

Article II.—NOTES ON BIRDS OBSERVED AT JALAPA AND LAS VIGAS, VERA CRUZ, MEXICO.

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PLATE III.

Doubtless no other area of similar extent offers as many attractions to the naturalist as does that portion of the State of Vera Cruz lying between the parallels of 18° and 20° north latitude. Its surface includes lagoons, rivers and dashing streams ; sandy beaches, marshes, and plains ; valleys, cañons and mountain crests whose loftiest peak reaches an elevation of over 18,000 feet, and is crowned with perpetual snow. The temperature of the region is of course affected by its varying altitudes, and the climate is further influenced by extremes of aridity and humidity.

To these natural conditions should be added the accessibility of the region, and the fact that it is bisected by two lines of railway, which within a few hours take the traveller through three life-zones. Thus, leaving the city of Vera Cruz on the Mexican Railway, at 6 A. M., we pass through the arid coastal zone, or *tierra caliente seca*, and in two hours reach the lower border of the humid tropical zone, or *tierra caliente húmeda*, at an altitude of some 900 feet. We are now fairly in the mountains, and the ascent is more rapid, the lower border of the temperate zone, or *tierra templada*, at an altitude of about 2,700 feet, being reached at 9 A. M. We now journey through the elevated valleys of the *tierra templada*, and in two hours have reached the northern limit of this zone, and the southern limit of the humid alpine zone, or *tierra fria húmeda*, at an altitude of some 5,500 feet. The palms and heliconias of the humid tropical zone, the tree ferns and coffee groves of the *tierra templada*, are now replaced by forests of pines and oaks, which continue until, six hours after leaving Vera Cruz, we approach the arid alpine zone, or *tierra fria seca*, at an altitude of some 8,000 feet. The journey from this point to Mexico is on the great central plateau, a treeless region, over which comparatively uniform conditions prevail.

It is evident, then, that within this circumscribed area the student of the geographical distribution of life will find a field for work, where a minimum of effort will produce a maximum of result. A bio-geographic map of this region, based not only upon an exact knowledge of the distribution of its plants and animals, but also upon detailed information of its topography, soil, and climate, would be of surpassing interest, and it is as a contribution toward so desirable an end that this paper is presented.¹

The following notes are based upon observations and collections made between March 28 and April 27, 1897, at Jalapa, altitude 4,400 feet, and at Las Vigas, altitude 8,000 feet. During this period I employed as my assistant Señor Mateo Trujillo, of Jalapa, and his thorough knowledge of the ground, skill in collecting, and obliging disposition, were material factors in securing the 772 specimens (486 birds and 266 mammals²) which formed my collections. I desire also to express my thanks to Mr. J. F. Brooks, of Jalapa, for permission to camp and to collect upon his estate. As a matter of convenience I have arranged the species observed in the order given in the 'Biologia Centrali-Americana.'

I.—BIRDS OBSERVED AT JALAPA.

The names of few localities in Mexico are better known to ornithologists than that of Jalapa. One of the first faunal papers³ on Mexican birds was based upon collections made largely near this city, and as early as 1859 Dr. P. L. Sclater published a report⁴ on a collection of 850 birds' skins collected by Señor Raphael Montes de Oca in the vicinity of Jalapa, which, with an immediately succeeding paper on birds from Oaxaca,⁵ and one by the same author on Sallé's Collections,⁶ constituted the most important contributions to our knowledge of the distribution of Mexi-

¹ For an important paper on the distribution of the birds of Vera Cruz, by F. Sumichrast, see *Memoirs of the Boston Society of Natural History*, Vol. I, pt. iv, 1869.

² For a report on the Mammals, see this *Bulletin*, IX, 1897, pp. 197-208.

³ Cassin, *Catalogue of Birds collected by Wm. S. Pease during the march of the Army of the United States from Vera Cruz to the City of Mexico.* *Proc. Acad. Nat. Sci. Phila.*, 1848-'49, pp. 87-91.

⁴ P. Z. S., 1859, pp. 362-369.

⁵ *Ibid.*, pp. 369-393.

⁶ *Ibid.*, 1856, pp. 283-311.

can birds which had then appeared. Subsequently, de Oca became one of the best known of Mexican collectors. He continued his work in the vicinity of Jalapa for many years, and no general collection of Mexican birds was without 'skins' of his characteristic make.

In more recent years Señor Mateo Trujillo, of Jalapa, has proved a worthy successor of de Oca, and while acting for Messrs. Salvin and Godman, and for others, has procured large numbers of birds near his home.

It would seem, therefore, that so far as their occurrence is concerned, our knowledge of Jalapan birds is too complete to render worth publication notes made during a stay of only three weeks. I find, however, on examination of the papers mentioned, and upon reference to other recorded specimens of de Oca's collecting, that our published knowledge of Jalapan birds is not only indefinite, but in many instances is positively incorrect.

Jalapa, lying between two wholly distinct life-zones (the *tierra caliente* of the coast region and the *tierra fria* of the tableland), is so situated that within a few hours one may pass to a tropical, or to an almost boreal fauna. It would even make a material difference in the result of a day's collecting whether one should go to the south or to the north of the city. Consequently, the necessity for exactness in labelling is evident, a necessity, however, which de Oca, in common with many of the earlier collectors, did not realize. His specimens, if they were labelled at all, were marked simply "Jalapa," though, as Trujillo informs me, and as a study of Dr. Sclater's list shows, many of them were taken in an entirely different faunal region. Hence we find included in the paper referred to such species as *Certhia familiaris alticola*, *Sitta pygmaea*, *Parus meridionalis*, *Junco phaeonotus*, *Loxia curvirostra stricklandi*, *Dryobates stricklandi*, and others characteristic of the alpine zone, and which doubtless never occur, even as migrants, near Jalapa. Again, other birds mentioned in this same paper (e.g., *Dendrotyx barbatus*) do not occur nearer than the arid coastal belt of the *tierra caliente*, and this inexactness bears fruit to the present day in the form of requests which Trujillo receives for specimens of de Oca's species, which the former has not met with during many years' experience.

It is evident, therefore, that for the purposes of the student of geographical distribution, the locality 'Jalapa' on a de Ocan specimen is of little more service than would be a statement that the specimen came from the State of Vera Cruz, while to accept the locality 'Jalapa' as exact might prove extremely misleading.

Trujillo, appreciating the need of greater care, has labelled his birds with full data, but as his collections have never been reported on as a whole, the results of his labors remain inaccessible to the public. Thus the 'Jalapa' of ornithological literature and the Jalapa of maps are by no means the same place, and as a contribution to our knowledge of the manner of occurrence and habits of the birds of this region, I feel warranted in presenting the following notes.

