; the black areas obscured by paler tips; breast spotted with dusky.

Adult female in winter plumage.—No. 151860, U.S.N.M.; Chihuahua, Chihuahua, Mexico, October 19, 1888; M. Abbott Frazar. Similar to the summer dress of the same sex, but upper parts paler and more uniform, owing to the wide margins of all the feathers, which produce a blended effect; cheeks and auriculars darker brownish; breast tinged with buffy, and heavily, though obscurely, streaked with dusky.

Young in first plumage.—No. 124525, U.S.N.M., San Diego, Chihuahua, Mexico, June 5, 1891. Back brownish cinnamon, spotted with sepia and buffy; rump, head and cervix buffy ochraceous, marked with sepia and whitish; wings and two middle tail-feathers fuscous, edged with buffy and ochraceous; rest of tail dark brown, the outer webs margined with white; sides of head pale brownish gray, slightly mixed with dull brownish; jugulum tinged with buff, and sparingly spotted with bark brown; sides washed with buffy; remainder of lower surface white.

Typical specimens of this race differ from *adusta* in the much less reddish back, as well as noticeably more pinkish nape and bend of wing; from *leucansiptila*, besides much darker colors above, in more pinkish nape and more brownish back, these last two characters being those of most value in the determination of intermediates. Compared with *pallida*, *aphrasta* is much darker, particularly on the back and rump, with decidedly less cinnamonaceous tinge, this most conspicuous on occiput, cervix and bend of wing. It may be distinguished from *ammophila* by the more pinkish cervix, upper tail-coverts and bend of wing, together with the more uniform upper surface, the back having usually less blackish; from *actia* and *chrysolama*, by much paler and more uniform upper surface. It is much larger and paler than *oaracæ*; decidedly smaller, as well as somewhat less deeply colored, than *occidentalis*; much smaller, more uniform, and more reddish above than *leucolama*.

The young of this race differ from those of *actia* in their much paler coloration, this being especially noticeable on the top and sides of the head, but these are by no means constant distinctions. From *ammophila* and *leucolama* the difference, which consists of the decidedly deeper ochraceous on all the upper parts, is more marked. Compared with *oaracæ* and *adusta* the young of *aphrasta* are paler and somewhat more grayish.

Breeding specimens from Willecox and Fort Bowie, Arizona, show an inclination toward *leucolama* in the pallor of the occiput and nape, but undoubtedly should be called *aphrasta*. Sulphur Spring and Willow Spring, Arizona, are also here included in the range of the present race, though it should be stated that this rests upon the determination of birds in first plumage. Breeding examples from San Diego, Chihuahua, Mexico, seem to be essentially typical; as also a series from La Ventura, Coahuila, though the males of the latter have the throat and eyebrow more deeply yellow, and the back with more admixture of brown, producing a less uniform appearance. None of the available specimens of this subspecies can certainly be said to have been taken out of its breeding range, and *aphrasta* probably is very nearly if not quite resident. An autumnal male from Parral, Chihuahua, Mexico, has a very deep yellow throat, this color also suffusing the entire head and slightly invading the breast below the black jugular crescent, this last, however, something which even breeding birds occasionally exhibit. Examples from the southwestern corner of New Mexico (Grant County, etc.), are intermediate between *leucolama* and *aphrasta*, but appear to be nearer the latter. Occasional specimens from this region are almost indistinguishable from *leucansiptila*, but have usually somewhat darker backs. To the southward, in the State of Durango, Mexico (specimens from Durango City), the birds are more reddish again, approaching the appearance of *adusta*. Coming

from an intermediate locality they would be readily classed as intergrades, though nearer *aphrasta*, but coming from the opposite portion of the latter's range, it is evident that no such disposition can be made of them. They are apparently not different enough to warrant separation under a name of their own, so the only course is to consider them aberrant examples of *aphrasta*. It is just such cases as this that render the identification and differentiation of the various horned larks so difficult.

Thirty-eight specimens examined, from the localities mentioned below:

Arizona.—Willcox;* Willow Spring;* Sulphur Spring;* Fort Bowie.*

New Mexico.—Dog Spring, Grant County (United States and Mexican boundary line).*

Chihuahua.—Parral; Playas Valley, near White Water;* White Water;* San Diego;* Chihuahua; Casas Grandes;* Balleza; Mesquite Springs (United States and Mexican boundary line).*

Coahuila.—La Ventura.*

Durango.—Durango.*

OTOCORIS ALPESTRIS PALLIDA Dwight.

Otocoris alpestris pallida DWIGHT, Auk, VII, April, 1890, p. 154 (Townsend, manuscript).—TOWNSEND, Proc. U. S. Nat. Mus., XIII, September, 1890, p. 138.—RIDGWAY, Man. N. Amer. Birds, 2d ed., 1896, p. 599.

Chars. subsp.—Similar to *Otocoris a. apherasta*, but paler above, the nape less pinkish, the back less dusky.

Measurements (1 male).—Wing, 102 mm.; tail, 69.5 mm.; exposed culmen, 11 mm.; tarsus, 20 mm.; middle toe, 10 mm.

Type locality.—Direction Hill, between Adair Bay and mouth of Rio Colorado, Sonora, Mexico.

Geographical distribution.—Region immediately adjacent to the head of the Gulf of California, Mexico.

Description.—*Adult male in breeding plumage*.—Type, No. 117679, U.S.N.M; Direction Hill, between Adair Bay and the mouth of Rio Colorado, northwestern Sonora, Mexico, March 26, 1889; Charles H. Townsend. Occiput, cervix, bend of wing and upper tail-coverts bright vinaceous cinnamon; back, rump, wings and middle tail-feathers wood brown, the first two with a cinnamon tinge, the feathers of back and rump with somewhat darker centers, the wings and middle rectrices edged with paler; rest of tail brownish black, margined exteriorly with white; crown, horns, lores, cheeks, subauricular region and jugular crescent black; forehead, superciliary stripe, auriculars, chin and throat pale yellow, deepest on the two last; rest of lower surface white, the sides and flanks tinged with cinnamon and obsoletely streaked with dusky.

This desert race seems to be closely allied to *adusta*, from which, however, it may be distinguished by its decidedly paler coloration above and noticeably less reddish back. It may be separated from *ammophila* by its paler, more uniform upper surface, the back being without blackish and the line separating the cervix almost obliterated; from *actia* it is by the same characters still more different; and it differs from *occidentalis* in smaller size, as well as very much lighter coloration of the entire upper surface.

The type of *pallida*, which apparently represents the breeding birds of the region immediately about the head of the Gulf of California, at least on the eastern side, seems to be the only individual properly referable to this subspecies. The two specimens from Santa Rosalia Bay, Lower California, a locality included by Dr. Dwight in his range of *pallida*,¹ seem to belong rather to *actia*, for reasons already given.² The specimens from Magdalena Bay, which he also records as *pallida*, have not been examined, but in all probability they resemble those from Santa Rosalia Bay. Should this prove to be so, *pallida* must, at least for the present, be expunged from the North American list, and its geographical distribution restricted to the neighborhood of the mouth of the Colorado River, in northwestern Sonora, Mexico. How far to the southward along either shore of the Gulf it extends can be of course only conjectured, and is an interesting point for future observations to determine.

OTOCORIS ALPESTRIS LEUCANSIPTILA, new subspecies.

Chars. subsp.—Similar to *Otocoris a. pallida*, but even paler, the cervix and bend of wing much less cinnamonaceous.

Measurements (6 males).—Wing, 100–107 (average, 102.9) mm.; tail, 65–70 (average, 67.9) mm.; exposed culmen, 10.5–12 (average, 11.2) mm.; tarsus, 21–22 (average, 21.3) mm.; middle toe, 10.5–11.5 (average, 11.1) mm.

Type locality.—Yuma, Arizona.

Geographical distribution.—Extreme southwestern Arizona, extreme southeast corner of California, and northeastern Lower California along the international boundary line, north to southern Nevada.

Description.—*Adult male in breeding plumage.*—Type, No. 132970, U.S.N.M.; Yuma, Arizona, March 13, 1894; Mearns and Holzner. Back grayish isabella color, streaked with pale fuscous; rump the same, streaked with sepia; wings and two central tail-feathers pale fuscous, edged with whitish, buffy and ochraceous; rest of tail brownish black, margined exteriorly with white; occiput, cervix, bend of wing and upper tail-coverts very pale vinaceous cinnamon; forepart of crown, horns, cheeks and jugulum black; forehead, superciliary stripe

¹Auk, VII, 1890, p. 155.

²Antea, p. 848.

and auriculars dull white, faintly washed with yellow; throat pale yellow; sides and flanks tinged with cinnamon; rest of lower parts white.

Adult female in breeding plumage.—No. 142166, U.S.N.M., Biological Survey collection; Yuma, Arizona, April 10, 1889; V. Bailey. Upper parts sepia, streaked with buffy, most conspicuously so on occiput; cervix pale cinnamon, streaked with brownish; bend of wing and upper tail-coverts deep pinkish cinnamon; rest of plumage similar to the summer male, except that the black of the head is in the female replaced by brownish and buffy, and the black jugular crescent is smaller.

