

Thraupis, I

10th Dec, 1954  
Toro-Keloro

lots of their birds around the clearing

~~many~~ = Palm Tanager = galinarianus

~~many~~ = Blue Tanager = cyaneus

Have seen making a few more or less scattered notes on these birds, but nothing very much as yet.

I would say that the common "basic" form of the song of the Blues is "dee duh dee duh dee duh dee"

— — — — — Quite a little variable.

Often interrupted. Some times other notes added, usually (??) introductory.

This species has the usual tanager CN<sub>2</sub>, apparently less than a penetrating than the CN's of Tanager barvata

And also the usual tanager tail flicks, or almost like thereof. Probably some sort of conventionalized wing flick as well, although I'm not sure of this yet.

There are some indications that the song of the Blues may be contagious.

It also seems to be somewhat (occasionally showing or immediately after) some unusual series (sometimes involving more than one pair) which look as if they might be duets.

Some of the wing flicks are really quite in tune. One bird gave its song from a completely was trilled just uttering - posture - without any sign of puffing.

Thruway, Nov. 4, 1957, II

(7)

||| ~~||||~~ Apparently "calling" its mate to join it!

~~||||~~ This is also my impression of the Palm Saver's song given from a completely unritualized posture. At least the performing bird just leans forward into a rather low, still diagonal, posture.

~~||||~~ The bill seems to open & partly close in correlation with the notes of the song.

||| ~~||||~~ It is certainly my impression that Blues are far more apt to come down into low or moderately low shrubbery than are Palm Savers. The latter tend to stick high in trees.

||| ~~||||~~ One bird of an apparent pair gives song when its presumed mate landed beneath it. Given from totally unritualized sitting posture.

||| ~~||||~~ This pair seems to be defending a territory, attacking & driving away warblers & red-eaters.

Thruway, I.

November 5, 1957

Barro Colorado

|||| ~~||||~~ One bird of an apparent pair of Palm Savers sings repeatedly (toward its presumed mate) in the intervals of feeding on Cecropia fruit. Definitely no sign of ritualized postures or movements at any time. The song itself was longer than that of the Blues, less obviously organized. Just a rather ramble made of a lot of notes.



Thraupis, I.

(3)

November 17, 1957

Barro Colorado

I have noticed that both Palm & Blue Tanagers tend to join up with flocks of Plain Tanagers. Usually one, two, or three of the Thraupis birds to a flock of ten or more Tanager. I think that the Blue is more apt to do this than the Palm. (Difference in preferred "food-level"?)

Food-fighting between 2 Palm Tanagers. One tried to take a bit of Cecropia fruit from the other. And they fought in the air, rising and falling for a second, and uttered a series of hoarse, loud, rattled nasal notes: "Wah wah wah wah..." quite rapid, all more or less the same pitch.

11

11

11

11

11

11



November 29, 1937,  
Barro Colorado

There are a great many tanagers of 2 species of this genus around the clearing.

~~XXXXXX~~ = Palm Tanager = palmarum

~~XXXXXX~~ = Blue Tanager = episcopus

Both of them are somewhat gregarious, but usually just fly about in pairs (although this is certainly not the breeding season) or even as single birds. Single birds or pairs of either or both species may be locally associated with the large and numerous flocks of Plain Tanagers, even though both the Thraupis species are usually somewhat less restless. (One wonders if the generally similar, dullness of the plumage of these three species may not be significant in this connection — particularly in view of the rather peculiar case of the Golden-marked Tanager.) Although the Palm & Blue Tanagers are often found close together (both — like the Plain Tanager, are very fond of Cecropia fruits), there is certainly a tendency for them to separate according to levels of vegetation. The Palms are frequently found in the tree-tops; the Blues more frequently in moderately low-vegetation (such as small citrus trees).

Both species seem to have more or less undifferentiated CN's (less sharp than those of the Tangara species, and not nasal or otherwise peculiar like those of Phainopepla and Arremonops). Uttered either as single notes, or as groups of

Manupis, Nov. 27, 1957, II

(3)

two or three. (I have not yet heard a real long rapid series like those of the Tanager species).

