COLECCION ORNITOLOGICA PHELPS

WILLIAM H. PHELPS
WILLIAM H. PHELPS Jr.

APARTADO 2009
CARACAS, VENEZUELA

August 1, 1965.

Dr. Martin H. Moynihan, Director,
Canal Zone Biological Area, Drawer C, Balboa, C.Z.

Dear Dr. Moynihan:

I refer to your letter of July 9 regarding where D. carbonaria and lafresnayi might be found in close proximity.

I am addressing this letter care of Dr. Lehmann in accordance with your request. The delay in answering is due to my ill health. I am sorry.

I am attaching a list of all of our specimens. You will see that only at the following localities did we find the two species together:

Páramo Tama, Táchira. Not recommended as need a camp with mules. Not reached by auto.

Páramo Zumbador, Táchira. Recommended as can collect from auto.

Paramo Aricagua, Mérida. Not recommended as you need Mules. Auto does not get there.

Téleferico. Recommended, but you say you have failed to see lafresnayi there.

I trust tat this information will be of use. Kindly write tome for anything additional.

Very sincerely,

William H. Phelps

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APARTADO 2009
CARACAS, VENEZUELA

November 23, 1962

Dr. Martín H. Moynihan,
Canal Zone Biological Area, Draweer C, Balboa, Canal Zone.

Dear Dr. Moynihan:

I have yours of 13th. I have been ill so this answer is delayed. I am very glad that you found your birds at Páramo La Negra.

DIGLOSSA GLAUCA. It is not a Venezuelan bird.

DIGLOSSA CYANEACYANEA. I am enclosing sheet showing all specimens collected, with the altitudes. You will see that all C. sitticolor localities are also D. cyanea localities, but not vive-versa.

You will see, from my correspondence, that you can collect all four species, D. cyanea, D. gloriosa, C. sitticolor and D. lafresnayii, from the 2,700 y 3,000 stations on the Mérida Teleférico (overhead, trolley suspension cars). You would not have to even hire a car to do so as the Teleférico starts from close to the city of Mérida and goes up the show mountains to the snow line. You could go up in the early morning and return late in the afternoon. You get to the city of Mérida by frequent planes from Caracas and I think Maracaibo. There is an excellent tourist hotel in Mérida.

DIGLOSSA LAFRESNAYII. It is notvrare as we have 18 specimens. Páramo La Negra was the only locality where the others ocurred and not it, so you did not find it there either.

I trust the above covers your questions. Kindly let me know if I can be of any further use to you.

Sincerely,

William H. Phelps

Localities and altitudes

DIGLOSSA LAFRESNAYII LAFRESNAYII

Paramo Misisi, Trujillo	2000m
" Acarigua	3000m
" Zumbador, Tachira	2600m
" Tamá, Tachira	3000-3275m
Rio Chiquito, Tachira	2300-2200m
Teleferico, Merida	3500m

DIGLOSSA CYANEA CYANEA

Paramo Misisi, Trujillo	2100m
" Cende, Trujillo	2700m
" Zumbador, Tachira	2300-2600m
" Tama, Tachira	2400-3000m
Rio Chiquito, Tachira	1800-2100m
Pregonero, Tachira	2280-2400m
Santo Domingo, ~~Tachira~~	2500-2700m
Paramo San Antonio, Merida	2750m
" Aricagua, Merida	3000m
" La Negra, Merida	3000-3200m
Tobay, Merida	1800m
Llano Rucio, Merida	2500m
Valle, Merida	2200m
Quintero, Merida	2500m
El Escorial, Merida	2800m
Teleferico, Merida	2700-3000m
La Azulita, Merida	2100-2300m

DIGLOSSA CYANEA OBSCURA

Cerro Pejochaima, Perija	1900-2300m
" Tetarí, Perija	2900m
Campamento Avispa, Perija	2175m

DIGLOSSA CYANEA TOVARENSIS

Colonia Tovar, Aragua	1800-1900m
El Junquito, Caracas	2000m

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APARTADO DE CORREOS No. 1289
CARACAS - VENEZUELA

MR. WILLIAM H. PHELPS
APARTADO 2009
CARACAS, VENEZUELA

OS

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26 March, 1963

Dear Moynihan:

Welcome to Peru. Maria has told me of your objectives; and if it were possible I would have enjoyed being on hand to discuss them with you and to offer you whatever aid and encouragement that I might. By the time you receive this letter I'll probably have arrived in southern Peru, from which I hope to return to Lima within about ten days before completing arrangements to go to several points in the Department of Junin.

It is my impression that you have selected an inhospitable time of the year for your studies. Not that the situation is hopeless. At the present time, however, both weather conditions and the political weather are unfavorable in the Sierra, or so at least my recent experiences at Chachapoyas, Machu Picchu and Maraynioc have led me to believe. All of these places are remote. I can tell you a little about each of them.

Chachapoyas. There are two raods to this city, one going to it from Cajamarca, the other going to it from the north, via Olmos and across the Rio Maranon. The former road is now absolutely impassible (it is a new road, its surface still so soft that the slightest rain modifies it and quickly churns it into a quagmire). When I was in Chachapoyas during the third week of February, not even the most intrepid great trucks could use this road. The other road is much better; but when the true dense rainfall of the rainy season arrives, it too becomes impassible. It was still good when I was there but the heavy rains had just started. Perhaps it is still all right; but it would be best to fly to Chachapoyas. Fawcett Airlines, according to my information, flys into there on Wednesdays and Saturadays, in DC-3's; rate is about $52.00 US, roundtrip. (Fawcett reservation office is in the building of the Bolivar Hotel and faces onto the Plaza de San Martin). As for the Humid Temp. Zone of Chachapoyas, it is difficult to reach from the town; much logging of it has occurred (the "woods" at Maraynioc

see e

seem to be much better preserved).

Macchu Picchu. The Sierra of Souhtern Peru has received unusually heavy rainfall this year. It rained daily in Macchu Picchu when I was there in early December last year. According to missionary friends of mine who live near Cusco, the rains still have not abated but have actually increased in the Cusco region. There is no place to stay at Macchu Picchu except the very expensive Tourista Hotel, and the Urubamba Valley at that point now is in terrific political turmoil; the army is there in force. Local Communists daily roll rocks down upon the railroad from Cusco to Macchu Picchu (the only route to the place). I doubt if Diglossa carbonaria is still breeding there, though it was in December (they began breeding in October at Chihuata, east of Arequipa). This species is of course a very common bird in many places, including places near Lima that Maria knows extremely well.

Maraynioc. The Tempe rate and Humid Temp. of this place are famous (it is East of Tarma in Junin) and it is the place I most wish to return to complete my own work. But you can't get to it now, and to get to it at all you must either have a vehicle or pack animals. I was there only a few weeks ago, in my Volkswagon. The road to it is very steep, a one-way road but I think quite good; its rules of traffic are: up in the morning, down in the afternoon. As I say, you can't get to Maraynioc now, for the road must be really in bad shape at present, owing to the recent rains in the Central Sierra, the heaviest of the year. I am hoping that by mid-April the situation will improve. (No busses run to Maraynioc; it is simply a hacienda located among touring meadows)

I have yet to encounter Diglossa lafresnayii, so I can't help you at all there. If you're interested in Xenodacnis, I can help you; also with Oreomanes fraseri. The relationships of these species can not help being of interest to anyone interested in Diglossa, verdad?

Perhaps you will still be in Lima or nearby when I return. What I have written so far is totally inadequate, and is gloomy; too gloomy perhaps. The fact is, however, that the upper regions of the Sierra will generate serious problems for your enterprise even in the dry times, and for the next few weeks up in those regions you must be prepared to cope with almost continuous heavy rain. It is a good thing to know this, and not to underestimate it. I think it is imperative that you travel to a place where you can have a roof over your head. At any rate, my best wishes to you. I am much interested in your studies and know from our mutual friend Gene Eisenmann that you are doing excellent work.

Sincerely yours,

Bill

Bill George

D. Carbonaria

*→ Paramo Tama 3000M (Pumerales) 2 specimens

Mucuchies 2700-3700-3800M 5 specimens

merida

✓* Tumbador 2500M 1 "

Paramo Conde 2700-3250M (Trujillo) (Muerto) 18 specimens

*→ " Aricagua 3000M 1 "

[illegible] 2550-3700M 7 "

Merida (mochilon)

C. Telari 2900M 12

Zulia

Camp. Arrife (mochilon) 2175M 2 "

Zulia

Pico Cerro (Mochi) 2350M 7 "

Zulia

P. Tallega 3050-3300M 16 "

Merida

✓* Teleferico (La aguada) 3000-3300M 2 "

" (Loma Redonda) 3900M 1 "

D. Lafresnayei

P. Misisi 2000M 1 specimens

✓* P. Tumbador 2600M 1 "

* P. Tama 3000-3275M 8 "

* P. Aricagua 3000M 2 "

Pico Chapito 2200-2300M 4 "

✓* Teleferico (La Aguada) 3500M 1

Was absent

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DR WILLIAM H PHELPS
APARTADO 2009
CARACAS, VENEZUELA

10-

PRINTED MATTER

April 1, 1972
Furnace

Went out with Olga, to photograph, on March 29 and 31. Did not observe intensively, but did note the following:

1. Most of my birds are not breeding now.
2. Heard of few songs by Numens and Wintestants
3. Heard did saw mixed flocks just below the parking on the Furnace side and in VSTF on Mesopán side.
4. Aglaeactis seems to have moved "up hill" Lots of birds. Sighting (and probably foraging) just below parking on Furnace side

Diglossini April 17, 1972
Cerro Punta

11:30 a.m. Road to Las Nubes. Looking for Diglossa "plumbea" ("Plumb.")

Area much cut over. Some second growth. Cloudy. Warm. Zonotrichias singing. Otherwise very quiet.

Hear Whitestart song. No other birds singing.

Yellow-thighs around. Apparently alone. Then see Silver-throats and BCBT's further on. Scattered scrub in pasture. Pairs usually mixed flock.

12:20. Some distance further on see mixed flock; Yellow-thighs, BCBT's, Yellow-throated Allapetes, etc. Dense second growth scrub near pasture.

See Whitestart in tree in pasture. Slate-throat. Sings a few phrases NODWA. Then sings more phrases in scrub. NODWA.

Further on, more Slate-throats. Singing NODWA. But some apparent overlap with Zonotrichia.

Stopping 12:55 p.m.

April 18, 1972
Cerro Punta

Going to work in and around town today. Arrive 6:35 a.m. Mixed sun and light drizzle.

6:42 a.m. See sings ♀ Plumb. Flitting about in matted isolated trees and bushes edge small pastures,

Diglossini, Apr. 18, 1972 II

B

crop fields, near houses.
Feeding on white "Daturas"

← Incisors made here.

5 points

♀ Plumb. obvious, quite alone. Utters occasional "Tsit"s. Moving very rapidly over wide area. Diameter at least several hundred yards. Then disappears from sight. Reappears 6:53 a.m. Moving thru non-flowering trees now. A little more sedately than earlier. Disappears into large orange tree NOTE. Now I see that this area is not very far from a rather large commercial flower garden.

Then walk around for quite some time. There are lots of flower gardens in the neighborhood! (SE VENDEN FLORES signs at 4 or more houses). But I don't see a single Diglossa OR hummingbird (altho I hear what may be hummingbird song or dispute sounds in distance).

Why are nectarivores so comparatively rare here? Climate? Or just not too many flowers under semi-natural conditions a few years ago.

Finally see hummingbird 7:32. In commercial flower garden. Rather large. Long straight bill. Undistinc

rushed tail. Generally dark green. Purple on forehead. Bluer green bright throat patch. Feeding on large cup shaped yellow flowers. Flies away.

A few minutes later and a few yards further on, seen single ♀ Plumb. Obviously alone. Silent. In garden. Feeds on dark pink small Gladiolus. Also same type of yellow cup shaped flowers taken by hummingbird. But definitely cutting in from side. Presumably not same ♀ seen earlier.

7:55 a.m. Annie back at first area. First ♀ Plumb-feeding on Datura flowers as before.

Stop observations here 8:20 a.m. Quite dense drizzle, bajareque, seems to be settling in.

COMMENTS: There are lots of Fuchsias and Foxgloves in flower here now; but I have yet to see a nectarivorous bird go to them during this visit. Why?

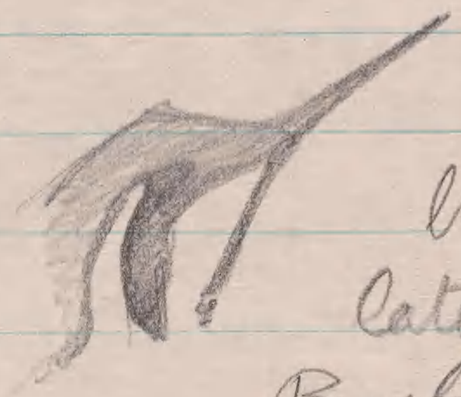
The rarity of nectar-feeders here applies to individuals as well as (or even more than) species.

9:30 a.m. Going to work around the Dahlin's house. This area is comparatively low. Probably only a few hundred feet above the El Hato Cuna plain (although several miles along road). The Dahlin's claim that one or more Diglossas do (does) feed at Fuchsias at this lower level. Certainly there are holes in corollas. The Dahlin's have also seen two species of hummingbirds here feeding on the same Fuchsias. Their accounts would suggest that interspecific encounters among nectarivores may be "random." But Jane Rosenthal did see one fight between a Diglossa and

a "blue" hummingbird (Wood Nymphs). Hummingbird the aggressor.

9:42. Single small greenish hummer shows up. Feeds briefly on Fuchsias. Goings from front, not side. Flies away.

9:55. Hummer appears. Quite possibly same bird as before. Get good view. Bill straight, not very long. Tail squarish, with small white tips to at least outer rectrices. Whole bird greenish above. Langely orange-buffy below. Head with whitish stripe behind and above eye, merging with buffy of chest. Dark stripe below whitish



Feeds on Fuchsias as before. Flies off. Back again a few minutes later. Flies off again. Definitely Back again 10:03. Off again. 10:11 Back again. Off again. Back 10:25. Off again Back again Off again.

Go for a walk without seeing anything of interest Return to Fuchsias 10:45 a.m. Same hummer around. It goes off again Back again almost immediately. Off again

10:50 Same hummingbird (I shall it "X") back. Alone and feeding as usual. A single ♂ Diaeus lands on Fuchsia plant a few inches away. X continues feeding; then perches and preens same plant. Another Diaeus (imm. ♂) lands on ground a few feet away. Joined by first ♂ Diaeus. Both Diaeus feed on ground. X continues preening, then starts

Diglossini, Apr. 18, 1972, V E

to feed as usual again. Then ♂ Plumb. flies straight into Fuchsia bush. Lands 6"-1' away from X. Starts to feed in usual Diglossa fashion. X also continues feeding. But the feeding is interspersed with obvious hostile behavior. X makes at least 12 "passes" at Plumb. Most of these are so rushed or "inhibited" that they are hardly interpretable. But one is vicious, and another may produce actual body contact. In both the latter cases, the Plumb. hops off a few inches, utters a few harsh sounds, but then resumes feeding, apparently undisturbed. On another occasion, the Plumb. (accidentally?) supplants the X. Finally, Plumb. flies off, apparently of her own volition. X flies after her in hot "pursuit".

X back immediately. The Diglossa have been joined by 2 or 3 other birds. (minutatrices, perhaps with adult ♂) of their own species. Seeming them small shrubs beside Fuchsia. X makes what may be one inhibited pass at them. Then flies away. Diglossa soon move on again in opposite direction.

X comes and goes again several more times in the next few minutes.

COMMENT: This area is obviously part (probably center) of X's territory. It is obviously willing to defend the area, even in some cases against birds of other species. But the inter specific hostility may not be as strong or as specialized as among some forms in the Andes.

11:18 X back, alone and feeding as usual. Stays around for several minutes. Then a ♂ Plumb. flies in. (So ♂ & ♀ Plumbs do overlap, even though — or when — the

inds. do not associate with one another). X swoops at it immediately. Its effort ♂ Plumb starts to feed. Occas. utters a weak, wheezy trills. X does some feeding, interspersed with half-hearted passes, periods of perching (watching the Plumb). Then Plumb flies off, obviously of his own volition. X follows, "in hot pursuit".

The Plumbs certainly do not seem to bother much about X here and now!

Stopping observation 11:35 a.m.

Returned to same site 3:30 p.m. Sunny and warm.

X back almost immediately. Alone. Feeds as before. Then perches in Fuchsia. ♂ Plumb shows up a minute or so later. Feeds in typical manner. X makes several passes X ignores them. X perches. Plumb eventually flies away into tree 20 ft away. X follows in pursuit. ♂ Plumb hops from branch to branch. 10-15 ft up. Preening? (there are no visible flowers in this tree). Eventually lost to sight. X perches in tree. Then flies off.

3:45. X back to Fuchsia. Feeds. Off again

4:02. Looks up to find ♂ Plumb back. Feeding actively but quietly. 2 Diaeus (1 ad. ♂, 1 ♀ or immature) appear in ground below Fuchsia. Hop up into branches. Plumb pays no attention. ♀ or imm. Diaeus poises at Fuchsia flower. (Could these birds be interested in nectar???) Then Diaeus flies off. Then a tiny hummingbird of another species appears. (♀ or young ♂? Dull brownish green above. Largely buffy whitish below. Light of underparts extending some distance up side of neck.

Deglerseni, Apr. 18, 1972, VIII

G

Bill straight and not very long.) Feeds on Fuchsia flowers a few inches to a foot away from Plumb. Neither md. pays any obvious attention to the other. I think that the tiny hummingbird is feeding from straight in front. Then tiny flies away. Plumb flies away a few minutes later.

Then tiny re-appears. And X comes in like a bolt of lightning. Dive-bombs tiny. Tiny dashes away. X goes in pursuit. Both disappear.

4:20. X back again. Goes again. Back again. Feeds. Perches and rests for some minutes. Feeds again. Off again (to tree in which ♂ Plumb disappeared). Back again. Off again. Back again. Off again. Back and off again 4:52. Back and off again. Then ♂ Plumb shows up. Feeds. X comes back. Immediately attacks. Forces Plumb to move a foot or so, further into Fuchsia. But Plumb relaxes immediately. Goes back to feeding. X starts to feed too. Interrupts feeding to make pass from time to time. All very half hearted now. Plumb ignores the fuss. Then Plumb flies 2 ft away, perches in rose bush (no flowers now). X seems to relax, even though Plumb is still perfectly in view. I.E. it probably is only defending Fuchsia, not antagonistic to Plumb in general. Then Plumb flies away. X follows.

Stop observations 5:05.

Go down to lower house (of Olga's expedition). There is a Fuchsia here too. Some of the flowers have holes. And hummingbirds have been seen around. Start observing 5:30. Stop 6:15 pm.

Lucall Leptoornis delattrei

Lenipornis calolaema
(castaneoventris)

thalassinus

see also visual general accounts

ECOLOGY & INTER-SPECIFIC RELATIONS NEAR MÉRIDA
DIGLOSSINI

Sept. 15, 1962

BG One or more BG's in thickets and trees near hotel in afternoon. One (at least) singing.

Basi A single Diglossa (♀ or juv, rather greenish yellow-gray, streaked underneath — albilatera ?) seen in thicket which had previously been visited by a BG. Quite silent.

Sept. 16

albi inter ??? One ♂ albilatera and (probably) one intermedium associated with mixed flock near foot of stops of Teleferico. 10:40 a.m. Other members of flock included at least 1 Basileuterus (same species as at Nono), 1 Thraupis cyanocephala, 2 attapetes (no. II on list), and others. I don't know if the Diglossini associated with this flock were really integral members of the group; but they certainly disappeared when the other birds did. The albilatera and the presumed intermedium were not particularly closely associated with one another within the flock.

albi The members of this flock were scattered through several layers of vegetation, from low scrub to 20 or 30 ft high in trees. Some members probably moved between several different layers

glor A single adult glaucosa seen in scrub above first station of Teleférico at 11:00 a.m. Quite alone. Not feeding.

A single ♀ or juv. Diglossa seen in area slightly
albi above glaucosa. Grayish. Obviously barbatula or albilatera. Looked buffy on breast, but definite light patches under wings. Couldn't tell if it was streaked or not. Feeding in tree on pink flowers with tubular corollas. Feeding methods like those of other Diglossas

C ??? Pair of cinereum seen near Chorros de Milla. 5:15 p.m. One feeding on eucalyptus or eucalyptus-like flowers. The other singing from high exposed perch. This is an area of scattered bushes, small trees, in grassland CC's were relatively high in the vegetation here, but just about as low as they could get without actually getting down into the grass.

A single Diglossa (probably ♀ or juv — albilatera) may
??? have gone into the same tree about 10 minutes after the CC's left. If so, it did not feed there. Moved on almost immediately.

BG A single BG began to sing high (but not exposed) in a tree about 30 ft away from the tree in which the CC's fed about 2 minutes after the presumed Diglossa had left

Gen None of the Diglossini here showed any definite reaction to any of the common finches (Yellow-bellied Seedeaters, Andean Sparrows Dark-backed Goldfinches), tanagers (BT's, a single ♂ White-sine

and some unidentified Tangara-like forms), or hummingbirds in the same area.

Here were a number of (single) North American Redstarts in this area, feeding in the tree in which the BG sang (and presumably also fed). May compete with the Diglossini for food.

Sept. 17

Barri — A single ♂ varietula seen in outskirts of town of Mucuruba. In tree above a small abandoned backyard. Altitude 7550 (uncorrected). 7:15 a.m.

Feeding on flowers of eucalyptus. (Not the same species of eucalypt as at Quito. Flowers smaller and in clusters. Also quite different from the eucalypt or eucalyptus-like tree frequented by some Diglossini in Mérida and near Chimos de Mulla.) Also perched at base of small cones of some conifer or conifer-like tree. Presumably extracting insects. Usually 10 - 30 ft above ground.

Barri — Bird also sang perched high and exposed (about 15 ft above ground) in conifer or conifer-like tree.

No other Diglossini visible in neighborhood at any time during my period of observation.

Barri Gen — Is this genus the only Diglossa which can survive in habitats which are sub-optimal for Diglossas as a whole ????

Barri — While this individual was feeding, it quite ignored Dark-backed Goldfinches, BT's, and hummingbirds in the same trees.

SEE ALSO MIXED DIGLOSSINI NOTES

♂ paid no attention for a while. Young bird followed the adult. Then the two birds flew off, returned in a few minutes. Repeated behavior as before. Finally, the ♂ went over & fed the young. Young started FB again, ♂ fed it again, & the whole thing was repeated again once more.

(It is just barely possible that the "young" bird in the above incident was an adult ♀. It is also possible that some of the notes were also given by the ♂)

E.E. also saw a ♂ Diglossa with the usual mixed flock of Wilson's Warbler, Slaty-throated Redstart, Buff-tanagers, Yellow-throated Euphonias, Brown-capped Vireos, etc. But again the Diglossa separated from the flock after a short while.

Most of the birds one sees around here are in pairs, but there are also quite a lot of apparently solitary birds around — at least ♂'s.

Diglossa, I — March 3, 1959, Cerro Punta

Flits through vicinity of here always at diff. times. Early this morning the ♂ delivered a lot of "singing" 1, 2, 3, or 4 "Treee" Notes. The 4-note series sometimes organized "Treee-treee treee-treee!" (I am

There is a ♂ around the Pension here, also the garden from time to time. (Here from time to time, but usually or out times from the ♂)

not sure that this "doublet" organization was always present.) He bill opened & closed (but not completely) with each note. Sometimes, I think, the ♂ gave this song from a completely upright sitting posture. Sometimes he did it in the intervals of intensive preening - then the song was given from the very ruffled posture shown on the preceding page.

Otherwise this behavior (i.e. fluffing & CN's) has been just like last year.

Diglossa, I. March 6, 1959
Cerro Punta.

The same apparently unmated ♂ was in the garden by the house this morning at dawn singing repeatedly. Could check the song very well. The commonest form is "Sree-tsree tsree-tsree." But this is probably only moderately high intensity. 5-note songs are not uncommon. "Tsree-tsree tsree-tsree tsree" Sometimes the place of the fifth note is taken by a very brief, gurgles, warble. But this is relatively very rare. More common is the replacement of the 4th note of a 4-note song by three very brief notes "tsch tsch tsch."

The ♂ did most of this apparently higher intensity type song while he was flitting about from bush to bush & sub-canopy levels, feeding. Every once in a while, he would stop feeding and fly up into a tree. There he would continue to give songs as before — at least for a while. Twice he gradually began to preen after sitting in the tree for a second or so. Once he stopped singing after the preening began. The other time he continued to give song phrases in the intervals of preening. It is my impression that there were relatively fewer of the higher intensity type song phrases dur-

ing this preening than when he was mixing in the intervals of feeding — although he did utter some phrases of all types during preening. In general, it is my impression that the song of this species may be less intimately connected with preening than is the song of Coereba.

