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Author(s): H. W. Henshaw

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head streaked with dusky on a white ground, the tawny or rufous edgings always seen in *B. borealis* being wholly absent. The measurements are as follows:—

	Wing.	Tail.	Cul-men.	Tarsus.	Middle toe.	
Colorado specimen	16.50	9.50	1.10	3.25	1.80	Tars. meas. in front.
Type of <i>B. cooperi</i>	15.75	9.10	1.05	3.15	1.70	“ “
<i>B. harlani</i> , No. 6851	15.65	9.00	1.00	2.80	1.60	“ “

It will thus be seen that the two specimens of '*B. cooperi*' differ more from one another than one of them does from a typical *B. harlani*. In fact, so far as the measurements are concerned, the extremes as given above * would easily fall within the range of individual and sexual variation in *B. borealis*, or any other species of equal size. The only character of coloration in the type of *B. cooperi* which cannot readily be reconciled with the theory of this supposed species being the light-colored phase of *B. harlani*, is the nearly uniform decided glaucous-gray hue of the primaries, which are almost without a trace of the dark spots seen in all specimens of *B. harlani* that I have examined, and also in *B. borealis*. But since the Colorado specimen (if my memory is not at fault) had, as stated above, the primaries differently marked, or brownish gray with distinct black spotting, just as in *B. harlani*, we may reasonably conclude that the type specimen of *B. cooperi* presents an abnormal or at least unusual coloration of these feathers.

THE SHORE LARKS OF THE UNITED STATES AND ADJACENT TERRITORY.

BY H. W. HENSHAW.

Of all our birds there are probably none that have given rise to so much perplexity and been the occasion of so great confusion as the Horned Larks. Occurring as they do, either as migrants or as summer residents, over almost every portion of our terri-

* Except the length of the tarsus, in which there is a discrepancy that it is difficult to account for.

tory, they necessarily have received frequent mention at the hands of authors and have, indeed, figured in almost every local bird list that has appeared. It needs but a glance at them to reveal the extreme uncertainty that has always attended their identification, uncertainty almost as marked in the notices of experts as of authors of less scientific pretensions. It has long been evident to those who have paid any attention to these birds that the present arrangement fails to meet the necessities of the case, and that either a number of new forms must be recognized or else that the characters of the forms already described must be extended so as to cover the peculiarities presented by a large number of specimens which by anything like a literal interpretation of published diagnoses cannot be assigned at all. In other words, it is clear that the existing arrangement does not permit the facts of geographical variation, of which this bird is a most conspicuous illustration, to be recognized and expressed. Of the two alternatives, the former appears to the writer to be the logical and proper course.

The causes for the extreme variation witnessed in this species are not far to seek. Like several other birds, notably the Song Sparrow, which split up into a number of geographical races, the Shore Larks are to a great extent resident wherever they occur, and, although individually they are by no means local, but wander far and wide for a considerable portion of the year, their movements do not carry them far enough, or last sufficiently long, to subject them to any considerable changes of food or climate. As the result of being subjected to practically permanent conditions, or owing to the possession of an unusually plastic organization, the Horned Lark varies with locality to an extent unprecedented among our birds, even the Song Sparrow, hitherto supposed to illustrate the extreme degree of susceptibility to geographical changes, falling behind in this particular.

Although not, strictly speaking, migratory, the extent to which the Horned Larks change locality is sufficient to materially complicate the geographical relations of the several forms. Over much of the west coast, and in almost all the southern part of the United States, these birds can scarcely be said to migrate at all, although they may, and doubtless frequently do, wander in winter from the localities which form their abode the greater part of the year. In the more northern parts of the United States, and

especially in the territory to the north of the boundary—in British America, Alaska, etc. — the bird partakes more of the character of a true migrant, and every fall and winter witnesses the intrusion from the north into our territory of hordes of these birds. How far south these northern birds penetrate is at present not determinable with accuracy. Judging from specimens at hand the 37th parallel marks about the southern limit. From the intrusion of these northern-born birds into regions where the summer residents only partially migrate, or do not migrate at all, there results a mixing up of the geographical races which is very puzzling. As an instance in point, the writer may mention that at Carson, Nevada, in November, he found two quite dissimilar forms, neither of which represents the bird found at that locality in summer.