Adult male in winter plumage.—No. 3652, collection of C. E. Aiken, Coyote Well, San Diego County, California, December 1, 1876; F. Stephens¹. Similar to the breeding dress, but colors of upper parts more blended, this effect produced by the pale buffy or ochraceous tips of the feathers, the pinkish nape being almost entirely obscured; the throat is much more deeply yellow, which color suffuses the ear coverts, forehead, superciliary stripe, and slightly the crown behind the black.

This new race is the palest of all the American horned larks, not excepting *pallida* itself, from which form it further differs in lacking much of the cinnamomeous tinge of the upper parts, particularly on the cervix and bend of wing. Other characters distinguishing *leucansiptila* from *actia* and *ammophila* are the more uniform upper surface and the much more pinkish shade of the cervix, upper tail-coverts and bend of wing; from *occidentalis*, the decidedly smaller size; from *adusta*, the conspicuously less reddish upper surface; from *leucolæma*, reduced size and more uniform upper parts. The single female of *leucansiptila* now at hand is difficult to tell from the same sex of *leucolæma* except by its smaller size. *Otocoris a. leucansiptila* is curiously similar to *enthymia* from North Dakota and Assiniboia, differing, however, in being smaller, much more brownish, and more nearly uniform above.

That the form of *Otocoris* inhabiting the region about Yuma, Arizona, together with the contiguous area along the Mexican border, should be so different from that of the mouth of the Colorado River, on the one hand, and *adusta* from the neighborhood of Fort Huachuca, on the other, is one of the surprises developed by the present investigation. Three of the specimens were collected by Dr. Edgar A. Mearns while acting as naturalist of the International Boundary Commission, and none of them were accessible to Dr. Dwight when he wrote his review of the group. Two winter specimens from Ash Meadows, in southern Nevada, though not quite typical of *leucansiptila*, are apparently much nearer this race than to either *ammophila* or *leucolæma*. Whether or not they represent the breeding *Otocoris* of that locality is not at

¹This specimen is not quite typical, verging somewhat toward *actia*.

present determinable. It is quite probable, however, that this will ultimately prove to be the case, for the region intervening between the known range of *leucansiptila* and southern Nevada is generally similar to that along the Mexican boundary, and of the breeding horned larks from this area we as yet know practically nothing.

Eleven specimens have been examined, representing the localities that follow:

Arizona.—Yuma.*

California.—Coyote Well, San Diego County.

Nevada.—Ash Meadows.

Lower California.—Gardners Lagoon;* Colorado River at Monument 204 (United States and Mexican boundary line).

OTOCORIS ATLAS Whitaker.

Otocorys atlas WHITAKER, Bull. Brit. Orn. Club, VII, No. LIII, 1898, p. xlvii; Ibis, 1898, p. 604, pl. XIII.

Chars. sp..—Similar to *Otocorys alpestris flava*, but the nape much more rufescent, the throat and superciliary stripe paler, the horns longer.

Measurements.—Male: wing, 111.2 mm.; culmen, 15 mm.; tarsus, 20 mm. Female: wing, 102.5 mm.; culmen, 12.5 mm.; tarsus, 17.5 mm.

Type locality.—Glaoui,¹ Great Atlas Mountains, Morocco.

Geographical distribution.—Atlas Mountains, Morocco.

Description.—"Adult male. Resembles *O. elwesi*, but differs from that species in having the upper wing-coverts of a uniform sandy-brown colour, the same as the back, and not vinaceous, while the hind crown and nape are of a rich rufescent hue, and the upper throat of a pale sulphur colour. The black of the lower throat and of the cheeks is distinctly separated by a yellowish-white patch, as in *O. alpestris*, while the general colour of the upper parts, the black band over the base of the bill, the bill itself, and the long hornlets are all as in *O. penicillata*. Iris brown; bill grayish black; legs black."²

"Adult female.—General colour as in male, but wanting the black band on fore crown; the dark cheek-patch but faintly marked; black hornlets much shorter; lores and narrow streak over base of bill brownish instead of black; frontal light band soiled yellowish; crown streaked with dark brown; hind neck slightly rufescent. Soft parts as in male."³

This *Otocorys* differs from all the forms of both *O. penicillata* and *O. longirostris* in having a yellow throat, and additionally from the former in having the black of the jugulum separated from that of the

¹ In the original description given as Glani, but this is evidently a mistake.

² Whitaker, Ibis, 1898, pp. 604-605.

³ Idem, p. 605.

auriculars. Although considered by its describer to be nearest *penicillata*, it undoubtedly is most closely allied to *alpestris*, being in fact possibly but a subspecies.

OTOCORIS LONGIROSTRIS LONGIROSTRIS Moore.

Otocoris longirostris MOORE, Proc. Zool. Soc. Lond., 1855, p. 215 (Gould, manuscript).

Otocorys longirostris SHARPE, Cat. Birds Brit. Mus., XIII, 1890, p. 536 (part).

Chars. sp.—Similar to *Otocoris alpestris flava*, but differs in being very much larger, noticeably paler and more grayish, and in lacking any decided tinge of yellow about the head or throat.

Measurements (two males).—Wing, 127.5–134 (average, 130.8) mm.; tail, 93–95 (average, 94) mm.; exposed culmen, 14–16 (average, 15) mm.; tarsus, 23–24 (average, 23.5) mm.; middle toe, 13.5 mm.

Type locality.—Vicinity of Agra, northern India.

Geographical distribution.—In summer, Cashmere; in winter, south to northern India.

Description.—*Adult male in breeding plumage.*—No. 150216, U.S. N.M.; Namika-la Pass, Cashmere, June 26, 1893; Dr. W. L. Abbott. Back, wings and middle tail-feathers sepia, the back streaked with buffy, the wings and middle tail-feathers margined with the same; rest of tail brownish black, the outer pair of feathers white on outer webs; cervix and bend of wing deep pinkish vinaceous; occiput and upper tail-coverts pinkish cinnamon; crown, horns, lores, cheeks and jugulum black; forehead, superciliary stripe, auriculars, subauricular region, chin, throat and rest of lower surface white, the sides and flanks tinged with cinnamon buff.

Adult male in winter plumage.—No. 125528, U.S. N.M.; Central Cashmere, September 23, 1891; Dr. W. L. Abbott. Similar to the summer dress, but almost uniform grayish ochraceous above, the black areas much obscured, and the sides of body more deeply shaded with cinnamon.

Although commonly treated as a subspecies of *ebresi*, the present form should stand as the typical one, having been described long before any of its subspecific relatives. The name *longirostris* undoubtedly applies to the very large bird which summers in Cashmere, as a careful examination of the original description shows. There is an apparent discrepancy about the type locality, for Moore gives as the range of his then new species simply the vicinity of Agra, which place apparently must be considered the type locality, although Dr. Sharpe catalogues¹ as the "types of *O. longirostris*" a number of specimens collected by Major Hay in Kulu.

The present species is apparently quite distinct from *Otocoris alpestris*, but among its various subspecies there is such a striking parallel

¹Cat. Birds Brit. Mus., XIII, 1890, p. 536.

development, particularly of the desert forms, that scarcely any one character will serve to distinguish all its races from all those of *alpestris*.

All the forms of *Otocoris longirostris* may be readily separated from *Otocoris alpestris flava*, the only form of *Otocoris alpestris* that occurs in Asia, by their much paler, more grayish coloration, and at all seasons by the entire absence of yellow on either head or throat. The present race, typical *longirostris*, is the giant of the genus, exceeding in size every other form, Old World or American. In general tone of coloration above it is neither very light nor very dark.

An adult male from Namika-la-Pass, Cashmere, is considerably smaller in most of its dimensions than a specimen from Central Cashmere, but has a decidedly longer bill. Allowing for difference of season there is apparently no significant contrast in color.

OTOCORIS LONGIROSTRIS ELWESI (Blanford).

Otocoris elwesi BLANFORD, Journ. As. Soc. Bengal, 1872, p. 62.

Otocorys nigrifrons PREJEWALSKY, "Mong. and Thibet, II, 1876, p. 103."

Otocorys teleschowi PREJEWALSKY, Ibis, 1887, p. 416.

Otocorys elwesi SHARPE, Cat. Birds. Brit. Mus., XIII, 1890, p. 534 (part).

Chars. subsp.—Resembling *Otocoris longirostris longirostris*, but decidedly smaller and less grayish on the upper surface, particularly in winter.

Measurements (two males).—Wing, 116.5–117.5 (average, 117) mm.; tail, 80–81 (average, 80.5) mm.; exposed culmen, 10–10.5 (average, 10.3) mm.; tarsus, 22.5–23.5 (average, 23) mm.; middle toe, 11.5 mm.

Type locality.—Kangra Lama Pass, Sikhim.

Geographical distribution.—Thibet, including the northern and southern borders.