(The term "preening" in the above paragraph is used in a rather broad sense, to include some other comfort movements in addition to preening s.s. It was almost always introduced by a few B.W. movements — not unpreening as the bird had just been feeding. And the actual preening s.s. was occasionally interrupted by scratching.)

It is obvious that the ♂'s and ♀'s of this species maintain separate territories (or, at least, remain in separate areas — as I have seen little or nothing in the way of real territorial defense.) I have only once seen a ♀ in the garden where the ♂ whose behavior I have been watching usually hangs out, and this occurred when the ♂ himself was absent. Later on this morning I spent a good deal of time watching a ♀, and her area was only visited once, very briefly, by a ♂ (I think that the ♂ and ♀ fought at this time). A second ♀ also visited this area once very briefly, but only when the first ♀ was absent.

The ♀ I watched was engaged in nest-building. She had the nest almost or completely finished (with at least some of the lining in) a large proportion of both the ♂'s and ♀'s of this form I have seen, both this year & last, have white feathers in the crown. Variable in extent, forming a patch of variable shape & area.

August 4, 1959
Mt. Atacazo

Lots & lots of a new species of Diglossa here
Caforsuayei = [illegible] = (see notes of July 29, 1760)
Mostly in the area where the humid paramo and humid tem-
perate zones come together. Most of the area is actually paramo, but
usually brush extends along the watercourses. And the flowers pierced
stuck to the brush)

A most distinctive looking species. Females just slatey blue-
gray. Eventually uniform all over. (W.J. Smith says that the female is
darkest between the eyes and the bill, and possibly the crown - ?) The
♂ is eventually black all over. Possibly really just dark slatey blue
black all over, with a slight bluish gloss. Light yellow at base of
lower mandible, but bill otherwise blackish. Light blue under wing
coverts. Also a small patch of light blue visible when the bird is just
sitting with the wings folded. This might be part of the upper wing cov-
erts, or a patch of flank or side feathers covering the bend of the wing.
(Just conceivably the light under wing coverts "showing through".)

It is presumably the breeding season for at least some of these birds
now.

We disturbed a female, apparently feeding her young, and she then stalked about the underbrush in our neighbor-
hood. Occasionally uttered single "Hoop" notes. Most distinctive in
quality. Probably very high intensity alarm notes, provoked by and di-
rected toward us.

When we flushed males from the underbrush, they occasionally utt

ered nuigs "Init" Notes as they flew off. Presumably either ordinary CN's or relatively weak dCN's.

The males did lots and lots of "nuigus", for several hours after dawn. The general effect of the song of this species is as rather unexpected a long warbling, possibly almost twittering phrase. The general effect, in fact, is not unlike the song of the Dark-backed Goldfinch in Panama; although the notes are actually much less varied. And if one listens to the song of this Flower-piercer very carefully, one can see that it is actually composed of a long series of eventually similar "Tsree" Notes. Sometimes eventually uniform "Tsree" Notes uttered one right after the other. More often a little more varied. Perhaps the majority of the "Tsree" Notes are really organized into doublets "Tsrub-uh Tsreee" Some songs occasionally interspersed with one or more shorter doublets "Tsee tsee" All this would suggest that the song of this species is based upon the same elements as the song of the Slaty Flower-piercers at Chiriqui.

I only got one good clear view of a male of this species nuigus. Front view. apparently sitting more or less upright, in an apparently unnatural sitting posture.

Most of the time, the males seemed to be nuigus when (just because?) they were separated from their mates But I also heard some males give (communally?) loud & prolonged nuigus just before, and in the intervals between, a prolonged and apparently emotional dispute The song of this species may, therefore, contain a "direct" hostile component

Most of the nuigus was done from moderately exposed perches, near the tops of bushes or small trees.

Actually, I saw quite a few cases of one male chasing another, in

what appeared to be territorial boundary disputes. Most of these chases were apparently quite silent, but once one or both birds involved in a chase uttered one or two loud "Tseet" or "Tsecee" notes.

As far as I could tell, the WF's and TF's of these species were exactly the same as those of the species at Chiriqui.

This species does appear to be larger (and relatively smaller-headed) than the Slaty Flower-piercers at Chiriqui.

Diglossa, I — August 5, 1959
Cerro Pichincha

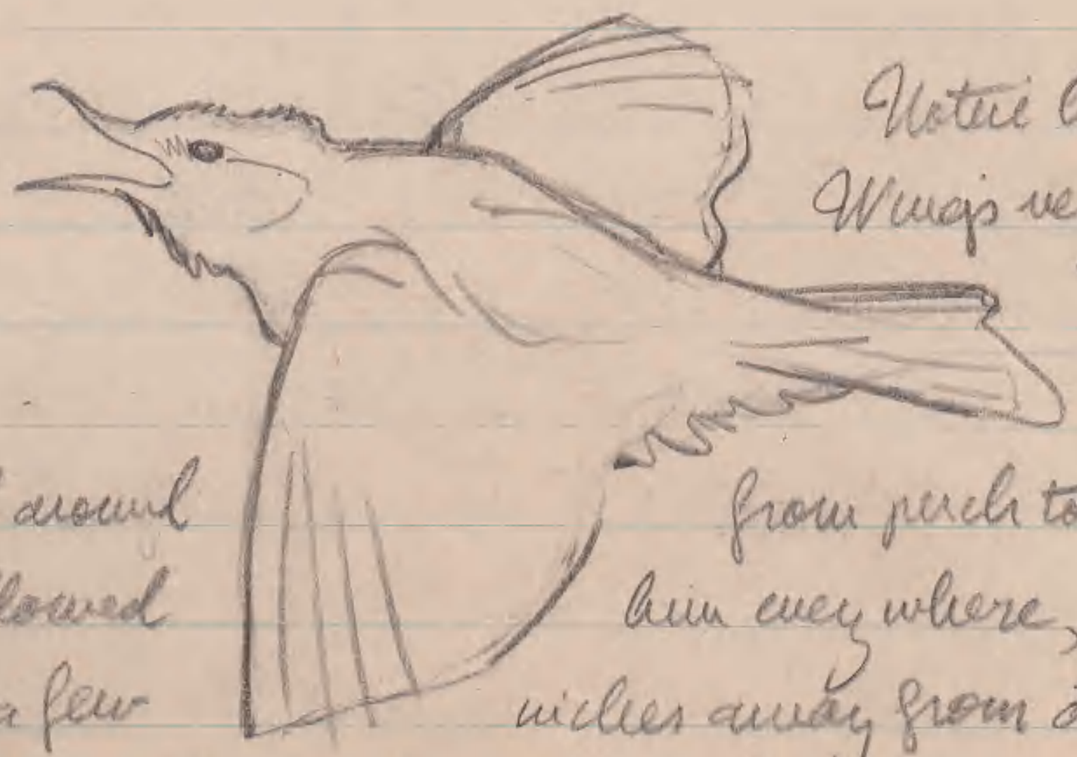
? other species

A male and a female, presumably paired, feeding 10 or 15 yds apart gradually approaching one another. Then the ♂ suddenly flew toward the ♀, uttering a long R "Zrrrrrrrrr" as he did so. Nothing happened after this, as the pair suddenly came down in bushes.

Diglossa, I. — August 7, 1959
Cerro Atacazo

I saw a magnificent encounter between two birds this morning. My notice was first drawn to the birds by watching an adult ♂ feeding in a bush. Quite silent & apparently relaxed. But another bird, in the same bush, which I could not see well, was uttering constant hoarse notes, very much like the scolding notes of wrens, although somewhat less abrupt sounding, and perhaps uttered somewhat more slowly. I might be transcribed as "Waa-aah Waa-aah Waa-aah..." or even "Waa-aash Waa-aash Waa-aash" (The "sh" sound at the end of these notes was

not very conspicuous, at this time.) The first bird (which I shall call "♂I") seemed to be quite undisturbed by this commotion. Probably because he was in his own territory (see below). Then both birds flew to another bush about 10 ft away. They landed very close together; and one bird (probably ♂I) uttered a definite typical song as it landed. This new bush was almost certainly in the territory of the other bird (which turned out to be a male - see below - and which I shall call "♂II.") I could see both birds pretty well in their new bush. ♂I was continuing to feed in an apparently relaxed manner, and ♂II was continuing the "Waa-aah...." Notes (which I shall call "WHAC" from now on). I could now see that ♂II was performing highly ritualized movements with his WHAC. Wings held way out, sometimes just very slightly drooped, sometimes quite horizontal. Waved slowly and asynchronously in a Butterfly-like manner (these movements may have been nothing more than balancing movements). (I thought I once saw a very brief trace of B-like movements, but this may also have been balancing). The head was held low, in a rather semi-hunched manner, throughout all or most of this performance, which I shall call "BV".



Notice head shape!
Wings very broad and rounded

♂I hopped around and ♂II followed + WHAC, only a few ds of this, ♂I flew off, and disappeared from the area for several minutes from perch to perch in the new bush. him every where, continuing to do BV wishes away from ♂I after a few seconds

♂II stopped displaying immediately and retired to the center of the bush, out of sight, presumably to relax. (At this time, I thought that ♂II must be a ♀ or a juv.; but when I finally located him again in the same bush, I got a good view of his plumage) Eventually ♂II came out again and started to feed normally.

Then another bird gradually approached by short flights, from a distance. This was presumably ♂I; as he eventually went to feed in the bush where I first saw the 2 birds, and stayed there for a little while at least. When ♂II first saw ♂I approach in the distance, he first fluffed his intensely, and then gave a brief soft "Brrrrrrrrp" note. Presumably a form of R. Then started to feed again. As ♂I came still closer, II continued to feed, but uttered occasional WHAC notes during the feeding. But curiously enough, he did not do any BV while uttering these WHAC's. The WHAC's themselves, however, were quite similar, nearly identical with the WHAC's uttered with BV. They were of the "Wax-axah" type, and it was my impression that the "ks" sound was much more conspicuous in these circumstances than earlier

All this hostile display is most peculiar. Certainly not reminiscent of Cyanerpes - Chlorophanes. Perhaps more like Coereba ???

When I go back again to look at males I and II again, after an hour, I find that they are still continuing their dispute. In ♂II's bush (At least, he seems to consider it his bush, although ♂I seems to feel some degree of possession over it too.) Much as before. I not displaying II doing frantic WHAC and BV. This time I could see the BV better. The waving and S-like movements of the wings are really balancing — definitely not integral parts of the display. The head, throat, breast and belly feathers are very ruffled. The tail is partly spread during all BV, but is suddenly spr

d much more widely when each WHAC is uttered (and partly closed again, just as suddenly after a note). This time, ♂ II repeatedly attacked ♂ I. Again & again. Actually jumping on II and pecking him vigorously. This was done right after vigorous WHAC + BV, and vigorous WHAC + BV was resumed right after the attack. It is possible, in fact, that the WHAC + BV were even continued during the actual pecking!!!! The whole WHAC + BV complex must be very very aggressive indeed!!!

♂ I did not resist the attacks very vigorously. He eventually flew away to another bush (II did not follow). As soon as I got to the other bush, he began to sing loudly & vigorously! This would seem to almost prove that the song of this species is hostile. (I have also noted, in several other cases, involving other birds, that when 2 ♂'s are close to one another, they seem to do an unusual amount of singing. And, of course, even when ♂'s are far apart, they tend to answer each other's singing by singing of their own.) But song must be much less aggressive than WHAC + BV (or even WHAC alone — I imagine that WHAC alone is probably just lower intensity than WHAC + BV.)

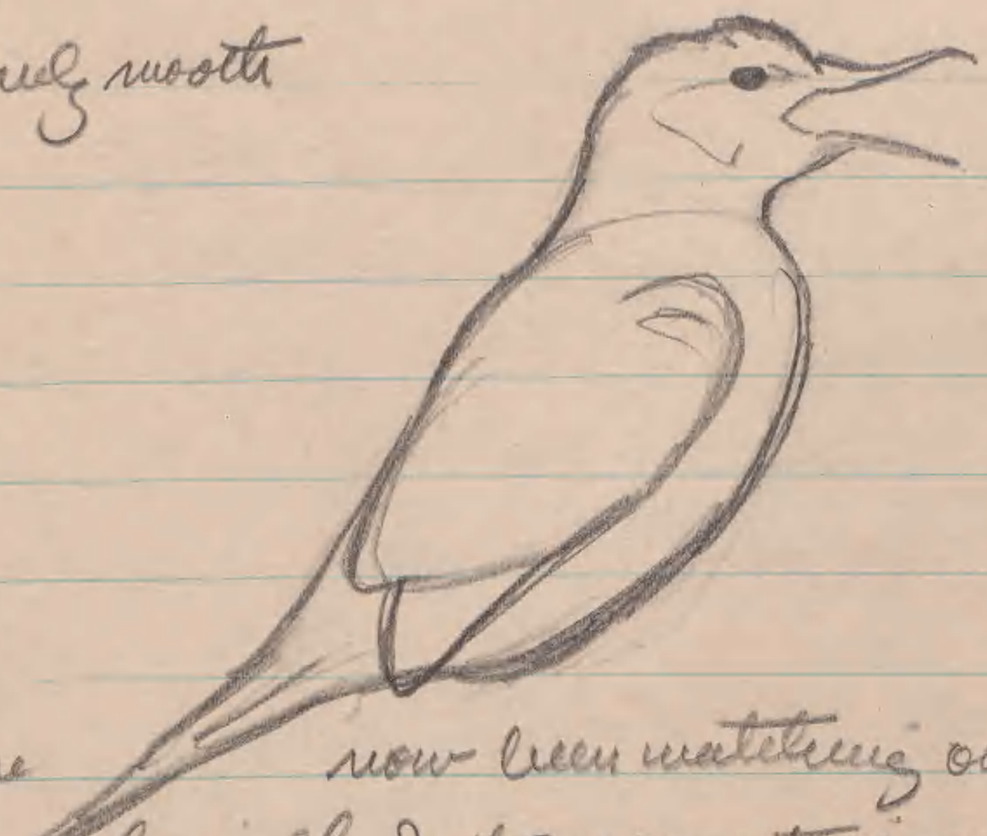
The most soft R's, such as uttered by ♂ II earlier this morning may be just as aggressive as any WHAC pattern, but probably much lower intensity.

One thing I did notice during the fight was that II's WHAC's became conspicuously harsher than usual, almost raspy, during the very few seconds just before he delivered an actual attack.

When a ♂ is alarmed by my presence, he keeps his head feathers smoothed down very flat.

When ♂ II sang after the fight, I noticed that he had his head feathers quite ruffled, but the re-

st of their plumage fairly smooth



Sanguis Posture
♂ II
After Flight

I have now been watching one of these ♂'s (II, I think) singing by himself. In the same posture as above, but crown looks more rounded (feathers very ruffled - but evenly). Also body more diagonal, breast & head lower. The wings & tail seem to quiver a little with the notes. The wings are definitely drooped a little, and the lower part of the wings (i.e. not the carpi) may be held out from the body a little.

Then the other ♂ (I?) flies into the same bush, and the singing male suddenly accelerates his song very noticeably. Then there is a chase back & forth between the two birds in the bush, and this chase is accompanied by many snatches of accelerated song. Further proof of the hostile nature of the song.

I forgot to mention that earlier, when II was doing intense BV+WHAC, he could hold the body & head at any angle (with the neck almost always short, except during actual pecking). Not always inclined diagonally upward as in my drawing on p. 9.

Diglona, I

August 8, 1959
Lena Pichnicha

?

This afternoon, at a level of about 2000 m, which may have been

?

the upper edge of the humid temperate zone, I saw a Diglossa which was probably the female of this species (although I am not sure I could tell the female of this species from the ♂ of the climiqui form) attacked by a hummingbird. The Diglossa immediately assumed a BV posture with back feathers ruffled. Probably silent (although I was so far away that I couldn't have heard any very soft calls). Comme ca.

Neck more or less straight

(The Diglossa which did this performance disappeared from my sight almost immediately. But as confirmation of my tentative identification I should note that when I did get to the place where the performance had occurred there was a bird in the bushes giving "Hoop" notes quite like those of the female described on Aug. 4, p. 6).

Note August 9th

I went back this morning to the same place where I watched the Diglossas yesterday — and I must admit that I am more confused about their identification than ever!

I must have seen at least 4 or 5 different individuals today; and they were all essentially uniform dark slate-blue (one of them may have have had a tinge of brownish on the flanks). In other words, they were all females of the same species as the one I have been studying on

? Cerro Ataraso, or males and/or females of another species. I rather incline to the latter belief at the present time. If they are another species, then my observation of yesterday probably refers to this new species. If this is a new species, then I might note that it seems to me less frequently than the species I studied on Ataraso (although the song is at least roughly similar in form), and utters WHAC more frequently. Unfortunately I have not been able to get a really good view of the birds here on Pichincha uttering either WHAC or song phrases.

March 20, 1960
Cerro Punta

We saw at least 3 ♀'s and 1 ♂ Slaty Flowerpiercer today quite high above Cerro Punta, about 7000 feet

One brief encounter between two ♀'s. Probably hostile. Facing one another on twigs in the same bush. In more or less hunched postures, sometimes pointing bill obliquely upward, in what may have been an intention movement of an St. Constant WF-ing and TF-ing by both birds. Both birds also uttering lots of "Zit" CN's One of the birds also ruffled the feathers of its back, quite conspicuously, and fluffed the breast and belly feathers to an appreciable extent

Hunched posture, with ruffled back, WF, and trace of St.

The whole thing was just slightly reminiscent of a low intensity indication of the BV of alterrima.

Diglena, I. March 24, 1960
Cano Punta

Walking a ♂ & ♀ Diglena feeding a few feet apart. Suddenly the ♂ flew at the ♀ (this looked quite aggressive), apparently uttering "Tut Tut Surrup" as he did so. The ♀ immediately flew away, and the ♂ followed.

Diglena, I May 19, 1960
Cano Ataeo

Back to the same place I saw ♂'s I and II last year. Two ♂'s there again Fighting again, with coups a WHAC's!!

The song is more or less the same as last year. Largely, but by no means completely, doublets. One type of doublet (uttered by presumably disturbed by our presence, is "Iza-a Iza-a"

Another type of song doublet is "Izee-a Iza"

Alternate high pitch & low pitch notes are not uncommon in some song phrases.

It is my impression that the higher pitched "Ieeee" or "Ieeeeee" type notes are most common during songs uttered by rival ♂'s close to one another — while the lower pitched "Iea" or "Iza" type notes are most commonly uttered by solitary ♂'s reacting to human intrusion.

Diglena, I

May 20, 1960
Cerro Pilluncha

We went back to the same place here where I was greatly puzzled by the identity of the Diglenas last year (see pp. 13 & 14). There were still a lot of Diglenas around — and all the ones we saw and heard were probably members of a species distinct from the caperanzei birds on Atacazo.

All the ♂'s we were able to see clearly were pure glossy black — without blue spots on the sides. All the ♀'s were slatey blue more or less uniform all over. The ♂'s appeared to be definitely smaller than the ♂'s of caperanzei. All or most of the ♀'s also appeared to be relatively small.

All my notes on the behavior of ♂'s below definitely refer to the ♂'s of this small black species. All my notes on the behavior of ♀'s, below, and above pp. 13 and 14, probably also refer to the ♀'s of this small species (although I cannot absolutely discount the possibility that some of the ♀'s I observed were ♀'s of aterrima, or even ♂'s of some third species.

All the notes which probably refer to this small species are marked ××××××× (= aterrima — see notes of July 29, 1960)

The ♂'s uttered "fut" CN's of the usual Diglena type. Quite weak and sibilant. I think that ♀'s also utter CN's of the same type — but I can't be quite sure about this — as the ♀'s lurk in bushes and are usually extremely difficult to see.

At least 4 ♂'s did a lot of singing this morning. Surprisingly enough, not right at or after dawn. Some little time later, when the sun began to shine on the area. Their songs were most reminiscent

of the songs of *Lafresnayei* ♂'s, but still quite easily distinguishable. A moderately long formulaic twitter, not including distinct doublets. Some of the songs seem to be an absolutely uniform twitter, but David thought that others might be represented by the following diagram

With a distinctly accented note in the middle!

(It is possible that the songs with such accented notes are really composed of two eventually identical phrases.). I must add, however, that none of the songs, to my ears, had as distinctly accented note as indicated in the above diagram.

Most of the songs we heard were uttered by solitary ♂'s, obviously unmated or separated from their mates. Such ♂'s would pick out a relatively high perch and then sing and sing and sing. The long repetitious of song were rather reminiscent of the singing behavior of Bananaquits.

All these songs were given from quite unvariable posture. A singing ♂ would just sit still, in a more or less diagonal-erect sitting posture. Crown possibly slightly ruffled. Breast and belly feathers definitely not ruffled. Wings meeting above rump. Once I saw a ♂ sing with slightly fluffed back feathers — but this was probably purely "coincidental", as the same ♂ later sang many more songs without any trace of fluffing of the back feathers. The bill opened & partly closed with each note of the song. (This revealed the fact I might pink inside the mouth — quite conspicuously)

Many of these songs must have been produced by some sort of pairing and/or sexual drives, but we never saw a ♀ come

anywhere near a swinging ♂ or respond overtly to a swinging ♂ in any other way.

Other songs of the ♂'s were almost certainly or completely hostile. Solitary ♂'s swinging from high perches tended to respond to one another's songs — sometimes swinging antiphonally. Such songs may well have contained a hostile component, although they sounded exactly the same as the songs uttered by completely solitary ♂'s.

The most obviously hostile songs were associated with direct attack & escape. One, for instance, we heard on obvious flight in the bushes (without being able to catch more than the briefest & most obscure glimpse of the birds) which was accompanied by a swing and lots of WHAC Notes (see below). This song was apparently higher-pitched than the ordinary "pairing" song, and sounded very intense. Similarly we watched a ♂ chase another bird (probably another ♂). Then the pursued bird landed, and the pursuer immediately supplanted it. This supplant was accompanied & followed by an R (see below) and a brief burst of song by one or both birds.

Thus, it would appear that the song of this species is of the primitive paruline type.

The only time we heard WHAC Notes this morning was during the flight described above. This morning there was certainly no indication that this species utters WHAC Notes more frequently than *Leparnagus* (see comments p. 14)

This species certainly does have an R pattern. Quite typical but high-pitched trill. Obviously hostile (almost certainly aggressive), but unfortunately I could never observe its circumstances very clearly. I heard the R but during 2 incidents. One was the supplanting attack described above. Another song & relatively loud R was

uttered by a ♂ flying very rapidly after another bird, probably attacking. This latter R was not followed by song.

The ♀'s were so skulking that we saw relatively little of their behavior. We did, however, observe one extreme alarm reaction by one ♀, and heard a lot of alarm notes by many others

Every once in a while, when we walked past a particular section of hedge, we would hear a bird utter one or a few single "Hoop" notes. These were quite like the notes uttered by ♀ during a taken disturbed (see notes of Aug. 4, 1957, p. 6), obviously provoked by our presence. I shall call these notes "♀ ALCN's." Unfortunately we could not see the ♀'s uttering these single ALCN's; and so I don't know if they were accompanied by any special movements or postures

Later on, a dog came down the road, barking quite loudly and steadily. As soon as it started to bark a ♀ Diglossa in a dense hedge began to utter many ALCN's. Most of the ALCN's she uttered were double: "Hoop hoop" Arranged in series somewhat as:

— — — — — — — —

While she uttered these notes, the ♀ moved slowly down the hedge, still keeping well hidden. Then, after the dog had left, David and I found that we could provoke the ♀ into even more frantic bursts of ALCN's by squeaking at her. She also tended to come toward us as we squeaked, so that we got some fairly good views of her. We squeaked at her off and on for quite a long time, and as a result we can summarize her alarm reactions as follows.

The doublet ALCN's are higher in tone than the single ALCN's. She uttered almost nothing but doublets when we were actually squeaking, but gradually declined into single notes when we

were silent. (David says that once she became so excited that she uttered a triplet alcN ———) The higher intensity alcN's, most of the doublets, were noticeably higher pitched than the lower intensity alcN's, the single notes and (probably) a few of the doublets — but there seemed to be complete intergradation between the highest and lowest pitched notes.