The movements of the Shore Larks appear to be chiefly latitudinal, but they also wander to greater or less distances east or west of their true homes. How extensive these longitudinal movements are is not readily determined. The peculiarities of one of the two forms found at Carson in November, as stated, seem to show conclusively that it came from the region to the westward, probably from across the mountains. If this supposition be correct, it would show that, in this instance at least, a very considerable lateral movement had been made in search of suitable food and climate. In itself this is not surprising, for the Oregon Snowbird (*Junco oregonus*) is known to occur abundantly in Colorado and Texas, as well as over the intermediate region, though it has not been ascertained to breed further east than the Sierras, more than 600 miles to the west. However, at present there is too little known of the boundaries of the several races of Shore Larks to enable any statements of value to be made concerning the extent of their longitudinal movements.

As the result of the accumulation of many years, the National Museum possesses a large series of these interesting birds, collected in almost every portion of the country. Large as it is, however, the material proved by no means sufficient for the complete elucidation of the several races of this bird. The great difficulty to a proper understanding of the mutual relation of the forms in the past has been not so much the lack of a sufficient number of specimens as a lack of specimens from the various localities collected in the breeding season. From what has

been said before as to the manner in which the races mingle geographically for a portion of the year, it will be readily understood how extremely unsatisfactory would be results which are dependent in any considerable degree upon a study of winter specimens. In addition, therefore, to the material contained in the Smithsonian collection and in my own private cabinet, the writer found it necessary to call upon friends in various parts of the United States, who have responded most generously to his request for specimens. The aggregate material he has thus been enabled to consult in the preparation of the present paper is believed to be greater than has ever before been brought together, at least in this country. No fewer than 350 specimens are now before him, representing the birds geographically so thoroughly that no area of any considerable size within the United States is believed to be unrepresented.

Before proceeding to formally diagnose the accepted forms, it may be well to briefly mention each race in relation to the area it occupies.

1. **Alpestris.**—The first question that presents itself is the relation of the Shore Lark of Northeastern North America to its European congener. Small as is the series of European birds at the writer's present disposition, it is large enough to show that the differences between the bird inhabiting the northern portions of Europe and the bird of Hudson's Bay, Labrador, and Newfoundland are not sufficient to separate them even varietally. This is in accordance with the conclusions of Ridgway, Coues, and others. Specimens of European origin can be selected that are practically indistinguishable from our birds and that differ less from individual examples of the latter than these do from others bred in the same locality, between which, of course, the differences are purely individual. The bird from Northeastern America may, therefore, be considered identical with the *O. alpestris* of the Old World. It would be extremely interesting to carry the comparison further, and to ascertain the relations borne by the several races of the Horned Lark of this country to the varieties into which the Old World bird is divided. A single specimen from southern Russia differs markedly from the *O. alpestris* of Northern Europe. It evidently represents a very large and extremely pale race, carrying the peculiarities of size and pallid coloration even further than does our *leucolæma*.

The number of species that have been described by European ornithologists from time to time suggests that the susceptibility of the Old World bird to changes of size and color corresponding to changes of environment is as great as in this country, and that the question of their relationship is not less intricate than with us. Unfortunately the Old World skins at hand are too few to afford opportunity for discussion in the present connection.

2. **Praticola.**—The first indications of a departure from the type of true *alpestris* are to be noticed in the region to the south and west of the Great Lakes, especially in Illinois. The birds of this region are to be distinguished as a race from *alpestris* proper by smaller size and by paler colors. Specimens in the breeding plumage are at hand from Minnesota, Wisconsin, Michigan, New York, Illinois, Indiana, Missouri, and Eastern Kansas. Those from Michigan are paler than any of the others and suggest an approach to the *leucolæma* type.