Jalapa being, as has been before remarked, at an altitude of some 4,400 feet, is in the heart of the temperate life-zone, or *tierra templada*. This life-zone, unlike the ones below and above it, has no arid sub-division, the whole temperate belt receiving a never-failing supply of rain from the moisture-laden clouds which arise from the Gulf and are condensed on the mountain-sides. Jalapa is, in fact, celebrated for its fogs and drizzling rains, which, even in midwinter, or at the height of the so-called 'dry season,' give to its vegetation a perennial freshness.

Collections were made at Jalapa from March 28 to April 16, at a point one and one-half miles east of the city, where my camp was most advantageously situated. The surrounding country is a series of low, rounded hills with narrow, intervening valleys, and is largely under cultivation in corn and coffee. There are also grazing lands, tracts of scrubby bushes, young second-growths, and fairly large areas of fine old forests containing some first-growth timber. The region is well watered by small streams.

Birds were abundant. Three or four species were found to be laying, but dissections showed that the breeding season was only just begun. Most species were mating, or nest-building, and the song-season was therefore at its height.

1. *Catharus melpomene* (Cab.).—An abundant inhabitant of the denser undergrowth, preferably along the borders of woodland. Its dull colors, habit of sitting motionless when perching,

and the nature of its haunts, make it a difficult bird to observe. It is not shy, and one's presence often seems to stimulate its powers of song; nevertheless I succeeded in securing but seven specimens.

Both this bird's relationships and appearance would lead one to suppose that it possessed unusual vocal talent, but from the birds about Jalapa I heard only the most unattractive song. It was not unusual to hear four individuals singing at the same time their oft-repeated, unmusical, guttural, *cheerless-merelless*, with occasionally a few added notes.

2. *Catharus mexicanus* (Bon.).—Apparently rare, but two specimens, a male and a female, being taken. The former differs from the latter in having the black cap deeper and more clearly defined, the back, sides of the throat, the breast and flanks grayer, a difference which, as Salvin and Godman suggest,¹ is doubtless sexual.

3. *Merula tristis assimilis* (Cab.).—The most abundant species observed. Its calls resemble those of the Robin (*Merula migratoria*), but are apparently less varied; its song, however, is to my mind much richer and more musical than that of the Robin. Dozens of these birds could be heard singing early each morning, and in the afternoon we were again serenaded by this inspiring chorus of bird-song.

Comparison of two specimens of this Thrush, collected by Dr. G. A. Buller, at Tonila, Jalisco, with eight specimens from Jalapa, shows such marked differences in color that I have submitted my Jalapa material to Mr. E. W. Nelson for comparison with his large series of *Merula tristis* from the west coast region, including specimens from Huitzilac, Morelos, which is in the same district as Temascaltepec, the locality whence came Swainson's type. Mr. Nelson kindly writes me that the Jalapan birds differ from west coast examples in their darker coloration, the wings and tail being blackish brown, not grayish olive-brown, the brown on the flank being grayer and darker. West coast birds are somewhat the larger, as the following average measurements of representative

¹ Biol. Cent.-Am., Aves, I, 7.

series of males from Morelos and Jalisco and from Jalapa show: West coast birds: Wing, 5.12; tail, 4.06; culmen, .87; tarsus, 1.26. Jalapa birds: Wing, 4.98; tail, 3.94; culmen, .83; tarsus, 1.20.

It thus appears that the east coast bird is well entitled to subspecific rank, and I apply to it, therefore, the name *assimilis* of Cabanis based by him on Jalapa specimens.

4. *Merula grayi* Bon.—Much less common about my camp than the preceding species, but abundant in the gardens of the city of Jalapa, where *M. t. assimilis* was not observed. This peculiarity of distribution doubtless accounts for the name *Primavera corriente*, or Common Thrush, being applied to this species. The calls of *Merula grayi*, like those of *M. t. assimilis*, bear a strong resemblance to certain of those of our Robin (*Merula migratoria*), but it has also a wholly distinctive, nasal mewling note. Its song I consider one of the finest I have ever heard a bird sing. In its varied character, fluency and execution it suggests the songs of the Catbird (*Galeoscoptes carolinensis*), Thrasher *Harporhynchus rufus*, and Mocker (*Mimus polyglottos*), but it is sweeter in tone and less consciously sung; in spirituality I was reminded of the songs of both the Wood Thrush (*Turdus mustelinus*) and Hermit Thrush (*Turdus a. pallasii*). In short it is a flawless performance, and heard at nightfall, when the birds sing most freely, is one of the most satisfying bird's songs to which it has been my fortune to listen.

5. *Galeoscoptes carolinensis* (Linn.).—A female, taken April 7, was the only one observed. This specimen shows no signs of molt in progress.

6. *Melanotis cærulescens* (Swains.).—Abundant; resembling the Catbird in its fondness for dense shrubbery and in its general actions. Its notes could be heard at almost any hour of the day, and their loud tone and striking originality, in connection with the bird's numbers, combined to render it one of the most characteristic birds of the region. It would take a far longer experience than mine to enable one to fully describe the notes of this bird, if, indeed, they could ever be fully described.

So greatly do the songs of different birds vary from each other that I cannot say which is the true song of the species. I have heard three birds singing wholly unlike songs at the same time. They may utter a rambling, broken recitative or short, vigorous call of but three or four notes, and in addition to their own apparently limitless repertoire they imitate the notes of other birds in so perfect a manner that identification by means of notes alone was often extremely uncertain.

7. Harporhynchus longirostris (Lafr.).—Not common. In choice of haunts and in song it resembles *H. rufus*; its song, however, seemed to me to be richer than that of the Eastern bird.

8. Myiadestes obscurus (Lafr.).—The Jilguero, as this bird is called by the natives, was common in all the older woodlands, where it frequents the tops of the highest trees. Occasionally it may be seen darting ten to twenty feet upward into the air, apparently after insects, but were it not for its song the bird would rarely be noticed. This, however, is so remarkable that one would indeed be unobservant who could pass within one hundred yards of a singing Jilguero and not be attracted by its song. It is described in my journal as beginning "with several preliminary, metallic, bell-like calls separated by rapidly decreasing intervals, then bursting into a shower of sparkling notes, which, if you are near the singer, completely drowns the songs of all the other birds in your vicinity. There may be a dozen birds singing, but you hear only the Jilguero. In rapidity of utterance, spontaneity and absolute irrepressibleness, the song reminds me of the Bobolink's, but *Myiadestes* sings more notes to the second than our 'mad singer.' The bird is secondary to the song; it takes entire possession of him. To use a rather unpleasant simile, it is like a fit; it is an explosion of music over which the bird has no control."