Description.—*Adult male (type).*—"Narrow frontal band, lores, sides of head below the eye, and a band running back below the ear coverts, but not extending down the sides of the neck, crown of the head, two sincipital tufts, and the upper part of the breast black; forehead above the black band, broad supercilia running back from it, with the ear coverts, sides of the neck intervening between the black of the cheeks and that of the breast, throat lower breast and abdomen white, nape, back of neck, rump and wing coverts pale greyish lilac; back pale fulvous brown with narrow dusky central stripes to the feathers, upper tail coverts long, pale brown with narrow central stripes and whitish edges; quills brown, the first primary with a white outer web, remaining primaries with narrow isabelline edges and tips which become white on the secondaries, the three last quills (tertiaries) and the central tail feathers brown with broad fulvous margins, the other tail feathers blackish with very narrow pale tips which can only be apparent in a freshly moulted specimen, the two outer rectrices on each side edged and tipped with white, most broadly on the outermost in which nearly the whole outer web is white; wing lining white;

flanks fulvous; bill black above, pale near the base below; legs black, soles of feet yellowish."¹

Adult male in winter plumage.—No. 101985, U.S.N.M.; Sikhim, India, 1874. Back, wings and middle tail-feathers fuscous, all the feathers margined with ochraceous or buffy ochraceous; rest of tail brownish black, the outer feathers edged exteriorly with white; occiput, cervix and bend of wing pinkish vinaceous, the two first streaked and clouded with brownish; upper tail-coverts deep vinaceous cinnamon; forehead, superciliary stripe, part of auriculars, chin, throat, and under surface, except jugulum, white, shaded with cinnamon on sides and flanks, spotted with dusky on breast; crown, horns, lores, cheeks and jugulum black, more or less obscured by grayish tips of the feathers.

Adult female in winter plumage.—No. 101986, U.S.N.M.; Darjeeling, India, 1874. Similar to the male, but more ochraceous above, the occiput, cervix and upper tail-coverts deep cinnamon ochraceous, streaked with brown; black of head either much mixed with ochraceous or replaced by brownish.

Of the two names here treated as synonyms of *cluesi*, the first, *Otocorys nigrifrons* Prejewalsky, has not been verified and is therefore somewhat doubtfully identical. The other, *Otocorys teleschowi* Prejewalsky, from northwestern Tibet, is possibly separable as a race, but with our scanty material we are unable to settle the question. In fact the dimensions Prejewalsky gives are more nearly those of *sibirica* than of *cluesi*, but unless the name is based on winter specimens from a more northern home, it is probably correctly located near or under the present subspecies.

This race of the eastern Himalayas differs from *longirostris* in its much inferior size and rather lighter more ochraceous colors, particularly on the upper surface. In winter dress the spotting of the breast is much more pronounced.

As with most of the Old World forms of *Otocoris* the series at hand is too limited to render satisfactory any comparisons of individual variations. These are, however, probably much the same as obtain throughout the genus.

Available material is lacking to establish the precise limits of the distribution of *cluesi* to the westward along the Himalayas; or to the northward beyond the mountains of northern Tibet, if indeed it reaches the latter region.

OTOCORIS LONGIROSTRIS PERISSA, new subspecies.

Otocorys longirostris SHARPE, Cat. Birds Brit. Mus., XIII, 1890, p. 536 (part).

Chars. subsp.—Similar to *Otocoris l. cluesi*, but much larger, and more rufescent above.

¹ Blanford, Journ. As. Soc. Bengal, 1872, p. 62.

Measurements (3 males).—Wing, 120.5–125 (average, 123.5) mm.; tail, 87–90 (average, 88.3) mm.; exposed culmen, 12.5–14 (average, 13.3) mm.; tarsus, 21.5–23.5 (average, 22.8) mm.; middle toe, 11–13 (average, 11.8) mm.

Type locality.—Tsokr Chumo Lake, Ladak.

Geographical distribution.—Ladak, central Asia.

Description.—*Adult male in breeding plumage.*—Type, No. 162845, U.S.N.M.; Tsokr Chumo Lake, Ladak, July 11, 1897; Dr. W. L. Abbott. Back cinnamon, with a rufescent tinge; wings and middle pair of tail-feathers fuscous, edged with buffy and cinnamon buff; occiput, cervix, bend of wing and upper tail-coverts pinkish vinaceous, palest on the last; crown, horns, lores, cheeks and jugulum black; forehead, superciliary stripe, auriculars, chin, throat and rest of lower surface white, the sides shaded with cinnamon and streaked with dusky.

Adult female in breeding plumage.—No. 162844, U.S.N.M.; Fotu-la Pass, Ladak, 1897; Dr. W. L. Abbott. Back, rump, wings and middle tail-feathers sepia, the feathers all margined with buffy; cervix pale pinkish buff, streaked with sepia; upper tail-coverts cinnamon, with a pinkish tinge; black of crown mixed with buffy; auriculars grayish; otherwise like the breeding male.

Adult male in winter plumage.—No. 112625, U.S.N.M.; Jouttak, Ladak, September 15; J. Biddulph. Similar to the breeding male, but upper parts more uniform and much more grayish, the occiput, cervix and bend of wing more pinkish; the black of head obscured, and the breast slightly spotted with dusky.

Young in first plumage.—No. 150217, U.S.N.M.; Khardong Pass, Ladak, July 13, 1893; Dr. W. L. Abbott. Upper parts clay color, each feather with a subterminal bar of sepia and a terminal spot of buffy; wings and tail sepia, margined with buffy white and ochraceous buff; sides of head mixed brownish and dull pale yellowish; chin and throat yellowish white; jugulum, breast and sides of body yellowish white, streaked and spotted with dark brown.

Though heretofore always confused with *longirostris*, this new race may be distinguished from that form by its smaller size and more ochraceous or rufescent coloration above. In winter *perissa* is apparently rather darker than *longirostris*. From *duesi* the present race differs in being larger, considerably paler, and somewhat more grayish above. That neither this nor the following subspecies (*O. l. argulea*) is the same as *Otocoris teleschowi* Prejewalsky may at once be seen by a comparison of measurements.

This is the only form of either *penicillata* or *longirostris* of which the young in first plumage is available for comparison. A single specimen from Khardong Pass, Ladak, is here considered as belonging probably to *perissa*, though no adults from the same place have been examined. Compared with the young of *Otocoris alpestris alpestris*,

which it seems most closely to resemble, it differs in being much paler, more grayish above; the light buffy markings on head, back, rump and wings are broader and more conspicuous; the breast is much less yellowish, its dark spots smaller; the abdomen is almost pure white, and the throat has only a faint wash of yellow.

The type of *perissa* is larger, darker on the cervix, and somewhat more reddish on the back than a similar specimen from Debring (Rupshu), Ladak, but these differences are probably not more than individual.

OTOCORIS LONGIROSTRIS ARGALEA, new subspecies.

Chars. subsp.—Resembling *Otocoris l. perissa*, but very much paler and more cinnamonaceous above.

Measurements (one male).—Wing, 124 mm.; tail, 85 mm.; exposed culmen, 12 mm.; tarsus, 23 mm.; middle toe, 12 mm.

Type locality.—Suket Pass, Kuen Lun Mountains, Chinese (Eastern) Turkestan.

Geographical distribution.—Southwestern portion of Eastern Turkestan.

Description.—*Adult male in breeding plumage.*—Type, No. 150218, U.S.N.M.; Suget Pass, Kuen Lun mountains, Eastern Turkestan, July 28, 1893; Dr. W. L. Abbott. Upper parts pale buffy fawn color, the rump streaked with dark brown; occiput, cervix, bend of wing and upper tail-coverts pale pinkish vinaceous, the hind part of crown whitish; wings and middle pair of tail-feathers fuscous, edged with color of back; rest of tail black, the outer feathers margined exteriorly with white; fore part of crown, horns, lores, cheeks and jugulum black; forehead, superciliary stripe, auriculars, chin, throat and remainder of lower parts white, the sides and flanks tinged with cinnamon.

A single adult breeding male from Suget Pass, in the Kuen Lun Mountains, Eastern Turkestan, differs so materially from the other forms of this species here recognized as to render almost certain the conviction that it represents an undescribed subspecies, which probably inhabits at least the southwest-portion of the arid plateau of Eastern Turkestan. In color it most closely approaches *sibirica*, being, however, considerably darker and less uniform above, the cervix and back more cinnamonaceous. It is, moreover, very much larger. *Otocoris l. argalea* is therefore a very pale edition of *perissa*, with the pinkish and rufescent areas of the latter much tinged with cinnamonaceous. From *longirostris* it may be distinguished at sight by its very much lighter colored, more uniform upper surface, as well as by its inferior size. From *elwesi* it differs in larger size and paler upper surface.

OTOCORIS LONGIROSTRIS SIBIRICA (Swinhoe).

Otocorys sibirica SWINHOE, Proc. Zool. Soc. Lond., 1871, p. 390.

Otocorys albigula auct. (not of Bonaparte).

Otocorys brandti DRESSER, Birds Europe, IV, 1874, p. 397.—SHARPE, Cat. Birds Brit. Mus., XIII, 1890, p. 536.

Otocorys parvexi TACZANOWSKI, Bull. Soc. Zool. France, I, 1876, p. 161.

Chars. subsp..—Similar to *Otocorys l. argalea*, but much smaller, the upper surface paler and more grayish.

Measurements (2 males).—Wing, 108–111 (average, 109.5) mm.; tail, 75–76 (average, 75.5) mm.; exposed culmen, 11 mm.; tarsus, 21–22.5 (average, 21.8) mm.; middle toe, 12–12.5 (average, 12.3) mm.

Type locality.—Pekin, China (winter).