In connection with this race, it is of interest to note that it appears to be gradually extending its range and to be encroaching on a territory which by reason of recent deforestation has been made to approach the conditions this prairie-loving species seeks. Thus Dr. C. H. Merriam writes that it has made its appearance in Lewis County, New York, within a very few years, and appears to be gradually gaining a foothold there. The number of specimens of this form before me is very large, and while they show it to be a well marked race, especially when extremes of either form are compared, they also prove that on the one hand it intergrades with *alpestris* and on the other with *leucolæma*, according as the respective regions inhabited by these forms are approached. Certain specimens also from Kansas more than hint that, as we go westward, it passes into *arenicola* of the plains. A winter specimen of this form from Texas indicates the extent of its dispersion at that season.

3. **Leucolæma.**—This form is characterized by large size, it being larger even than *alpestris*, and by pale colors. It never has any decided yellow on the throat, though the latter and super-orbital line is not rarely tinged with this color. 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 specimens at hand show, 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. Without doubt, however, it inhabits, in summer, much of the interior of British America, for in early fall and in winter it occurs all along the line of our northern frontier, from the eastern slope of the Sierras (apparently not crossing the mountains) to Eastern Dakota. It is, in fact, a form of the interior plains of high latitude. How far south it goes in winter cannot now be stated. I found it to be abundant at Carson, Nevada, in November. Specimens attest its occurrence at that season in Utah, Colorado, and in Kansas.

4. **Arenicola.**—As compared with *leucolæma*, its nearest ally, it is smaller and, while nearly as pale, always shows considerable yellow on the throat. *Leucolæma* appears to be even paler in fall than in summer; the reverse is true of the present form, as indeed of all the others which have the yellow on the throat and about the head more diffused. This form inhabits the Great Interior Basin, extending from the eastern border of the plains to the Sierra Nevada, and from somewhere about the line of our northern border to Mexico. Specimens are at hand from all portions of the area mentioned, and they are found to present essentially the same characteristics. Specimens from Montana, Dakota, etc., are somewhat larger than those from farther south, in Arizona and New Mexico. Those from the last-named sections are also brighter and display a rufous cast of coloration which, in some individuals, approaches true *chrysolæma* of Mexico. This is simply what is to be expected. Towards the north *arenicola* grades into *leucolæma*, and in the south into *chrysolæma*. There are no summer specimens from localities within our territory farther south than Santa Fé; and it is probable that summer residents in the extreme south of Arizona and New Mexico would be found to be referable to *chrysolæma*.

The *O. occidentalis* of McCall has usually been cited by authors as applying to this interior form. There seems to me, however, to be more than a reasonable doubt as to the bird McCall actually had in hand. He says (Proc. Phila. Acad., 1851, p. 218): "The chief difference between this bird [*i.e.*, his *occidentalis*] and the young of the Shore Lark, is in the different

dimensions, *and in the whole of the under parts being whitish* [italics mine]; but more particularly in the length and shape of the bill, which is longer, more slender and rather more curved above than that of the Shore Lark, either young or old." The young of none of the Shore Larks are "wholly white beneath," and the fact that McCall makes a direct comparison between his specimen and a young Shore Lark renders it doubtful to my mind whether he did not have a young bird of some other species. In the uncertainty I prefer to rename this form. Baird's *occidentalis* from Salt Lake is referable to *leucolæma*, as his specimens show.

5. **Giraudi.**—That a form of Horned Lark should occur in Texas different from the one inhabiting the plains region of the interior is somewhat remarkable; yet such is certainly the case. The race is characterized by smaller size than *arenicola*; the yellow of the throat is much deeper, and in a very large proportion of the males the yellow overspreads the upper part of the breast. The general color above is of a peculiar grayish cast, not easily characterized on paper, but sufficiently peculiar to render identification of the form easy upon comparison. The bird is, perhaps, confined to the eastern and southeastern portions of the state, though its range is at present not well known.

There is no doubt but that this form is the *Alauda minor* of Giraud, as I ascertain by an inspection of his type specimen. Dr. Stejneger calls my attention to the fact that this name is pre-occupied by the *Alauda minor* of Gmelin of 1788, as applied to the *Anthus pratensis*; hence, unfortunately it is not eligible for use in this connection. As Giraud was the discoverer and describer of the bird, I have applied his name to it, as in some sort a measure of justice to one who in times past has been dealt with rather hardly by American writers.