We could only see the ♀ when she was most excited, uttering lots of doublet alcN's in response to our squeaking. At such times she behaved in a most peculiar hysterical, almost epileptic, manner. Hopping & flitting about very rapidly. Performing erratic bowing movements. Occasionally picking down at the ground or a branch (once she even picked up something in her bill) All the time her wings were held out a little and either vibrated rather slowly or waved rather rapidly, and her tail vibrated (vertically, I think) almost continually. All looked very disorganized. Her plumage seemed to be quite generally fluffed. I couldn't see this fluffing very well, but her breast & belly feathers were certainly at least mod. fluffed, and it is possible (?) that her back feathers were at least slightly ruffled.

I think we must have put this ♀ off her nest. Her disorganized, generally hysterical, reaction is the sort of thing from which a distraction display could easily be derived.

The comparative significance of this ♀ behavior is difficult to estimate, but there is no doubt but that the behavior of the ♂'s of this species is generally quite comparable to that of the ♂'s of lafresnayei.

This species would seem to be more closely related to lafresnayei than either is to plumbea.

Diglossa, I

May 21, 1960
Cerro Pichincha

Watched the same birds of the little black species again today.

One of repeatedly interjected R's into the middle of his songs, when he was apparently all by himself. Not all his song phrases included R's; but at least a third did.