Geographical distribution.—In summer, Mongolia and southern Siberia west of the Amoor River; in winter, south to southeastern Russia, Turkestan, Eastern Turkestan and northern China.

Description.—*Adult male in breeding plumage*.—No. 101984, U.S.N.M.; Kasolinse, Turkestan, 1878. Back, scapulars and rump almost uniform pale dull ochraceous buff, the feathers with rather darker centers; wings and middle pair of feathers fuscous, edged with color of back; rest of tail brownish black, the outer feathers margined exteriorly with white; upper tail-coverts pale cinnamon buff; occiput, cervix and bend of wing ecru drab; fore part of crown, horns, lores, cheeks and jugulum black; forehead, superciliary stripe, auriculars, chin, throat and remainder of lower surface white, the sides washed with cinnamon.

Adult female in breeding plumage.—No. 100226, U.S.N.M.; Kirghis Steppes, Siberia, February 3, 1880.—Much like the breeding male, but back darker and less uniform; occiput and cervix pale buffy with scarcely any pinkish tinge, and narrowly streaked with dark brown; black of head considerably mixed with grayish, or replaced by brownish.

Adult male in winter plumage.—No. 114660, U.S.N.M.; Katun Karagai, Siberia, December, 1881; Dr. Rey.—Similar to the summer male, but darker, decidedly more grayish above; the black areas somewhat obscured by grayish.

The specific name *albigula*, so long applied to this horned lark, dates from Bonaparte,¹ since the *Alauda albigula* of Brandt seems not to have been previously described. To whatever the latter's name may have referred, there is now no doubt that the name *albigula* Bonaparte is to be considered a synonym of *O. penicillata*, as already shown by Dr. Dubois² and by Dr. Sharpe,³ as well as by Mr. Dresser.⁴ The earliest name for the present race is apparently *Oto-*

¹Consp. Avium, I, 1850, p. 246.

²Bull. Mus. Royal d'Hist. Nat. Belgique, III, 1884, pp. 225, 229.

³Cat. Birds Brit. Mus., XIII, 1890, p. 536; see also under *Otocorys penicillata*.

⁴Birds Europe, IV, 1874, p. 397.

corys sibirica Swinhoe, ostensibly adopted by him from Eversmann, but so far as it has been possible to ascertain Eversmann had never published this name. Although Dr. Sharpe¹ synonymizes it with *cluesi*, it undoubtedly refers to the form called by him *brandti*. Mr. Swinhoe, after describing the bird by comparison with *O. alpestris*, says of it: "Sedentary and abundant in the high regions of Mongolia, whence it descends to Peking in small numbers. This pretty lark loves the neighbourhood of the Mongol tents in winter."² Since the resident form of Mongolia—if, indeed, not entitled to separate subspecific distinction, as appears quite probable—is evidently nearer the bird from the region just south of Lake Baikal than it is to that of the Himalayas, the name which applies to it must be used for the Baikal form together with all else identical. The Baikal bird (from Dauria and Kiachta) has been named *parveri* by Taczanowski,³ and this by the adoption of the view above expressed becomes a synonym of *sibirica* Swinhoe. The form from the Kirghis Steppes in western Siberia, described by Dresser as *Otocorys brandti*,⁴ is apparently larger than that from Dauria, and a good series would probably serve to establish its claim to recognition, but otherwise it must be added to the synonymy of *sibirica*. The name *Otocorys petrophila*⁵ is commonly cited under this form, but though referring apparently to the bird from the Tian Shan Mountains, it is clearly a *nomen nudum*, and is entitled to no consideration.

This is the smallest and palest of the forms of *longirostris*, and may readily be identified by these characters. In size it is not so different from *cluesi* as from the others, but still is usually considerably smaller. Winter specimens occasionally in color resemble *longirostris* and *perissa*, but in such cases size is an infallible test.

An adult winter male from Katun Karagai, Siberia, apparently belongs to this race, though it is considerably darker and more grayish above than the two other specimens.

OTOCORIS BILOPHA (Temminck).

Alauda bilopha TEMMINCK, Pl. Col., III, 1823, pl. CCXLIV, fig. 1.

Otocoris bilopha BONAPARTE, Conspectus Avium, I, 1850, p. 246.

Otocorys bilopha SHARPE, Cat. Birds Brit. Mus., XIII, 1890, p. 537.

Chars. sp.—Similar to *Otocoris longirostris sibirica*, but smaller, the upper surface very much more fulvescent.

Measurements (one male).—Wing, 96.3 mm.; tail, 60 mm.; culmen, 13.8 mm.; tarsus, 20 mm.

Type locality.—El Akaba, southwestern Turkey in Asia.

¹ Cat. Birds Brit. Mus., XIII, 1890, p. 534.

² Proc. Zool. Soc. Lond., 1871, p. 390.

³ Bull. Soc. Zool. France, I, 1876, p. 161.

⁴ Birds Europe, IV, 1874, p. 401.

⁵ Severtzow, Journ. f. Orn., 1873, p. 379.

Geographical distribution.—Northwestern Arabia, with adjacent part of Turkey in Asia; Algeria; Morocco; casual in southeastern Spain (Valencia).

Description.—*Adult male.*—“Entirely bright sandy rufous above, with a vinous shade, and with darker rufous shaft-lines to some of the dorsal feathers; wing-coverts entirely sandy rufous like the back; quills dusky brown, externally sandy rufous and edged with white at the ends, the inner secondaries entirely sandy rufous, the first primary externally edged with white; centre tail-feathers sandy rufous with black shaft stripes, the remainder black, the penultimate feather edged with white near the end of the outer web, the outermost one white for nearly the whole extent of the outer web; crown of head sandy rufous like the back, with a vinous tinge; forehead and eyebrow white, succeeded by a broad band of black across the fore part of the crown, continued into two long ear-tufts above the ear-coverts and reaching to the sides of the nape; nasal plumes, lores, feathers below the eye, fore part of ear-coverts black, this black patch extending down the centre of the cheeks; hinder ear-coverts and adjacent sides of neck, as well as the remainder of the cheeks and throat, white; a very broad crescentic band of black on the lower throat and fore neck; remainder of under surface from the chest downwards white, the sides of the breast vinous-sandy, and the sides of the body and thighs washed with vinous; under wing-coverts and axillaries white, the edge of the wing sandy; quills dusky below, ashy isabelline along the inner web: ‘bill dusky horn-colour, paler on the mandible; feet pale dusky horn-colour.’

“In breeding-plumage the vinaceous colour of the upper parts becomes obliterated and the back is of a rufous-sandy colour; the head sometimes shows a white band behind the black frontal one.”¹

Otocoris bilopha seems most nearly related to the *longirostris* group, but is less in size than any of these, and is further distinguished by its uniform fulvescent buffy upper surface.

The birds from Arabia are very possibly not the same as those from Algeria, particularly as their range does not seem to be continuous.

OTOCORIS PENICILLATA PENICILLATA (Gould).

Alauda penicillata GOULD, Proc. Zool. Soc. Lond., 1837, p. 126.

Otocoris penicillata GRAY, Genera Birds, II, 1844, p. 382, pl. xi.

Otocoris scriba BONAPARTE, Conspectus Avium, I, 1850, p. 246.

Otocoris albigula BONAPARTE, Conspectus Avium, I, 1850, p. 246.

Otocoris larrata De FILIPPI, Arch. Zool. Anat. and Phys., II, 1863, p. 382.

Otocorys penicillata SHARPE, Cat. Birds Brit. Mus., XIII, 1890, p. 530.

Otocorys penicillata transcaspica FLÖRICKE, Die gefiederte Welt, 1898, p. 46.

Otocorys penicillata iranica ZARUDNY and HÄRMS, Orn. Monatsber., 1902, p. 53.

Chars. subsp.—Resembling *Otocoris longirostris longirostris*, but very much smaller, the black of the auriculars continuous with that of the jugulum.

¹Sharpe, Cat. Birds Brit. Mus., XIII, 1890, p. 538.

Measurements (two males).—Wing, 116–118.5 (average, 117.3) mm.; tail, 80–82 (average, 81) mm.; exposed culmen, 11–13 (average, 12) mm.; tarsus, 22.5–23 (average, 22.8) mm.; middle toe, 12.5–13.5 (average, 13) mm.

Type locality.—Erzeroum, Asia Minor.

Geographical distribution.—Asia Minor, the Caucasus and Persia, to Afghanistan and Baltistan, Central Asia.

Description.—*Adult male in breeding plumage.*—No. 101982, U.S.N.M.; Bereketti, Taurus, Asia Minor, April 30, 1876; C. G. Danford. Upper parts drab gray, the feathers with dark brown centers; upper tail-coverts chiefly ecru drab; occiput and cervix dull, deep vinaceous, this color slightly tinging the bend of the wing; wings fuscous, margined with the color of the back; middle pair of tail-feathers fuscous, edged with paler; rest of tail black, the two outer pairs of feathers with white external margins; crown, long horns, lores, cheeks, sides of throat, lower throat and jugulum black; forehead, superciliary stripe, chin, center of throat and remainder of lower surface white, the sides of the body washed with buffy and obscurely streaked with dusky.