6. **Chrysolæma.**—This name has been indiscriminately applied in turn to the Horned Larks of almost every portion of our western territory, more particularly to those of California; true *chrysolæma* is, so far as now known, limited to Mexico, where it appears to be a constant resident. It is considerably smaller than *arenicola*, but is about the same size as *giraudi*. It presents a combination of bright colors and rufous tints that serve to distinguish it. The yellow of the throat is much deeper than in any other form.

8. **Rubeus.**—Reaching California a new form presents itself. For this the name *rubeus* has been selected, as the deep 'sorrel'

or rufous color is the character that chiefly distinguishes this form from the foregoing. Its small size is also noticeable, it being the smallest of any of our forms. In a considerable number of specimens from the interior of the state the back, with the exception of some black streaks just above the rump, is entirely rufous. Examples from about San Francisco, Santa Barbara, and San Diego are of a lighter shade of rufous, but all appear to be distinguished from the preceding form. In casting about for a name for the California race I expected to be able to apply the *Alauda rufa* of Audubon. The supposed type of Audubon's plate and description is now before me, and it agrees perfectly with the California form; no locality, however, is given on the label. In the account of his *rufa* Audubon states its habitat to be the whole of the interior of the United States and Mexico. Aside, however, from any doubt attaching to the locality of the specimen, and of its being Audubon's type, the name is preoccupied by the *Alauda rufa* of Gmelin of 1788, as applied to *Anthus ludovicianus*; hence there is no alternative but to propose a new name.

9. **Strigata.**—The remaining form within our territory is the variety *strigata*, which is, perhaps, the most strongly marked of any of the forms mentioned. It is slightly larger than the Californian bird, as would be expected from its more northern habitat, which is the extreme Northwestern United States—the neighborhood of Puget Sound, Washington Territory, and southwards into Oregon. As in this region the rainfall is greater than in any other portion of the United States, it naturally follows that from here would come the darkest colored Horned Larks. Such is the case, and its deep coloration and the conspicuously striped dorsum constitute the essential characters of this race.

To those who have never attempted the identification of any considerable number of Horned Larks, or who are familiar only with specimens from a single restricted locality, it may appear that the number of forms suggested by the above arrangement is excessive, and that in handling the subject an unnecessary degree of refinement has been practiced. This, however, is believed to be not the case. Certainly by predilection the writer is committed to the recognition of as few varieties as the most conservative could desire. Between predilection and practice, however, there must, in such cases as the present, be a wide divergence.

If one would be consistently conservative and refrain from swelling our bird lists with new names, it is absolutely necessary to refrain from the study of specimens. The widely differing climatological and topographical conditions prevailing within our territory are reflected in the great variety of animal forms. It is absolutely necessary to a proper understanding of the subject that these forms, whether properly ranking as species or only as varieties — incipient species — should be studied and the method and amount of their variations recorded. Notwithstanding that the professional book-maker, to whom the constantly changing and swelling bird lists are a nuisance, may call a halt, the work of elucidating these forms and formally cataloguing them must go on till all the facts of geographical variation are fully set forth. The practical necessities to be met in the case of the Horned Larks are the establishment of a sufficient number of geographical races to serve for the reception of specimens, due care being exercised to recognize by name no form not sufficiently differentiated to be capable of clear definition; added to which is the requirement that every form recognized shall be known to inhabit a definite geographical area. Of course it is not pretended that by the acceptance of the above forms the identification of every specimen of *Otocorys* taken within the limits of the area treated of becomes at once easy and certain. To suppose this, one must know little indeed of the manner in which species and varieties vary according as they approach and recede from the central points where they are most strongly marked.

On the contrary, in the case of the Horned Larks, one must expect to find in any considerable collection a number of specimens to assign which to their proper forms becomes a matter of nice judgment and of thorough understanding of the subject. It is believed, however, that by the above arrangement the Horned Larks can be treated as satisfactorily as any other variable species; certainly as easily as the Song Sparrows. Due allowance must of course be made for individual variation and for the occurrence of intermediate specimens — those reared in localities between the centres of two forms, and hence showing in varying degree the characters of either race. Very rarely indeed will specimens be found that display the characters of two forms so equally that it is impossible to decide to which form they most incline. By far the larger proportion of specimens are well

within one side or the other of the line. Below are appended brief comparative diagnoses of the above-mentioned forms, together with descriptions of such of them as have received new names.