I observed two cases of what were probably actual attacks or supplanting attacks deep in the shrubbery. Involving different birds. Each attack was accompanied by an R, followed immediately by 2 distinct notes: "Rrrrrrrrrrrr Ja-ta"

~~~~~~~~~~~~ — —

These terminal notes may have been "intention movements" of song.

Cerro Atacazo

This afternoon we went up Atacazo-looking for Diglossas. At one point, a couple of thousand feet below where alterrima is so common, all the Diglossas we could identify were of the small black species. (Unfortunately, we couldn't investigate the region where the ranges of lafresnayei and the small black species must meet or overlap, as the rain & fog came down.)
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Diglona, I — May 25, 1960
Cerro Pichincha

We watched the same little black Diglonas this morning as on May 20th. They seemed to be behaving in essentially the same way as before. (The ♂'s sang a little less, and we saw a little less chasing. But this may have been due to the fact that this morning was particularly windy.)

I checked the WF's and TF's of this species this morning. Both are comparatively rare — much rarer than the corresponding movements of many other tanagers & finches (I can't really compare their frequencies with the frequencies of the TF's and WF's of other Diglonas). The WF's seem to be even rarer than the TF's. When WF's do occur, however, they can be quite extreme. The TF's are D-V, sometimes (almost always?) with a strong lateral component.

The songs of different ♂'s may be rather different. Some songs seem to contain a definite trace of "Zee-Zee" doublet structure, almost throughout, while others are much more warbling. One ♂ I watched today always began his song phrases with a "real" "Zee-Zee" doublet. This was followed by warbling notes; and each song phrase usually ended with a fairly distinct "Tsa-wee-yoo."

One ♂ who had been singing steadily for quite some time, stopped singing completely when a ♀ came within a couple of feet of him, and then flew straight away from her! She did not follow. This incident is another indication that the songs of Diglona are (at least) not strongly sexual.

Another ♂ flew toward a ♀ and uttered R-song as he did so. Presumably hostile.

Still another ♂ flew away from us, twice; and uttered R, fol

owed by a few brief jumbled notes (perhaps an "intention movement" of song each time. I couldn't tell if he had a ♀ near him at the time or not

I must say that I have been quite surprised by the apparent absence or comparative rarity of overt hostility between neighboring ♂'s of this species here this year. We have yet to see a prolonged territorial boundary dispute with ritualized postures and movements (This morning, we didn't even hear any WHAC notes!)

Ca de Iñaquito

This afternoon we watched a few of the small black Diglossas here. There were in a hedge, along the edge of a Eucalyptus forest, facing a fairly open brushy field.

One thing I noticed this afternoon — which I have also noticed in the other areas where we have watched this species, but have forgotten to write down — is that the ♂'s of this species (and probably the females, to some extent) are remarkably aggressive toward birds of other species. Time and again we have seen them chase all sorts of burrowing birds. They also get involved in disputes with Andean Flamens quite frequently. This sort of extreme aggressiveness is quite reminiscent of hummingbirds. Presumably correlated with the habit of feeding on nectar of flowers

Very late this evening, after sunset, a ♀ Diglossa of this species began to utter a long series of WHAC notes. Quite rapid and almost continuous. — — — — — — — — — — — — — — — —
She began this while she was hidden in a hedge, and she continued as she gradually moved down the hedge. I was only able to locate

her in my glasses after several minutes at that time she was sitting fairly erect Audean Sparrow. She was in a low-hunched posture, with head drawn in on the shoulders, without either ruffling of the back feathers or waving of wings as in the BV of Lophospingus

Diglona, I. May 26, 1960
Cerro Atacazo

Watching in the same old area again this morning.

To my surprise, we found one ♂ of the small black species near this area this morning. Feigning. Perhaps significantly, this ♂ had selected a territory which received much use before the territories of all or most of the ♂'s of the blue-spotted species.

We found it very easy to distinguish between the songs of the ♂'s of the 2 species, even at a distance. The song of the small black species may be considered an "awkward twitter" It also seems to have a definite "usual" length. The song of the blue-spotted species is stronger and slower; composed of comparatively distinct notes; and (almost certainly) much more variable in length.

I got some more detailed information on the songs of the blue-spotted ♂'s. There is considerable difference between the songs of different individuals at the present time. One ♂ in particular sang something like "Zraa Zraa Zraa Zraa-a—Zaa Zraa Zraa ....." Mostly single notes. Only a few "doublets" (underlined in red above). Other ♂'s sang almost nothing but doublets

As further confirmation of the hostile nature of the songs of these species — it should be noted that, several times today, one or more males who had been silent for at least several minutes suddenly began

to sing loudly when we moved about conspicuously near them. The songs, in other words, may be used as a potential predator reaction.

In case I have not made it completely clear in the preceding pages, I must stress that the ♂'s and ♀'s of both the small black and the blue-spotted species seem to keep almost completely apart. They must come together for copulations; but we have very seldom seen a ♂ and ♀ together except when both were feeding on the same flowers. Such "feeding associations" seem to be essentially casual. The rarity or absence of close "pair" associations between ♂ and ♀ Diglossas is another feature in which they resemble hummingbirds.

We may have caught a brief glimpse, this morning, of a large bulgy blue Diglossa-type bird (which I definitely saw last year — without being able to study its behavior. I think that we may have heard it sing this morning — although I couldn't actually see the bird when the singing occurred. (I shall mark this species [illegible]. It might be indigotica (see notes of July 29, 1960.)

The song we heard was as follows: "Da Zee Zee Zee Zra" More reminiscent of baritula than of either the small black or the blue-spotted species.

After hearing the song of one of the local species of Cone-bills (see today's notes on Conirostrum), I am more than ever convinced that Diglossa is most closely related to the Banaquit - Conebill group of warblers.

Cerro Pichincha

This afternoon we made some more observations of the small black species, in the usual place.

Diglona, May 26, 1960, III.

I noticed this afternoon that ♂'s tended to single response to any squeaking or "whooshing" noises I made. This occurred even when the ♂'s had been quite silent for some time before I began to make noises. The ♂'s usually sang with considerable vigor in response to my noises. Surprisingly enough, however, even when they sang most vigorously, they made no attempts to actually approach me!

In any case, this singing reaction of the ♂'s is still another indication that the song of this species is hostile

One ♂, probably responding to my sounds, repeatedly sang song phrases, each one of which was introduced by a short but quite unmistakable R.

One skirmish fight between two neighboring ♂'s was accompanied by hurried emphatic songs & R's, in alternation.

It is obvious that the R of this species is either more aggressive or (perhaps more probably ?) higher intensity than the song.

This is a very common type of singing posture of the small black species.

Notice the head shape. This sort of "semi-crested" shape is quite common, although by no means always present.

The amount of fluffing of the breast and belly is quite variable, but never very extreme

Diglaucopis, I May 27, 1960
Cerro Pulquicha

xxxxx = coeruleicaus

Much to my surprise, late this afternoon, ca. 5:00 p.m., 2 Diglaucopis individuals turned up here, in the same area where we have alone a lot of walking both this year and last.

They looked like this:

Alert
Posture

Bill quite different from Diglaena.
Black mask.
Rest of plumage dull cobalt blue (perhaps slightly iridescent)

Looks smaller-headed and longer tailed than Diglaena.

Both birds were in identical plumage. Presumably ♂'s

Very, very restless & active. Flying from bush to bush with great speed. Nearly constant call notes and/or song.

Their CN's might be transcribed as "Dit" or "Dit."

One or both birds uttered songs very frequently. (I think it quite likely that all or most of these songs were heard. What would be expected of 2 ♂'s going around together. David also saw a trace of what may have been BU — see below.)

Their songs were very, very reminiscent of the songs of the small black Diglaena here. Twittering, warbling phrases, frequently repeated. David would transcribe a typical single song phrase as: "Dit Dit Diddle-wee Diddle-wee" I would transcribe a typical

single song phrase as "Trit Trit Tsewee Tseweeyoo".

There was considerable variation in these songs. Some songs were introduced by many more than 2 "Dit" or "Trit" Notes. Some songs included definite R sounds. For example:

"Trit Trit Tsewee Tseweeeeeeeeeeeyoo".

These songs may be distinguished from those of the small black Diglossa here by 2 features. I They are always or almost always introduced by the "Dit" or "Trit" CN-like notes, which appear to be integral parts of the song. (The songs of the small black Diglossa may be preceded by CN's, but these latter appear to be more sharply set off from the song itself.) II The various notes of the main part of the song phrases of the Diglossopis are more "distinct", in some way, than the notes of the song phrases of the small black Diglossa. Apparently fewer also. (In any case, we could attempt to make transcriptions of the songs of the Diglossopis, while we could not attempt to make transcriptions of the song of the small black Diglossa.)

As far as I could tell, the songs of the Diglossopis were delivered from completely unritualized perching and feeding postures.

David caught a glimpse of one bird in a bush, with its wings stretched out horizontally, waving a little. This may have been part of a BV pattern. Unfortunately we could not tell if the bird was singing or not at the time.

These birds did a lot of TF's. I saw one bird do both U-D and D-U types. They also did WF's; probably less frequently than TF's.

They seemed to be feeding on flowers in exactly the same way as Diglossa – and on exactly the same flowers.

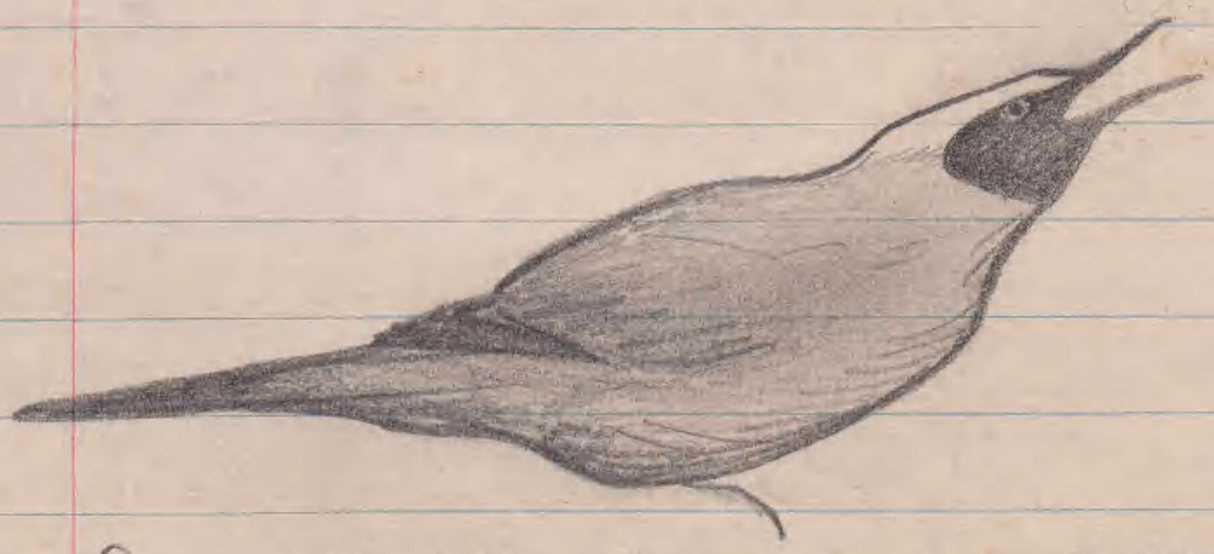
Diglossopis I

May 31, 1960
Cerro Pedernicha

We finally found where the Blue Diglossopis usually common - and where the birds we saw on May 27 almost certainly came from. About 500 to a 1000 ft below the path here where we have been studying other species there is a fairly large stream, in a ravine, with very thick vegetation along the banks of the stream. (This is the western, or wet, side of Pedernicha.) There are also cultivated fields, with hedges, on either side of the stream & ravine. (This is very close to the town of Nona). We have seen Blue Diglossopis in both the vegetation of the ravine and in the hedges.

We saw a fight between 2 birds in a hedge this morning. Vigorous and frequent supplanting attacks. Both birds were apparently ♂'s. One of them may have had a ♀ along with him, but, if so, she didn't get involved in the fight — and I never managed to get a good view of her.)

Both ♂'s sang almost constantly during this dispute. Their songs were either similar to, or identical with, the songs of three species we have heard before. Most (perhaps all ?) of the postures accompanying songs were relatively low — stretched forward & slightly diagonally upward, comme ça:



Head very flat on top

During the intervals between supplanting attacks, the 2 ♂'s some times sang while sitting only a few feet apart. But I did not see any

trace of BV. Some of the songs included rattling "freeeeeeee"s, but I did not hear any independent R's. As far as I could tell, there were no actual pulses delivered during the dispute. Both birds eventually moved out of my sight, still disputing.

I got a very good look at the birds this morning; and can add some to my original description of p. 1. The eyes are red or (more probably) red-brown. They have a definite iridescent crown patch, which looks either white or very pale blue in some lights. (This is very reminiscent of the Red-legged Blue Honeycreeper.) The wings and tail appear to be distinctly definitely darker than the rest of the body plumage. Most of the body plumage appears to be quite a bright cobalt blue in sunlight.

David heard some more songs from a ♂ this evening, songs which would appear to be slightly from any we have heard before. He would transcribe one song as "Wit dewee dewee dewee". (I would probably transcribe this as "Trit Trewee Tsewee Tsewee".) Another song sung by the same ♂ was essentially similar, but included more "Dewee" or "Trewee" notes

Diglossopis, I

June 1, 1960
Cerro Pedernales

Watching the birds near Home again today.
We saw at least 2 different birds, presumably ♂'s, sitting on high perches (usually 10-20 ft off the ground, in Eucalyptus trees), singing apparently quite leisurely. Early morning - up to about 8:00 a.m.
This is very reminiscent of both the small black and blue-spotted Diglossas.

Both birds uttered songs of the usual type in such circumstances

One bird uttered songs with a definite R element (at least during one bout of song), in spite of the fact that there seemed to be no other Diglossopis (which could have provoked his hostility) in his immediate neighborhood. The other bird sang songs without any obvious R element. Each of his songs was composed of a single phrase, repeated 3 or 4 times. A single one of his song phrases might be transcribed as:

"Ja Ja Ja-swee Ja-swee-yoo"

All the songs of both ♂'s which sang by themselves were delivered from apparently individualized singing postures. Comparatively low, but not quite as low as the posture shown on p. 3. The ♂ who sang songs without any R element certainly did not have his crown feathers flattened during the songs. (I don't think that the ♂ who sang songs with R had his head feathers flattened either, but I can't be quite sure about this.) Below is a typical posture assumed by the ♂ who sang songs without R

Notice position of wings!

Bill not very widely opened. The tongue appeared to be raised several times, presumably during certain particular notes — but it was not raised throughout the whole of a song phrase

The tail quivers (up and down) slightly with each note of the song. As in Diglossa.

Both ♂'s which sang by themselves did a lot of hopping or flying about, from one perch to another, during the general periods when they were singing, but I think that they seldom or never sang when they were actually moving. (These short hops and flights during song peri

ods were never more than a couple of feet long, and usually much shorter.)

We saw one dispute which seemed to be a territorial boundary dispute between 2 pairs. Both ♂'s (at least) singing madly, bowed back & forth, but not too much. Most of the time, the ♂'s just hopped around, or flew from perch to perch, about 5 ft from one another. They sang both when perched and when flying. Their songs included R elements, but these elements were no longer than the R's in many other songs I have heard in other circumstances. They did not utter any independent R's, or WHAC Notes, or perform any BV.

During this dispute, and during an earlier dispute we saw (less clearly (probably involving only 2 ♂'s without their mates)), one of the disputants interrupted his singing and fighting about to peck & pull vigorously at a branch. During the earlier dispute, the bird actually succeeded in detaching a piece of bark or a twig; and then rang, facing his opponent, with the twig or bark still in his bill! This may have been "displacement" nest-building or, more probably, redirected attack.

Birds of this species perform a lot of flicking movements. WF's often very extreme, especially during disputes. TF's also quite extreme, probably in almost all circumstances. Usually or always V-D, with a very strong lateral component.

I have yet to see any bird in distinctly different ♀ plumage. So it is possible that the ♀'s of this species are colored more or less exactly like the ♂'s.

I have seen at least several birds, in ♂ (and ♀?) plumage, which had some white near the anus

This afternoon I noticed that a bird sitting quite peacefully in a tree, perhaps feeding a little from time to time, made occasional D-V tail flicks, without much lateral component. (I think that this is the only ty

pr of TF it performed.)

Both yesterday and today we have heard quite a lot of "Hoop" Notes coming from hedge here, without being able to see the bird uttering the notes. These notes sound quite like the "Hoop" Notes of ♀ Diglossas, (although perhaps a little softer and more plaintive), but they tend to be arranged rather differently. Occasionally single or in doublets. Most frequently in triplets. Quite frequently in series of 4, 5, or 6 notes. These may well be uttered by ♀ Diglossopis.

Diglossopis, I — June 2, 1960, Cerro Pichincha

Working near Nono as usual.

The bill seems to be kept open throughout a whole burst of song, but the mandibles certainly move in rhythm with the notes.

Diglossopis, I — May 20, 1961, Cerro Pichincha

Watching the birds near Nono again. They do not seem to be very active or exciting at present. I did, however, study their songs a little bit today.

One bird sang very frequently as it hopped about in a eucalyptus tree Apparently alone. These songs were very long and generally twittering in effect. Included lots of R's. But began with CV's or CV-like Notes, like the songs I heard last year.

Later, this afternoon, I watched a bird (probably the same as above) flitting about in a eucalyptus tree and uttering lots of the

ort "conventional" songs. Apparently no other bird of the same species is nearby. Once the bird landed on a new perch, began to sing, just as a Redstart used to land on the same perch. The Diglonopis immediately spread one or both wings horizontally. Extreme but brief. No trace of wing-waving or Q. I think the song continued while the wing(s) were spread. The Redstart flew away immediately.

Just at sunset, I watched a single Diglonopis perched, quietly, without moving, utterings rather peculiar songs. Each song consisted of nothing more than 6 or 7 rapid "Zeewee" notes. Was similar to other songs in tonal quality. Filtered from an ordinary sitting posture. Did not lead to anything. The bird eventually flew away and disappeared

It would appear that this species has quite a variety of song patterns.

I think that the "conventional" songs of this species are usually louder, more "tinkling" than those of alterniva, but I shall have to check this.

Diglonopis, I. May 24, 1961
Cerro Pichincha

Watched the birds near Mono again this evening.

I have only seen one Diglonopis here at any given time this year. Probably always the same bird. Always in the same area. Probably 4 or 5 days quite a lot.

This evening, I saw the Diglonopis repeated supplanted by an alterniva. Made no resistance. Once, I think, it held its wings out horizontally before the alterniva attacked, but I can't be sure of this

ii). After the alternia stopped attacking, the Diglossopis uttered one song phrase. "Tit-sweeeee-yoo."

Diglossopis, I May 19, 1962
Pichincha

Working near Nono both morning & afternoon today. Diglossopis scarce & inconspicuous, like last year. This morning I heard one Diglossopis song phrase at dawn (appx. 6:00 a.m.), not repeated. Possibly provoked by my approach. This afternoon, ca. 4:45 p.m., I watched 1 Diglossopis utter several song phrases. All with "Sreeeeeee" components. Not introduced by "Tit" or "Trit" notes. Uttered from various perched postures.

Diglossopis, I May 22, 1962
Pichincha

Working near Nono this afternoon.

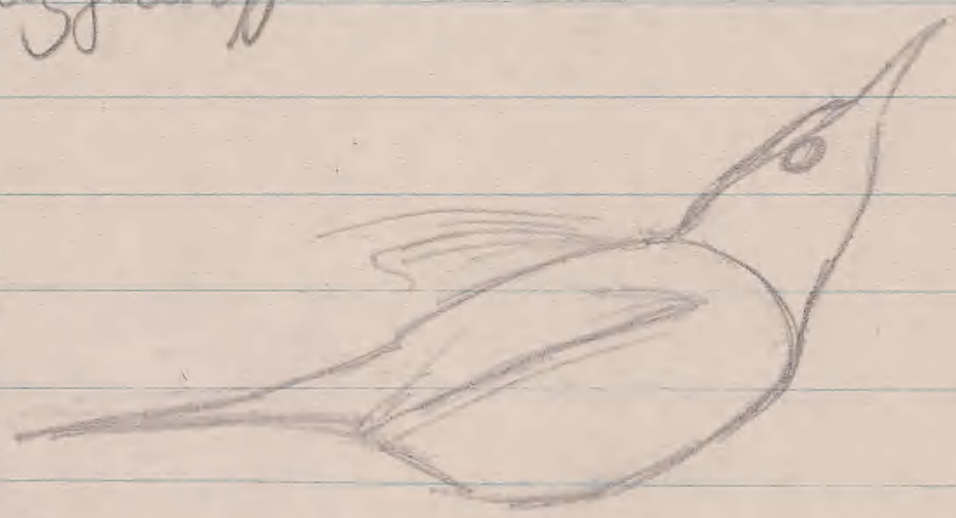
4:10 p.m. See a single Diglossopis singing in tree. Song phrases with introductory "Trit" or "Tit" notes. Then singing bird flies to attack another bird in tree 30 ft away. Attacker utters song phrase during attack. Then attacker retreats. Both attacker and attacked sing after attack. I did not notice any trills or R's in any of the songs during this incident. Neither bird assumed any special postures or performed any special movements.

This is undoubtedly a more tree-loving species than any of the Diglossa as I have studied. Very frequent 20, 30, or more feet up in Eucalyptus.

Good heavens! There seem to be Diglossopides all over the place this afternoon singing a lot. Possibly more conspicuous because sun has been shining off & on this afternoon. Apparently occupying same territories as last year and the year before.

I have now heard quite a lot of songs without "Tut" introductory notes. They are probably still a minority though.

Watching a single Diglossops feeding, 5:05 pm. Apparently not a bird of its own species anywhere around. Suddenly the bird assumes ht, spreads both wings horizontally, and 8's there very slightly but very rapidly. No TV. Apparently silent. Then resumes feeding as before. Eventually flies off.



Bill possibly more nearly vertical!!

5:13. Watching an apparently single bird feeding. Flies away. Utters one thin, high-pitched, plaintive "feeeeet", and then some ordinary CN's as it goes. Must surely note presumably a PN! (This may conceivably have been the same bird that "voluted" a few minutes earlier.)

Diglossops, I May 23, 1962
Pichincha

Working near Hono this morning.

Annie area where "voluting" bird was yesterday at 5:40 a.m. As far as I can tell, there are no Diglossops singing here at

t know which) utters 1 "keeat" or keyeet. Then one or both birds utter (s) loud hard song phrase(s) as "greeting" when they land together. This "greeting" does not include "keeeeee" components. (Probably does not include introductory notes either.) Then both birds continue feeding as before. Then both go down into scrub, to feed on insects. Quite silent there except for occasional "Tit"s. Then one bird drapps ears. The other continues feeding in scrub for a few minutes. Then flies up into tree. Utters a few song phrases. Then flies away. Drapps ears to.

It would appear that this species uses song phrases in the same way as the local Cowbird.

NOTE: The only other place I have seen Diglossopis was at Hon, on the afternoon of May 20th. A single bird, feeding quite high in a bush. (It may be significant that there were also trees in the area.)

Back at Hono 3:00 p.m. Cloudy Occasional rain

Said two birds feeding in cloudy adjacent trees. Definitely not pair watched this morning. (I shall call these birds "C"). Apparently peaceful. One bird sings from time to time. Then one bird disappears. The other remains

perched in tree. Sings repeatedly in posture shown above. Then disappears

So it does look as if ♂'s and ♀'s of this species may stay together for brief periods of time fairly frequently. Fairly intermediate between Diglossa and Conirostrum.

As far as I could tell, both birds were feeding on insects (when they fed). They were in eucalyptus trees, but not in the parts where the flowers are.

At 11 alticola sings & sings & sings, ca. 3:25, in area where the C Diglossopis had been. Doesn't induce any Diglossopis to sing in return.

Back to C area 4:05. Said both birds hopping about in same eucalyptus trees as before. Possibly feeding. Both sing when separated from one another. When one flies over to a thicket and begins to feed. Followed by second. Then both move from thicket, feeding on nectar first bird always in lead. One or both birds may utter brief "seet" s when flying (not too close to the other bird). First bird occasionally utters typical song phrase when perched some distance away from second. Second bird doesn't sing at all. Both birds quite silent when close together. No "greetings". First bird usually quite sleek. Second bird usually with plumage slightly fluffed.

It is almost certain that the first bird of this pair is ♂ and that the second is ♀.

4:17 p.m. The C pair still feeding as before

Interesting coincidence or reaction between Diglossopis and alticola. 2 alticola ♂'s singing vigorously. Approximately synchronized Then shut up. Then, about 30 seconds later, one or both of the Diglossopis sing a few phrases. Then shut up. Almost immediately one of the alti

this time.

Hear what may be fwit Diglossopis song 5:46 a.m. Each phrase preceded by "Tit tit" Some or all phrases include "freeeee" component.

Hear fwit burst song quite over within a couple of minutes

See what is probably the bird that "solicited" yesterday (I shall call this bird "A"), 6:15 a.m. Flying rapidly & excitedly from tree to tree. Usually at least 30 or 40 ft above ground. Usually not feeding. Utters song phrases w/ at least some of the trees visited. Too far away for me to tell nature of song. Disappears from sight almost immediately.

6:35 a.m. See 2 or 3 birds flying about together. Utter "feeet" notes in flight. Then land in tree. 2 disappear. 1 remains behind. Sings. Flies to another tree. Utters more (single) "feeet" notes in flight. These notes may be FCN's.

This remaining bird then flies from tree to tree feeding. Definite probing eucalyptus flowers. Sings occasionally. All songs with introductory notes. All or most with "freeeeee" components.

I am not sure if this bird is A or not. If it is, it has an enormous territory (at least 300 yds long).

7:30 a.m. There has been no Diglossopis song for some time now. (Sun has not reached this area yet.)

A back. Feeding. Singing occasionally 7:40. Songs without "freeeeee"

Watching his flubring. TF's very common. All very lateral all or most V-D. WF's rare or absent. Tail quivers visibly during song.

Most of his song phrases now are very long and warbling or twitter

ing. Without introductory notes.

He is still going from tree to tree very rapidly staying very high. Feeding and singing in each tree. Then goes down into low scrub and disappears 7:52 a.m.

A shows up again in a different area 8:05 a.m. Feeding & singing. Sometimes low in ground scrub, sometimes in trees. Then goes to perch in tree and sits and sings. All song phrases with one or two introductory notes. More or less "Tit tit tsewee-ceyoo". Sometimes the "tsewee-ceyoo" becomes "tsewee-ce-c-c-c-c-c-yoo" sort of thing. Then "wee-ce-c-c-c-c-c-c" but is probably more or less the same thing as the vocal pattern I have also transcribed as 'sreeeeeee'

A few minutes earlier I saw A and a single ♂ alternina feeding in the same thicket. At one point, they sat within 3 inches of one another!!! Without any sign of hostility of any sort.

Then the 2 birds separated and both sang. A in tree. The alternina in shrub. About 40 ft apart. There seemed to be a definite tendency for the 2 birds to synchronize their song phrases to some extent. A frequently began a phrase a second or two after the alternina, before the latter had stopped his phrase. Many exceptions. Sometimes obscuring no synchronization of any sort.

Then songs of Diglonopis may be somewhat smaller than those of alternina And "thinner".

8:30 a.m. See 2 Diglonopis feeding in same tree. A and mate? Quite peaceful. Flying about more or less together. One or both utters occasional song phrase, but only, I think, when the 2 birds are fairly far apart. Otherwise only utter single "Tut" notes. Then one bird flees to another tree. The second follows. One of the birds (I don't

mias sings 1 or 2 more phrases. So it is possible that the sound of the songs of one species inhibits birds of the other species, when it does not stimulate them to sing in return. In any case, the songs of the 2 species do not overlap in a random manner.

4:25 p.m. C(s) singing as usual. Then shut up. Then 1 of ♂ alemina starts to sing. Then 1 of the C's starts to sing antiphonally with alemina. Then there is a brief overlap one song phrase of each species. Then both fall silent.

Then the C's go to feed in an eucalyptus tree. Far apart in tree. Both singing. Songs of presumed ♂ longer and louder than those of presumed ♀. Then pres. ♂ flies about 20 ft away, to feed in shrub. Utters 6 or 7 loud "fweet"s in flight (I am now beginning to return to the idea that there are 8N's.) Two C's continue to sing. More or less antiphonally. Some overlap. pres. ♀ apparently following (in the sense of beginning to sing) after the pres. ♂. Then ♂ flies back to ♀. Does not utter "fweet"s as he does so. Lands right beside ♀. A loud "greeting" song as he lands. All or most of the "greeting" by the ♂. Then both fly off. Silently.

Then the same ♂ alemina utters a few more song phrases!

I should mention that the inhibition of song between alemina and Diglossopis seems to be mutual. One species starts after other stops. Neither "cuts off" the song of the other.

Incidentally, the Diglossopis were definitely feeding on insects while they were in the eucalyptus during this last incident. Poking at the bases of leaves, under hanging strips of bark, at the rosettes of twigs, etc.

As far as I know I have never seen any of the "Diglossini"

Diglossopis May 23, 1962, VII

flycatching

Go for a walk and come back to Carea 5:10 p.m. C's silent & invisible. The ♂ ater̄inna who has been reacting to the C's all afternoon is singing vigorously. Then he shuts up too.

Find what may be one of the C's further down hedge 5:15. Apparently alone. Sings. All phrases with "freeeeeee" component. Then the bird flies away.

Then I find both C's feeding in eucalyptus trees. Both quite silent, except for occasional "Trit"s, when close together. Then one flies away into adjacent trees. Just utters "Trit"s in flight. They each bird feeds in a different tree for a while. They both sing, repeatedly, more or less simultaneously. Then second bird flies over to join first bird (in second tree). Utters "Trit"s in flight. No "greeting" Both birds were looking for insects in their trees.

5:23 ♂ ater̄inna sings in one of the trees in which both C's sang earlier. C's silent and invisible at the time.

Diglossopis, I May 24, 1962
Pacheedia

Working in Norco again this morning.

Arrive area C birds 5:35 a.m. C birds apparently not singing — altho neighboring ater̄innas are in full voice