It is not to be wondered at, therefore, that the Jilguero is a favorite cage-bird among a people who are more than usually fond of pets. It is, as a rule, reared from the nest, and evidently thrives in captivity on a diet of plantains and boiled eggs.

There is a striking and very interesting difference in the songs of individuals of this species from different localities. Thus the voices of the birds about Jalapa are possessed of such strength that when heard at a distance of a few yards the sound is painfully loud, and I have often placed my fingers to my ears when passing near the cage of a singing bird. But the birds from the deep ravines or barrancas have much sweeter, less powerful voices, and under the name of "Jilguero de la Barranca" are highly prized.

In caged-birds I have noticed that the three to five notes which precede the song are in turn preceded by a nervous flitting or twitching of the first primary, the outward evidence of the emotion which culminates in the burst of music I have tried to describe.

The Clarin (*Myiadestes unicolor*) was reported by Trujillo as occurring on the wooded sides of a deep barranca several miles from, and at a lower elevation than, Jalapa. Its song, as I have heard it in captivity, is much superior to that of the Jilguero, being possessed of greater richness of tone, depth of expression, and variety of notes.

9. *Sialia sialis azurea* (Baird).—In a locality which strongly suggested an old apple orchard, Bluebirds were not uncommon, and I have observed seven individuals there in a morning. They were evidently preparing to breed, and their familiar song seemed, by association, wholly out of place in a region inhabited by Toucans, Trogons and Ant-birds.

10. *Regulus calendula* (Linn.).—Four individuals were observed, three of which were females showing, on dissection, no signs of an approaching breeding season.

11. *Heleodytes zonatus* (Less.).—Common in small companies of six or eight birds. They frequent the denser growth at the borders of woods, living both in the bushes and upper branches, but if found in the former situation at once mount upward, hopping from limb to limb. As they go they switch the tail violently from side to side, or sweep it about in a singular

way, but I have never seen them cock it forward as other Wrens do. At the same time they give utterance to a loud, scolding, cackling note, which is soon followed by a chorus sounding like *scratchertee-scratch-e-scratch*, three times repeated, and in such perfect unison that one can readily imagine it a concerted performance under the direction of a leader.

12. *Henicorhina mexicana* Nels.—This Wren was a not uncommon inhabitant of the denser undergrowth in damper parts of the forests where, owing to the nature of its haunts, its color and activity, it was as difficult to shoot as a Field Mouse. Its call is a low, chippering *kick*, but its song is possessed of surprising volume. It is thrush-like in quality, and suggests the song of the Robin, but it is delivered with the snap and energy which characterizes the song of the Whip-poor-will.

13. *Thryothorus maculipectus* Lafr.—Common. Its musical, rapid whistle does not appreciably differ from that of *Thryothorus rutilus*, and is so unlike the song of any other Wren with which I am familiar that it suggests a much closer relationship between these two birds than their appearance would lead one to suppose existed.

14. *Troglodytes aëdon* Vieill.—Two females, the only individuals of the species observed, show no signs of breeding. These specimens are obviously to be referred to *aëdon* rather than to *aztecus*.

15. *Cistothorus palustris plesius* Oberholser.—On the outskirts of Jalapa there is a small marsh grown with high grasses and reeds, in which there were about a dozen individuals of this bird, which has apparently not before been recorded from this part of Mexico. The three specimens secured are evidently to be referred to the interior form of Long-billed Marsh Wren recently distinguished by Mr. H. C. Oberholser¹ under the above name. They were females, and on dissection the ovaries showed no signs of enlargement.

¹ Auk, XIV, April, 1897, 188.

16. *Cistothorus polyglottos* (Vieill.).—In the marsh inhabited by *Cistothorus p. plesius* there were several pairs of these Short-billed Marsh Wrens. A nearly completed nest of coarse grasses, open on top and placed near the ground, doubtless belonged to this species, and this evidence of their breeding was confirmed by the much enlarged testes of the three males taken.

Aside from their paler under parts, these birds are readily distinguished from any one of a representative series of *C. stellaris* by the broader white stripes of the back, and unbarred black inner webs of the basal two-thirds of the inner tail-feathers.

I have no specimens of this Wren from South America, and follow recent authors in referring the Mexican bird to *C. polyglottos*.

17. *Helminthophila pinus* (Linn.).—A male, taken April 7, is acquiring new feathers in the interscapulars.

18. *Helminthophila rubricapilla* (Wils.).—One of three specimens, a female taken April 7, is gaining new feathers on the breast.

19. *Helminthophila peregrina* (Wils.).—A male taken April 18 shows no sign of molt in progress.

20. *Dendroica virens* (Gmel.).—A female taken April 7 is acquiring new feathers on the crown.

21. *Seiurus aurocapillus* (Linn.).—A male taken April 6 shows no signs of molt in progress.

22. *Geothlypis trichas* (Linn.).—A female taken April 15 is growing new feathers on the crown.

23. *Icteria virens* (Linn.).—A female taken April 10 shows no signs of molt in progress.

24. *Wilsonia pusilla* (Wils.).—Three of the four specimens taken, one a female, are acquiring the black cap by a complete molt of the feathers of the crown, and are also gaining new feathers about the gular region.

25. **Basileuterus culicivorus** (*Licht.*).—Common, especially in young second-growth woods. It is a rather suspicious bird, and with drooped wings and slightly spread tail flits from branch to branch about the intruder, uttering a chirping call. Its song is simple and weak, but musical, and reminds one of the song of *Sylvania mitrata*, though by no means equal to it.

26. **Basileuterus rufifrons** (*Swains.*).—Much less common than *B. culicivorus*. It seemed to prefer bushy growths at the borders of woods, just such haunts as are selected by *Geothlypis trichas*.

27. **Vireo gilvus** (*Vieill.*).—A male, taken April 18, shows no signs of molt in progress.

28. **Vireo amauronotus** *Salv. & Godm.*.—It is a singular fact that in a region so well known as Jalapa this hitherto little known *Vireo* should prove to be a common bird. Five to seven individuals were heard daily, and their song so closely resembles that of *Vireo gilvus* that before examining specimens I entered the species in my notes under that name.