It may be premised that it has been found very difficult to give in a few set words the differences of coloration that actually exist between the several races. The only satisfactory way of identifying birds so closely related as the Horned Larks is by a direct comparison of specimens.

COMPARATIVE DIAGNOSES.*

O. alpestris.—Size large; wing, 4.44; tail, 3.02; bill, .91; tarsus, .50. (Average of 19 males.) Nape, lesser wing-coverts, rump, etc., deep vinaceous. Habitat, Northeastern North America, Labrador, Greenland.

O. alpestris praticola.—Size smaller; wing, 4.17; tail, 2.93; bill, .83; tarsus, .46. (Average of 19 males.) Nape, lesser wing-coverts, rump, etc., pale vinaceous; back dead gray, in contrast; whole aspect generally paler than in true *alpestris*. Habitat, Upper Mississippi Valley and region of Great Lakes.

O. alpestris leucolæma.—Size about as in *alpestris*; wing, 4.39; tail, 2.96; bill, .89; tarsus, .49. (Average of 12 males.) Chief character, paler; nape, lesser wing-coverts, rump, etc., very pale vinaceous; back gray in contrast. Throat white or with but faint trace of yellow. Colors are still paler in fall; occasionally at this season there is some yellow on the throat. Habitat, British America and Alaska; Western United States only in winter.

O. alpestris arenicola.—Size smaller than *leucolæma*; wing, 4.27; tail, 3.35; bill, .84; tarsus, .48. (Average of 16 males.) The colors similar to the last, but throat always decidedly yellow. Fall specimens are brighter, with more yellow on the throat and forehead. Habitat, Great Basin of United States and Rocky mountains.

O. alpestris giraudi.—Wing, 3.78; tail, 2.57; bill, .80; tarsus, .43. (Average of 9 males.) General color above brownish gray; streaks of back very indistinct; yellow of throat bright; breast unusually pale yellow. Habitat, Eastern and Southeastern Texas.

O. alpestris chrysolæma.—Wing, 3.98; tail, 2.91; bill, .83; tarsus, .46. (Average of 4 males.) Much deeper in color than *arenicola*. Nape, etc., deep pinkish rufous; throat deep yellow, but breast always white. Habitat, Mexico, possibly across the border into Southern Arizona and New Mexico.

O. alpestris rubeus.—Wing, 3.51; tail, 2.71; bill, .77; tarsus, .45. (Average of 11 males.) General color above, deep cinnamon or ferruginous; throat bright yellow; streaks on dorsum nearly obsolete. Habitat, California.

* The color descriptions are based on males in breeding plumage.

O. alpestris strigata.—Wing, 3.99; tail, 2.75; bill, .76; tarsus, .44. (Average of 2 males.) Coloration above very dark; much less cinnamon than in either *rubeus* or *chrysolæma*; back distinctly striped with dusky; breast usually yellow. In some fall specimens the yellow overspreads the entire under parts. Habitat, coast region of Washington Territory and Oregon.

DESCRIPTIONS OF NEW RACES.

O. alpestris praticola, var. nov. PRAIRIE HORNED LARK.

SUBSP. CHAR.—*Adult ♂ in Spring* (No. 90763, Richland Co., Ill., May 16, 1883; R. Ridgway): Posterior portion of crown, occiput, nape, sides of neck and breast, lesser wing-coverts, and shorter upper tail-coverts, light vinaceous; back, scapulars, and rump, grayish brown, the feathers with darker centres, becoming darker and much more distinct on the rump; middle wing-coverts light vinaceous terminally, brownish gray basally. Wings (except as described) grayish brown, the feathers with paler edges; outer primary with outer web chiefly white. Middle pair of tail-feathers light brown (paler on edges), the central portion (longitudinally) much darker, approaching dusky; remaining tail-feathers uniform black, the outer pair with exterior web broadly edged with white. Longer upper tail-coverts light brown, edged with whitish, and marked with a broad lanceolate streak of dusky. Forehead (for about .15 of an inch) yellowish white, this continued back in a broad superciliary stripe of nearly pure white; fore part of crown (for about .35 of an inch) deep black, continued laterally back to and including the ear-like tufts; lores, suborbital region, and broad patch on cheeks (with convex posterior outline) deep black; jugular crescent also deep black, this extending to the lower part of throat; chin and throat pale straw-yellow, gradually fading into white on sides of foreneck; anterior half of ear-coverts white, posterior half drab-gray, each portion forming a crescent-shaped patch. Lower parts posterior to the jugular crescent pure white, the sides of the breast light vinaceous, the sides similar but brown, and indistinctly streaked with darker. Upper mandible plumbeous-black, lower bluish plumbeous; iris deep brown; legs and feet brownish black. Wing 4.30, tail 2.85, culmen .47, tarsus .85.