Both the Palm & Blue Tanagers have what I call the "usual Tanager WF's and TF's". That is: the WF's are not very extreme, usually one WF per TF; but it is possible that some TF's occur without WF. The TF is equally unexaggerated. Really just looks like a continuation of a sideways body movement. Usually (I think) one sideways swing of the tail - out and back - perhaps sometimes out-back - out to the other side - back.

The TF's and WF's are usually synchronized with CN's.

In spite of the fact that this is not the breeding season, "song" is not uncommon by the Blues. This is difficult to describe, but I should say that the "backbone" of the song is composed of a series of "doublets" and a terminal note.

— — — — — This sort of thing. I am not sure how many "doublets" are typical, but I should say that three is very common in cases of what appear to be "complete" song. Often abbreviated, cut off short. Sometimes four doublets (at least). And also other variations, the commencement of which is a series of warbling notes, usually somewhere in the middle.

I should add that this description does not agree very well with Eichenmann.

The song of the Palms is rather similar (one would recognize, I think, that they are uttered by closely related species) but it is much less obviously organized. More of a series of var-



Thruwpes, Nov. 27, 1957, III

(6)

red warblers.

The Vireos did a lot of singing when I first came here early in September, but I hear them less often now. It may be that there are fewer birds around now than earlier, but I don't think so.

Both the Vireos and Warblers give their songs from the same, very slightly ritualized, posture. The performing bird sits leaning forward, in a short-necked, more or less low, diagonal posture, and sings, without any trace of any feather erection or ritualized movements.

The function(s) and motivation of this singing are still thoroughly obscure, but they do sometimes seem to be a means of "summoning" the mate. I.E. If a bird should get separated from its mate, somehow, it will often fall in the direction of the mate (if the latter is still around) and sing repeatedly. Really solitary birds will sometimes sing repeatedly just as they are. And this does indeed seem to work - in some cases at least. The mate sometimes does approach.

I should add that I have never seen more than one bird of a pair (presumably the ♂) sing.

Thruwpes, I

November 30, 1957,  
Barro Colorado

The CN's of both species can probably best be translated as "Whit" but they are, of course, rather variable.



Maui, I

(7)

December 13, 1957

Point Solander

Blue & Green may flock together, to some extent even without any Plain Tanager. One sometimes sees one Blue & one Green flying more or less together, flying from tree to tree at the same time. It is perhaps more common to see one bird of one species perching with a pair of the other.

The Blue does have a whistle-like CN in addition to its ordinary one, but this is about all I can say about it now.

Maui, I

December 20, 1957

Fiigoles

One Plain Tanager came & hopped around the top of one of the railroad girders for several minutes. When I first heard it, it was uttering alternate snatches of "song" and single, rather long drawn, rather plaintive, rather whistle-like "Whicecece" Notes. Didn't see the accompanying postures at first, but later had a good view while the bird gave more of the "Whicecece" Notes. Postures quite unritualized. The bird just sat or hopped around with wings perhaps slightly drooped (not crossed, covering the rump) but not spread. The bird seemed nervous and was apparently quite alone. The "Whicecece" Note performance was somehow very reminiscent of the CN performances of the Seed-eaters. Perhaps due to some thwarted gregarious or sexual drive. The notes were sometimes repeated at intervals of only a few seconds, but

Thraupis, Dec 17, 1957, I

(8)

never organized into distinct series. Some of the "Wheeeoo" notes were a little sharper than others, but still quite unlike the sharp ordinary CN's. The bird uttered a burst of ordinary CN's as it flew off, and the difference was quite striking.