Comparison of seven examples of this bird with an equal number of *Vireo josephae* and a large series of *V. gilvus* shows that its relationships were correctly defined by Messrs. Salvin and Godman in describing it from the then only known specimen.¹ In the plumage of the back it more nearly approaches *josephae* in being brownish olive-green rather than grayish olive-green, while the crown is distinctly brownish, not grayish, as in *gilvus*. In the color of the under parts, however, it almost exactly resembles *gilvus*, being much less yellow than *josephae*.

A female taken April 1 was about to lay, while one taken April 5 was laying.

29. **Vireo solitarius** (*Wils.*).—Two specimens, taken respectively March 29 and April 1, are acquiring numerous new feathers on the crown, back, throat, and breast.

¹ Biol. Cent.-Am., Aves, I, 193.

30. *Neochloë brevipennis* *Scl.*—Three males of this rare Vireo were taken in scrubby undergrowth, two at the border of woods and one in the more bushy growth of an old field. Their song is short, and in character is sufficiently like the notes of *Vireo noveboracensis* to enable one to recognize the singer as a Vireo before seeing it. The iris is white.

31. *Cyclorhis flaviventris* (*Lafr.*).—Not uncommon, and resembling in notes and habits the same species as I have seen it in Yucatan.

32. *Ampelis cedrorum* (*Vieill.*).—Not uncommon in flocks of six to ten individuals. A female taken April 3 is acquiring a few new feathers on the crown, and is the only one of five specimens showing signs of a molt in progress.

It is surprising to learn that the relation between birds so apparently unlike as the present species and *Ptilogonys cinereus* should be recognized in the common name given to them both, *Ampelis* being known at Jalapa as *Filomena cola corta*, while to *Ptilogonys* the name *Filomena cola larga* is applied, or, respectively, the Short- and Long-tailed Filomena.

33. *Ptilogonys cinereus* *Swains.* — Tolerably common, haunting the tops of the tallest trees, where it usually selects a perch on a dead or leafless limb. Its position is upright, its manner alert, and with crest slightly erect it is ever ready to dart into the air for insects. It apparently catches several before re-lighting, and it may not return to the same perch. Its call is a loud, metallic *claiik*. Its flight is rather rapid and undulating, and when on the wing it utters a chuckling note.

A male having testes one-fourth of an inch in length, resembles the female in plumage except for the white tail band, which is as broad as in the fully-mature male.

34. *Progne chalybea* (*Gmel.*).—Not uncommon in the city of Jalapa, but not observed in the surrounding country. No specimens were obtained.

35. *Chelidon erythrogaster* (Bodd.).—Late each afternoon great numbers of Swallows were seen coursing low over the city of Jalapa. No specimens were obtained, but the present species and *Tachycineta bicolor* were positively identified, and there was also a species of *Petrochelidon*, whether *lunifrons* or *melanogaster* I cannot say. None of these birds were seen about my camp, distant less than two miles.

36. *Tachycineta bicolor* (Vieill.).—Seen in the late afternoon in large numbers feeding over the city of Jalapa.

37. *Stelgidopteryx serripennis* (Aud.).—Not common. Several were seen apparently prospecting for nesting sites in a sand-bank, and the testes of a male taken April 18 were considerably enlarged, evidence tending to show that this species breeds at Jalapa.

38. *Euphonia elegantissima* (Bonap.).—Not common.

39. *Tanagra abbas* Licht.—Not uncommon.

40. *Piranga rubra* (Linn.).—A female taken April 6 had slightly enlarged ovaries.

41. *Piranga leucoptera* Trudeau.—A fully plumaged male, taken April 3, was the only specimen observed.

42. *Piranga bidentata* Swains.—Common in the more heavily-wooded tracts, where it frequents the upper branches. Its song resembles that of *Piranga erythromelas*, but is more musical, and even more strongly suggests that of *Merula migratoria*. Its call-note is a characteristic *clit-tuck*, corresponding to the *chip-chirr* of *P. erythromelas* and *chicky-ticky-tuck* of *P. rubra*.

43. *Phœnicothraupis rubicoides* (Lafr.).—Three examples were taken, the only ones observed.

44. *Chlorospingus ophthalmicus* (Du Bus).—Common. A female taken April 1 was laying, another taken April 16 was sit-

ting, showing that the breeding season was at hand ; but I failed to hear, or, at least, to recognize either the song or call-notes of this species.

45. Buarremon brunneinucha (*Lafr.*).—Not uncommon ; living in the forests on or near the ground in the denser undergrowth. It is apparently a shy bird, and I failed to learn anything of its notes.

46. Saltator atriceps (*Less.*).—Not uncommon about the borders of woods. This is an active bird, seldom seen long in one place, and apparently it ranges over a wide extent of territory during the day. Its notes are loud and harsh, but I did not hear the unpleasant, steely alarm-note uttered so frequently by this species in Yucatan.

47. Saltator grandis (*Licht.*).—Less common than the preceding.

48. Zamelodia ludoviciana (*Linn.*).—Not observed about our camp, but apparently not uncommon in the trees of Trujillo's garden in Jalapa, to which it was doubtless attracted by their fruits. A male taken April 18 is evidently renewing its plumage by molt. The tail is but half grown, the wing-coverts and inner secondary are new, new feathers are appearing in numbers throughout the body where the change is nearly completed, but the wing quills, except as noted, are of the old brownish plumage. A second male, taken the same day, is in adult but apparently worn plumage, and shows no signs of molt in progress.

49. Cardinalis cardinalis coccineus (*Ridgw.*).—A single male was taken west of Jalapa, but the species was not observed near our camp.

50. Guiraca cærulea eurhyncha (*Coues.*).—Not common. One was heard singing April 1, and the testes of a male taken April 13 measured about .15 inches in length.

51. *Sporophila morelleti sharpei* *Lawr.*—Flocks of fifteen to thirty were observed on two occasions.

52. *Volatinia jacarini splendens* (*Vieill.*).—Four individuals were observed, one of which was taken.

53. *Euetheia olivacea pusilla* (*Swains.*).—A flock, containing some thirty individuals, was observed April 15. The testes of two males taken on this date measure .15 inches in length, but the ovaries of two females show no signs of enlargement.

54. *Chondestes grammacus strigatus* (*Swains.*).—A single Lark Finch was seen, but not taken, west of the city of Jalapa.

55. *Spizella socialis arizonæ* (*Coues*).—Not uncommon in small companies. The three specimens taken are typical of this subspecies.

56. *Melospiza lincolni* (*Aud.*).—Abundant in the old weeds of uncultivated fields and in bushy growths.