Hear what seem to be first Diglossopis songs 6:01. With introductory notes. Much thinner and more wiry than songs of ater̄inna at this time of morning. Phrase after phrase. Almost continuous.

Catch glimpse of singing bird a few minutes later. Definitely Di

glossopis. Exposed in scrub. Then flies to tree. Utters some "fecect"s in flight. Sings in tree. Flies to another tree. Feeds & sings. Flies to another tree Feeds and sings. Apparently alone all the time. Then disappears

Pl. songs were not usually overlapped by those of the alemina during this behavior.

Both ♂'s back, together, 6:15 a.m. Feeding in eucalypts. Both insects & flowers. Not usually close together. Fly from tree to tree. Pres. of utters lots of song phrases. All with introductory notes. All or most with a trace of "freeeeee" component. (It may be that introductory notes and "fuuuuee" components are characteristic of all high intensity songs of at least the ♂'s of this species.) No "feeeet" notes. Occasional "Jit"s. (Pl ♀ may also have sung, at the same time as the ♂, beginning each phrase a second or so later, but I am not sure about this.). Then both birds fly off and disappear 6:20 a.m.

Both birds back a few minutes later. In Eucalyptus as before. This time both definitely sing when separated.

Then both go down into low scrub to feed (on nectar) Quite silent when down low (this seems to be characteristic). Apparently a dispute between one of the ♂'s and a ♂ alemina over one particular flower. Silent. Can't see who wins. But the ♂ flies away a few seconds later.

All the local ♂ alemina were silent most of the time the Diglossopis were singing 6:15–6:23 appx. Only once in a while did one ♂ alemina utter a few phrases. Then occurred between the phrases of the Diglossopides.

Both ♂'s gone now 6:33 a.m.

Back 6:37. Feeding & singing in eucalypts as before. Once one

or both birds utter(s) series of "Jit"s accelerated into a "CN-trill" in flight. Then both fly off and disappear again.

Once one of the birds was joined by a small plump warbler (even smaller than the Diglossopis itself). Don't know which species. Yellow below, olive above, with a very broad yellow or white superciliary stripe or patch. This warbler apparently also feeding on insects in tree. The Diglossopis did not show any hostility to the warbler.

Both C's back 6:50. Feeding & singing in Eucalyptus as usual. One flies away, uttering several "feeeet"s as it does so. Other follows later.

One C back 7:01 a.m. Apparently by itself. Flies from tree to tree singing frequently. All songs with introductory notes. Then flies away, uttering "feeeet"s. ("feeeet"s seem to be most characteristic of solitary birds and birds flying away from their mates)

Again & again this morning I have noticed more conclusions between songs of C's and alternans o's. Usually one silent while the other(s) utter burst of song phrases. Less frequently (but not actually infrequently) phrases of the 2 species alternate. I have seen both incidents when a C seemed to be responding to the song phrases of an alternans and incidents in which the reverse seemed to be the case. D.E. sometimes a C will utter a phrase immediately after an alternans, and sometimes an alternans will utter a phrase immediately after a C.

Things very quiet now - 7:16. Going down to A area.

7:40 a.m. Find a single "A" singing about 30 ft up in an eucalypt. Phrase after phrase. Almost continuous. None of these phrases have introductory notes or "freeeee" components. I think that the tendency to omit introductory notes may be an individual peculiarity of A's.

(This is almost certainly the same bird that omitted introductory notes in its songs the first day I arrived this year). Then the bird flies to rear al trees. Sings in each. Does not utter "Seeet"s in flight. Then disappears.

8:25 a.m. Come upon same "A" as before. Apparently alone. Singing repeatedly on top of bush. Songs without introductory notes or "Seeeeee" components (which I shall call "SR" from now on). Then flies up into adjacent eucalypt. Continues singing. Then a alternina about 75 feet away begins to sing to. There are undoubtedly the same 2 birds I watched singing together in the same place Yesterday!! They seem to be real territorial rivals. Sometimes their phrases were alternated. More often they were partly synchronized. Sometimes the alternina began a phrase a second after the "A" Sometimes the "A" began a phrase a second after the alternina. Eventually the 2 birds shut up. I think the alternina had the last word.

At the same time that this "duel" began, I noticed that "A"'s phrases had begun to include both introductory notes and SR. There seems to be a definite (but not invariable) correlation between SR and introductory notes. Which probably means only that phrases with introductory notes tend to include more, and more accelerated, notes than phrases without introductory notes.

It is possible that phrases with introductory notes and SR are more strongly territorial than phrases without such elements

8:47. The same 2 birds are engaged in another "duel" as before. In this case, the alternina definitely has the last word.

Come back to C area 8:55. Finds single C singing, in tree and includes All songs with introductory notes & SR. Occasionally utters

Diglossopis, May 24, 1962, V

"feeeet" Nott in height.

Again a single ♂ alemina uttered a few song phrases dur
ing the intervals in which the C was not singing. This time, however, the Diglossopis had the last word.

The territorial inter-specific relationships of these Diglossopides are not yet clear, in all respects. The territory of C pair obviously overlaps the territories of at least 2 (probably 3) ♂ alemmas. But the territory (or home range) of A (or the A's) overlaps the territory of only one ♂ alemma (of that) and the single Cowbell. It is obvious, in any case, that the home ranges and territories of Diglossopis are much larger than those of ♂ alemmas (or ♂ Lafresnayei) This may be another resemblance to the Cowbell.

The home ranges or territories of Diglossopis are, of course, difficult to compare with those of Diglossa spp. simply because they are so much higher (literally) on the average.

It might be more useful or correct to estimate the areas occupied by individuals of all these species in terms of "perches used". They might all be nearly identical from this point of view.

May 23, 1962
Pichincha

Diglossopis, I

Working near Nono again this afternoon

Reach C area 3:10 p.m. C pair feeding quietly in trees and bushes. Only once does one of the birds utter a song phrase when uprooted from its mate. All other local Diglossini silent

BQ

November 14, 1962
Barro Colorado

Eisenmann saw BQ's copulating this morning. 8:00 a.m. In bushes in front of Old Lab. Initiated by ♀ begging. BVTV with ♂. Little or no fluffing or ruffling of plumage. ♂ copulated with her 3 times in rapid succession. No song of any type in immediate anouation with their cop. attempts. Some other notes, which Eisenmann cannot describe. Presumably some sort of begging call.

This copulation behaviour is not particularly reminiscent of Diglossa!

November 15, 1962
Barro Colorado

Watching BQ's myself. Beginning 6:20 a.m.
Two birds feeding in bush (presumably Stanmelia sp.) feeding on orange tubular flowers. Frequently or usually cutting into bases. Birds not close together. Uttering occasional "Tsit" notes. Not very hard or loud

Then one of the birds flies away. Apparently sings in near by tree. Songs are determinate series of monosyllabic notes I should transcribe them as "Zeee zeee zeee...." (Not "Tsee tsee tsee.... as in some of my earlier notes) 4 to 8 notes per series

BQ's seem to ignore hummingbirds (and a single Bay

breasted Warbler) feeding in same bushes

Song continues off & on for the next half hour. Once a bird sings while very near mixed flock of flycatchers and warblers. This is not unusual.

As far as I can tell, songs are uttered only by birds separated from their mates (or other companions of their own species)

None of the birds I have been able to see singing have been in special postures or have performed special movements.

6:50 a.m. Burst of song composed of disyllabic notes. Might be transcribed as "Zee-huh zee-huh zee-huh...."

I shall call songs composed of monosyllabic notes "MS", and songs composed of disyllabic notes "DS".

7.00 a.m. A single bird, feeding apparently alone in bushes, utters occasional "Tseet" notes. Apparently "answered", with same notes, by another bird in bushes a considerable distance away.

7:10. More DS's, same as before. Each DS usually composed of 4 to 8 doublets. Sometimes (perhaps usually) terminal note is a simple "Zhuh" instead of a doublet.

7:20. Looking at a bush on the side of the lab. 2 BG's in it. Chasing one another. This chasing accompanied by bursts of loud hard "Tsit"s. Sometimes accelerated into semi-R. Each "R" probably composed of no more than 3 or 4 notes. All or most "R"s followed, immediately, by hoarse HAC like note!! One of the birds eventually flies away.

7:35. Again see a bird uttering DS's in intervals of feeding. Each DS "Zhee-huh zhee-huh zhee-huh zhuh". No special

BQ, Nov. 15, 1962, II. (3)

movements or postures.

November 17, 1962
Barro Colorado

Watching same place as yesterday 6:00 a.m.
6:10. Single bird feeding. Utters both ordinary "Tsit"s and "Tseet"s. Then the "Tseet"s stop, and I see that there are now 2 BQ's in bush! Also warblers
6:25. Then both BQ's fly away. Then hear MS song, "Zeee zeee zeee ..." in nearby tree. Each MS phrase accelerating (almost to R) toward the end.
6:30. Pair feeding in bush. Close together. Uttering ordinary "Tsit"s. Probably a pair. I shall call these birds "I." Then one of the I's flies to nearby electric cable. Faces a 3rd bird, probably member of adjacent pair ("II") about 2 ft. away. Both birds hop back and forth along cables, facing one another. Quite silent throughout. In more or less horizontal postures, head low. Heads usually horizontal; bills perhaps occasionally pointed just slightly upward. Crowns probably slightly fluffed or ruffled. Underparts slightly fluffed. Underparts of II more fluffed than those of I. Breast feathers of II more fluffed than feathers of the rest of its underparts. Fluffing out and forward. II also has trace of an "upper back ruffle." II retreats more frequently than I. Then the whole incident is broken up by the arrival of a Tropical Kingbird.
The I bird which had been reacting to the II bird mum

ediately flies back to its presumed mate, which had remained in the feeding bush. One or both of the I birds utters a brief twittering phrase of variable "zeezeezee..." notes, apparently as "greeting"!!! Then both feed, close together, uttering occasional single ordinary "Jit"s. Then one bird flies away. Almost certainly same bird which had been reacting to II. Flies into near by tree. Apparently swap MS phrases

(5)

BQ

November 18, 1962
Barro Colorado

Beginning observations 6:00 a.m. Clear, but still rather dark.

BQ apparently arrives 6:10. Usual bunch. Can't see bird, but it is uttering lots of "Tsee't"s. Some quite long, e.g. "Tseeeeet". Quite regular in rhythm. Almost DC.

See bird a few seconds later. Feeding. Utters occas. "Tseet" at intervals between feeding.

I shall call these "Tseet" - "Tseeeeet" type notes "PN"s. The ordinary "Tsit"s I will call CN's. And the particularly loud hard "Tsit"s I will call "SHN"s.

BQ gone again 6:12. Then back again, feeding and uttering occasional PN's, CN's, or (CN-PN)'s.

6:15 a.m. Bird begins to sing in nearby tree. Sounds like same bird I have been watching feed in bunch. Long MS type. Undersong. A few seconds later another bird flies into bunch. Utters several series loud brief notes. Exactly intermediate between typical MS notes and typical SHN's. This second bird may be a II.

A minute or so later there are 2 birds in bunch. Uttering CN's, nothing more. Then one flies away. Remaining bird utters one loud MS song, then apparently flies away too.

Then pair #1 appears in bunch. Utter CN's. One bird also utters brief series (CN-SHN) notes. Might be transcribed as "Ta-zee zee zee". Then birds are almost certainly both II's. A

BQ, Nov. 18, 1967, II. ©

I is singing in nearby tree at same time.

Then one "II" flies away. Remaining "II" utters several typical MS phrases. Overlapping MS phrases of "I". Then apparently flies away also.

Apparently single bird feeding back in same bushes. Utters lots of MS phrases. Overlapping a lot with MS's nearby bird (again). Also utters one (SHN-MS) phrase (as before).

Typical songs apparently uttered only by single birds, at least in most circumstances.

Bill kept open throughout MS phrases. Little or no movement of mandibles.

Birds continue to sing together for quite a while. No (other) overt signs hostility. Mates?

Then, 6:45, regular songs stop, and I see there are 2 birds feeding in bush. Uttering CN's and scores of notes that are either (SHN-MS)'s or (CN-MS)'s. (It is possible that I can't distinguish between these 2 patterns.)

This evening Encinitas saw what was probably a border dispute between an A and a B bird. Lots of "Tsit"s, presumably SHN's. Lots of wing "jerking" (WF's?) and raising of the tail (TF's?). Some pivoting. Birds kept heads fairly low. No visible CR. Perhaps slight fluffing underneath. Birds sometimes facing one another, sometimes parallel. Never very close to one another. In bushes and on electric cables. Presumed B bird eventually flew away.

BG

November 19, 1962
Barro Colorado

This morning, ca. 6:30 a.m., saw 3 BG's, I(s) and II(s), engaged in aerial chase. Accompanied by long series hoarse "3hee" notes (almost "3haa"s). Presumably a form of HAC. No special postures or movements.

November 20, 1962
Barro Colorado

Watching I & II area 6:05 a.m.
1 or 2 I's feeding in canal bank 6:10. Uttering CN's.
Nothing of interest afterwards. Still no song yet 6:27.
Finally, first song, presumably by a I, 6:31. DS, not MS!!
"3ee-uh 3ee-uh 3ee-uh 3ee" type phrases. Including variable number of notes.
Leaving 7:05

November 26, 1962
Barro Colorado

Arrive I & II area 6:00 a.m. Still quite dark. Looks like rain.
One or two birds feeding in bank 6:05. Quiet. Uttering a few CN's. Probably I's.
Nothing doing. Leaving 7:00 a.m.

6

Diglossa, I — May 29, 1960
Cerro Pichincha

This morning, just before sunrise, one ♂ of the small black species was giving a song in which "zee zee zee zee...." components were more conspicuous than usual

Later in the morning we heard at least 7 or 8 R's, each of which was followed by 2 or 3 notes "Zaza" or "Zazaza" uttered by ♂'s flying straight to some other bird. We were never able to see the other birds, but I am sure that some, at least, of these other birds were ♀'s. The following incident was most suggestive. One ♂ was singing vigorously, then flew straight to another bird uttering R-"Za Za" Then both birds flew away a few feet — and the ♂ did not resume singing (i.e. he was almost certainly with a ♀)

I have suggested, above, that the "Zaza" or "Ta Ta" notes so frequently uttered immediately after the "real" R, the "Sreeeeeee" are an "intention movement" of song. This may be so — but the "Za Za" or "Ta Ta" notes are so very frequent, even usual, after the "real" R that they might be considered to be integral parts of a "compound R performance". If so, this species would seem to have a more complex R pattern than any other Diglossas I have watched.

We didn't hear any WHAC notes this morning — and I haven't heard any for days. Why? I am beginning to think that in this species the WHAC's are only uttered by ♀'s. We may have heard a few WHAC notes earlier this trip because some of the ♀'s were not yet incubating them. WHAC's may be absent now because all the ♀'s are incubating. I may have heard so many WHAC's last year because ♀'s were moving about with young then

Diglossa, May 29, 1960, II

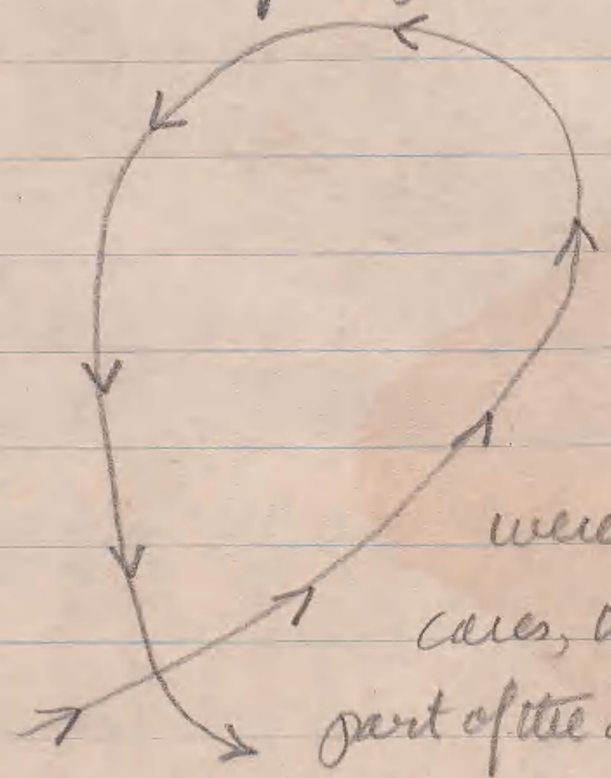
This afternoon David had a good view of a ♂ and ♀ in a bush together. Watched them for 10 minutes. They just hopped about, without performing any interesting overt reactions to one another. The ♂ seemed quite excited. Moving about rapidly. Lots of exaggerated flicking movements. Lots of "Tit" CN's The ♀ was less active. Performed less extreme flicking movements She also uttered CN's. These were quite like the CN's of the ♂, but slightly lower in pitch. Perhaps more like "Tsut" or "Foot"

The ♀ was almost certainly in the incubation phase of the breeding cycle!!

Diglossa, I

May 30, 1960
Cerro Pichincha

Twice this morning, I saw a ♂ of the small black species singing a very high steep flight. Looked like a ritualized flight performance. The path of the flight was more or less como ca:



I think that the two flights I saw were performed by 2 different ♂'s. In both cases, the ♂ sang going up, and during the first part of the descent. In both cases, the actual flight movements appeared to be quite unritualized in form. The songs appeared to be quite similar to, or identical with, the songs uttered by perched ♂'s.

I couldn't see what provoked these flights, or what they led to.

Diglena, I

May 31, 1960
Cerro Pichincha

Today we did most of our work near the village of Nono (see today's notes on Diglenopis).

In spite of the presence of Diglenopis coeruleocens in this area, the small black Diglena is still very common — much more common than the Diglenopis itself.

The only interesting reaction of the small black species I saw today occurred this evening. One bird, almost certainly a ♂, was hopping about on the ground and on very low twigs in very dense shrubbery. Very close to us. It uttered a whole series of single, soft "Sree" notes as it moved about. The notes were uttered at fairly lengthy but irregular intervals. I wonder if these notes are homologous with the "soft weak little trill" of plumbea mentioned in my notes of Sept. 20, 1958, p. 2?

Thinking things over, I have come to the conclusion that the aggressive behavior of ♂'s is one of the most distinctive features of the species. Aside from singing (which may or may not be mildly aggressive) all the ♂'s of this species ever do is perform attacks (including chases), with or without R — "3a 3a" patterns. They never stay close together and threaten one another at length, like ♂'s of the blue-spotted species performing BV & associated patterns, or even like ♂ Diglenopis singing very close to one another. One presumes that this feature of the small black species is highly specialized.

In case I forgot to mention it before, the small black species is the only one which occurs near Quito and its environs. It is obviously adapted to living in quite a wide variety of moderately humid to moderately dry environments

Diglossa, May 31, 1960, II

In connection with the preceding discussion of the aggressive behavior of the small black species, I should add that I have never seen rival ♂'s of these species engage in "pendulum" back and forth disputes.

Every time I look at these Diglossas I am more impressed by their resemblance to hummingbirds. Even the songs of some of the species of hummingbirds here are like the songs of the small black and the blue-spotted Diglossas (and the Conebills and the Blue Diglossopis).

Diglossa I

June 2, 1960
Cerro Pichincha

For the last 2 days, we have been working only near Nono. The small black birds here would certainly appear to be well past the peak of display here now. The ♂'s sing relatively very rarely.

I think that the ♂'s usually or always keep the bill open throughout a single burst of song, only moving the mandibles a little with each note. Certainly the bill is never opened very widely during song.

Late this morning, I heard a ♂ utter R — buzz warble 3 times in rapid succession. Couldn't see him at the time. The buzz warbles after the R's were sort of slurred, but one, at least, might be translated by something like "Za za wee wee." This is more confirmation of the hypothesis that the usual "Za za" notes after R are a buzz "intention movement" of song.

Diglossa, I

July 29, 1960
Washington

After looking at the collection in the USNM here, I am certain

that the small black species is alterrima and that the blue-spotted species is lafresnayei. The bright blue species is probably vidua-
ria.

Diglossa, I. October 8, 1960
Cerro Punta

I was watching a mixed flock just below the upper pasture today, when I saw a solitary ♂ Slaty Diglossa fly up and perch on a stump, about 3 feet from the ground (this was in a field covered by very low vegetation, so the ♂ was very exposed and conspicuous). On this perch he sang repeatedly. His posture during the singing appeared to be quite unremarkable, but he did WF and TF, sometimes repeatedly, between each song phrase. The first 5 or 6 song phrases he uttered were "Zeee Zeee Zeee" (once "Zeee Zeee Zeee Zeee"). These were not divided into very obvious doublets. Then he uttered about 4 song phrases which included both "Zee" notes and brief fornlers warbles. Commonest: "Zeee Zeee Zeee ~" At least two of these latter phrases, the fornlers warble ended with 3 very brief descending notes. More or less commonest: "Zeee Zeee Zeee ~-_-" These last 3 notes might possibly be transcribed by something like "Dub dub dub". I think that this must be the most elaborate form of song of the species. (Compare with my notes of Mar. 6, 1959, p. 4).

After singing these phrases the ♂ just flew away

Diglossa, I. October 9, 1960
Cerro Punta

Watching the same ♂ as yesterday. He sang for more or less lengthy periods, off and on, all morning (up to 10:30 a.m.). Song phrases essentially the same as yesterday. Always from a more or less elevated perch (once from the top of a tree, at least 50 feet from the ground — but usually much lower). No response to any ♀. In other words, the singing of this species is essentially the same as that of alticola and lafresnayei.

Diglossa, I. May 21, 1961
Cerro Pichincha

Yesterday, both morning and afternoon, I worked near Hona, and this morning I worked along the path above Hona. Alticola was are still very common all over the place, but by no means as conspicuous as last year. One or two ♂'s sing almost as frequently as they did in May last year, but the others are relatively silent. It is my impression that they have not yet begun to show much in the way of breeding behavior!

I have been impressed, again, by how extremely skulking the birds of this species are. Singing males are almost the only birds that expose themselves for more than a very few seconds & usually stay way down and inside very thick shrubbery. (But I have seen ♀'s more frequently this year than during my observations last year. I.E. the ♀'s are not incubating yet.) Non-singing ♂'s seem to come to the top of shrubbery more frequently than do ♀'s, but the

They are still usually very inconspicuous. And all the birds are really quite remarkably shy. (I shouldn't be surprised if the local children use catapults)

The songs I have heard uttered by ♂'s this year have been much the same as the corresponding songs I heard last year. Probably many of the same birds involved. This morning, for instance, there was a bird singing songs, each phrase of which was preceded by an R, in exactly the same place where a bird sang similar songs last year.

The most active ♂ I observed this morning sang at the same times as the ♂'s I observed last year. I.E. a few songs just after dawn, and then a lot of songs later in the morning.

I have not seen any ♀'s associating with ♂'s for more than a few seconds. This species certainly does not seem to form pairs.

Around 8:00 a.m. this morning, I saw a bird which was probably a ♀ aterrima (possibly a ♂ of another species, like plumbea), sitting by itself in an eucalyptus tree, uttering very, very soft songs!!! These songs appeared to be quite similar to the ordinary songs of ♂ aterrimas in form; but they were barely audible at a distance of 10 feet. Uttered from an ordinary sitting posture, No OCB. But tail vibrated in rhythm with the notes of the song. I shall call such songs "SS". The bird uttered at least 3 SS's; and then flew down into a bush and disappeared.

I have heard quite a lot of single "Hoop" Notes coming from the shrubbery along the path above Flora and near Flora itself. These were probably uttered by ♀ aterrimas, but I have not yet been able to see the birds utter them.

I have not heard any WHAC's this year yet.

Diglona, I. May 23, 1961
Ca de Iñaquito

I have been working here, all day yesterday and this morning, in the same field where I studied so many birds last year. Small black Diglonas are still common here; but, surprisingly enough, I have yet to hear one sing here this year!

Diglona, I May 24, 1961
Cerro Atacazo

Went back to the same place this morning where I observed Diglonas in 1960 and 1959.

There were a lot of Lafresnayei around — in exactly or almost exactly the same places as on previous years. Possibly the same birds. There were also quite a number of alterrima around. In the same area I saw them last year. There are some Lafresnayei in the area where alterrima occur (the 2 species may be approximately equally common in this area), but alterrima are apparently lacking in some of the areas where Lafresnayei is common. The altitude of all these areas is approximately the same, and the vegetation seems to be similar everywhere Diglonas occur here. I think that the critical factor controlling the distribution of alterrima here may be sunlight. The area in which alterrima occurs, here, receives the morning sunlight much earlier than the areas where alterrima are absent.

The 2 species seem to react to one another rather significantly. At least, if alterrima may start to sing when they hear Lafresnayei singing.

Rather surprisingly, the territories of ♂'s of the 2 species may overlap with little or no friction. I saw one ♂ lafresnayei and 1 ♂ albilinea this morning which seemed to be using the same tree as "headquarters." These 2 birds seemed to ignore one another; but they did not usually sing at the same times.

The ♂'s of both species sang quite frequently this morning. But not at dawn. Singing began in earnest about ½ hour after dawn, and continued, in full swing, until about ½ hour after the sun reached the area(s).

I saw quite a number of ♀'s of both species moving about quite freely this morning.

All this would suggest that the birds are just beginning to breed.

I was able to study the songs of ♂ lafresnayei in detail. The most common songs were more or less commonest: "zraa zraa ti-ti zraa-zraa ....." Essentially a series of "zraa" notes, interrupted at irregular intervals by doublet "ti-ti" notes. It was this type of song which was sung by ♂'s apart from their ♀'s. Delivered from high exposed perches. When singing was at its height this morning, the ♂ lafresnayei would sing this type of song endlessly. Not divided into distinctly separate phrases. The whole performance was quite reminiscent of the "dawn song" of Yellow Grosbeaks. The songs of the lafresnayei actually sounded like the songs of the Yellow Grosbeaks — delivered by a tiny dwarf grosbeak.

It is possible, therefore, that the song of lafresnayei is relatively "primitive" among Diglossas.

These songs by the ♂ lafresnayei were much "slower" tha

n the songs of ♂ atterima. Longer notes, separated by longer pause
es.

I don't know why the ordinary lafresnayei songs I heard this
s morning seemed to include fewer distinct doublets than the co
responding songs I heard last year. Different intensity? (Perhaps
higher this year???) In any case, it should be stressed that they
were essentially uniform this morning. I heard at least 4 or 5 differen
lafresnayei ♂'s utter similar songs.

The ordinary lafresnayei songs this morning were also si
milar to the songs of Yellow-Goldbreaks insofar as they occasionally in
cluded a few notes of different pitch from the rest. Usually or always
"zraa" notes I think. Usually or always higher than the rest of the
"zraa" notes. I don't think the relatively high notes were produced
by any significantly different motivation. Just inserted more or less
at random

The ordinary songs of ♂ aterrimas I heard this morning
were much the same as last year. These songs were uttered by isolat
ed and spaced ♂'s. Much more rapid than the ordinary songs of ♂
lafresnayei and divided into distinct phrases. All the phrases eventu
ally similar to one another. A typical phrase might be transcribed
by something like:

" tuh-tuh-tuh tuh-tuh-tuh-wheeyooo "
tuh-tuh-tuh

This looks very different from the diagram of aterrima song
drawn on May 20, 1960, II. It is possible, however, that the latter
diagram represents two phrases "run together". The emphatic note
in the center might be a "wheeyoo".

I rather think that the aterrima may have been showing some sexual behavior today. At least, I caught brief and unsatisfactory glimpses of some peculiar reactions, each of which seemed to involve one ♂ and one ♀ aterrima.

In one case, I saw a ♂ aterrima chase a ♀ repeatedly. This chasing was largely aerial (although the ♂ also sometimes hopped after the ♀ when they were both in a bush). Some of the aerial chasing was quite prolonged, the two birds twisting and turning very rapidly. The ♀ made no attempt to leave the area. Most of the chasing was quite silent, but the ♂ did utter one R — "Zaza" at one point.

Another time, I saw even more prolonged aerial chasing. I think that the 2 birds involved in this chase were the same as the ones involved in the chase described above, but it was all so rapid that I could not be absolutely sure of either the sex or the species of the two birds. This very long chase was also largely silent, except for a few ordinary-sounding CN's, 1 soft WHAC or HAC note, and one very brief burst of very rapid, gurgles, twittering song.

If the 2 birds involved in this last chase were really aterrima, it is interesting that the chase appeared to stimulate a neighboring Calyptomena ♂ to begin singing.)

It seems quite likely that "pursuit flights" are a prominent part of aterrima "courtship."

Rather late in the morning, around 8:30 a.m., I caught some brief glimpses of 2 birds flitting rapidly about in a very dense thicket. I think the 2 birds were aterrima. In any case, the rapid flitting was accompanied by lots of R — "Zaza" calls (by a ♂?) and single WHAC notes, "Whaah Whaah Whaah....." (by a ♀?). Unfortunately, I could not see if these calls were accompani

-ed by any special movements or postures.

There were also a few interesting reactions among the lafresnayei this morning.