Adult ♂ in winter (No. 95583, U. S. Nat. Mus., Gainesville, Texas, Feb. 12, 1884; G. H. Ragsdale): Similar to the spring plumage but darker, with the vinaceous somewhat obscured by grayish brown, the black by pale tips to the feathers, and yellow of throat slightly deeper. Wing, 4.20, tail, 3.00, culmen, .43, tarsus, .85.

Adult ♀ in spring (No. 90760, Richland Co., Ill., May 25, 1884; R. Ridgway): Above grayish brown, the pileum narrowly and distinctly, the dorsal region broadly and less sharply, streaked with dusky; nape, lesser wing-coverts, and shorter upper tail-coverts dull light vinaceous, the first very indistinctly streaked. A narrow frontlet and broad superciliary stripe (the latter very sharply defined above) dull white; lores, suborbital

region, and triangular patch on cheeks, dull brownish black, without sharp definition posteriorly; auriculars drab, the anterior half lighter; chin and throat white, the former faintly tinged with yellowish; jugular crossed by a distinct band of black, narrower and less intense in color than in the ♂; rest of lower parts white, tinged with pale brownish on breast, the sides (especially of breast) pale isabella-brownish, the flanks indistinctly streaked with darker. Wing 3.85, tail 2.50, culmen, .45, tarsus, .80.

Adult ♀ in winter (No. 85417, Mt. Carmel, Illinois, Dec. 20, 1874; S. Turner): Differing from the summer plumage in being browner, and with the streaks on the pileum less distinct, the whitish frontlet obsolete, and the superciliary stripe less sharply defined; the lores, suborbital region, and cheeks dull brownish, like the auriculars, the latter with an indistinctly lighter central spot; chin and throat dull buffy white, with a tinge of straw-yellow, changing to clearer buffy white on sides of fore-neck; jugulum with an indistinct blackish patch, the feathers broadly bordered with dull whitish. Whole breast and sides light isabella-color, indistinctly streaked with darker; abdomen and crissum white. Wing 3.75, tail, 2.45, culmen, .40, tarsus, .80

Young, first plumage (♂, No. 90761, May 29, and ♀, No. 90792, May 16, Richland Co., Illinois; R. Ridgway): Above brownish black, the wings brownish; back dotted with sharply defined deltoid and rhomboid specks of white; pileum with similar but much more minute markings, and rump also varied in the same manner but spots rather more transverse than on the back. Lesser and middle wing-coverts brownish black, broadly tipped with buffy white; greater coverts dusky, edged with isabella-brown, and narrowly tipped with pale buff; prevailing color of closed remiges isabella-brown, the tertials, however, darker brown, bordered with buff, this bordered internally with a dusky submargin. Lower parts dull white, the jugulum, sides of breast, and sides, dull isabella-buff, spotted or clouded with dusky.

Measurements: wing, 4.30; tail, 3.08; bill, .80; tarsus, .45 (largest of 16 ♂).

Measurements: wing, 4.10; tail, 2.80; bill, .78; tarsus, .45 (smallest of 16 ♂).

O. alpestris arenicola, var. nov. DESERT HORNED LARK.

Male: Crown, nape, rump, lesser wing-coverts, and sides of body pale vinaceous, feathers of middle back dark brown centrally, darker towards the rump, not however taking the form of distinct streaks. Exterior surface of wing near shoulder very pale cinnamon. A broad crescent of black from forehead to behind the eyes, bordered by white below. Malar and pectoral patch black. Below white; tail black, except the two middle feathers, which are dark brown edged with pale cinnamon; outer tail feathers edged with white. Throat pale yellow.