Thraupis, I

January 15, 1958  
Barro Colorado

Noticed a solitary Blue Tanager in an orange tree this evening. Quite restless, hopping from twig to twig, with lots of flicking, but not apparently alarmed by me (I was quite some distance away). Uttering CN's from time to time. These were different from the ordinary CN's given by flying birds (FCN's), softer, more like "Wheeeoo" instead of "Whit". Let us call them SCN. I think the bird was trying to call its mate. In any case, the mate arrived after a while, and one or both birds uttered sharper CN's, in a little burst, as a form of greeting. Later on, the bird who had been uttering SCN's earlier, gave a little burst of harder FCN's when it hopped particularly close to its mate.

Thraupis, I

January 21, 1958  
Aucou Heights

Got a brief glimpse, in passing, of a flock of Palm Tanagers in the trees near the Tivoli. This was a real flock - almost reminiscent of the Plain Tanagers - including perhaps



Thraupis, Jan 21, 1958, II

(9)

7 or 8 birds, all of whom were noisy almost constantly

At least several, and possibly all, of them uttered a lot of the single, rather plaintive whistle-like "Wheeeee" Notes I described on Dec. 20, p. 7. As before, from quite unmutualized postures, as the birds moved along, presumably feeding.

Again usually or always by a somewhat isolated member of the flock, presumably temporarily separated from its mate

One or more of these birds also gave a lot of a variable "song-like" vocal performance. Including 2 components. Single notes, sometimes occurring in series of variable length, before and/or after "fweee" Notes, and varying somewhat (apparently irregularly??) in pitch. These single notes were very reminiscent of, perhaps identical with, some forms of the ordinary CN. The number, as well as the "position", of these notes in a single phrase of "song" seemed to be extremely variable. The "fweee" Notes with which they were associated were longer. Definitely seemed to be a form of Rattle!! — might be transcribed as "fweee" — and I think that the usual procedure was

for 2 or 3 fweee Notes to occur in the more or less middle of a "song" phrase. As usual, these "songs" were also given from unmutualized postures — usually while the performing bird was sitting or standing still

This vocal performance certainly seems to be what Eisenmann calls "song", but it was certainly my impression that this species, or at least the birds around Barro Colorado, has a more warbling, more Blue Jay-like, "song" as well. My impression may have been mistaken, however, and this whole matter must be checked again.



January 22, 1958  
Barro Colorado

Yes! Of course. The Palm Tanager do have a "warbling" song. Rather than a high pitched, and (as mentioned earlier) "formless". Let us call this WS, as distinguished from the song-like performance, with CN- and R-like notes, I heard yesterday in Balboa (which I will call CNRS).

I have heard lots of Palm Tanager WS's today, all or almost all late this afternoon and this evening, more or less as the birds were settling down for the night (feeding for the last time, preening at their special "preening stations" before actually going to roost, etc.) As usual, without ritualized postures or movements - the performing bird may stretch or turn its head toward its partner (these WS's are almost always given when 2 birds of an apparent pair are separated at least to some appreciable degree), but that is all - and some performing birds don't try to face the presumed partner at all. Most of these WS's were associated with "Wheeee" Notes, or, possibly soft versions of the ordinary CN (if there is such a thing apart from the "Wheeee" Notes).

This "song" business raises a lot of problems. Most of the WS's I have heard on the island seem to be attempts to "call in" or "call over" the mate. Certainly not associated with overt attack or escape (although it should be noted that I have seen little or no overt attack or escape, yet, in this species in any circumstances). Then why were the WS's almost confined



Thraupis, Jan. 28, 1958, II

(11)

to the evening period today? Why do CNRS seem to be so rare on the island? (As far as I know I haven't heard a single CNRS here - although this may be somewhat deceptive). And what are the essential differences between WS & CNRS?

I rather think that the "song" of the Blue Tanager I have heard must be homologous with the WS rather than the CNRS of the Palms. At least it is warbling in quality, although quite distinct in form - and I think that I shall also call it WS, for the time being at least. It seems to occur in much the same situations, and presumably serves much the same obscure function(s), as the WS of the Palms.