Just at dawn, I saw one of lafresnayei moving through a thicket very rapidly. Uttered "zee-zee-zee-zee-zee mmmm see-a see-a see-a see-a" The mmmm was a definite, quite loud R. I think this bird was following or chasing another bird in the same thicket.

Somewhat later, I heard several more "zee zee zee zee zee ...." calls. Unfortunately, I was never able to get a very good view of the bird(s) uttering these calls. But they were uttered in an area which appeared to contain only lafresnayei. And I think these calls were associated with aerial chases.

All this would suggest that lafresnayei has a hostile "zee zee zee zee ...." pattern more or less like that of Conirostrum fraseri.

I also think that this "zee zee zee zee ...." may be closely related to (perhaps a low-intensity form of ?) the WHAC. I heard some "zee zee zee ..." notes this morning which seemed to be verging upon typical WHAC.

This afternoon I went to look at the birds near Nono, in the usual place.

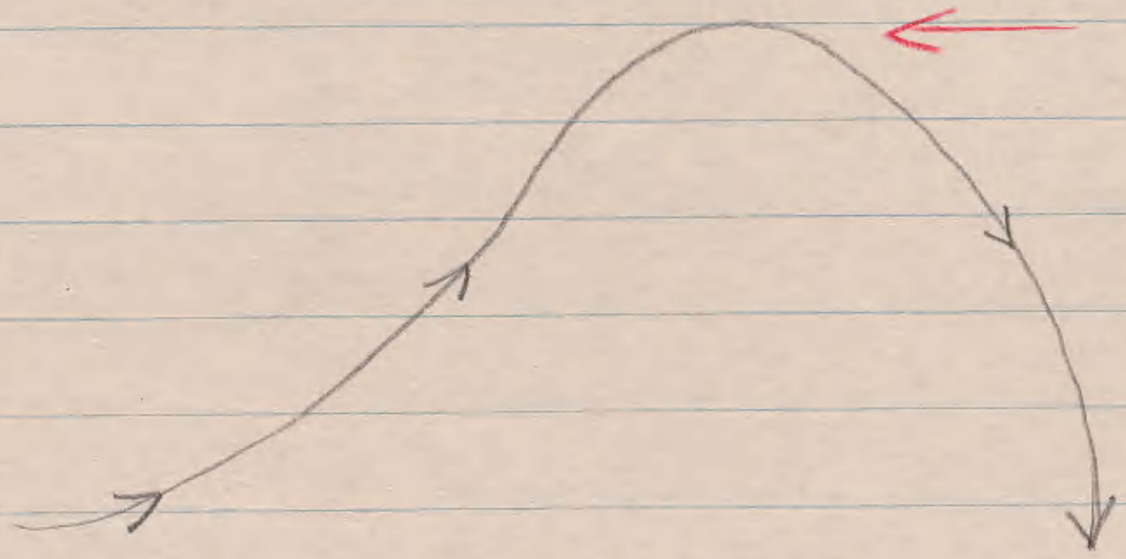
It is obvious that the songs of aterrima here, at the present time, are slightly different from the songs of aterrima on Atacaso. The songs of the Nono birds are even more rapid and formless. Probably also include more notes. As far as I can tell, the songs of all the aterrima at Nono are essentially similar. They might be transcribed more or less something like:

"Zeeva zeeva zeeva zeeva zeeva zeeva zeeva zeeva zeeyaaaaa"

(All very rapid).

It is possible that the songs of the Honeo-birds are characteristic of a later phase of the breeding cycle than are the songs of the Ataeso-birds.

Late this evening, I saw another song-aerial flight performance. A ♂ flew up, about 10 feet above the level of the shrubbery and then down again, singing all the while. His song was quite ordinary, quite like the songs of other birds singing on perches here. The course of his flight was comme ça:



One ♂ aterrima repeatedly supplanted a (♂) Diglossopis feeding in the same tree. He uttered a few songs during the period he supplanted One quite ordinary. A couple of others even more hurried, and probably briefer, than usual.

aterrima ♂'s seem to have two types of "CV" "Tsit"s and "Teet"s. I don't know what the difference between them is - yet "Tsit"s more hostile? Or more aggressive?

Diglossa, I

May 24, 1961
Cerro Atacazo

Watching both a. aterrima and l. lafresnayei here, in the usual places, this morning.

The ♂ l. lafresnayei I listened to on May 24th seemed to be singing in exactly the same way today.

But I also came across another ♂ l. lafresnayei which was singing a song which included more "ee" sounds. Comme ça:
"Zeea zeea zaa-zaa zaa zeea zaa zeea zaa-zaa zaa zee-zee ....."

The only CN's I have heard uttered by l. lafresnayei have been ordinary "Tit"s. By birds in bushes near me.

This morning, the a. aterrima began singing frequently some minutes before the l. lafresnayei. This might be another indication that the former are more advanced in the breeding cycle than the latter.

This morning, I made a special point of watching the two birds, one of which was uttering lots of "Whaah" notes on May 24th (see description bottom p. 37). I was able to establish that these two birds definitely are a. aterrima. One an adult ♂! One apparently juvenile in gray plumage with very short tail! The juvenile uttered many more "Waah" and similar notes this morning, and it was obvious that these notes were "begging", probably partly FB (see also below).

The juvenile followed the ♂ steadily. But it usually kept very well concealed, down in thick shrubbery. It seldom came up to feed and sat in the open, although the ♂ did so very frequently.

The juvenile uttered the "begging" notes almost steadily for at least two hours this morning. Only taking occasional pauses of 5 or 10

minutes.

The rhythm of the "begging" notes was fairly distinctive: "Waah waah waah-waah waah waah waah ...."

Sometimes the individual notes were more like "zhaa" than like "Waah"; but this variation appeared to be minor.

A few of the "begging" notes were much harsher than the rest. Almost trills.

The only time I got a good view of this juvenile while it was "begging", it was hopping through the bushes in a more or less "normal" hopping posture, with wings drooped (quite appreciably) and slightly spread. No trace of Q. Back rather ruffled. Head pulled in, in what may have been an indication of H.

I never saw the ♂ feed this juvenile this morning. He seemed to ignore the juvenile almost completely. He did not utter R-"Zaza" calls this morning.

The fact that the juvenile kept up "begging" so steadily this morning, with so little apparent response, might suggest that its "begging" is not purely FB. Probably partly hoctatic (this is confirmed by the fact that some of the "begging" notes were almost trills).

I think it is highly probable that all or most of the "WHAC"s I heard on the path above Honu on Aug. 9, 1959, (p. 14), were really begging notes. The birds which uttered the "WHAC"s near Honu on Aug. 9, 1959, were remarkably "skulking" and difficult to see, just like the juvenile on Ataeaso today. The "♀" observed uttering "WHAC"s near Iñaquito on May 25, 1960, (p. 23) may also have been uttering "begging" notes.

Aterrima does, however, have a "real" WHAC pattern — see below, and also some earlier descriptions, such as that on May

29, 1960 (p. 18) — but it seems to be comparatively rare. It might also be called just plain "HAC."

The pair which performed all the chasing reactions on May 24 (see p. 37) were still around this morning. I shall call this pair "Z". Their behavior this morning was very much the same as on May 24th. The ♂ chased the ♀ repeatedly, sometimes for minutes on end. Sometimes silently. At other times, one of the birds (presumably the ♂) uttered R—"Za Za" calls. Every once in a while, when the ♂ got too close to the ♀, one or both birds would utter 1, 2, or 3 notes which seemed to be "real" HAC. Might be transcribed as "Zhaaa" or "Whaaaa." Hoarser than the "begging" notes. Less harsh. Usually longer than most "begging" notes. As far as I could tell, these HAC's were not accompanied by any special movements or postures.

In spite of all this chasing, the 2 Z birds stayed more or less together all morning. Seldom or never more than 20 or 30 feet apart from one another — although seldom very close except when feeding visorously or during chases.

I noticed again, this morning, how prone the Artemisia ♂'s are to sing in response to almost any sound of any other species. This morning, they responded particularly vigorously to the song notes of the large rusty Pheugelus (see today's notes on the latter genus).

I watched one solitary ♂ preening, vigorously and quite silently, for two or three minutes. Then he suddenly flew up, singing, to perform a song flight just like the ones I have observed before. Then went straight back to his old perch and began to preen silently again.

I think the "Tit" and "Seet" CN's of Artemisia are nothing

more than slight variations of a single pattern. The birds seem to give "feet"s in flight, and "-tit"s when hopping or birding in bushes.

Diglossa, I May 27, 1961
Cerro Atravesado

Working in the same place this morning, 5:45 – 7:10 a.m.

Began by watching the 2 pair. The ♂ sang a little, apparently by himself, just at dawn. Quite ordinary songs. Then disappeared for a few minutes. Then, around 6:00 a.m., re-appeared, with the ♀. Then the 2 birds did a little chasing, in much the same way as yesterday. The ♂ pursuing the ♀. I couldn't see the details of this chasing, but I did hear a few HAC Notes from time to time while the chasing was in progress. This chasing did not continue very long. Afterwards, the 2 birds were most uninteresting. I saw them occasionally, but they did little but feed. A few brief chases — but many fewer than on May 24th. I got the impression that the birds were settling down into happy domesticity. Hostility greatly reduced.

I then began to watch another pair of Atlapetes, on an adjacent territory. Call this pair "X". (The X ♂ is the one who did the song flight yesterday.) The X birds seemed to be definitely less advanced than the 2 birds. The X ♂ only approached the ♀ occasionally.

Most of the time, the X ♀ hopped and fed, quite peacefully, in a restricted area of bush. The ♂ spent a large part of his time at least 20 or 30 feet away from the ♀ (usually out of my sight), probably feeding. He did not, however, utter many song phrases while he was thus separated from the ♀. I.E. he knew she was around.

When he did approach the ♀, the reactions between the 2 birds were quite variable.

Sometimes the ♂ just flew into a bush near the ♀, or even the same bush as the one in which the ♀ was feeding, and began to feed peacefully himself. No "greeting" display by either bird. All that happened was that one or both birds occasionally uttered a few "Tit" CN's as they continued feeding (probably no more "Tit"s than they would have uttered if alone).

At other times, the ♂ would fly straight at the ♀, uttering R-Za-Za as he did so. The ♀ usually retreated at this, but not very much. The ♂ would then fly away immediately. The ♂, in other words, was too afraid of the ♀, or the ♀ was not sufficiently afraid of the ♂, to enable charging to develop.

Every once in a while, just as the ♂ flew at the ♀ with R-Za-Za, I would hear one or two faint HAC Notes.

I think these HAC Notes, and the HAC Notes uttered during the 2 charging performances, were usually or always uttered by the ♀'s of the pairs.

The reactions of ♂ alternating to ♀ alternating are certainly reminiscent of the "pouncing" of Emberizines!

Just before leaving this morning, I saw a particularly interesting series of reactions between the ♀ birds. They had both disappeared from our view, and then re-appeared quite suddenly. The ♀ was hopping through the shrubbery, and the ♂ was following here. Every once in a while the ♂ would hop particularly close to her (it looked very much as if he wanted to mount her). The ♂ was silent throughout. But the ♀ uttered nearly constant HAC's. Definitely "WHAC"s. "Whaash whaash whaash whaash ....." Very buzzy. Moderately loud. Every time

the ♂ came particularly close, the ♀'s HAC notes became noticeably loud er and faster. At the same time, when the ♂ came particularly close, the ♀ began definite BV! Wings held out, waving asymmetrically and irregularly (usually not rapidly). No back-fluffing. This BV was superimposed upon a variety of ordinary hopping & perching postures. The only regular feature of these postures was that the ♀ usually tried to face the ♂.

* ♂ approximately here

A typical BV Posture

The wing nearest the ♂ was sometimes raised higher than the wing away from the ♂

This BV appeared to repell the ♂ at least, he always dropped back a little, or stopped following the ♀ so closely, when she began to perfor m the BV.

This behavior by the ♀ is a good indication that HAC + BV is threat, and higher intensity than HAC alone.

After approaching the ♀ very closely, and being repelled, 5 or 6 times, the ♂ just flew away — still without uttering a note or perform ing a display of any kind.

At one time early this morning, a Sparrow Hawk appeared in the area, and perched on a nearby tree-top. The ♀ dived into the bottom of a bush, uttering 2 or 3 faint HAC's as she did so, when she saw the hawk.

I noticed this morning that when alarms are sounding bush, the

vi TF's are usually V-D.

Diglossa, I May 20, 1962.
Atalaso

Arrive usual place 5:40 a.m. Not quite light yet.

Hear what appears to be first song of blue-spotted Diglossa 5:45. Composed of distinct notes (not a formless twitter), but without any very conspicuous doublet structure. "Zree zraa zee zraa zee zraa zeee-zeee-zee" is one phrase I hear clearly. Considerable variation. Can only get a glimpse of bird.

Same bird utters song with more obvious doublets 5:59 "Zree-zraa zree-zraa zree-zraa".

It is obvious that birds can sing at dawn if sufficiently motivated.

Hear what is probably first alternina song 6:09 (This is as soon as I reach a fairly typical alternina area.)

6:15 a.m. Now there seems to be a general lull in Diglossa songs. Birds presumably feeding.

6:19. Watching a single ♂ singing. Almost certainly a blue-spotted bird. Uttering phrases more or less commune ca: "Zree zree zree zree zraa zree-zree zraa". Frequently more abbreviated than this, but seldom or never any longer (Yes! This is definitely a blue-spot). Sitting in perfectly normal unvitralized, rather erect, posture while singing. Looks from side to side between phrases. Occasionally interrupts singing to go feed.

6:40. Apparent zig zag boundary dispute between two ♂ Blue-spots. Flying back & forth. Uttering lots of songs. Rather

accelerated for the species. No other display.

7:00 a.m. Watching a ♂ alemona singing. Apparently all by himself, but many of his songs have rattle or trill component. Ending "preeeeeeeya"

In the same area where I thought I saw pre-cop behavior last year, I can occasionally hear soft "Wah wah wah wah ....." notes. Sound like begging of young last year. In the same area, there is a ♂ alemona who has done little or no singing this morning, in spite of the fact that he has not been accompanied by a ♀. I think he must have young (probably still in nest, as begging sounds seem to be stationary)

7:45 a.m. I have now heard a lot of ♂ Blue-spots singing on their stations (quite apart from obvious hostility) Most songs composed of distinct notes, with only an occasional "zee-zee" or "zree-zree" doublet, usually toward the end of a phrase. (I am using "doublet" to include only notes which are closer together than most of the other notes in a long phrase.)

Thus, my observations of the song of Blue-spots today would seem to confirm my observations of the songs of the species last year.

When I first observed these birds 3 or 4 years ago, I may have been misled into supposing that most of the songs were long or completely composed of doublets because the birds frequently alternate notes of slightly higher and slightly lower pitch (i.e. "zree"s and "zraa"s).

The doublets I have transcribed as "zee-zee" and "zree-zree" today may be the same as the ones I transcribed as "ti-ti" last year.

One of the ♂ alemonas here seems to have a large white spot on its

Diglossa, May 20, 1962 11 (48)

Schen!

Diglossa, I

May 21, 1962
Pichincha

Working near Loa this morning.
6:50 See a ♂ atemina attack and chase a Chuicol. With "Zweeee-za-za" so perhaps this species does show a lot of inter-specific aggressiveness, like hummingbirds. It may not attack the Blue-spots on Otaeao simply because the latter species is larger.

Diglossa, I

May 22, 1962
Pichincha

Working near Nono this afternoon.
3:50 p.m. See an atersima ♂ attack & drive away a humming bird.

Diglossa, I

May 23, 1962
Pichincha

Arrive Nono 5:30 a.m.
As I walk along path immediately afterward, I hear lots and lots and lots of atersima song!!! It is still night at this time, but the moon is full and very bright
Hear a presumed ♂ atemina singing phrase after phrase.
5:30 a.m. All phrases almost formless warbles, but each one seems to

begin with a "zee-zee". This may be a resemblance to Diglossopis

First burst of Diglossa songs quite pronounced by 6:00 a.m.

Songs beginning again 6:16 a.m.

7:30 a.m. There has been little or no Diglossa song for some time now. (Sun has not reached this area yet)

8:05 a.m. Watching a single ♂ atterrima singing repeatedly. All phrases "zeewazeewazeewazeewazeewa" type. Quite like those of the Coerebid (see today's notes on Coereba). I simply can not tell some of the song phrases of the 2 species apart.

SEE ALSO TODAY'S NOTES ON DIGLOSSOPIS

Back to Nono again in afternoon. Cloudy and occasional rain.

3:45. See a ♂ atterrima give a long song phrase in flight. Flying more or less horizontally over ravine. Wing beats fast, but not very deep, and bird moves forward slowly

Diglossa, I May 24, 1962
Pichincha

Arrive Nono 5:28 a.m. Still dark. Atterrimas already singing. At least several birds. Working in area of C Diglossopis. There are at least 3 atterrimas singing in this area. Notice that the song phrases of these 3 birds do not usually overlap (altho there are, of course, exceptions)

First burst of song over by 5:50 (if not a few minutes earlier)

Starts again 5:55. Again phrases of different birds do not usually overlap.

These birds do not seem to pay any attention to songs of unrelated

Diglona, May 24, 1962, II

species singing at same time. Overlap with latter in perfectly random manner.

6:10 a.m. A♂ alemina is now singing in tree where Diglossopis sing quite frequently. They are absent now. And the alemina is singing from a perch which is much lower than the singing perches usually selected by the Diglossopis when in the same tree.

Ataraso & Iñaquito

Went up to Ataraso this afternoon. Arrived 3:00 p.m. Heavy mist & rain, so I didn't stay long.

Both lafresnayei and alemina sang quite a lot while I was there. My impression was that the songs of the 2 species were not correlated in any way. Once, at least, a single ♂ of each species (quite far apart) sang songs simultaneously. A couple of other times I heard phrases of the 2 species overlap. I don't know if these reactions were coincidental or not.

I arrived at Iñaquito, at the usual field, at 4:45, and stayed until 6:20. During all that time, I didn't hear a single alemina song phrase, although I did catch occasional glimpses of ♂'s (see also today's notes on Conirostrum).

Diglona, I

May 25, 1962
Ataraso

Working in usual place. Arrive 5:28 a.m. Very misty and cloudy

C
C Swit a~~lemma~~ (or Cowbird) songs heard 5:38 a.m.
C Several birds involved. Then fall silent

First Blue-pot songs 5:45 a.m. when the C ~~alemma~~
are silent. First Blue-pot starts by alternating song phrases
with Atlapetes rufinucha!!! Then continues song thru rufinucha
phrases (apparently ignoring latter) 5:47.

Then hear some Blue-pot and C ~~alemma~~ (or Cowbird) phr
ases alternating. Then overlapping.

3 times C overlaps A

1 A overlaps C

5:57. Two C ~~alemmas~~ carefully alternating phrases and
C bursts of phrases. All early phrases seem to be "Zeewee zeewee zeewee
C zeewee..." or "Zeewee a zeewee a zeewee a zeewee a" Then become more
C warbling a few minutes later.

All the Blue-pots near me silent while the C ~~alemmas~~ are
singing.

C 6:02 a.m. All local C ~~alemma~~ type songs now back to
C "Zeewee a zeewee a....."

6:04 a.m. Two "C ~~alemmas~~" repeatedly uttering phrases almost
C synchronously. Then alternately. Then synchronously again

NOTE: I have not been able to see any of the birds delivering
these songs; but I am almost certain that they are really alemmas. Notes
relatively loud & melodious. I think Conirostrum notes would be thinner

All birds silent 6:09 a.m.

C Oh oh!!! Now there is a single Cowbird singing in area where
C the "alemmas" were a few minutes ago. See the bird. Song phrases relatively
short "Zeewee a wee a" Quite thin. When bird begins to sing these phrases
C it provokes a neighbor to sing also. Two birds alternate phrases. I think

C the second bird is a Cowbell too, but I can't be sure about this.

Then silence again 6:15 a.m.

S All the Blue-spots have been very quiet this morning. Why?

No sooner said than done! Single Blue-spot begins

singing 6:16 a.m.

Same area where I know alemina & Blue-spots both occur.

Blue-spot singing when I arrive. Shuts up. Then Cowbell sings. Then Blue-spot starts again. Then Cowbell. Then Blue-spot. Then silence. Then Blue-spot again. Then silence.

S The only alemina of I can see around now is the one who has young in the nest, and he is silent.

Blue-spots singing off and on.

All birds silent now 6:27. Then Blue-spots start again. Then an alemina of I starts. (This time I can see bird). Just alternates phrases with Blue-spot. Then twice overlaps Blue-spot. Then Blue-spot shuts up. Alemina sings many phrases. Then alemina stops and Blue-spot starts again. Then alemina starts again. Twice Blue-spot overlaps alemina. Then alemina stops. Blue-spot continues then stops.

All these alemina phrases were quite different from the "Cowbell" songs heard earlier. Beginning "Zeezeezee ..." accelerating into a formless twitter, ending with an "ee-ee-yoo".

The alemina quite ignored a furnariid or flycatcher singing at more or less the same time sometimes overlapped, sometimes not

The alemina and the Blue-spot were singing from stations at least 30 ft apart, but I have twice seen them feeding in the same areas (altho not at the same time)

So it looks as if all 3 species here react to one another more or less like Diglossopis and atterima at Nono.

6:40. Blue-spot alone singing now. Seems to ignore Atlapetes albinucha singing day-song. Then shuts up, while albinucha continues. Then starts again while albinucha continues.

Two Blue-spots largely alternating phrases. Only partial overlap.

I should not be surprised if the sound of one Blue-spot singing stimulated others to do the same, even when they do not overlap.

Now 2 Blue-spots singing simultaneously but not really synchronously. Then one gives up, leaving the other a clear field. Then bird is sitting in one of the favorite bushes of the atterima ♂?

Then an atterima (on station far from Blue-spot) sings, twice overlapping Blue-spot. Then Blue-spot shuts up !!! Then atterima stops, and a different Blue-spot starts !!!

At least 3 Blue-spots have sung within the last 2 minutes with little or no overlap!

All fairly quiet now 6:30. Only occasional Blue-spot singing. Then two birds singing simultaneously. These Blue-spots would actually appear to be more scrupulous about impinging on the songs of the other species than upon one another's.

All absolutely quiet 7:00 a.m. Going back to Coubill area.

Blue-spot suddenly bursts into song as I round corner and it sees me. Almost certainly reaction to me. Another indication song is partly territorial.

The thicket on the Coubill area is definitely lower, possibly sparser than in the areas where atterima occurs or Blue-spots occur alone.

Daytona, May 25, 1962, IV. (54)

When I arrive at the Cowbell area, a Blue-spot is singing. Shuts up. Then a Cowbell sings. Shuts up. Then another Blue-spot starts to sing !!! Shuts up. Period of silence. Then first Blue-spot starts to sing again. All 3 birds are singing from stations rather far apart from one another, but the station of the Cowbell is closer to that of one of the Blue-spots than the two stations of the Blue-spots are to each other.

I have seen several cases (involving at least 4 different birds) of ♂ Blue-spots chasing other ♂ Blue-spots in flight. Always quite silent.

7:15 a.m. Blue-spot sings. Shuts up. Then Cowbell sings. Shuts up. Then sings again. Shuts up. Another Cowbell sings. Shuts up. Then another Blue-spot sings. Then shuts up. Then first Cowbell sings again. Shuts up. Then a (fourth ?) Blue-spot sings. Shuts up. Then another Blue-spot sings. Then first Cowbell. Then a Blue-spot !!!

The regulation of songs seems to be almost too good to be true!

7:30 a.m. Hear burst of "Zeewee zeewee zeewee zeewee zeewee" song, exactly like the song I thought was uttered by ateniensa at dawn this morning, but this time I can see it is uttered by Cowbell.

Then Blue-spot sings. Then Cowbell sings again.

I think the 2 Cowbells here may be rival ♂'s. I have seen several chases which may have been hostile. Difficult to tell exactly what is going on, as birds are usually obscured by vegetation

7:40. Several more cases of Blue-spots beginning to sing when I appear.

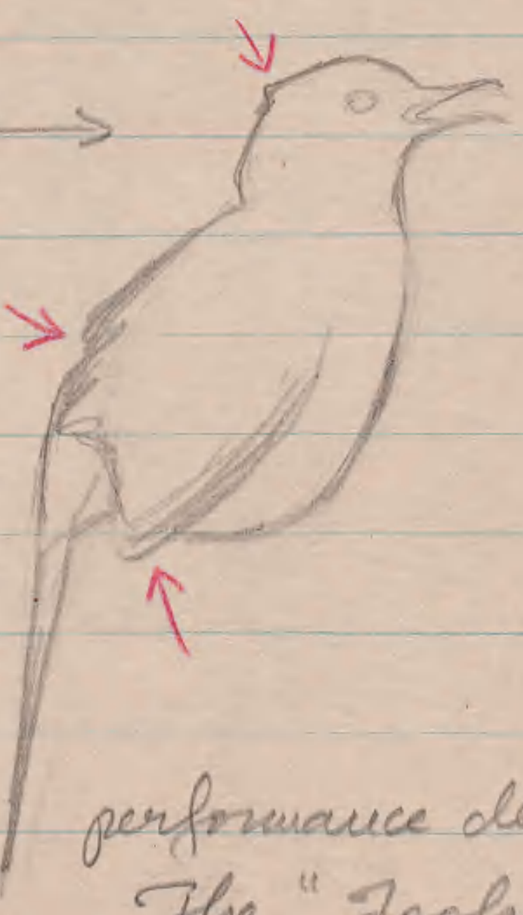
song of the first bird would be the releasing mechanism for the song of the second.

8:56 a.m. A song by a Blue-spot seems to be provoked by a song of an alternans.

It might be better to say that the song of one bird has both an inhibiting and stimulating effect on the song potential of another bird. Usually inhibition stronger than stimulation while song of first bird persists. But inhibition abruptly removed after song of first bird stops, while the stimulating effect remains.

Most peculiar! Come across a ♂ Blue-spot. Setting on exposed perch. Repeatedly utters "Took took", followed immediately by a sort of "SS." Bill OCB (very wide) 2, 3, 014 times, while the bird remains silent, or, possibly, utters something like a very soft "see-see-wee." I don't know if this was provoked by me or by another Blue-spot singing loudly a few ft. away. 9:05. I think possibly the latter. This performance may have been partly inhibited song.

This is the posture of a Blue-spot giving a long burst of ordinary song. 9:20. Probably more elevated than some song postures.



NOTE: The "SS" performance described above may well have been compound. The "Took took" notes may have been largely or completely All CV's. The subsequent muffled notes may have been the "real" inhibited song.

Back to alemina area 7:43. Blue-spot singing. alemina starts. Partly overlaps Blue-spot. Blue-spot stops. Alemina stops. Blue-spot starts again. Alemina starts again, partly overlapping Blue-spot again. Both shut up. Blue-spot starts again. Shuts up.

7:50 a.m. See parts of a long dispute between 2 Blue-spots. One chasing the other in air. Long twisting & turning flight. Accompanied by "secret" notes. Then 2 birds land in same bush. One sings briefly. Hop around excitedly. Silent. One or both fluffed underneath, with tail fanned. One BW's 2 or 3 times. Then aerial chase resumes. Again with "secret" notes. Then birds apparently separate. Sing from perches appr. 50 ft apart. Sing synchronously, then alternately. 8:00 a.m.

Arrive back Cowbell area 8:12 a.m. A Blue-spot sings briefly. Then another. Then various Blue-spots sing from time to time. Not very prolonged. No overlapping.

Here also seems to be at least one alemina in this area. Largely silent. Gives a couple of brief phrases when the Blue-spots are silent. Quite like the phrases of the other alemina heard singing here this morning.

8:50. See a pair of Cowbells feeding. Definitely probing at base of tubular flowers. Then one bird flies over to its mate, and apparently feeds it!! No display.

One of these Cowbells sang quite briefly when separated from its mate by a few yards (the bird who did the singing was the one who also did the feeding — i.e. almost certainly the ♂?) This seemed to provoke an adjacent Blue-spot to sing. Then Blue-spot shut up. There was a pause. Then the Cowbell sang another phrase.

The sound of one bird singing might be considered a "priming" mechanism, getting another bird "ready" to sing. Then the silence after the

Diglena, May 25, 1962, VII (57)

C NOTE: It is obvious that I got the D. aterrima and Combella
C tongs mixed up this morning. I have indicated corrections by "C"
C Other references to Combellas are indicated by /.

Redmedia

Walking in Nieto this afternoon, cloudy & rainy

3.25. Watching a ♂ aterrima sing. Long phrases like those of aterrimas on Ateneo this morning.

3.28. Hear another ♂ aterrima sing. Phrases more or less "Zee weewee weewee wee-ee-yoo" This bird then alternates phrases with another bird. The phrases of the latter are similar to those of the former. One of the birds doing this alternation is the one who alternated with the "A" Diglenopes

4:45 Watching another ♂ aterrima singing in C Diglenopes area. Long phrases more or less as transcribed above.

It is amazing how much less all the birds here do on bad days (climate-wise) than on good days

September 16, 1962
Telefonico #1
La Montaña

Diglena, I

= carbonaria glenosa
= albilatera
= local form of baritula

11:00 a.m. Come across a single ♂ glenosa in thicket.

Diglona, Sept. 14, 1962, II (58)

Obviously nervous about me. Lots of flying int. movs. Uttered lots of loud "Tsit"s. In rapid but slightly irregular series

12:05 p.m. Came across a single bird which may have been a ♀ or juv. albilatera. Also uttered lots of "Tsit"s. But not very rapidly repeated

Diglona, I

September 17, 1962
Tucuruba

7:15 a.m. ♂ baritula feeding & singing.

Singing moderately high and exposed. Song consisting of "Tazeezeeze" phrases. Quite reminiscent of chiriquiensis. Bird acting in erect unritualized posture. Sings about 20 phrases and then disappears.

This bird appeared to become involved in some sort of apparently hostile chase with another bird, shortly before singing, but I couldn't identify the other bird.

Coereba, I

November 11, 1957
Base Colorado

There are a lot of these birds here - and they seem to be fascinated by the capture birds. I haven't been paying much attention to them, but I did note one bird's conspicuous display.

Two birds flew into a tree, and one of them apparently began to "beg" from the other fluttering wings, and uttering a long rapid series of whirring notes. They stood for a few minutes in posture como en 5.

Looking quite remarkably round & fluffed.

Yellow rump particularly conspicuous

Coereba, F.

November 13, 1957
Base Colorado

Another glimpse of some of the same display as above. A single bird, apparently alone in a tree, uttering repeated calls: "I see tree tree tree tuh" again & again. In posture como en 5 (see next page), with fluttering wings but little or no fluffing or puffing. Just went on with this until another bird appeared. Then shut up and stopped flirt

Coreba, Nov. 12, 1957, II.

turning. Then both birds flew away, in opposite directions.

I am fairly certain
that the tongue was
raised during part of the song.

The number of syllables in the song may have varied somewhat, but it was certainly usually five, and the terminal note was always differentiated.

Later on I hear the same call from the same tree, presumably being uttered by the same bird, and look up just after the call stops. A bird, presumably the one who just finished singing, is sitting in a posture common for Icterus: looking quite remarkably plump, but without any wing-flutter

Perhaps a slight trace of CR.
White stripe looking broadest at rear of head.

Just sat there for quite some time, uttering a series of single pure CN's, each note being accompanied by a single wing-flick which gradually grew less extreme and finally disappeared, while the bird continued to give a few more CN's.
(I should add that the bird I heard singing earlier today also uttered CN's, from an unmotivated posture, during the intervals of song.)

Coereba, I. (3)

December 2, 1957,
Barro Colorado.

This is certainly the most conspicuous honeycreeper in the clearing on the island. Both in fairly low bushes and high in tree-tops. They did some displaying in October, but I have lost the notes I took, and they have been fairly quiet since then, until yesterday and today.