Adult male in winter plumage.—No. 126852, U.S.N.M.; Skardu, Baltistan, January 28, 1892; Dr. W. L. Abbott. Very much like the summer dress, but more uniform above, the vinaceous of occiput and cervix being entirely covered by grayish like the back; black areas obscured by grayish.

Adult female.—“Wants the black band across the crown, the head and back being very distinctly streaked with blackish brown; the whole general appearance of the bird more dusky than in the male.”¹

The *Otocoris scriba* of Bonaparte² is a pure synonym of *penicillata* Gould, having been obtained at the type locality;³ and a similar fate apparently attends *Otocoris larvata* De Filippi,⁴ from Persia. With regard to *Otocoris albigula* Bonaparte,² of which mention has already been made under *Otocoris l. sibirica*, and which, judging even by the original description, can apply only to some form of *penicillata*, Dr. O. Finsch has, by request, very kindly furnished the following particulars: “To this species [*O. penicillata*] belongs, without doubt, *Otocoris albigula* Bp. Consp., p. 246 (ex Alp. Russ. As.), based on the specimen in our museum, which bears by Temminck’s own handwriting the label, ‘Alauda albigula Brandt, par le Mus. St.-Petersbourg, Alpes de Russie’ * * * It agrees very well with the figure cited above [Gray, Genera of Birds, II, pl. 92], and has, so far as I can judge from the description, nothing to do with Reichenow’s *Otocoris penicillata balcanica*.”

¹Sharpe, Cat. Birds Brit. Mus., XIII, 1890, p. 531.

²Consp. Avium, I, 1850, p. 246.

³See Severtzow, Ibis, 1883, p. 61.

⁴Arch. Zool. Anat. and Phys., II, 1863, p. 382.

Although "Alpes de Russien" is rather an indefinite locality, it seems most probable that the reference is to the mountains of the Caucasus, where the bird is well known to occur.

Otocoris penicillata with its various races differs from all the other horned larks, except *berlepsi*, in having the throat completely encircled by black—that is, the black of the cheeks not separated from that of the jugulum by a white area. The horns of this species are, moreover, much longer than in *longirostris* or *alpestris*. Typical *penicillata* is, excepting *balkanica*, apparently the darkest and most grayish race.

A winter male from Skardu, Baltistan, is rather more ochraceous throughout the upper parts than a specimen from the Taurus Mountains, Asia Minor, near the type locality, being thus to a degree intermediate between *penicillata* and *oreodrama*, though very much nearer the former. Good series of specimens from both Baltistan and Asia Minor might show the bird from the former locality to be a recognizable subspecies, whose name would probably be *larvata* De Filippi.

OTOCORIS PENICILLATA BALKANICA Reichenow.

Otocorys penicillata balkanica REICHENOW, Ornith. Monatsber., III, 1895, p. 42.

Chars. subsp.—Like *Otocoris penicillata penicillata*, but considerably darker above.¹

Type locality.—Bosnia.²

Geographical distribution.—The Balkan Peninsula, southern Europe.

In the original account of this form no detailed description is given, and as no specimens have been available, none can be presented here. The essential portions of Dr. Reichenow's diagnosis follow:

Sie unterscheidet sich von der typischen *O. penicillata* insbesondere durch intensivere weinröthliche Färbung des Hinterkopfes und Nackens und dunkleren graubraunen Ton des Rückens und der Flügel. Ferner ist der Schnabel im allgemeinen etwas länger und die schwarze Stirnbinde wie die Kropfbinde breiter.

From this it seems to be a recognizable race, though closely allied to *Otocoris penicillata penicillata*, differing principally in the deeper colors of the upper surface.

The records of *Otocoris penicillata* in Europe³ doubtless belong here.

OTOCORIS PENICILLATA OREODRAMA, new subspecies.

Otocorys pallida SHARPE, Cat. Birds Brit. Mus., XIII, 1890, p. 533 (part, not of Dwight).

Otocorys diluta SHARPE, Cat. Birds Brit. Mus., XIII, 1890, p. 670 (part).

Chars. subsp.—Similar to *Otocoris penicillata penicillata*, but slightly paler, more uniform above, as well as very much more cinnamomeous.

¹ Dr. Reichenow (Ornith. Monatsber., III, 1895, p. 42) gives no measurements, but states that the bill is rather longer than in true *O. penicillata*.

² Dr. Reichenow in a letter says that his type specimens came from here.

³ Reiser, Ornith. Jahrbuch, 1890, p. 106.

Measurements (2 males).—Wing, 115–118 (average, 116.5) mm.; tail, 83–87.5 (average, 85.3) mm.; exposed culmen, 10–11 (average, 10.5) mm.; tarsus, 21–23.5 (average, 22.3) mm.; middle toe, 12–12.5 (average, 12.3) mm.

Type locality.—Tagdumbash Pamir, central Asia.

Geographical distribution.—In summer, Tagdumbash Pamir, and probably Ferghana; in winter, extending to the western portion of Eastern Turkestan.

Description.—*Adult male in breeding plumage.*—Type, No. 150222, U.S.N.M.; Tagdumbash Pamir, central Asia, June 16, 1894; Dr. W. L. Abbott. Back and rump dull grayish ochraceous, streaked with dark brown; upper tail-coverts cinnamon, with pinkish tinge, the longer ones with darker centers; occiput, cervix and bend of wing deep vinaceous; wings and two middle tail-feathers fuscous, margined with the color of the back, the tips of the secondaries broadly white; rest of tail black, the outer feathers white on exterior webs; crown, horns, nasal plumes, lores, cheeks, sides of throat, and jugulum black; forehead, superciliary stripe, auriculars, chin, center of throat and rest of lower parts white, the sides tinged with cinnamon.

Adult male in winter plumage.—No. 112624, U.S.N.M.; Kashgar, Eastern Turkestan, December, 1873; J. Biddulph. Similar to the summer male, but upper surface more uniform and more grayish; cervix more pinkish; black areas obscured by grayish.

Adult female in winter plumage.—No. 150223, U.S.N.M.; Turngart Pass, Tian Shan Mountains, central Asia, September 20, 1893; Dr. W. L. Abbott.—Resembling the winter male, but more ochraceous above, the nape less pinkish, the black of head mixed with grayish and ochraceous, the breast washed with buff and spotted obsoletely with dusky.

This form has heretofore been confounded with *penicillata* or *diluta*, or both, and though to some extent intermediate between these two, is easily recognizable upon comparison. It seems to be nearest *penicillata*, from which it differs in the slightly paler, more uniform upper surface, and in the strongly cinnamonaceous shade of the same parts, the exposed surface of the upper tail-coverts being cinnamon, instead of pinkish vinaceous. From *bicornis* it may be distinguished by its larger size, less uniform upper parts, more pinkish nape and occiput, and much more grayish coloration.

OTOCORIS PENICILLATA DILUTA (Sharpe).

Otocorys pallida SHARPE, Cat. Birds Brit. Mus., XIII, 1890, p. 533 (not of Dwight).

Otocorys diluta SHARPE, Cat. Birds Brit. Mus., XIII, 1890, p. 670.

Otocorys penicillata diluta RICHMOND, Proc. U. S. Nat. Mus., XVIII, 1895, p. 578 (part).

Chars. subsp.—Resembling *Otocorys penicillata oreodrama* but decidedly paler, more buffy on the upper surface.

Measurements (1 male).—Wing, 120 mm.; tail, 82 mm.; exposed culmen, 11.5; tarsus, 22 mm.; middle toe, 12 mm.

Type locality.—Kashgar, Eastern Turkestan.¹

Geographical distribution.—Western part of Eastern Turkestan.

Description.—*Adult male in breeding plumage.*—No. 150221, U.S.N.M.; Bulan Kul, Eastern Turkestan, April 2, 1894; Dr. W. L. Abbott. Back, scapulars, rump and upper tail-coverts uniform pale cinnamon buff, with ill-defined shaft lines of brown, the rump with a pinkish tinge; occiput, cervix and bend of wing ecru drab; wings and middle pair of tail-feathers fuscous, the latter and the innermost secondaries broadly margined with the color of the back, the remainder of the wings edged with buffy and whitish; rest of tail black, the outermost feathers margined on exterior webs with white; crown, horns, lores, cheeks, sides of throat, lower throat and jugulum black; forehead, superciliary stripe, auriculars, chin, center of throat and rest of lower surface white, the sides of body tinged with cinnamon.

Adult female in breeding plumage.—No. 150219, U.S.N.M.; Bulan Kul, Eastern Turkestan, April 1, 1894; Dr. W. L. Abbott. Similar to the male, but back and rump with much admixture of dark brown; the cervix ochraceous buff, obsoletely streaked with dark brown; bend of wing with but little tinge of pinkish; crown dull ochraceous buff, streaked with blackish; auriculars buffy; black of cheeks much mixed with buffy and grayish.

Readily distinguished from both *penicillata* and *oreodrama* by its much paler and much more buffy upper parts, the back being almost uniform pale cinnamon buff. It differs from *bicornis* in larger size, paler upper parts, more pinkish occiput, cervix, bend of wing and superior tail-coverts. Females of *diluta* may be separated from females of the other races of *penicillata* by their paler, more buffy coloration.

OTOCORIS PENICILLATA BICORNIS (Brehm).

Phileremos bicornis BREHM, Vogelfang, 1855, p. 122 (Hemprich manuscript).