Female: General colors similar. Feathers of occiput dark brown, medially like the back; throat showing lines only of yellow.

Measurements: wing, 4.25; tail, 3.00; bill, .88; tarsus, .48 (largest of 7 ♂).

Measurements: wing, 4.00; tail, 2.90; bill, .85; tarsus, .47 (smallest of 7 ♂).

Otocorys alpestris giraudi, var. nov. TEXAN HORNED LARK.

SUBSP. CHAR. — Smaller than *O. alpestris praticola* (the wing not more than 3.90 inches in the ♂), and deeper colored; the forehead and superciliary stripe yellow, or tinged with yellow, and the breast (immediately beneath the black jugular collar) often, if not usually yellow. Female much paler and grayer, with more distinctly yellowish throat than in *praticola*.

Adult ♂ in Spring, No. 73706, Corpus Christi, Texas; G. B. Sennett): Posterior half of crown, occiput, nape, sides of neck and breast, lesser and middle wing-coverts, and upper tail-coverts, grayish vinaceous; back, scapulars, and rump dull brownish gray, the back very obsoletely, the upper part of the rump distinctly, streaked with darker. A narrow frontal band (about .12 of an inch wide) continued back in a distinct superciliary stripe; chin, throat, and malar region, primrose-yellow; a broad patch on fore part of the crown (about .35 of an inch wide), ear-tufts, lores, oblique patch beneath the eyes, and jugular patch, black; middle portion of auriculars pale primrose-yellow, the terminal portion grayish brown. Breast, except laterally, pale primrose-yellow, minutely and very indistinctly flecked with pale grayish brown; rest of lower parts white. Wing, 3.90, tail, 2.55, culmen, .42, tarsus, .80.

Adult ♀ in Spring (No. 73707, Brownsville, Texas, G. B. Sennett): Above light vinaceous-gray, everywhere distinctly streaked with dusky; forehead (indistinctly) dull whitish, this gradually passing into a rather well-defined buffy white superciliary stripe; malar region, chin and throat, primrose-yellow; lores and suborbital region dusky, mottled with pale buffy grayish; auriculars pale pinkish buff, darker terminally. Jugulum with a distinct transverse patch of brownish black, the feathers narrowly tipped with dull whitish. Lower parts white, the breast somewhat tinged with pale vinaceous (especially laterally) and marked with deltoid spots of pale vinaceous-gray. Wing, 3.55; tail, 2.30; culmen, .40; tarsus, .80.

Measurements: wing, 3.90; tail, 2.60; bill, .72; tarsus, .38 (largest of 8 ♂).

Measurements: wing, 3.57; tail, 2.50; bill, .82; tarsus, .40 (smallest of 8 ♂).

In a series of 17 specimens all from Texas, the characters of this form as given above are remarkably uniform. Of eleven adult males, only four are without yellow on the breast: in the same number it is very distinct, being almost as deep as the color of the throat, while in three it is paler, though distinctly indicated. In the coloration of the upper parts there is no variation worthy of note, except in the width of the yellow and black bands on the top of the head, which vary to a greater or less degree in

all the races. Six adult females, in spring plumage, are all so nearly alike that the description given above would apply equally well to all of them.

O. alpestris rubeus, var. nov. RUDDY HORNED LARK.

SUBSP. CHAR.—*Adult* ♂ (Stockton, California, No. 76599, L. Belding): Occiput, hind neck, rump, upper surface of wings, and sides of body deep cinnamon or ferruginous; feathers of back grayish brown, not taking the form of distinct streaks. Superciliary stripe pale yellow. Belly and under tail-coverts white; throat bright primrose-yellow. Sides of breast deep cinnamon, in strong contrast with the white. Crescent, malar and pectoral patches as in other forms. *Female* (No. 82413, Santa Rosalia Bay; L. Belding): Upper parts light grayish cinnamon, brighter on lesser wing-coverts and nape. Crown, back, and upper part of rump broadly streaked with dark brown. Superciliary stripe buff-yellow. Chin and throat clear buff-yellow. Jugular patch and patch on breast brownish black; rest of under parts dull white, tinged on sides of breast with light grayish cinnamon.