57. *Aimophila rufescens* (*Swains.*).—Very common in bushy tracts and in the undergrowth bordering woodland, suggesting in choice of haunts as well as in actions the Song Sparrow (*Melospiza fasciata*). Its song is uttered frequently and with much energy, but is mechanical and unmelodious.

58. *Carpodacus mexicanus* (*Müll.*).—Observed only in the town of Jalapa, where it apparently was not common. Since leaving Jalapa Señor Trujillo has forwarded me two young females and an adult male of this bird taken in that city in May. When compared with specimens from the more arid tableland these Jalapa examples prove to be darker and more heavily streaked, and it is not improbable that further material will show them to be worthy of subspecific separation.

59. *Coccothraustes abeillæi* (Less.).—Not uncommon, a few individuals being seen almost daily. In the 'Biologia Centrali-Americana' (Birds, Vol. I, p. 427), this species is described as being "rather sluggish in its movements, frequenting the lower branches of the forest-trees," but I found it an alert, active bird, which perched in an exposed position on the topmost limbs of the tallest trees, where, after calling its loud, double-noted whistle, it left on an apparently extended flight for some distant haunt.

60. *Spinus notatus* (Du Bus).—Not uncommon. A female taken April 2 was laying.

61. *Spinus psaltria mexicanus* (Swains.).—Common in small flocks. Specimens of both sexes taken April 13 are apparently in full molt; the old wing-feathers are being replaced by new ones, but the old tail-feathers have not been shed.

62. *Icterus melanocephalus* (Wagl.).—Apparently not uncommon but irregular in its appearance, and evidently covering a wide range of territory in its daily wanderings. Its song, which is also uttered by the female, is a most singular performance, and always reminded me of a boy with no ear for music who whistles a series of unrelated notes, which he tries to improvise into a kind of rambling tune.

63. *Dives dives* (Licht.).—Seen on several occasions, but only in the parks of the city of Jalapa.

Near the railway station at Jalapa I had a brief distant view of flocks of birds which I provisionally identified as *Quiscalus macrourus* and *Molothrus*.

64. *Cyanolyca ornata* (Less.).—These birds occur only in the larger forests where, on April 7, I secured a male and female, the testes of the former being slightly enlarged.

65. *Xanthoura luxuosa* (Less.).—Very common in small companies about the borders of woods and in scrubby growths. They are noisy birds, often reminding one in their notes of *Cyonocitta cristata*.

66. *Psilorhinus morio* (*Wagl.*). Observed and heard calling on two occasions, but no specimens were secured.

67. *Mionectes oleagineus assimilis* (*Scl.*).—Two specimens were secured of this well-marked race, which may be easily distinguished from Panama and South American examples by its grayish green throat and breast.

68. *Myiozetetes texensis* (*Giraud*).—Common in pairs about the borders of woodland. They are noisy, excitable birds, and their harsh chattering cries were among the most characteristic bird-notes. Several times, while one of these birds was pursuing its mate at full speed, I heard a whirring sound which was sufficiently loud to be startling in its effect at a distance of one hundred yards. It lasted only two or three seconds, and was apparently produced voluntarily, doubtless by the wings, though the primaries of this species show no unusual modification.

69. *Myiodynastes luteiventris* *Bonap.*—Six individuals were observed, of which three were taken.

70. *Mitrephanes phæocercus* *Scl.*—A rather uncommon inhabitant of the woods.

71. *Empidonax albigularis* *Scl.*—A male with enlarged testes, taken April 9, was the only one observed.

72. *Contopus pertinax* *Cab.*—Five individuals were observed, of which three were taken.

73. *Contopus borealis* (*Swains.*).—A male was taken April 13.

74. *Myiarchus lawrencei* (*Giraud*).—Very common, and evidently preparing to breed.

75. *Platypsaris aglaia* *Lafr.*—Common about the borders of woods. They were mated and nest-building as early as April 3, and were now noisy and active, their harsh, chattering notes,

as they chased one another about the tree-tops, often reminding one of the sudden outbreak of *Myiozetetes*.

Their nest, of which several were seen in course of construction and a completed one, without eggs, secured, is so unlike that described by Messrs. Salvin and Godman as belonging to this species, that I cannot but believe these authors were misled by a collector's error. They write of a nest, evidently resembling that of a Vireo, open at the top and about two inches deep. Whereas that built by *Platypsaris* at Jalapa, where both the bird (called 'Mosquero degollado') and its home are well known, is some fifteen inches long and about eight in width, with an entrance at one side near the middle. It is a remarkable structure, composed largely of coarse weed-stalks and grasses, in part covered with fresh green mosses, the walls of the cavity being lined with mud. These nests are attached to the end of a limb of one of the taller trees, and sometimes overhang a public road. (See Plate III.)

76. *Pachyrhamphus major* (Cab.).—Two specimens were taken and several others observed. The note heard was a low, sweet, questioning whistle.

77. *Automolus rubiginosus* (Scl.).—A male having much enlarged testes was secured April 3.

78. *Sclerurus mexicanus* Scl.—Four specimens were secured in dense woodland on or near the ground. Their note is a single high chirp of peculiar quality.

79. *Dendroornis flavigaster* (Swains.).—Not uncommon in the larger forests, where its loud whistled call was not infrequently heard.

80. *Picolaptes affinis* Lafr.—Three specimens were secured.

81. *Thamnophilus doliatus mexicanus* Allen.—Not uncommon in tracts of scrubby bushes. Its call is similar to that of the representatives of this species as I have heard them in Yucatan and Trinidad.

82. *Chlorostilbon canivete* (Less.).—A female taken on April 18.

83. *Uranomitra cyanocephala* (Less.).—Common. A nest found April 5 was placed in a small bush about five feet from the ground, and contained two partially incubated eggs.

84. *Amazilia beryllina* (Licht.).—A male taken April 10.

85. *Sphenoproctus curvipennis* (Licht.).—Not uncommon. This bird is locally known as 'Guiche (a name applied to all Hummers) Cantador del Monte,' or the Singing Hummer of the Woods, a distinction it well deserves. Upon first hearing this Hummer's song I supposed it to be uttered by a bird at least nine inches long, although the singer was some 75 feet from me, and the intervening space was thickly grown with bushes. A bird that I often watched regularly frequented certain perches. He was rarely quiet, but constantly turned his head from side to side as though looking for something, while his tail, which was above his drooped wings, was often nervously flitted. Frequently he uttered a long, high, twittering trill, which at intervals of several minutes was followed by his song. This truly remarkable performance is difficult of description, but if one can imagine the sound which would be produced by a violent, automatic jerking of a quart of water in a five-gallon demijohn some idea may be had of this bird's unique song. It lasted about ten seconds, and seemed to greatly excite the singer, and at its conclusion he quickly and repeatedly protruded his tongue for an inch or more, then, with a shrill twitter and a whirr he darted off in a direct line. He was gone only a few seconds when the twittering note and sometimes the song, uttered on the wing, told of his return to one of two or three perches, when the whole performance, twitter, song and sudden dart, were repeated.