At least one bird has sung persistently, off and on (for long periods) most of the last 2 days. (Slutch is certainly right about their persistence). The usual song is a phrase of 5 or 6 notes; harsh, loud, shrill, "Kreee kreee ....", all more or less in the same tone or pitch. I got a long view of the bird giving this song this morning; but unfortunately only from below. This bird held its head approximately horizontal and pointed straight forward. The neck did not seem to be greatly extended, and both the head & neck seemed to be moderately low, at about the same level as the back. The breast & belly feathers were fluffed to a moderately great extent. This posture was maintained throughout each song. In the intervals between song phrases, however, the bird did a lot of preening, especially of the breast feathers & under wings. The preening movements. Themselves did not appear to be ritualized in physical form.

The same bird, or another in the same place, was also singing the same song this afternoon. But at intervals the song changed into one of 3 notes. I.E. the bird would

Cocuba, Dec. 2, 1954, II

sing the 3 or 4 note song several times, then sing a few songs of 3 notes, and then switch back for a few more of the first type. The notes of the 3-note type were rather distinctive "Kreeoo kreeooo kreeooo" I couldn't see the bird performing bird through the foliage, so I don't know what posture(s) or movements may have accompanied this performance. As far as I could see, none of these songs during the last two days has had a response of any kind from anyone

Cocreba, I. December 15, 1954
Baño Colorado

Apparently the same bird back — at least a bird singing in the same place. Sometimes singing the 3-note "Kreeooo kreeooo kreeooo" type song; then changing to a slightly modified "Keeroo keeeooo keeeeooo keeuh" type. Repeated again. From posture more or less comic as This was intermingled with a few single "Kree" notes when the bird began to preen.

Breast, belly & yellow rump feathers slightly fluffed

Flew off eventually without having got any response of any sort from anyone

December 20, 1957
Barro Colorado

One bird appeared from time to time today, and gave bursts of the "three three three three three" "song". I only saw the accompanying postures & movements during one burst. Then the bird was alternately and interrupting its songs with lots of preening; the preening being quite vigorous but not obviously exaggerated in physical form. Most of the song notes were usually uttered from a posture somewhere:

This is posture. head & the last note was obviously a feathers ruffled motion.

obviously a sort of pre-preening and the bird often pointed its bill downward during of the song; an infant preening (the breast wings) bit.

It would seem that the association of pre with this vocalization is quite usual. Rather remarkable that the preening is so extreme without being modified in physical form.

The bird was quite alone, and, as usual, there was no response to the performance.

Cocreba, I December 20, 1957
Barro Colorado

A bird singing at the same old stand this morning, the "Kreeeooo breeeooo kreeeooo" type song. Again all sorts of comfort movements between each series of notes. Lots of preening, scratching, and lots of a sort of wing-fluttering which also seems to be a comfort movement (wings drooped and vibrated rapidly). The song itself was given from variable postures, more or less like those of pp. 4 and 5. The fluffing was particularly variable. It may be purely a reflection of the "comfort activities element" in the performance; and seems to vary according to the comfort movements performed before and after the song. (Sometimes, for instance, the wings were kept crowed over the back; so that the yellow-rump was hidden!) The accident would seem to indicate that the comfort movements element is present in both the main types of song performance.

Coeuba, I

January 5, 1958
Barro Colorado

What seems to be the only resident bird near my house the one who has performed most of the behavior patterns described above, is still as active as ever, singing for long periods time and again. He seems to have a favorite station and several definite subsidiary ones within his home range or territory where he definitely prefers to sing. I have still to see him get any response, however.

I have been watching him give the "Kreeeooo" type

Coeuba, Jan. 5, 1958, I

, song again. Usual postures. Not fluffed on back or rump, slightly fluffed underneath and slight trace of CR. Interspersed with comfort movements in the usual way. Among the latter were bill-wiping, OCB, and "tongue-pumping".

Coeuba, I — February 3, 1958, Barro Colorado

Watching an apparently male bird singing again. (Almost certainly not the same bird I watched a few months ago - at least it was in a rather distant area, clear on the other side of the clearing). Giving long bursts of "Kreeeeee" type song. Without any preening at all. Not much fluffing of feathers either - just the breast and, particularly, the belly feathers. Just like the drawing on Dec. 15, p. 4, without the slight fluffing of the rump feathers (and probably with the neck pulled back or in even more, so that the back of the head appeared to merge smoothly with the back).

Coeuba, I — March 7, 1958, Barro Colorado

I have now seen several cases of the "Free bree bree bree" type song without much preening either (Probably by the same bird I watched on Feb. 3). So it is possible that the preening and other movements sometimes associated with both types of song are not integral parts of the displays.

Coereba, I. February 25, 1960
Barro Colorado

A young bird hatched in a Bananaquit nest, almost certainly on Feb. 21 or 22, and I began to make observations of its behavior yesterday (Feb. 24), early in the morning. Only watched it very briefly yesterday.

Most of the time I held it in my hand yesterday it lay curled up, with neck bent downward, so that the head & bill pointed downward, or even downward and backward. Usually quite silent, even when I pulled it up awkwardly, dangling it by the neck, etc. Only once did it utter a single "Peep", presumably a distress note, when it was being handled. Apparently uttered with bill closed.

It did a little "begging" yesterday from time to time. Stretching neck far upward, and pointing head & bill upward. Sometimes without opening the bill (presumably low intensity or rudimentary begging), sometimes (perhaps consequently?) with bill wide open, held motionless, without any trace of opening and closing movements. All types of begging were about utterly silent at all times!

By this afternoon, its behavior had changed considerably. Still absolutely naked (although traces of pin feathers seem to be visible under the skin) with eyes closed, and swollen abdomen; but apparently stronger. Struggled a little more when I pulled it up rather roughly. Uttered nearly constant, single, "Peeps" when being handled. Again with bill quite closed. Still showed tendency to sit in head-down posture.

Also begged much more vigorously and frequently. Neck and bill up, with bill wide open. This was also accompanied by nearly constant single "Peeps". But again absolutely no trace of any opening or closing of

the bill movements, even when "Peeps" are being uttered most frequently.

The little wings are sometimes (perhaps always?) held away from the body during begging. Yesterday I noticed that they vibrated very rapidly, a little bit, when they were held out during at least some begging. This will presumably develop into SG, but it is still very slight and incomplete.

SG We recorded the "Peeps" of this young bird today. I call it "A" bird on the tape.

Coereba I February 27, 1960
Barro Colorado

SG Took little A out of the nest twice today, to find that its behavior has changed quite considerably. (Lots of pin feathers are now visible under its skin and its eyes have just started to open.) We took it out at 8:30 a.m., and then at 10:00 a.m. Decided not to record

Most of the time it was being handled, or when it became too hot, it did a lot of what I shall call "SG". Opening & closing the bill, as if it were uttering notes, but without any sound (or only "c" — as below). This looked very much like a "silent Peep" pattern — except that the bill is not opened & closed during Peeping. The bill was usually opened quite widely during SG, although less widely than during the extreme Begging we saw on Feb. 25 (see above). The SG was not accompanied by any ritualized postures or movements, but could be combined with all sorts of unritualized postures or movements.

Some of this SG was accompanied by what I shall call "c" (for "clicking") A slight faint clicking noise, probably due to a slight opening & closing of the bill. This did not seem to be produced by the mandibles hitting

one another. I think probably produced by something in the throat like the hyoid apparatus. Similar C was also uttered when the bell was completely closed, quite apart from any SG. I am also certain that I heard the same C the first day I investigated the little bird, Feb. 24. (I ignored it then because I thought it was unimportant, perhaps just the heart-beats of A, or the blood pounding in my own ear. But this morning it was louder and quite unmistakable.)

The SG is usually slow. Usually or always in rhythm with the breathing. It looks very much as if the little bird were just gasping for breath, except for the fact that it stops when the little bird seems to be comfortable, i.e. when it is just sitting comfortably in my hand. The C seems to be approximately as slow.

C may be rather more common than SG, but I am not quite sure about this.

I think that SG must be a relatively low-intensity clutters pattern. C may be an even lower intensity clutters pattern

A also uttered a few Peeps today, but much less frequently than on Feb. 25. They sounded just the same as they did on Feb. 24 and 25. Usually or always uttered with bell completely closed. Never with any stimulated posture or movement. They were always uttered when the little thing was being mani-handled, and were, therefore, presumably at least partly a clutters reaction; but they were most frequently uttered when the little thing was probably hungry as well (i.e. after it had not been fed for some minutes). Possibly in process of becoming an eventually pure FB reaction.

It was difficult to judge the significance of these Peeps simply because A did not do any Begging today like it did Feb. 25. Never stretched its neck up or opened its bill widely and kept it open for several seconds. Possibly it is already fixated on its parent(s). But it did perform one reaction w

which may have been closely related to Begging, or even a low intensity version of Begging. Every once in a while, when it was being manhandled, especially when its bill was being topped, it would point the head & bill upward (almost vertically) without stretching the neck upward at all (or only bending the upper part of the neck upward a little bit), and then vibrate the whole head & bill very rapidly for a second or so. Always silent, without any opening of the bill. The reason I think this may have been related to Begging is that it vibrated its head in essentially the same way when swallowing food that had been forced into its bill. I shall call these vibrating movements "V".

A somewhat similar-looking pattern may possibly have been a defense reaction. Every once in a while, especially when I lifted its head a little, A would throw the head & neck backward, so that the head & bill were nearly vertical, keeping the neck stretched up to a considerable extent, and then "sway" the whole head & neck from side to side, moderately rapidly. These movements were much more extreme than my V, and also much slower than my V. The whole performance was quite reminiscent of some of the "snake" displays which are known to be performed by the young of some hole-nesting birds. I shall call it "SS".

Coereba I — February 29, 1960, Barro Colorado

Took A out of its nest today again.

While I was trying to get it out of the nest, it uttered a fairly series of "Peeps" and struggled quite violently (holding on to the nest with its feet, etc.) These "Peeps" seemed to be essentially similar to the ones heard on previous days. But then, as soon as I got the little thing out of the nest

and into my hand, it shut up completely and I had the greatest difficulty in getting it to utter anything more. I jiggled it up and down, dangled it by a foot, etc. etc., and it remained obstinately silent throughout. Finally after quite a lot of man-handling it started to utter a few more "Peeps", and we managed to record these. They also seemed to be essentially similar to the peeps recorded on previous days — but definitely much softer. Possibly low-intensity or, more probably, somewhat inhibited.

None of these "Peeps" seemed to have anything to do with hunger. When being treated roughly today A did SG and C quit as on Feb. 27. I must say that it is difficult to believe that either of these patterns is ritualized — they are no-little exaggerated!

I didn't see any trace of V or SS today (although this may not be significant, as we only kept A out of the nest a little while)

A did not do any Begging today, although it did swallow food put into its bill.

I was rather to find that A was not much more developed physically today than the day before yesterday. Pin-feathers of wing (primaries and secondaries) more or less well developed, but eyes still only partly open

Coeroba, I

March 2, 1960
Barro Colorado

Fed recording A again today, around 1 p.m. Its eyes are a little wider open now; and its pin feathers are considerably longer.

When I first approached the nest, I tapped repeatedly on the rim. This stimulated A to do a lot of food-begging. Neck stretched up, bill wide open and kept wide open while it uttered a long continuous series of loud notes. These seemed to be similar to the "Peeps" it uttered before in a variety of circ

circumstances, except that they were higher in pitch and almost "bell-like" in tone Calo-bowder than any "Peeps" we have been hearing since the first few days of recording A).

Then, when I tried to extract A from the nest, it struggled violently uttering "Peeps" all the while. I think these "Peeps" were exactly the same as those it had just uttered while FB.

When we got A into the lab to record, however, there seemed to be an appreciable difference between the FB "Peeps" and "pure duties Peeps" in actual sound. It only FB'd into the microphone, once. This was accompanied by the loud and high "Peeping" I heard while it was in the nest (During the recording, we realized that the individual FB "Peeps" are almost beyllabic.)

During the recording session, A also uttered a lot of "Peeps" which seemed to be provoked by "pure duties", i.e handling. These sounded very much like the FB "Peeps", but were always or almost always much softer (probably also less high pitched and less beyllabic). It is possible that the difference between FB and pure duties "Peeps", in sound, at the present time, is still purely one of intensity.

But the movements and postures accompanying pure duties "Peeps" are now quite different from the movements and postures accompanying FB "Peeps". The neck is not stretched upward during the pure duties notes More important, the bill opens & closes with each pure duties note. This latter feature is a big difference from earlier behavior.

A still does SG as before. This is pretty obvious, a pure duties pattern still, A tends to perform SG's after pure duties "Peeps" have stopped. The SG now looks exactly like "silent pure duties Peeping".

It is interesting that the bill movements which are now combined

with pure dutters Peeping developed independently some time before they became associated with the Peeping.

A may still be doing a little C, but it is now at least very faint and irregular. Difficult to distinguish from miscellaneous background noise.

I didn't see any trace of V or SS today (not even when I peeled it to the nest before removing A.)

Coereba, I — March 5, 1960, Barro Colorado

Took A out of the nest again around 8:30 a.m. Tested and recorded it. It is much better developed now. Eyes open. Yellow feathers out of sheathes underneath.

Surprisingly enough, however, its behavior (i.e. its vocal signals) seem to have remained essentially the same as before.

It still does a lot of SG when moderately disturbed by handling. It also still utters a lot of "pure dutters" Peeping when handled. Some of the "pure dutters" Peeping today was accompanied by opening & closing of the bill (as on Mar. 2); but most of it was uttered with the bill absolutely closed throughout (as before Mar. 2). This is rather remarkable! I am beginning to think that the causal difference between SG & Peeping is not purely intensity. A uttered quite a lot of "pure dutters" Peeping today as it appeared to relax in my hand after being handled rather roughly. It is possible, therefore, that the SG contains a relatively stronger escape component than the "pure dutters" Peeping; or that the SG contains both escape and attack components which are absent in Peeping. (The latter alternative may be supported by the fact that it is always Peeping and never SG which is uttered

wrong FB - see below).

I didn't hear any C today.

A did do quite a lot of FB today (when tapped on the bill by a meal-worm). Much as before. Neck up, bill kept wide open throughout, while a whole series of Peeps was uttered. It is obvious now that the FB Peeping is merely a higher intensity version of the "pure distress" Peeping. The actual Peeps during FB are essentially the same as when the bird is being handled. Only during FB they are louder & repeated more rapidly (and, consequently somewhat more abbreviated) than during handling.

Coereba, I. March 7, 1960
Barro Colorado

I just took A out of the nest very ruffly today. It is getting quite well feathered now and quite bright and alert.

It did not do any Peeping when I first tapped on the nest or later when I actually pulled it out of the nest.

It did a lot of SG, however, whenever I handled it.

It also did a little FB Peeping, just as before, when I fed it.

Coereba, I. March 8, 1960
Barro Colorado

First David and then I took Little A out of the nest today and then played with it. But no recording.

When I pulled A out of the nest it uttered "pure distress" Peeping, more or less as before. Heat (probably) with bill closed. It was very noticeable today that the "pure distress" Peeping was very buzzy

almost raspy. Sounding quite a little bit like the "Kree kree kree kree kree ..." type of adult song.

When David took A out of the nest, it uttered notes which may have been identical with the "Kree kree kree kree ..." adult song. At least, David was very much struck by the resemblance of these notes to adult notes and their difference from the Peeping he heard before. David says that the notes he heard were accompanied by opening & closing of the bill with each note.

No matter how distinctive these notes may have been, however, I am fairly sure that they have been derived from Peeping at least.

When I first tapped on A's nest, it began FB Peeping — just as before. Neck stretched up, bill wide open throughout. The notes themselves were high-pitched, "pumping" and bell-like.

These high-pitched bell-like FB "Peeps" are probably high intensity FB. When I took A out of the nest, and laid it on my hand, and tapped its bill gently, it stretched up its neck and opened its bill as in typical FB, but only very briefly, and uttered brief series of "Peeps" which were quite buzzy and relatively low-pitched. They resembled vaguely like the "Peeps" it uttered before, when it was struggling with me as I pulled it out of the nest. They must have been either low intensity or "inhibited" FB. Probably the former ??? In any case, this performance would suggest that the FB and "bontebi" Peeping patterns are not completely differentiated yet — although they do seem to be becoming separated.

A also had a lot of SG when it was just slightly uncomfortable in my hand.

When it uttered the low-pitched buzzy "Peeps" in my hand, when it seemed to be performing low intensity and/or "inhibited" FB, it twitched its wings, very slightly but quite regularly, every few seconds. This is pres-

!!

nably related to the ♀ of adults, but it is certainly much less ex treme than the ♀ of any adults I have ever watched (or the ♀ of the bird described in page 1, which may have been juvenile for all I know). I presume that the great reduction of wing movements in the circles of this species is correlated with the closed nest. (I might add that I have never noticed the slightest wing movements when A has been FB-ing in the nest. Some wing movements may occur, but they must be (at least) very slight.)

Coereba, I. March 23, 1961
Barro Colorado

A couple of months ago, I watched a single Bananaquit feeding on long tubular flowers in almost exactly the same way as a Diglossa. Cutting through the base. (When I examined the flowers afterward, they all had neat little incisions at their bases. Straight.)

This morning I watched a Bananaquit feeding in hibiscus flowers. Again probing at the base. But the petals of hibiscus flowers are separated down to the base, and I could find no incisions in them when I inspected them later. So this bird this morning was presumably probing between the petals.

It seems quite likely that the habit of "flower-piercing" developed from the habit of probing between petals.

I have several times, during the last few days, watched single Bananaquits perched near the tops of tall trees singing for minutes on end. One bird I watched this morning uttered a song which I would transcribe as "Zeea zeea zeea zeea zeea ....." while perched in what looked like a completely unmotivated posture.

One of the most striking characteristics of this species in the feet

that the birds are almost always single. Males and females do not usually go around together. In this respect, the species is reminiscent of Diglossa rather than Conirostrum spp.

Coereba, I

July 24, 1961
Port of Spain

In the zoo here, there is a small cage, containing several Bananaquits (presumably the local subspecies) and lots of tanagers, finches, icterids, etc.

About 2:00 p.m. this afternoon, I saw an interesting performance by 2 of the Bananaquits. On the ground, hopping about excitedly near one another. In posture more or less common:

Very erect.
Legs stretched
Bill obliquely CR ?
Wings raised & S'd.
One ring probably raised more than the other

I shall call this posture "St." somewhat reminiscent of the St patterns of the Darwins. The two birds hopped around one another in St. for quite a long time. I think the ♂ was more or less continuous throughout. The hopping (the ♂ was more or less irregular (certainly not ritualized circling). When the two birds first began this performance, they were not carrying anything in their bills. Then one bird bent down and picked up a long strand of w.m., and

immediately resumed hopping in it & Q as before. A second or so later, the rec and bird did the same thing. Then they both continued hopping in it & Q, wi the rec n.w. for a minute or so more. Then one of the birds flew away a couple of feet, and both stared and stopped displaying.

I think that all or most of these hopping performances were accompanied by some sort of "trilling" song, by one or both birds. (I don't know if this was the "ordinary" song of this subspecies or not. It is my impression that the ordinary song of this subspecies may be different from that of the Panama birds.)

I don't know what the significance of this performance was.

Coereba, I. July 26, 1961
Zumla

This morning, by the Cab, I watched a single Bananaquit singing. Right after dawn. The songs seemed to be composed of slightly warbling phrases. More or less commencing:

"Ja a'zeee tuh zah zh zhuh"

Repeated frequently. Delivered from an ordinary territorial/sexual sitting posture.

This afternoon, ca 4:00 p.m., in the savannah country at the old American car barn, I saw one Bananaquit do very regular side-to-side Pivoting ("Pvt") in more or less ordinary sitting posture, head rather low (head, neck and body almost in line). Pivoting very long continued, mechanical looking. Involving body, but not feet (no hopping on perch).

This was accompanied by a long series of loud, hard "Tik" or "Tit" Notes (CN's ??? or aggressive ???). Notes well spaced, no tendency to be

drop into a rattle or trill.

I think this bird was directing its whole performance toward another bird hidden in the leaves of a nearby tree. The performing bird eventually flew away, uttering more "Tik"s or "Tsit"s as it did so. I think that it flew away in pursuit of the other bird.

Two different Bananaquits caught in nets by C. Collins were quite silent when handled!!!

One of these trapped birds uttered a lot of "Tik" notes, in flight, immediately upon being released

Coereba, I. — July 30, 1961, Simla

I have now heard quite a lot more songs by Bananaquits, in various parts of northern Trinidad, and they have all been more or less similar to the song described above on the preceding page

Coereba, I — Sometime in Spring of 1962 (April or May?) Rio Piedras

Ca. 3:00 p.m. Came across a single Bananaquit. Uttering distinctive song phrases:

"Tuh-tuh tuh-tuh sreeeeeeeeeeeee zeeee"

sometimes with one or more extra "zeeee"s at the end. This bird may have been disturbed by my presence.

These phrases were somewhat reminiscent of some song phrases of Diglossa carbonaria aterrima near Quito. It is beginning to look as if this species may be able to utter the equivalents of all types of Diglossa song!

Coereba, I

September 16, 1962
Mérida

Rather to my surprise, the Bananaquit is one of the common species in the gardens and woods around the town here

Saw my first BQ here at 4:30 p.m. yesterday. Single. Singing on high exposed perch. Songs most distinctive. Composed of phrases of two or three "trill"s each. Each "trill" more or less comme ça:

"Sreeeeeeeeeeuhzuh"

(Last syllable, marked in red, loudest and most emphasized. Middle syllable hardly distinguishable, sometimes "slurred over" almost completely. The bird was sitting with BF, slight but definite fluffing of rump (yellow of rump visible above wings, which were kept at the sides, without being drooped), and a slight trace of CR (at least at times)

This bird sang for several minutes, without provoking any obvious response, and then flew away and shut up.

Later in the afternoon I saw the same and/or several other BQ's around the hotel garden, in trees and in thickets. All silent. All single. One bird was seen moving about in ex

Lastly the same thicket that I had seen a q or so Diglossa (of the greenish-yellow, streaked type — see notes on Diglossa and inter-specific relations) in an hour or so before.

This morning, at 6:05 a.m., I heard and saw what was almost certainly the same BG singing in the same place as yesterday afternoon. Both in bushes, and high exposed in trees. Song phrases same as yesterday. Postures more or less as before, except that the rump was not fluffed.

This afternoon I went to a small area of trees and bushes near the park "Los chorros de milla" At 5:27 p.m. I heard a BG begin to sing in a tree about 30 feet away from a tree in which I had seen C. cinereum (and probably a Diglossa) somewhat earlier. Began to sing 12 minutes after a cinereum had sung. Gave a few phrases (like those of the other birds around here) and then shut up.

This species seems to be the dominant honeycreeper around Merida itself.

The local birds resemble the BCI birds of the same species in singing near the middle of the day relatively frequently (this may be characteristic of the Diglossini as a whole)

Although my observations have been much too brief to prove anything yet, it looks as if the BG may have "mutual inhibition" relations with other species of Diglossini here that are essentially similar to the mutual inhibition relations between the species of Diglossini near Quito.

I wonder if the songs of the local BG's are so distinctive because they facilitate isolation from cinereum ????

Conirostrum, I

May 25, 1960
Cerro Pichincha &
Ca. de Iñaquito

We have seen quite a few Conebills, of one species, today. (This species was eventually found to be frasconi. See notes of July 23, 1960, below. frasconi = ~~xxxxxx~~)

The birds we watched this morning, on Pichincha, were moving about in hedges, in the same general area where we have watched many other species. Very active, restless, and rapid. Impossible to watch for more than a few seconds at a time.

The birds we watched this afternoon, near Iñaquito, were moving about along the edge of an Eucalyptus plantation, usually in quite low bushes.

This is certainly a thicket-loving species

When apparently quite relaxed, the species looks like this:

Dark crown. Grayish back.
White superciliary & wing-patch

Caramel colored chin & breast

Quite reminiscent of the Bananaquit in general effect.

All the birds we have watched have uttered lots of CV's when moving. Sometimes single. More often in more or less long series. The longest series given during long flights. A single CV might be translated by anything from "Tsit" to "Zee"

The TF's of this species are not very extreme. They are usually or always V-D. WF's seem to be rarer than TF's; but they do occur.

Conirostrum, I

May 26, 1960
Cerro Atacaso

We watched more Cone-bills here, in the same area where I have watched many other species (much higher than Iñaquito, or anywhere we have worked on Pichincha). At first, I thought these birds might belong to a second species (they seemed to have less caramel color below than the birds we have watched at Iñaquito and on Pichincha); but they were eventually found to be fraseri also (see notes of July 23, 1960).

These Atacaso birds uttered CN's in the same situations, with much the same frequencies, as the birds at Iñaquito & Pichincha; but their CN's did appear to be louder and harsher-sounding. A single one of their CN's might be transcribed by something like "Dzlit".

We also heard a number of songs this morning.

One bird, feeding near its mate, uttered brief "Ta ta Swee"s. These may have been abbreviated song phrases. They may have been provoked by our approach.

Somewhat later, one bird (perhaps the same individual), apparently feeding some distance from its mate, uttered several longer song phrases. Each of these phrases might be transcribed by something like "Ta Ta Tasweeyoo" These phrases were uttered from apparently quite unritualized feeding postures.

Still later, one bird flew to join another bird, apparently its mate (either one of these birds might have been the bird(s) which sa