Measurements: wing, 4.10; tail, 2.95; bill, .80; tarsus, .42 (largest of 11 ♂).

Measurements: wing, 3.60; tail, 2.60; bill, .75; tarsus, .42 (smallest of 11 ♂).

O. alpestris strigata, var. nov. STREAKED HORNED LARK.

SUBSP. CHAR.—Most like *chrysolæma*, but differing in much darker and less cinnamomeous coloration above, with the back broadly and distinctly streaked with dusky; the lower parts either entirely yellow, or with the breast yellow (very rarely destitute of yellow).

Adult ♂, *spring plumage* (No. 8734, U. S. Nat. Mus. Ft. Steilacoom, Puget Sound, April 15, 1856; Dr. Geo. Suckley, U. S. A.): Upper parts, in general, rather deep vinaceous, the back, scapulars, and rump, however, more grayish brown, very broadly and conspicuously streaked with brownish black. Lower parts pale yellow, or yellowish white, becoming nearly pure white on flanks and crissum. The usual black areas on head and jugulum. Wing, 3.80; tail, 2.60; culmen, .45; tarsus, .75.

Adult ♂, *in winter* (No. 80477, Yuba Co., California, February 1877; L. Belding): Similar to No. 8734, but upper parts more obscured by brownish (the dark streaks of dorsal region very heavy and distinct, however), and yellow of lower parts much deeper, the whole surface posterior to the jugular patch being light primrose-yellow, except the crissum, which is white; black jugular patch and that on fore part of crown slightly broken by very narrow pale yellowish tips to feathers. Wing, 4.00; tail, 2.80; culmen, .40; tarsus, .80.

Adult ♀, *in spring* (No. 8733, U. S. Nat. Mus. Ft. Steilacoom, March 20, 1856; Dr. Geo. Suckley): Lesser wing-coverts bright cinnamon; mid-

dle wing-coverts and upper tail-coverts paler, more vinaceous cinnamon; rest of upper parts, including top of head, rather light fulvous-grayish, the pileum narrowly but very distinctly, the back, scapulars, and rump very broadly and sharply, streaked with brownish black; nape more inclining to vinaceous, and obsoletely streaked. Lower parts pale buffy yellow, relieved by a large and distinct jugular patch of black, slightly broken by narrow buffy tips to the feathers. On the fore part and sides of the crown the black streaks show a tendency to coalescence, thus strongly indicating the solid black area of the adult male; the black on lores and cheeks is also strongly indicated. Wing, 3.65; tail, 2.40; culmen, .45; tarsus, .80.

Adult ♀, in winter (Albany, Oregon, Jan. 22, 1881; Cab. H. W. Henshaw). Above more decidedly brownish, with the streaks more suffused; lesser wing-coverts much duller cinnamon. Lower parts (posterior to the black jugular patch) with only the breast yellow, this clouded with rather distinct spots (some of deltoid shape) of dull grayish olive, or drab. Wing, 3.60; tail, 2.40.

In connection with my study of the Shore Larks I should not forget to mention the assistance I have received from friends. My thanks are due to the following gentlemen who have kindly placed their series of Shore Larks at my disposal: Mr. William Brewster; Mr. Geo. B. Sennett; L. Belding; W. Bryant; C. F. Batchelder; H. K. Coale; T. S. Roberts. My especial thanks are due to Mr. Ridgway, whose advice and substantial assistance I have had throughout the preparation of the paper.

BICKNELL'S THRUSH.

BY REV. J. H. LANGILLE.

OFF the south-west end of Nova Scotia, opposite Yarmouth and Shelburn Counties, is a large number of islands—one for every day in the year, they say. On leaving the harbor of the city of Yarmouth, off to the westward and well out at sea, are Green Island and Garneet Rock. Then comes the Tusket Islands, many in number, and of varied size, form and appearance; some being partly cultivated, some wholly wooded and the outermost almost as smooth as a lawn; these last are called the Bald Tuskets. Farthest out at sea, and very nearly on an extend-