So far as my observations went, the much-enlarged shafts of the outer primaries are functionless, as regards the production of any unusual sound. The shrill noise which often accompanied the bird's flight was undoubtedly vocal. It was frequently produced while the bird was at rest, and when I could distinctly see the movement of its mandibles.

86. *Trochilus colubris* Linn.—A female taken March 29 is gaining new feathers on the throat and back.

87. *Atthis heloisæ* (Less.).—A female taken April 12.

88. *Cypseloides niger borealis* (Kennerly).—A flock of from 50 to 100 of these birds was often observed passing over our camp early in the morning. They flew with great rapidity, and in a few seconds were lost to view. In the evening numbers were sometimes seen circling about at a great height.

A species of *Chatura* was observed in small numbers on several occasions, but no specimens were secured.

89. *Antrostomus vociferus* (Wils.).—Three specimens were taken, none of them having the sexual organs enlarged.

90. *Nyctidromus albicollis merrilli* Sennett.—Not uncommon, and heard calling each evening.

91. *Chordeiles acutipennis texensis* (Lawr.).—Night-hawks were seen in small numbers every evening flying at a great height. The only individual secured was of this form.

92. *Melanerpes formicivorus* (Swains.).—Several pairs of these birds were resident in certain tall dead trees at the border of a wood, the only locality in which they were observed.

93. *Sphyrapicus varius* (Linn.).—Three specimens were taken, two of which are gaining a few new feathers on the breast or crown.

94. *Eleopicus oleaginus* (Reich.).—Not uncommon. Its call resembles the sharp *peek* of *Dryobates pubescens*, but is uttered continuously for several seconds.

95. *Trogon puella* Gould.—Not common, and confined to the denser forests. A female taken March 30 was laying, and another taken April 8 had the ovaries much enlarged, indicating a comparatively early nesting season. The call of this species is a

softly whistled *coo*, several times repeated, agreeing in character with that of the three species of this genus I have heard in Trinidad.

96. *Crotophaga sulcirostris* Swains.—Several were observed, and one secured.

97. *Piaya cayana thermophila* (ScL.).—Not common. A female taken April 7 had much enlarged ovaries. The call of this bird is evidently uttered by both sexes; it is a loud, nasal *vee-à-ho*, reminding one in tone of a Peacock's scream, repeated several times and followed by a hyla-like piping whistle.

98. *Cathartes aura* (Linn.).—A few were observed daily.

99. *Catharista atrata* (Bartr.).—Less common than *C. aura*.

100. *Elanoides forficatus* (Linn.).—Two were seen March 29.

101. *Buteo latissimus* (Wils.).—Two specimens were secured.

April 5 and 16 flights of Hawks—I was unable to determine the species—were observed passing northward, exceeding in number any migration of these birds I have before seen. Unlike the well-known autumnal flights of Hawks when in straggling companies they may be seen for several hours, these birds were closely massed. Nor did they fly directly, but in circles, thousands being massed in whirling flocks, the number of birds being incalculable. They flew at an altitude of about 1000 feet, and although, as I have said, they soared in circles, they nevertheless progressed rapidly, those seen on the 5th being in sight only about 15 minutes, while those observed on the 16th were less than one hour in passing our camp.

102. *Polyborus cheriway* (Jacq.).—Two were seen.

103. *Leptotila fulviventris brachyptera* (Salvad.).—Common.

104. *Columbigallina passerina pallescens* Baird.—A male and female, taken respectively April 13 and 15, had the sexual organs much enlarged.

105. *Ortalis vetula macalli* (Baird).—Occurred locally in small numbers.

106. *Rallus virginianus* Linn.—Four specimens were secured, two in the small marsh previously mentioned as the home of *Cistothorus elegans*, and two in a narrow strip of grassy marsh bordering a wood. Two were males with slightly enlarged testes and the basal half of the lower mandible coral-red; two were females with dull yellowish bills and unenlarged ovaries.

107. *Crypturus cinnamomeus* (Less.).—One or two of these birds were heard trilling their short, low whistle each morning and evening, but no specimens were secured.

II.—BIRDS OBSERVED AT LAS VIGAS.

Las Vigas, at an elevation of 8,000 feet, is on the border of the tableland, in the humid alpine zone, some forty miles in a direct line from Jalapa. After becoming partially familiar with the avifauna of Jalapa, a brief experience at Las Vigas proved a most impressive lesson in the effects of temperature on the distribution of life.

Two hours by rail after leaving Jalapa, with its semi-tropical vegetation, one is surrounded by magnificent pine-forests, which, almost wholly devoid of undergrowth, are apparently of boundless extent. The Trogons, Toucans, Tinamous, Ant-birds, Tanagers, Thrushes, Wrens, and other birds common in the region about Jalapa, have been left behind, and in their place one finds Juncos, Crossbills, Brown Creepers, Pine Finches, Evening Grosbeaks, and other species characteristic of the alpine zone. In short, an almost entire change in avifauna occurs. Of 108 resident birds observed at Jalapa and Las Vigas, only three (*Cathartes*

aura, *Catharista atrata*, and *Carpodacus mexicanus*) were found in both localities.

At Las Vigas we are still within reach of the moisture-laden Gulf clouds. The region is fertile, and humidity plays no part in this remarkable faunal change, which is evidently due to the influence of temperature alone. From the summit of the pine-clad hills one can look down on the dense forests of the temperate zone, distant only a few minutes as the bird flies, but between the two temperature has erected an invisible but potent barrier which few species cross.

At Jalapa the average temperature at 7 A. M. during my stay was 64°; at Las Vigas it was about 50°, and each morning we had a white frost.

Scarcely less interesting than this difference between the faunæ of Jalapa and Las Vigas is the much earlier nesting-season which, contrary to what would be expected, was found to exist at the last-named place. At Jalapa, as has been before remarked, only four species were discovered by dissection to be laying, and no young birds were seen. At Las Vigas the nesting-season was evidently more than half over. Full-fledged young were taken of the following species: *Merula migratoria propinqua*, *Sitta pygmæa*, *Certhia familiaris alticola*, *Dendroica olivacea*, *Junco cinereus*, *Loxia curvirostra stricklandi*, *Coccothraustes vespertinus montanus*, *Anrostomus vociferus macromystax*, and *Dryobates stricklandi*.