Otocorys bicornis SHARPE, Cat. Birds Brit. Mus., XIII, 1890, p. 532.

Otocorys penicillata var. *bicornis* DUBOIS, Synopsis Avium, Pt. 7, 1901, p. 451.

Chars. subsp.—Similar to *Otocoris p. diluta*, but smaller and rather darker; the cervix, bend of wing and upper tail-coverts more cinnamonaceous.

Measurements (3 males).—Wing, 110–112.5 (average, 111.5) mm.; tail, 67.5–72.5 (average, 70.7) mm.; exposed culmen, 14–15 (average, 14.5) mm.; tarsus, 20–23 (average, 21.4) mm.; middle toe, 12.5 mm.

Type locality.—Syria.

Geographical distribution.—Syria and northern Palestine.

¹ Dr. Sharpe, through Mr. C. Chubb, has kindly furnished this information regarding the type locality.

Description.—*Adult male in breeding plumage.*—No. 37837, U.S.N.M.; Mount Hermon, Palestine, June 4, 1864. Upper surface dull ochraceous, the feathers with dull brown centers; upper tail-coverts cinnamon; occiput, cervix and extreme bend of wing dull pinkish vinaceous; wings and middle tail-feathers fuscous, margined with buffy and ochraceous; rest of tail brownish black, the outer feathers edged outwardly with white; fore part of crown, horns, lores, cheeks, sides of throat, lower throat and jugulum black; forehead, superciliary stripe, auriculars, chin, center of throat and rest of lower parts white, the sides tinged with cinnamon.

Adult female in breeding plumage.—No. 37835, U.S.N.M.; summit of Mount Hermon, Palestine, June 2, 1864. Similar to the summer male, but rather darker, duller and more uniform above, the cervix less pinkish, the black of crown much mixed with dull ochraceous.

Dr. Sharpe says¹ that Hemprich's *Alauda bicornis*, which was current so long as a mere manuscript or label name, had never been published, and he adopts it² as the designation of the present race, the one, as Dr. Sharpe himself shows, to which it undoubtedly refers. But the *Phileremos bicornis* of Brehm,³ which Dr. Sharpe quotes under *Otocoris bilopha*, is with equal certainty applicable to the same bird, as a careful examination of the description proves.⁴ Brehm here adopts Hemprich's name, and notes in addition that other authors have referred *Alauda bicornis* to *Alauda bilopha*. Moreover, the description and locality apply much better to the present bird than to *Otocoris bilopha*.

The few available examples of this bird are in very much worn summer plumage, but are sufficient to indicate that *bicornis* is an excellent race. It differs from *penicillata* in smaller size, and in the more uniform cinnamonaceous and ochraceous colors of the upper parts.

OTOCORIS BERLEPSCHI Hartert.

Otocoris berlepschi HARTERT, Journ. f. Orn., 1890, p. 103; Kat. Vogelsamml. Senkenburg, 1891, p. 37.

Otocorys berlepschi HARTERT, Ibis, 1892, p. 522, pl. XIII.

Chars. sp.—Nearest *Otocoris penicillata penicillata*, but very different by reason of its entirely black chin and throat, together with its cinnamonaceous breast, abdomen, and upper surface.

Measurements (type).—Wing, 106 mm.; tail, 70 mm.; culmen, 12 mm.; tarsus, 22 mm.

¹ Cat. Birds Brit. Mus., XIII, 1890, p. 532.

² Idem.

³ Vogelfang, 1855, p. 122.

⁴ This is as follows: "3) Die langhörnige Wustenbergtierche, *Phileremos bicornis*, Brm. (*Alauda bicornis*, Hemp. A. *bilopha*, auct.). Der Schnabel und die Hörner sind viel länger als bei Nr. 1 [= *Phileremos alpestris* = *Otocoris alpestris flava*] und 2 [= *Phileremos rufescens* = *O. a. flava*] und ihre Kehle weisslich; kommt wahrscheinlich aus Syrien nach den griechischen Inseln."

Type locality.—Caffraria, South Africa.

Geographical distribution.—Caffraria, South Africa.

Description.—"Top and sides of the head, chin, throat, and upper breast black, with a faint purplish gloss; ear-coverts tipped with pale brown; occiput, hind neck, interscapular region, smaller upper wing-coverts, and tail-coverts bright vinaceous cinnamon; outer and inner webs of all the quills brown, faintly margined and tipped with brownish grey; tail dark brown, central pair and outer webs of lateral rectrices paler brown; lower parts bright vinaceous cinnamon, spotted with brown on the breast and whitish along the middle of the abdomen. The bill is of the somewhat acute form of that of *Otocorys bilopha*."¹

This remarkably distinct species was discovered some twelve years ago by Mr. Hartert among the mounted birds of the Senkenberg Museum at Frankfort-on-the-Main, and the single specimen has remained unique. Although not examined in the present connection, it belongs without doubt to *Otocoris*, though in pattern and details of coloration it is very different from any other member of this group. Though apparently most closely allied to *Otocoris penicillata penicillata*, it differs from this as well as from all the other horned larks in the solid black throat, chin and forehead, cinnamonaceous abdomen and lower tail-coverts, together with the brown outer web of the ninth primary.

The only data accompanying the type specimen was a slip of paper fastened to the stand, and bearing the legend "*Alauda?* Caffraria." As Mr. Hartert thinks, the bird probably came from the interior of South Africa, though there must of necessity be some doubt until additional examples shall have been secured from an unquestionable locality.

¹This quotation is taken from Mr. Hartert's article in the *Ibis* for 1892, pp. 522-523. The original description (*Journ. für Orn.*, 1890, p. 103) is as follows: "*Otocoris*, pileo toto, penicillis brevibus, regione ophthalmica et parotica, gutture pectoreque nigris; notaeo, corporis lateribus, subcaudalibus plus minusve pallide rufis; gastraeo medio sordide albido; remigibus fumosis, pogonio externo canescente, primae remigis pogonio externo non albo; cauda fumoso-nigricante, colore albo nullo."

"Diese prachtvolle neue Ohrenlerche, die in ihrer Schnabel-gestalt mit *Otocoris bilopha* (Temm.) übereinstimmt, in ihrer Grösse der *O. alpestris* nahekommt, in der Färbung mit keiner der bekannten Arten Aenlichkeit hat, erlaube ich mir zu Ehren meines hochverehrten Freundes, Frhr. H. von Berlepsch * * * zu benennen."

Table of measurements.

MALES.

[Measurements in millimeters.]

No. of specimens.	Name of species.	Wing.			Tail.			Exposed culmen.			Tarsus.			Middle toe.		
		Average.	Maximum.	Minimum.	Average.	Maximum.	Minimum.	Average.	Maximum.	Minimum.	Average.	Maximum.	Minimum.	Average.	Maximum.	Minimum.
15	<i>alpestris</i>	111.5	113	108	71.8	75	66.5	12.2	13	11	24	25	22	13.5	14	13
7	<i>flava</i>	107.9	111	105.5	70.6	73.5	68.5	10.1	11	9	21.9	23	21	11.9	12.5	11.5
15	<i>boopi</i>	111.1	115.5	104	70.5	75	65.5	11.4	13	10.5	22.3	23.5	21	12.5	13	11.5
15	<i>arcticola</i>	111.5	114.5	108.5	70.7	74	67.5	11.3	12.5	10	22.7	24	21.5	12.6	13	12
15	<i>enthymia</i>	104.8	107.5	101	70.4	75	67	11.3	12.5	10.5	21.8	23	21	12.1	13	11.5
15	<i>leucolena</i>	105.8	110	101	71.5	77	68	11.5	13	10	21.8	23	20.5	11.7	12	11
15	<i>pratensis</i>	104.2	108	100	69.5	73	67	11.2	12	10	21.6	22.5	20.5	11.7	12	11
7	<i>diaphora</i>	99.4	103	96.5	67.5	70.5	64.5	11.3	12	11	21.7	22.5	21	11.4	12	11
15	<i>grauadi</i>	96.8	102	92	62.2	66	56.5	10.5	11	9.5	21.8	22.5	20.5	11.1	12	10.5
15	<i>merulli</i>	102.9	106	98.5	69	72	64	11	12.5	10	21.6	22.5	20.5	11.5	12	11
14	<i>strigata</i>	98	101	96	65.8	68.5	61.5	11.3	12.5	10	20.8	22	19.5	11.4	12.5	10.5
15	<i>usularis</i>	97.1	101	95	64.4	68	60	11.3	13	10	22	23	21	11.9	13	11
1	<i>pergrina</i>	92	.....	.....	63	.....	.....	10.5	.....	.....	21.5	.....	.....	11.5	.....	.....
15	<i>chrysolaema</i>	102.9	106.5	98.5	68.8	71.5	64	10.9	12	10	21.4	23.5	20	11.2	12	10.5
15	<i>actia</i>	99.1	102.5	94	65.9	70	62	11.4	12.5	10	20.8	21.5	20	11.5	12	10.5
15	<i>amamphila</i>	100.2	103.5	96	67.7	72	65	11.4	12.5	10	21.1	22.5	19	11.4	12.5	10
15	<i>rubra</i>	99.6	105	94.5	67.2	71	64.5	11	12	10	21.7	23.5	20	11.8	13	10.5
10	<i>oxacae</i>	96.8	99	94.5	61.3	66	58	11.5	12	11	21.9	23.5	21	11.9	13	10.5
15	<i>occidentalis</i>	106.4	110.5	103.5	71.4	75	67	11.2	13	10	21.8	23	20	11.6	12.5	10.5
15	<i>atusta</i>	102.4	105.5	97	68.8	73	65	10.8	12	10	21.2	22	20.5	11.3	12	10
15	<i>aphrasta</i>	102	104.5	99	68.5	72	64	11.2	12	10.5	21.3	22.5	20.5	11.1	12	10
1	<i>pallida</i>	102	.....	.....	69.5	.....	.....	11	.....	.....	20	.....	.....	10	.....	.....
6	<i>leucansaphia</i>	102.9	107	100	67.9	70	65	11.2	12	10.5	21.3	22	21	11.1	11.5	10.5
1	<i>altas</i>	111.2	.....	.....	.....	.....	.....	11.5	.....	.....	20	.....	.....	.....	.....	.....