In the case of both Palms & Blues, the WS seems to be confined to one bird of a pair - presumably the ♂. I have never heard a bird respond to a WS of its partner by giving a WS of its own.

I have never heard anything like a CNRS by any Blue. Both Blues & Palms usually give a little "vibrato" burst of "flight" CN's when flying off. Always much shorter than the comparable bursts of the Plain Tanager. Apparently never or more than 3 notes. More or less comme ça: — — — or — — —. Similar bursts may be given by a landing bird when it lands next to its partner, or the 2 birds of a pair land together.

Thraupis, I

January 23, 1958,  
Barro Colorado

Perhaps I was just blind & deaf yesterday, I



Thraupes, Jan. 23, 1958, I

(19)

Anyhow - there has been a great deal of WS by the Palm Tanager today (around 7.15 a.m., when hazy and very calm) I haven't been able to follow the circumstances & reactions to these WS very well - except, in one case, when 2 birds on either side of the lab clearing seemed to be answering one another, every WS of one bird apparently provoking a WS response by the other. Rival males??

I have caught brief glimpses, today and on previous days, of a brief posture by some Palm Tanagers of what might conceivably be a very low intensity "rit mov" of an ft. The circumstances in which this has occurred have been rather obscure, but not such as to preclude the possibility that the pattern (i.e. when a bird lands near others) it may be hostile has always been very brief in all the cases I have seen so far.



Very sleek.

(This sketch may be exaggerated, i.e. far too vertical, but the posture is reminiscent of the *Deteridae* - and the Blue Honeycreeper).

Most of all of the WS's is over by 7.30 a.m.

Lots more WS this afternoon. Particularly common in a group of about 6 birds which spent a lot of time chasing one another back & forth. Looked almost as if this "row" might retain a slight trace of a hostile component.

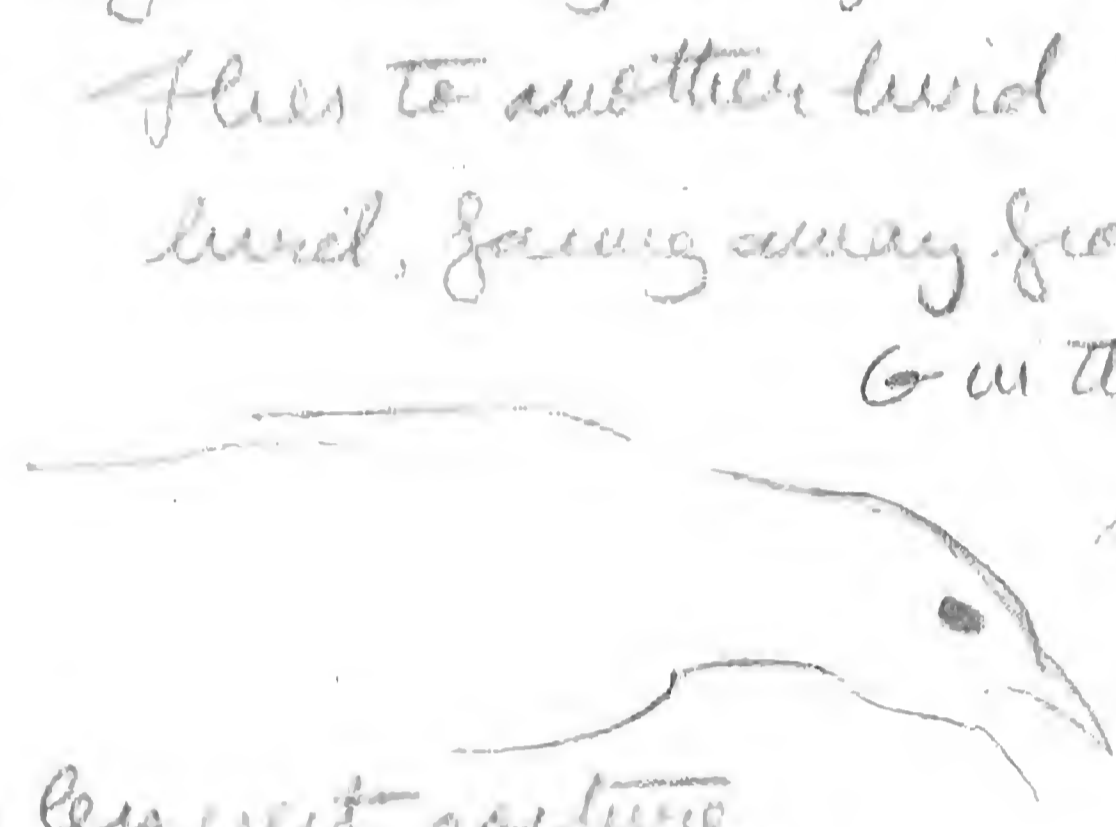
I think there is no doubt but that the Palm Tanager is slightly more gregarious than the Blue. It is with my explanation of the dull plumage very nicely.