The following species were found on dissection either to be laying or incubating: *Sialia mexicana*, *Parus meridionalis*, *Ergaticus ruber*, *Vireo huttoni stephensi*, *Empidonax fulvifrons*. Fourteen species, or about forty per cent. of the resident birds noted were thus, even by my limited observations, found to be breeding or to have bred. Without a detailed knowledge of the climatic conditions prevailing at Las Vigas during the spring and summer months it would be useless to speculate on the manner in which this unexpectedly early breeding season has become established.

1. *Turdus ustulatus swainsoni* (Cab.).—The single specimen taken was too mutilated to permit of a satisfactory examination of the sexual organs.

2. *Turdus aonalaschkæ auduboni* (Baird).—Two specimens, representing both sexes, were secured. In neither of them were the sexual organs enlarged.

3. *Merula migratoria propinqua* Ridgw.—Common, and in full song. The breeding season was evidently at its height, and on April 25 a nest containing two nearly fledged young was found. It was placed on the lower limb of a pine toward the end, and in general construction resembles a typical Robin's nest. The usual number of young was said by the natives to be three.

4. *Sialia mexicana* Swains.—Apparently not common. Four specimens were taken, three males, having the testes much enlarged, and a female containing an egg ready for deposition. No songs were heard.

5. *Regulus calendula* (Linn.).—Not uncommon. Three females were taken, but in none of them did the ovaries show signs of enlargement.

6. *Parus meridionalis* ScL.—Common. The call of this Titmouse is a rapid, vigorous, double-noted whistle repeated three times, and not at all like the notes of *Parus atricapillus*. In its conversational 'juggling' notes there is, however, a marked similarity to the corresponding notes of that species. A female taken April 20 was laying.

7. *Psaltiriparus melanotis* (Hartl.).—Not uncommon in small companies of three to five individuals. They seemed to prefer low, bushy growths, but were also seen high in the pines. Their note is a metallic twitter.

An incomplete nest found April 24 was suspended to the outer branch of a bush. It is composed of plant-down and grasses firmly interwoven, and externally is uniformly covered with bits of lichens. It is pensile, with the opening on one side at the top, and measures eight and one-half inches in length. The entire bottom is lacking, whether through an accident or because the

nest is incomplete is not apparent. The structure, however, is evidently of recent make.

8. *Sitta carolinensis mexicana* Nels. & Palm.—Tolerably common. A female differs from five males in having the abdomen and flanks browner, and also in having the crown wholly black, but not glossy.

9. *Sitta pygmæa* (Vigs.).—Tolerably common. They feed actively on the terminal buds of the pines, and often utter a rolling trill. April 25 one was seen feeding fully grown young.

Four males differ from Arizona examples in having the crown somewhat lighter.

10. *Certhia familiaris alticola* Berl.—Four specimens were taken, three adults and one fully grown young of the year. Apparently more than one brood is reared, for a female taken April 23 was collecting nesting material. The song of this Creeper is a rather loud but unmusical *squeak-squee-e-e-er*, evidently, therefore, unlike that of *Certhia familiaris americana* of Maine, as described by Mr. Brewster.

11. *Troglodytes ædon* Vieill.—The two specimens taken agree with two from Jalapa in being clearly referable to *ædon* rather than to *aztecus*.

12. *Troglodytes brunneicollis* ScL.—A shy and rather uncommon inhabitant of the rocky arroyos.

13. *Anthus pensilvanicus* (Lath.).—Two were observed April 22, and eight or ten on the 25th. No specimens were secured.

14. *Helminthophila rubricapilla* (Wils.).—A male, taken April 23, the only bird of this species observed, is gaining new feathers on the crown.

15. *Dendroica auduboni* (Townsend.).—A female in full plumage, taken April 23, was the only bird of this species observed.

16. *Dendroica virens* (Gmel.).—A fully plumaged male was taken April 24.

17. *Dendroica olivacea* (Giraud).—An abundant inhabitant of the pines. The only note heard was a loud rapid whistle so like the *peto* of *Parus bicolor* that I at first supposed it to be uttered by a Titmouse. Numerous young that had left the nest were seen being fed by the parents; my series of seventeen specimens includes three in first plumage.

18. *Seiurus noveboracensis* (Gmel.).—A typical female of this species was taken April 26.

19. *Geothlypis macgillivrayi* (Aud.).—Two males having unenlarged testes were collected.

20. *Ergaticus ruber* (Swains.).—A pair of these beautiful Warblers was taken April 24. The testes of the male were much enlarged, while the condition of the ovaries, oviduct, and abdomen in the female showed that she was incubating.

21. *Wilsonia pusilla* (Wils.).—A male was secured April 24.

22. *Setophaga miniata* (Swains.).—A male was taken April 25.

23. *Vireo solitarius plumbeus* (Coes.).—Not uncommon, frequenting the higher branches of the pines. Three males had much enlarged testes, and were in full song, indicating that the species breeds at Las Vigas.

24. *Vireo huttoni stephensi* Brewst.—Common. Six specimens were secured—five males with enlarged testes and one laying female. The call of this species consists of two unexpectedly loud whistled notes, often repeated.

25. *Piranga hepatica* (Swains.).—A female with slightly enlarged ovaries was taken April 23.

26. *Zamelodia melanocephala* (Swains.).—A singing male having much enlarged testes was taken April 24.

27. *Junco cinereus* (Swains.).—Abundant, especially about the borders of the pines, where it was much on the ground. Young in first plumage were common, and my series includes birds just from the nest, and others fully grown but in spotted plumage. The sharp chirp, twitter, and *chew-chew* notes of this species resemble those of *J. hyemalis*, but the song of seven notes suggests in a measure that of the Song Sparrow.

28. *Spizella socialis arizonæ* (Coues).—Common in flocks in the cleared fields. Specimens taken give no evidence of breeding.

29. *Melospiza lincolni* (Aud.).—Not uncommon along certain agave hedges bordering brooks.

30. *Aimophila superciliosa* (Swains.).—Common in hedge-rows and bushy growths bordering fields, roadsides, and arroyos. It is a bird of much character in pose, and when excited mounts to the top of a bush, partly erects its tail and chirps vigorously. The sexual organs in both sexes gave evidence of the near approach of the breeding season.