¹Total culmen.

Table of measurements—Continued.

MALES—Continued.

No. of specimens.	Name of species.	Wing.			Tail.			Exposed culmen.			Tarsus.			Middle toe.		
		Aver- age.	Maxi- mum.	Mini- mum.	Aver- age.	Maxi- mum.	Mini- mum.	Aver- age.	Maxi- mum.	Mini- mum.	Aver- age.	Maxi- mum.	Mini- mum.	Aver- age.	Maxi- mum.	Mini- mum.
		2	<i>longirostris</i>	130.8	134	127.5	94	95	93	15	16	14	23.5	24	23	13.5
2	<i>cluesi</i>	117	117.5	116.5	80.5	81	80	10.3	10.5	10	23	23.5	22.5	11.5	11.5	11.5
3	<i>perissa</i>	123.5	125	120.5	88.3	90	87	13.3	14	12.5	22.8	23.5	21.5	11.8	13	11
1	<i>argalca</i>	124			85			12			23			12		
2	<i>sibirica</i>	109.5	111	108	75.5	76	75	11	11	11	21.8	22.5	21	12.3	12.5	12
1	<i>bilopha</i>	96.3			60			13.8			20					
2	<i>penicillata</i>	117.3	118.5	116	81	82	80	12	13	11	22.8	23	22.5	13	13.5	12.5
	<i>balkanica</i>															
2	<i>oreotrama</i>	116.5	118	115	85.3	87.5	83	10.5	11	10	22.3	23.5	21	12.3	12.5	12
1	<i>ditida</i>	120			82			11.5			22			12		
3	<i>bicornis</i>	111.5	112.5	110	70.7	72.5	67.5	14.5	15	14	21.4	23	20	12.5	12.5	12.5
1	<i>berlepschi</i>	106			70			12			22					

FEMALES.

15	<i>alpestris</i>	103.8	109	101	63.1	66.5	60.5	11.1	12	10.5	23.2	24	22	12.8	14	11.5
6	<i>flava</i>	102.7	104.5	101.5	65.1	67	63.5	9.3	9.5	9	21.6	23	21	12.3	13	11.5
13	<i>hoyti</i>	104	107	102	63.2	69	60	10.8	11.5	10	22.1	23	21	12	13	11
6	<i>arctica</i>	104.1	106	101.5	64.3	67	62	10.2	9.5	11	22.3	23	21.5	12.3	13	11.5
15	<i>euthypia</i>	97.6	101	93.5	62.2	66	59	10.2	11	9	21.2	22	20	11.5	12	10.5
15	<i>leucokema</i>	98.6	102	95	64	67	58	10.5	11.5	9.5	21.1	22	20	11.4	12	10.5
15	<i>pratense</i>	96.8	100.5	95	61.7	66	59	10.8	11.5	10	21.5	23	20	11.7	12.5	11
1	<i>diaphora</i>	89			56			11.5			20.5			10.5		
15	<i>girardi</i>	90.2	93.5	87	55.9	59	52.5	10.3	11	10	21.4	22.5	20.5	10.8	12	10
15	<i>merrilli</i>	97.1	102	94	62.8	66	58.5	10.6	12	9.5	21.2	22	19	11.3	12	10
10	<i>strigata</i>	92	93.5	90	59.6	63.5	56.5	10.2	11	9	20.4	21.5	19	11.7	12.5	11
15	<i>insularis</i>	91.4	97	88	58.8	63	55	11.4	12.5	10	21.3	22.5	20	11.7	12.5	11

1	<i>pergrina</i>	92	96.5	91	63	58	10.5	11	9.5	21.5	22	20	11.5	11.1	11.5	10
15	<i>chrysolama</i>	94.5	96	87	58.8	63	10.5	8.5	12	21.3	21.5	17.5	10.8	10.8	12	9.5
15	<i>acta</i>	92.6	96	90	59.5	63.5	10.3	11.5	9.5	20.6	22	19.5	11.1	11.1	11.5	10.5
10	<i>annaptila</i>	92.4	95.5	89	59.5	62.5	10.1	11.5	9.5	20.8	22	20	11.3	11.3	12	10.5
12	<i>rubca</i>	89.3	90.5	87	55.5	57	10.6	11	10	21	22	20	11.4	11.4	12	11
4	<i>ozaze</i>	98.8	103	95	63.8	66	10.3	12	9.5	21	22	19	11.3	11.3	12	10
15	<i>occidentalis</i>	96	98.5	91.5	61.4	65.5	10.4	11	9.5	20.5	21	19.5	10.8	10.8	11.5	10
15	<i>atlanta</i>	95.1	99	91.5	61	65.5	10.8	12	9.5	20.5	22	18.5	10.7	10.7	11.5	9.5
10	<i>aphrasia</i>															
	<i>pallida</i>															
2	<i>leucaspilla</i>	94.5	96	93	59	59.5	11.3	11.5	11	21.3	21.5	21	11	11	11	11
1	<i>altas</i>	102.5					12.5			17.5						
	<i>longirostris</i>															
1	<i>elvest</i>	107			78		11			20.5			11			
1	<i>perissa</i>	115.5			79		14			23.5			13.5			
	<i>argata</i>															
1	<i>sibirica</i>	99			66.5		10			20			10			
	<i>bitopha</i>															
	<i>penicillata</i>															
	<i>balcanica</i>															
1	<i>orcodrama</i>	112.5			80		10.5			22			12.5			
2	<i>dilatata</i>	110.5	112	109	73.5	76	10.5	11	10	22	22	22	12.5	13	13	12
2	<i>bicornis</i>	103.8	105.5	102	68.8	69.5	12.8	13	12.5	23	23	23	13	13	13	13
	<i>berlepschi</i>															

1 Total culmen.



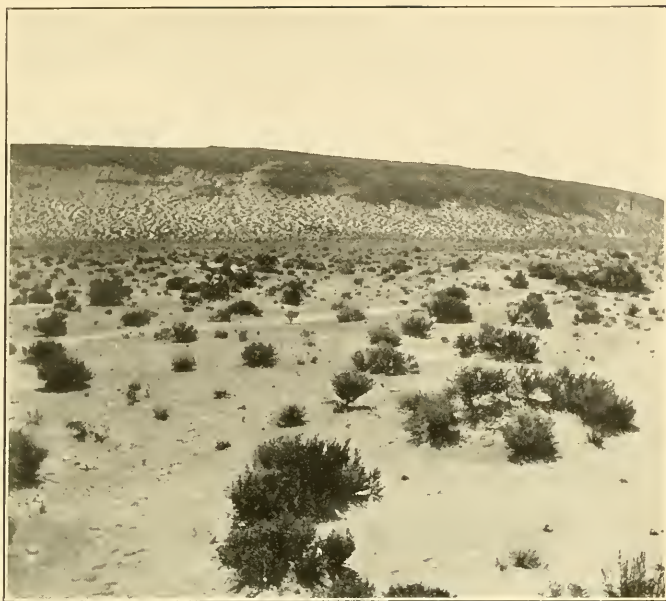
1.



2.

HOMES OF (1) *OTOCORIS ALPESTRIS PRATICOLA*, WOOSTER, OHIO;
AND (2) *O. A. LEUCOLÆMA*, STAKED PLAINS, NEAR DIMMITT,
TEXAS.





1.



2

HOMES OF *OTOCORIS ALPESTRIS LEUCOLÆMA*.

1. Near Stillwater, Nevada. 2. Toyabe Mountains, Nevada.



1.



2.

HOMES OF (1) *OTOCORIS ALPESTRIS GIRAUDI*, SHORE OF MATAGORDA BAY,
TEXAS; AND (2) *O. A. ADUSTA*, HUACHUCA MOUNTAINS, ARIZONA.

MAP I.
DISTRIBUTION OF THE GENUS
OTOCORIS.