Manupus, Jan. 23, 1958, II

(13)

Then see a Palm standing rather erect, with bill open in what looks like a G. Alternating this not very ritualized looking erect posture with an equally little ritualized looking low posture. Then WS's then G's again then other



Flies to another bird G's beside head, facing away from it, along the G in the same 2 postures

Seems some more in a than the other

more or less erect posture

bird flies off, and the bird that has G's and WS's flies after it. Was this hostile?? Was any of it beside the WS ritualized?

Lots of the WS today has not been associated with "Wicece" Notes.

The WS of the Palms does certainly have some "organization". It is just difficult to grasp and describe. A few preliminary notes Dah-dah-dah-dah - - - ?? Then a center bit, mostly trilling or twittering notes. Then, perhaps, a few terminal notes

I think that the soft "Wicece" Notes sometimes uttered by one bird of a pair of Blues must be the homologue of the "Wicece" of the Palms, but it is much less whistle-like

Manupus, I

January 23, 1958  
Hotel Incha

Watching a large flock of Palm Tanagers from the balcony. Lots of chasing back & forth, with the sideways "flying" (FCN) and the "twittering" which seems to be part of the WS.

WS.



Thruays, Jan 24, 1958, II

(14)

One pair flew by, got involved in an aerial scuffle, and then landed on a nearby branch. During the scuffle one or both birds uttered a twitter, slightly slower, with more emphatic notes, than the usual WS twitter. This developed into, or was succeeded by, a perfectly ordinary WS Twitter by one of the birds when they landed!

I have seen 2 chases, involving 2 pairs, in which one of the birds twittered when the pair landed, and the other bird flew off, leaving the twitterer apparently content on his perch. This left the 2 twitterers sitting quite close to one another - and they eventually flew off to rejoin the main flock. In other words, I rather doubt if the pairs involved in the original chases were mates. Certainly not very well mated, to all appearances.

There is no doubt but that both the Palms and Blues around here are extremely 'restless'. Perhaps more so than on Barro Colorado. Perhaps almost as much as the Plains.

Now that one listens for it, of course, the FCN's of both species are quite distinct from their other CN's.

The FCN's of the Blues seem to me harsher than those of the Palms.

One can hear WS's of one or both species almost constantly around here. I think they seem to be quite as consistent, and comparatively noisy as the Plains on Barro Colorado.

Another flying pair of Palms got in a fight, in flight, and fell almost to the ground. Uttering a whole series of rapid harsh notes during the fight. Obviously HRC. Quite like that of many other species. Then separated, flew apart. One of them uttered a twitter or complete WS, I think as they flew apart.



Memphis, Jan 21, 1958, III

(15)

This occurred during another general burst of chasing, WS-ing, FCN-ing, and also "Morse" Notes, in a flock of about 10 birds. Most, but not all, of the birds in this flock (and the other ones) appear to be "paired" — but what this actually means God alone knows.