31. *Chamæospiza torquata* (Du Bus.).—A male with enlarged testes was shot in a growth of scrubby bushes.

32. *Pipilo fuscus* (Swains.).—Not uncommon in hedges of agaves. I heard no song, but the call-note was deceptively like that of the Song Sparrow. The testes of the males taken were much enlarged.

33. *Loxia curvirostra stricklandi* Ridgw.—Common in small flocks. They show the well-known fondness of this species for salt by frequenting, in numbers, the troughs on the mountain-tops where the goatherds were accustomed to call their flocks. Young in streaked first plumage, from individuals in which the

mandibles are as yet uncrossed to those in which the bill is fully developed, are included in my series of fifteen specimens.

34. *Coccothraustes vespertinus mexicanus* Chapm.

Coccothraustes vespertinus mexicanus CHAPM. Auk, XIV, 1897, 311.

Four specimens were taken, one of which, a young male but a few days from the nest, was being fed by an adult male.

35. *Spinus pinus macroptera* (Du Bus).

"*Carduelis macroptera* DU BUS, Esq. Orn. t. 23."

Spinus pinus macroptera CHAPM. Auk, XIV, 1897, p. 311.

Common and evidently preparing to breed. Males were observed singing on the wing after the manner of *Spinus tristis*, at which times the wings and tail are fully spread, displaying their yellow markings so effectively as to give the bird the appearance of being largely yellow.

36. *Scolecophagus cyanocephalus* (Wagl.).—Several flocks were observed, and a pair of birds was secured.

37. *Corvus corax sinuatus* (Wagl.).—Two or three individuals were observed daily about the town of Las Vigas.

38. *Aphelocoma sieberii* (Wagl.).—Two males, one with much enlarged testes, taken April 21, were the only birds of this species observed.

39. *Empidonax fulvifrons* (Giraud).—Common. A nearly completed nest found April 26 was saddled on the limb of a small pine about fifteen feet from the ground, and was composed of dried lichens.

40. *Empidonax fulvipectus* Lawr.—Four specimens were secured, of which the sexual organs of two indicated that they were about to breed.

41. *Contopus borealis* (Swains.).—Four were observed, and a male with unenlarged testes was taken April 26.

42. *Contopus pertinax* Cab.—Common, and evidently preparing to breed. The males perched upon the topmost branches of the pines, and at short intervals gave utterance to their singularly musical song.

43. *Antrostomus vociferus macromystax* Wagl.—Evidently not uncommon. Several specimens were taken, and on April 25 two nearly fledged young were found. They were squatting side by side on a little shelf of earth, which served the purpose of a nest, on the grass-grown side of a deep arroyo. The female parent was perched on the ground about fifty feet away, and at intervals uttered a low, clucking note.

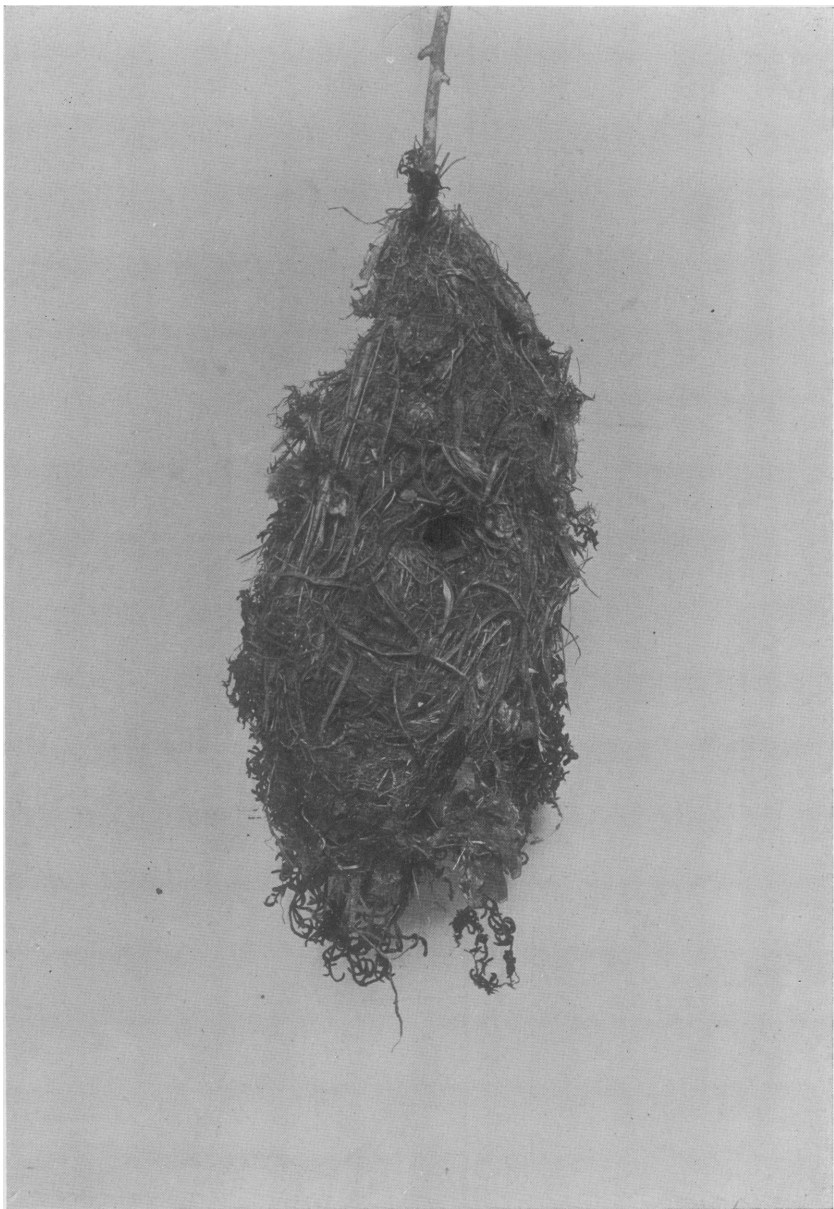
44. *Dryobates villosus jardinii* (Malh.).—Two were seen and one secured.

45. *Dryobates stricklandi* (Malh.).—An adult female, accompanied by a fully-grown young bird of the year, was taken.

46. *Colaptes cafer* (Gmel.).—Not common. Two males with much enlarged testes were secured.

47. *Cathartes aura* (Linn.).—A few were observed daily.

48. *Catharista atrata* (Bartr.).—One or two were observed daily.



NEST OF *PLATYPSARIS AGLAIAE lafr.*

About one-fourth natural size.