1870

THE UNIVERSITY OF CHICAGO

LIBRARY

1870

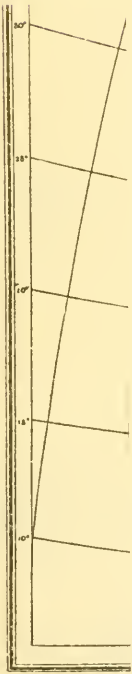
1870

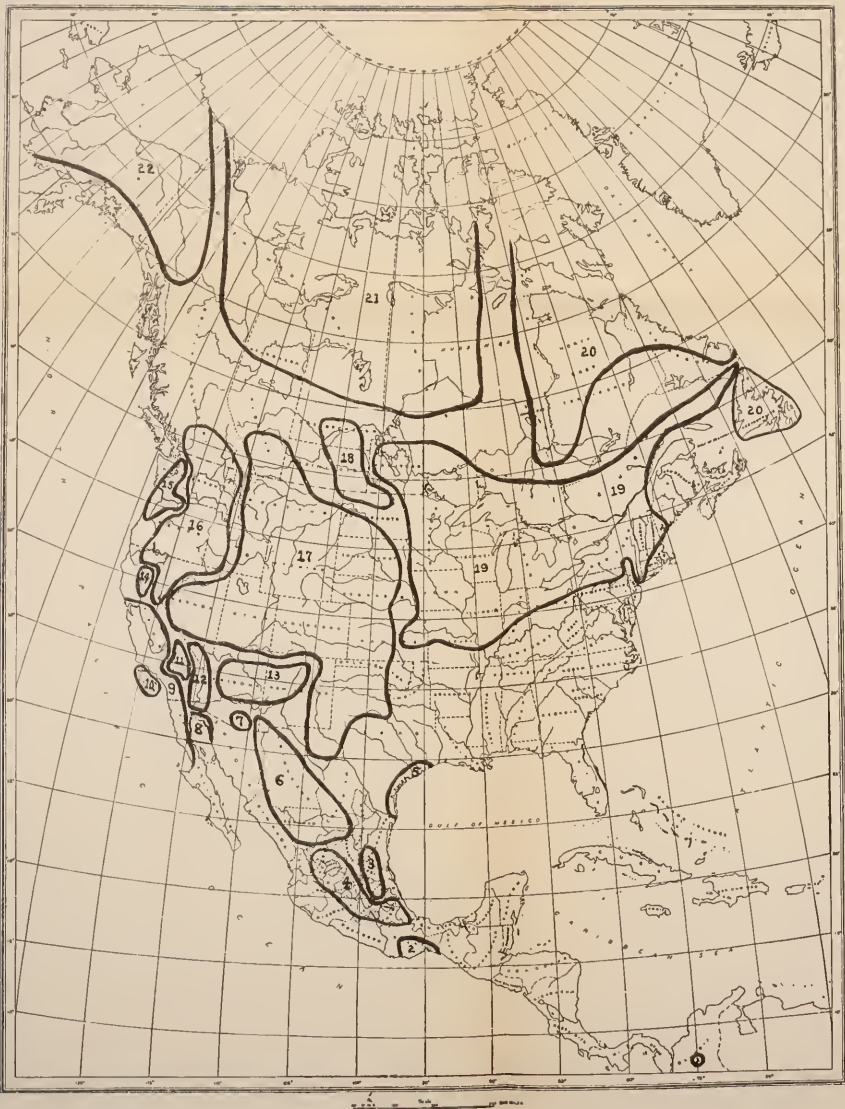
THE UNIVERSITY OF CHICAGO

1870

1870

1870





MAP II.—BREEDING AREAS OF NEW WORLD OTOCORIS.

1. peregrina.
2. cauxiae.
3. diaphana.
4. chrysolema.
5. giraudi.
6. aphrasia.

7. adusta.
8. pallida.
9. arctia.
10. insularis.
11. annophila.
12. leucansiptila.

13. occidentalis.
14. rubra.
15. strigata.
16. merrilli.
17. leucolema.
18. euthymia.

19. praticola.
20. alpestris.
21. hoyii.
22. arctica.

MAP III.
AREAS OF OLD WORLD
OTOCORIS.

- 5.—oreodrama.
- ica. 6.—diluta.
- s. 7.—flava.
- lata.



MAP III.
BREEDING AREAS OF OLD WORLD
OTOCORIS

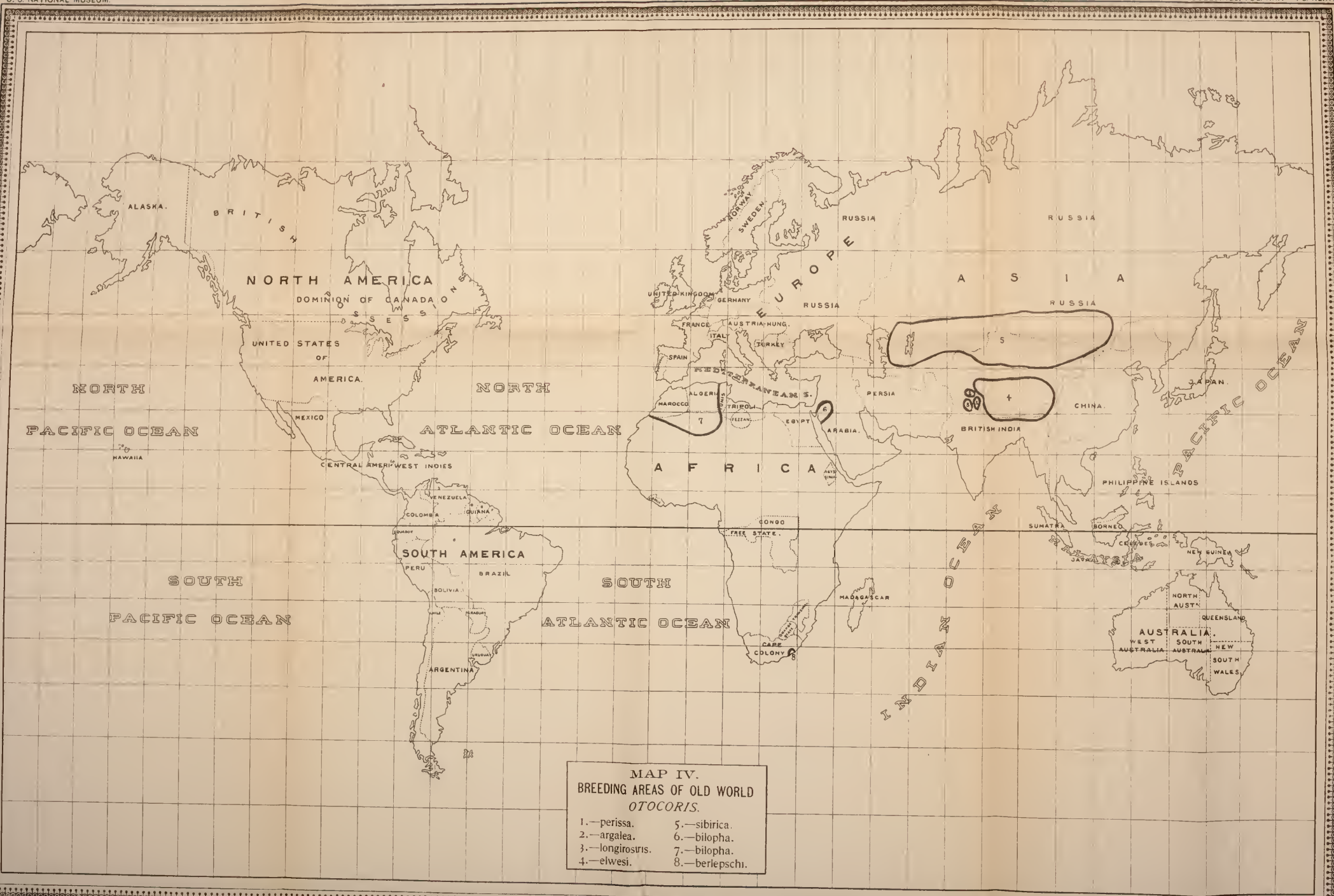
1.—atlas.	5.—oreodrama.
2.—balcanica.	6.—diluta.
3.—bicornis.	7.—flava.
4.—penicillata.	

Date	Description	Amount
1890	Jan 1	100.00
1891	Feb 1	200.00
1892	Mar 1	300.00
1893	Apr 1	400.00
1894	May 1	500.00
1895	Jun 1	600.00
1896	Jul 1	700.00
1897	Aug 1	800.00
1898	Sep 1	900.00
1899	Oct 1	1000.00
1900	Nov 1	1100.00
1901	Dec 1	1200.00
1902	Jan 1	1300.00
1903	Feb 1	1400.00
1904	Mar 1	1500.00
1905	Apr 1	1600.00

1890 100.00
1891 200.00
1892 300.00
1893 400.00
1894 500.00
1895 600.00
1896 700.00
1897 800.00
1898 900.00
1899 1000.00
1900 1100.00
1901 1200.00
1902 1300.00
1903 1400.00
1904 1500.00
1905 1600.00

MAP IV.
AREAS OF OLD WORLD
OTOCORIS.

- 5.—sibirica.
- 6.—bilopha.
- 7.—bilopha.
- 8.—berlepschi.



MAP IV.
BREEDING AREAS OF OLD WORLD
OTOCORIS.

1.—perissa.	5.—sibirica.
2.—argalea.	6.—bilopha.
3.—longirostris.	7.—bilopha.
4.—elwesi.	8.—berlepschi.