either one or both of the songs described above.) At the moment of joining, either one or both birds uttered some song as "greeting". I couldn't analyze this "greeting" song very well. It may have consisted of nothing more than a few "Ta Ta Tasweeyoo" phrases. It is also possible, however, that it
consisted of "Ta Ta Tasweeyoo" phrases plus a few additional "Zee" or "Tzee" notes.

The longer song phrases of this species, especially when repeated, give the effect of an "aimless twitter". Quite reminiscent of the songs of *Diglossa aterrima*.

In general, these Atacaso Conebills seem to have much the same habits as the Miñquito & Pichinchia birds. Usually or always in pairs. Mates seldom separated very widely for any great length of time. Very active & restless. Seem to prefer moderately low shrubbery

NOTE. John Smith observed a pair of this species, at almost exactly the same place on Atacaso, last year on August 14. He noted a number of reactions

He observed CN's like those described above. (He transcribes a single CN as "Zee"

Then he observed "One (bird) flew to the top of a bush ca. 15' in front of me and gave the following 'song':

'Za zweé-ee zuh, za zweé-ee zuh' etc.

Fast, more emphatic, harsher, and a bit harder than the (CN)."

Courrasbrum, I. May 27, 1960
Ca. de Piñaguito

Watched more Conebills, in the same area as on May 25th. Behaving in much the same way as before.

An aerial chase, involving 3 birds, almost certainly strong hortets, was accompanied by fast, buzzy, relatively harsh "Zee Zee Zee Zee ..." notes (David would transcribe these as "Zee Wee Zee Wee Zee Wee ...").

We managed to observe a lot more singing. The songs of these birds seemed to be even more twittering than those of the Atacaso birds we watched yesterday, but perhaps more uniform (i.e. with few changes of pitch). Probably also longer. Each song phrase usually contained more notes, on the average, and the phrases were usually repeated more frequently repeated (in other words, the songs of these Piñaguito Conebills were more like those of Diglossa cafesnayei, while the songs of the Atacaso Conebills were more like those of D. aterrima).

We heard one song, apparently uttered as "greeting" when one mate joined the other, which might be transcribed as "Zee Zee Zee Zee Zee Zee ..." or (perhaps better) "Zee-uh Zee-uh Zee-uh Zee-uh ..." Very fast and twittering. The notes were less harsh and buzzy than the "Zee" notes during the aerial chase mentioned above.

The most common form of song seemed to be slightly different. It seemed to consist of approximately 6-note phrases, usually repeated once or twice without interruption:

— — — — — — — — — — — — etc.

Or: — — — — — — — — — — — — etc. It might best be trans-

Courrostrum, May 27, 1960, II.

cubed as "Duh duh duh duh duh dah duh duh duh duh duh dah ....." (The notes are so fast that it is almost impossible to represent them by letters. The "duh"s and "dah"s indicated above are the best I can do. The notes are somewhat buzzy, however. They might almost be said to have a "333 undertone".

As far as we could tell, today, almost all the typical songs were uttered as "greetings" when one mate joined the other. The few songs which were uttered by birds apparently separated from their mates may have been reactions to us.

This would certainly suggest that such songs are largely or completely hostile — like the songs of Diglossa

Courrostrum, I

May 29, 1960
Cerro Pichincha

I watched a pair of birds feeding here this afternoon. One of them sang repeatedly. (It seemed to be separated from its mate. But I couldn't be sure of the stimuli releasing the songs. There were quite a lot of other birds in the vicinity — as well as me.) These songs sounded very much like the songs of Diglossa atterrima — but thinner, harder, and more metallic. I.E. like those of the Conebills on Atacazo described above on May 26.

Courrostrum, I

June 2, 1960
Cerro Pichincha

Working near Nono again today. I watched a pair of Conebills

Conirostrum, June 2, 1960, I.

who seemed to be feeding at the bases of the white trumpet-shaped flowers which are so common here. These flowers are great favorites of both the Diglossas and Diglossopsis here, and it certainly looked as if these Conebills were feeding in exactly the same manner as Diglossa and Diglossopsis!!

I watched one bird singing a "Tit-tsee weeyoo" type of song. In posture comme ça:

Head looking particularly flat.
Body looking large.

I also watched a couple of apparently hostile aerial chases — involving 2 birds. One or both birds certainly uttered "Zeee Zeee Zeee Zeee Zeee ...." notes during one chase. I think that one bird uttered "Zeeeeeeeee Zaza" during the other chase. Just like the R-Zaza of Diglossa aterrima.

Conirostrum, I

July 23, 1960
Washington

After looking at the skins in the collection here, I am now certain that all the Conebills we saw in Ecuador were fraseri.

So the 2 types of songs we heard uttered by the Conebills must be qualitatively different. I think that the more uniform type songs, the "Zee Zee Zee Zee ..." and "Duh duh duh duh duh duh dah ...." songs, must have been largely or completely hostile; while the less uniform

songs, the "Ja Ja Jasweeyoo" and "Jit-tseeweeyoo" songs, may have been partly or completely due to some thwarting of some pairing and/or sexual drive.

Conirostrum, I May 22, 1961
Ca. de Inaquito

This morning I worked in the field here, where I observed finches last year. There are at least several pairs of the birds here — still as difficult to study as last year.

This is certainly a species which travels in pairs. The members of such pairs, presumably mates, tend to stick together nearly constantly. Quite unlike Coereba & Diglossa.

Early late this morning, I distinguished a pair which flew into a couple of bushes very near me. Did a lot of hopping & fluttering about in these bushes. Lots of short flights. Also occasional periods of sedentary me and/or feeding. All very rapid.

The birds uttered "Jit" CN's almost constantly as long as they remained near me. Usually eventually single, although repeated very frequently. But definitely accelerating to form real CN-trill's in flight.

While the birds were perched and hopping about near me they did lots of extreme but irregular pivoting movements. Also a few extreme but irregular bowing movements. (I couldn't tell if the pivoting & bowing movements were ritualized or not.) Accompanied by lots of extreme TF movements, and less extreme WF's (as below). Tail always slightly fanned (these birds may keep the tail slightly fanned at all times). Wings sometimes, but not always, slightly droo

ped. Tail occasionally slightly cocked. Head usually looking rather rounded (CR?). Sometimes, but by no means always, a slight trace of belly-fluffing

One of the postures assumed by the birds when they were most excited was commune ca 5

Alert or Alarm Posture (probably just pre-flight)

with CR and belly-fluffing

Tail fanned (it was only rarely cocked to this extent)

Wings slightly drooped

This was about the most extreme posture adopted. But the birds always looked large-headed, small-bodied, and long-tailed, as long as they remained near me.

The birds usually or always remained in the same postures, and continued to perform the same movements, both when they were all out and when they were uttering CN's.

All this pivoting and bowing (+ CR + belly-fluffing) was really quite remarkably reminiscent of some bush-finches.

During this incident, I had many opportunities to watch the flicking movements of the species. TF's extremely lateral. Little or no vertical component. When there was a vertical component, it was usually or always D-V. WF's much less extreme. Ordinary. Usually synchronized with TF's. (Once I saw a bird perched on

with a place that it could not do TF's. It then did WF's in the same rhythm as if it had been TF-ing.)

Interestingly enough, the 2 birds which I disturbed this morning never uttered a trace of song. Presumably because they were always close to one another and/or very friendly to one another.

This afternoon I returned to the same area.

I came across 3 or 4 *Sparei* flitting about close together. One landed close beside another, and uttered a very thin high pitched R (very much like the R of the small black Diglena), followed immediately by song, as it did so. This song was very rapid, including many notes, and rather trilling or rattling in quality. It did not seem to include very distinct "Zee zee ... " notes. Nor anything very like a distinct "Titsweeyoo".

Immediately afterwards, in the same group, I saw several more cases of a bird landing beside another, and uttering rapid trilling songs as it did so.

I think that these rapid trilling songs must be largely or completely hostile. They may (conceivably) have been the same as the song diagrammed on the bottom of p. 4 (May 27, 1960). It is possible that songs of this type are lower intensity than the songs which include more distinct "Zee zee ... " notes.

Convirostrum, I — May 24, 1961
Cerro Atalaso

I saw several *Sparei* here, in the same areas where I saw them here last year.

One pair feeding more or less together. Then one bird flew away

and started to feed about 10 feet away from the others. A few seconds later, the bird which had flown away uttered a single song phrase. More or less "Tit tit ta-tit ta-swee-yoo." This must, I think, have been the result of thwarted pairing motivation. A few seconds later, the bird which had been left behind flew over to join its mate. As it landed, both birds uttered "greeting" songs. Both of these "greeting" songs seemed to be much the same as the song by the isolated bird described immediately above, but slightly louder.

Later in the morning, I observed another isolated bird singing. Its song phrases were commença: "Tit tit ta-tit ta swee-wee-wee-wee-wee-wee-you" Very rapid!

Still later, I saw still a third bird singing repeatedly while isolated.

All the birds I saw feeding today were probing inside clumps of young leaves. Going in" from above. No picking. Probably getting insects.

I think that this species may tend to perform more inter-specific following reactions than most other species here. This morning, I saw a single bird or a pair which seemed to be following a single male Diglena atricapilla. A couple of days ago, I saw a pair which seemed to be following a mixed flock of finches (including Catamenia analis and goldfinches) in the field near Yaguito.

Conirostrum, I July 27, 1961
Lima

This afternoon we went to the Cerro near, and I saw some cone-bills there. Gray Cone-bill's = bicolor =

Conirostrum, July 27, 1961, I.

There cane-wells were quite abundant along the edge of the mangrove forest, by a canal (possibly brackish). I saw one isolated individual, at least 1 pair, and one group of 4 individuals (presumably a family group).

They were all very active and restless. Apparently purely insectivorous, peering and poking all along the branches of the mangroves.

They were comparatively very silent. Always silent when undisturbed by me or not engaged in other forms of hostility (as below).

This silence was a remarkable difference from the behavior of the Sporophila birds near Quito. Possibly correlated with the fact that this species is not nectarivorous ???

Several times, when I came close to the birds, they uttered single "Tseet" notes. With a faint but distinct rattling undertone. Uttered by both flying and perched birds. Not accompanied by special gestures or movements. Sometimes repeated, but never accelerated into a trill.

I also caught one brief glimpse of a very rapid, twisting, aerial chase, involving 3 or 4 birds. This was also accompanied by "Tseet" notes.

for it seems likely that the "Tseet" notes are hostile.

. Conirostrum, I

May 19, 1962
Pichincha

Working near Nono today, both morning and afternoon. I once saw little groups of at least four Sporophila, more or less associated with one another (see today's notes on mixed flocks). One in the morning, one in the afternoon. Don't know if it was the same

2 group both times or not.

This afternoon I was close enough to the group to hear some of their notes. Uttering lots of cN's. Usually "Tit"s. Once a bird uttered a long "seeeeet" as it flew in to join its companions. PN?

Cotacachi, I May 20, 1962
Atacazo

Caught a few glimpses of a pair of conebills here. In usual place.

As usual, the birds here looked relatively dull underneath. One of the birds uttered a few song phrases. Usual type for here. Very rapid and warbling or twittering. I am not sure that I can distinguish between such songs and some songs of D. atricinia.

Could I possibly be seeing 2 sibling species of conebills in various areas around Quito ???

Cotacachi, I May 22, 1962
Pichincha

Working slightly above Floor this morning. Come across a pair of Conebills feeding in thickets along a ravine. Often become separated from one another. Then, whenever they rejoin one another, one or both burst(s) into "greeting song" Usually an absolutely formless twitter. Once included a "sreeeeeee" and several "zee-zee-wee zee-wee..." doublets. More strongly hostile than usual?

Conroe Texas, May 22, 1962, II.

Three birds looked moderately bright underneath.

One of the birds frequently perched in bush near me. Obvious nervous. Silent. Lots of irregular bowing. Neck not ruffled at all. Lots of CR. Lots of TF's. All primarily lateral. Vertical component, when present, D-U. WF's rare or at least inconspicuous concealed with TF's.

Working near Hwy this afternoon.

5:35 pm. Saw a single Cowbird feeding in a tree. The first time I have ever seen a single bird of this species. Quite silent except for 2 "Jit" CN's.

Conroe Texas, I. May 23, 1962
Pachmicha

Working near Hwy this morning.

7:58 a.m. The same single Cowbird I watched yesterday afternoon has been around in same area all morning. Has sung from time to time, but not (9 times) very frequently. All the songs I have paid attention to have been very fast, twittering, and long. Might be transcribed by something like "Zewazewazewazewazewazewazewa".

Conroe Texas, I. May 24, 1962

I have been thinking about the territorial behavior (or home range) of the local species. All or most of the pairs of the local species seem to have larger territories or home ranges than the Diglossa spp. This may be a resemblance to Diglossopis. The Cowbirds, in particul

ar, may learn to cover a large area simply because they can easily secure the remnants of food left by the other, larger, species.

Interestingly enough, there do not seem to be any Conebills near the C Diglossopis. The hillside is almost continuous scrub at the present. Conebills seem to be fond of the margins of scrub & seem to prefer areas where the scrub is low, new, & comparatively sparse (e.g. Magnito) or relatively thin hedges with grass or crop land on either side (e.g. Atacama and the A Diglossopis area near Nono).

Ca. de Magnito

Working my usual field this afternoon

5:45 pm. An apparently single Conebill utters a single brief song-phrase. This seems to bring a Tyrannus over to investigate but I can't see what happens afterwards if anything. Apparently no fight.

I don't know why but all the Conebills around here have been remarkably quiet since I arrived (4:45 p.m.). Almost as quiet as the Tyrannus (see today's notes on Diglossa)

Conirostrum, I May 25, 1962
Atacama

Worked at usual site this morning. All observations of Conebills in this area today incorporated in today's notes on Diglossa.

Conirostrum, I

September 16, 1962
Mr. Chorro de Millas

5:15. A pair of cinereum ("CC"s) here. One feeding while the other sings on high exposed perch in nearby tree. Song: formless twittering warbles. Quite like some songs of Sui to birds, I think.

SEE MIXED DIGLOSSINI NOTES

Bruuncincentris — Lima

OVERLAPS

I Bruuncincentris — micricta Chachapoyas

II Bruuncincentris — pectoralis Marayniac

III Bruuncincentris — albilinea Machu Picchu

IV Bruuncincentris — glorionissima Paracuellos
Colombia
Cordillera Oriental

c/o de la
Cerlehmann — Cali
Apartado Nal 6850

(D. cyanea)

William H. Phelps Jr.

1 W 57th Street

Apartado 2097 Caracas.

V gloriosa — C. s. interandicum Cordillera de
Merida
Venezuela

Reference

ZIMMER, J.T. (1929) "Variation & distribution in two species of Diglossa." — Auk 46, pp 21-37

All "Studies of Peruvian Birds" by Zimmer Amer. Mus. Novit. Go at least to 50

Especially XLIV "Notes on the genera Diglossa and Cyanerpes, with addenda to Ochthoeca" Amer. Mus. Novit. 1203, 1942, p. 1-15.

Also Field Mus. Nat. Hist., Zool Ser. 17, pp 420-421, 1930.

(Zimmer's numbers)

No. 56 "The genera Entoreas, Campylopterus, Eupetomena, and Florisuga" Amer. Mus. Novit. 1450, 1950.

Conirostrum Synoptic - AMNH

I sitticolor

RUFOUS BELLY
NO MOUSTACHE

(1) sitticolor (Colombia, Ecuador & N.W. Peru.)
♂♀ similar. Black head, breast, wings & tail, rufous belly, blue back & scapulars

RUFOUS BELLY
NO MOUSTACHE
EYE-STRIPE

(2) intermedium (W. Venezuela, Cordillera of Merida)
♂♀ similar. Same as above, but with blue sides to head & post-ocular stripes.

RUFOUS BELLY
NO MOUSTACHE
EYE-STRIPE

(4). cyaneum (Peru & W. Bolivia)
♂♀ similar. Same as above, but throat blends

Diglossas Synoptic - AMNH

II lafresnayei

BLACK (1) lafresnayi (Temperate zone extreme western Venezuela, eastern and central Andes Colombia and Ecuador, extreme n.w. Peru.)
Both ♂ & ♀ black with pale blue humeral patches.

RUFOUS BELLY NO MOUSTACHE (2) gloriosissima (Western Andes Colombia, ex Baranullo)
Both ♂ & ♀ black above, chestnut belly & sides, blue humeral patch

RUFOUS UTC MOUSTACHE (3) unicincta (Central cordillera northern Peru)
Both ♂ & ♀ black, with white malar stripes, chestnut pectoral band and under tail coverts

RUFOUS UTC MOUSTACHE (4) pectoralis (Central Peru)
Both ♂'s and ♀'s black, with white malar stripes, chestnut under tail coverts, chestnut and white pectoral bands

RUFOUS
UTC
MOUSTACHE

(5) albilinea (S.E. Peru)

Both sexes black, white malar stripes, rufous under-tail coverts

RUFOUS
UTC
MOUSTACHE

(6) mystacalis (W. Bolivia)

Both sexes (presumably) black, with rufous malar stripes and under tail-coverts, blue humeral patches

Diglossas Synoptic – AMNH

I. carbonaria

BLACK (1) nocticolor (Santa Marta Colombia)
both ♂ and ♀ glossy blue-black all over

BLACK (2) humerales (Eastern Andes Colombia and extreme western Venezuela)
both ♂ & ♀ glossy black with bright gray humeral patches

BLACK (3) aterrima (Central Andes Colombia, Andes Ecuador, northwestern Peru)
♂ glossy black. ♀ generally slaty gray

RUFOUS BELLY MOUSTACHE (4) brunneiventres (Temperate zone west of Peru, only recent districts of n.w. Bolivia. Isolated colony in northern end of western Andes in Antioquia Colombia)
♂ black, with rufous underparts and malar stripe, gray sides, band of wing, scapulars, and rump
♀ similar

BLACK PECULIAR (5) carbonaria (Temperate zone Bolivia)
♂ & ♀ Black, gray belly & sides, & humer

al patch, wings under tail coverts

RUFOUS (a) glaucosa — Temperate zone of western Venezuela

BELLY — ♂ ♀ black, with gray humeral

NO MOUSTACHE — patch & supra-ocular streak, chestnut

EYE-STRIPE — breast & abdomen Rump

Dyloma Synoptic - AMNH

ALL BLUE BIRDS — SOME BLACK ON FACE

III indigotica - glauca - coerulescens - cyanea

(1) indigotica (subtropical zone western Ecuador & western Andes Colombia)
♂ bright blue (almost violet in old skin)
♀ duller blue. Both short-tailed. Both with black between eye and bill, but not black forehead

(2) glauca (Tropical & sub-tropical zones south ern Peru & adjacent Bolivia
♂ & ♀ dull blue, black foreheads

(3) g. tyrianthina (Tropical & sub-tropical zones eastern Ecuador)
♂ & ♀ identical, as above, but duller

(4). coerulescens (Sub-tropical zone coast ranges of Venezuela)
♂ & ♀ identical. Dull blue, black fore heads. Large. Lighter than glauca ssp

(5). c. saturata (Sub-tropical and temperate zones Colombia - except Santa Marta -

and W. Venezuela)
♂ ♀ identical. As above.

(6). C. pallida (Sub tropical & temperate zones Peru)
♂ ♀ identical. As above
Museum also has three 2 other ssp. from Peru: intermedia & mentalis. Also 1 other ssp. from Venezuela (Cumbre cerro Pejochaina, Perijá - Julia): ginesi.

(7). cyanea (Sub-tropical & temperate zones western Venezuela, i.e. Merida, Colombia — except Santa-Marta — Ecuador. Possibly also N.W. Peru)
♂ ♀ identical Black marks. Most of body dark ink blue — as dark as glauca, lighter than coerulescens

(8) C. melanopis (Sub-tropical & temperate zones Peru and western Bolivia)
As above
Also another ssp. dispar (Peru)

COLOMBIA VSN

I. brunneiventris Altitude (in ft):
Antioquia 8500
Hda Zulaiba

Series E	July 26, ✓	Antioquia	
	" " ✓	Hda Zulaiba	8500 ft
1950	July 21		
	July 26		
	Aug 21, 1951	Parama Frontino	
	Aug 23, 1951	" "	"

Immature	Aug. 23, 1951	Parama Frontino	11,850 ft
	" " "	" "	" "
	Aug. 27, 1951	" "	" "

M.A. Carriker Jr.

II alemana

TE	~~Aug. 20, 1947~~	~~Hacienda Las Vegas~~ ~~Santander cerro~~ ~~ft.~~
	Mar. 17, 1746	Rio Quatapeuri 8,000 - 9,500 ft
	July 29, 1947	Angostura, Santander 10,000 - 11,000 ft.
	Feb. 7, 1952	Puracé, Cauca, 11,300 ft
	Feb. 11, 1952	" " 11,000 ft
	Feb. 2, 1952	" " 10,500 ft
Jww	July 29, 1747	Angostura, Santander 10,000 - 11,000 ft
O.E	Feb. 13, 1752	Puracé, Cauca, 12,000

Areas to Check

I. Numerique. Possibly glorioussima and aleurina come in contact here

II Northern part of the Central Andes, Colombia. Possibly brunneiventris and Cafrenayei (s.s) come in contact here.

July 13, 1974
Jonsha

Working near this little village (west of road from Huánuco to La Unión, between Huallaga and Marañón drainages). Arrive 6:10 a.m. Cloudy. Very cold.

Looking at small patch. Poly types. For Oreomanes

Hear Andean Sparrows. Apparently NODWAH

Catamenias and goldfinches around

Songs stop almost immediately. (Note: this is middle of dry season, at least around Huánuco)

6.40. See what may be single cyanocephala! Flies away immediately. Alone

See single big sooty thrush. Alone

Hear what sounds like Diglossa Twitter in distance. Brief "Greeting"??

7:20. See Thraupis (again). Definitely bonariensis. Quiet and alone

Ca 7:35. Area young Polylepis. Quite a lot of small birds low in scrub. Definite flock? Including Thraupis and cinereum ??? Very difficult to see. Disappear

More bonariensis alone

7:55. Somewhat further on. Another patch of wood. Find definite mixed flock. Birds flitting about edge wood + pasture 4-10 ft up in rather old trees. Group definitely includes at least one cinereum, one Oreomanes (definite), one pale gray Agriornis type, another birds (mostly small dull flycatchers and finches, [illegible]

All very active, flitting about. The *curvirostra* definitely probing in bark of Polylepis. Group quite highly integrated. Moves off after a few minutes. Can't see who is in lead.

COMMENT: I should imagine that there is only one flock in this whole area (2 patches of woods — see below).

See Sooty Thrush alone

8:28 See *curvirostra* approximately where flock seen earlier. This individual is either alone or perhaps on outskirts flock. Quiet. Gleaning leaves as well as feeding on bark.

Almost all the birds here are very shy.

cc (s) here largely gray below apart from rufous UTC.

Flush more *brunneiventris* definitely alone.

Stop observations here ca. 9:00 a.m.

NOTE: The patches of Polylepis here are small, roughly rectangular, perhaps 300 ft long, 50 ft wide, very close to houses. In this particular area there are 3 patches quite close together. Looking at the distant landscape, it would seem that patches are usually more scattered.

The altitude here should be 3900–4000 m. according to the forestry department in Huánuco. According to the altimeter of Craig Morris, we are at 12,400 ft. In any case we are way up into the puna. Polylepis occurs much higher than any other native tree of the Andes.

July 14, 1774
Foggish

Going along river (lower) highway
Bowdoin entrance tunnel ca 8800 ft 6:07 a.m. Cloudy
Rather warm.

Whitetail(s) ? singing NODWAH

6:45. Large mixed flock present in mixed scrub. Usual type. Including whitetail(s), Blue & Orange tanagers, PL's, Basileuterus migrocristatus etc etc. Noisy and cohesive. I do not bother to count or follow;

(4)

July 16, 1944
Quesada

Same plan as day before yesterday. Polylepis. Orcomanes
Fog just lifting 7:55 a.m.
Andean sparrows, thrush, flycatchers where flock used to be. But flocks apparently not here now.
CORRECTION: Some or all of the birds that I called bonariensis is the day before yesterday are really the common highland gray and yellow finches (ayaji ???) Species is common here
9:15 a.m. Drive along road to look at other small patches of Polylepis
Little boys with slingshots.
10:05. "Wedge" large Polylepis edge town. Single cc feeding 6-8 ft up. Very tit- or nuthatch-like. Probing in bark. Sometimes upside down. Active. Uttering CV's. Apparently essentially alone, although there certainly are a variety of finches and perhaps flycatchers not far away in same hedge.
Down = Ayapita
cc flies away. Apparently by itself.
Then back. Gleaning leaves as well as probing bark.
Hear what sounds like greeting twitter. Are there 2 cinclodes here??
Then cc(s) disappear(s) again.
Back to Quisla 11:00 a.m.
Stop 11:20 a.m.
NOTE: Altimeter reads 13,730 along road back to town

August 21, 1974
Paddartaulbo.

Arrive town 7:15 a.m. Cloudy. Cool. Altitude ca. 8000 ft.

7:40. Garden outskirts town. See pair cc's low in scrub-ni garden. Quiet and alone. Fly away

A few minutes later, see single Brown feeding in Eucalypt. Visiting (white) flowers. 20 ft up. Silent. Alone. Flies away over area where cc's were earlier. Brown back to same Eucalypt flowers a few minutes later. Still alone.

There is a medium sized ♀ hummingbird feeding on other flowers same Eucalypt 30 ft away. She and the Brown seem to ignore one another.

7:55. Suddenly there is a flight between the Brown and the ♀ hummingbird. Both fly off in opposite directions.

NOTE: There is cactus and mague here. Area cannot be extended, fenced.

8:05. Still watching same tree. Same presumed ♀ hummingbird feeding Eucalypt flowers. Brown flies in from far away to attack hummingbird briefly. Definitely very aggressive. Hummingbird flies away. Brown stays behind. Returns.

NOTE: It is quite possible that this hummingbird is a Colibri.

There is also a brownish hummingbird in this tree from time to time.

Walk further along path. Grove of Eucalypts. Some in

flower. Lots of hummingbirds around. I am sure that some are Calliope. (My guess would be Rufous.) I can't see purple on belly. This may not mean very much, as the light is bad. But I have also heard brief snatches of what sounds like 2-note song in distance. NODUWAH.)

8:35 Back to first tree. Now hear what sounds like Lazuli song! Brief NODUWAH.

Stopping observations here 8:40 a.m.

August 28, 1974
Above San Juan
Ataco

Arrive 4:02 a.m. Quite light. Clear. Cold. Birds rather quiet.

Do recording until 8:00 a.m. No time to take notes. But I did see one interesting series of incidents. A single Lal repeatedly attacked by a single hummingbird XXIII The Lal is feeding lunch and moving around 2-5 ft up in AS. Attacks take form of "passes" (apparently not pressed home to actual contact). Lal just ignores the whole thing. (The hummingbird is somewhat smaller than the honeycreeper.)

September 4, 1974
Puracé

Working in usual (Quito) areas below páramo early this morning. Clear, cold, and very windy. Lots of songs by Tafs. NODWAH. Nothing else of interest.

Go down to "Canaan" ca 8:30. Still lots of Kniphofia in garden. Also lots of Cinns. Plus two or three (possibly more) Ateris. Lots of "pases" at Ateris by Cinns. Seldom or never pursued home. These pases do not usually bother the Ateris in any middle way. (I am sure that many pases must induce an Ateri to move on sooner than it would otherwise. But this is the sort of thing that is very difficult to prove.)

Also a few attacks by Ateris upon Cinns. These appear to be very determined. Mostly silent. At least one with R. Ateris appear to be more stolid than Cinns, less easily irritated, but more impressive or "imponente" when aroused. They are both larger and heavier.

Two of the Ateris (both apparently adult) were associating closely. Perhaps pairid. But apparently no mutual display.

September 5, 1974
Puracé

Working at "Canaan" this morning. Doing some recording — without very conspicuous success. I did, how-

even, note the following points:

(1) The pair of Otters was still very much in evidence. Two kids going about together, usually very close together. Lots of "Greeting" R-Zagas (and perhaps a few accelerated Twitters) but very, very little "Long."

(2) There was at least one Cy in the neighborhood. Apparently no Song at all.

(3) There were also other hummingbirds in addition to many Cuns. At least one ♂ and one ♀ VB. And several kids of several other species. But no Colibri.

(4) The Ateos and the Cuns fed frequently and extensively on Kniphophora. But none of the other Nectarivores would touch this plant. All the kids, however, including Cuns and Ateos fed on some other (native?) kinds of flowers. Including a yellow (pseudo) composite-like type (actually a relative of Poinsettia?) and small cream colored trumpet-shaped blossoms.

(5) The Ateos fed almost constantly. More steadily than any other species. I was surprised by this behavior, in the apparent presence of a superabundance of food.

(6) There was a lot of highland Whitestart Song in neighborhood. This species apparently in reproductive condition.

(10)

September 7, 1974
Guadelupe
(Bogotá).

Did some recording here early in morning.
Large mixed flock in flowering eucalypt. Lots of Hummers, probably several sps, many hummingbirds (Eriocnemis, probably Zeolura, certainly a few Scans). Quite a lot of songs and other vocalizations. Scans, at least, certainly breeding

Photographic Schedule Central Peru

First series Polylepis Quisha.

Second series Carpish 3x Roll 1

① VSTF nr tunnel 1, 2, 3

② VSTF - AS to pass area trail 4

③ VSTF nr tunnel 5

④ VSTF - AS to highest part of old highway, & from distance 6, 7

⑤ ca 6500 - 6000 ft. Shot of white cecropia in distance 8.

August 19, 1974
Malibu Pueblo

Photographic Schedule

Color Chrome
A Ruin side
① Halfway to fort and pan 8, 9, 10, 11

Color Negative
B Edge ruin & non-ruin sides by fort 12

C Forest just over pan. 3-X 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

D Aug. 20 Verichrome. 3 View-habitat adjacent hills. Also 4.

August 27, 1974
Rd to Santo
Domingo

Photographic schedule

① General view AS and VSTF on Atacaso
Panchromatic 6, 7

② Band where I have done a lot of work Second growth
12.

③ Monztrui Ilford. 1.

④ Pamflora flowers 2, 3

⑤ Shots along irrigation ditch.