There is no doubt but that the WS's of both species are highly contagious (within each species, that is — there is very little evidence that the WS of one species is particularly apt to provoke WS's by members of the other species — although there may be some slight effect of this sort). Nor do the WS's of either species seem to have any very obvious signal effect(s) certainly not obviously intimidating.

Nevertheless, I am beginning to feel that the WS's of the Palms at least, may well be partly hostile.

It should also be noted, however, that the WS's of both species seem to subserve some, at least, of the functions of the long series of CN's of the Palms. Are the two species primitive among tanagers in this respect ???

I just saw an obviously aggressive, I think, supplanting attack develop into an aerial chase, with only FCN's by the aggressor.

Also one complete fight which was quite silent.

I have watched one bird "chase" another through a tree-top. One or less hopping after it from perch to perch. Some of the hops of the chaser toward the chased almost seemed to be supplanting attacks. If so, it must be considered significant that the chaser uttered several WS's during the intervals of the chase (which was really quite irregular), while the chased was quite silent.







Thraupis, Jan. 24, 1958, V

(17)

Jan. 21, the things I called CNRS yesterday, were probably only variants of the "ordinary" WS. (And my description of them may not have been too good). If so, this would seem to indicate that the behavior of the Palms is less different from that of the Blues than I thought.

It is possible that the Trill is no more than an accelerated Twitter. (It is also possible, I suppose, that the Twitter Notes are only modified CN's — although they sound quite different now. If so, then this species may be more like the Plains than I thought.)

It should be noted that none of the birds I have watched today has shown any signs of overt sexual behavior. Just lots of gregariousness and a little fighting (presumably some escape as well as attack, but most escape would be very difficult to detect, as such, in these circumstances). This would seem to indicate that the WS is the result of some gregarious or hostile motivation, and would seem to rule out the sex drive as an immediate (at least) causal factor.

It may also be noted that none of the birds I have watched has shown the slightest trace of ritualized postures or movements (aside from flicking) at any time — and I have seen hundreds of encounters between all sorts of birds, and watched hundreds of WS performances.

The "sharpest" CN's or FCN's would seem to be those containing the strongest alarm components. (They are the ones that are given by birds which fly onto the balcony and are surprised to see me here waiting for them.)

This WS is really very very contagious. When a flock of 8 or 9 birds is attempting to feed together (e.g. in the crown of a palm), they really spend a good deal more time WS-ing than actually eating. (And they also spend an appreciable proportion of their time "Whecccc"ing &



Thraupis, Jan 24, 1958, VI

(18)

uttering other CN's). This very frequency of WS-ing is reminiscent of Schaeffer's description of the Courtship of the Swallow-Tanager; and it is quite possible that the WS of the Palm is a mimetic display, at least in part.

These Palms here seem to be really quite as gregarious as the Plains (on BCI). They also seem to be quite as specialized as the Plains in most respects. The fact that they are not, perhaps, as continually noisy & restless may simply be due to their greater size.

I wonder why the Palms & Blues are so common here, much commoner than the Plains, while the Plains are so much commoner on Barro Colorado. They all seem to be feeding on essentially the same stuff (although the Palms do seem to have a preference for Palm trees).

January 27th, 1958  
Hotel Tivoli

Thraupis, I

Watching Blues, as before.

One bird did WS, in "alert" semi-st posture, as it retreated down a branch, away from a pair which had landed beside it.

The WS is not always as distinctive sounding as usual. I.E. the doublets may be less obvious as usual, more like — — — — then the whole thing sounds more like the WS of the Palm.

I am surprised to find that the large flock of Palms that was here last week seems to have completely gone — although the Blues are still here. Are the flocks of Palms "mobile" too?

The CN's of the Blues seem to have 3 main "notes", the relatively soft "whoooo" notes, apparently used to "call up" a mate or (possibly)



Thraupis, Jan 29, 1958, II

(19)

just any other member of the flock; the relatively harsh "Tchank" or "Chit" notes given by apparently alarmed or nervous birds; and the solitary "Whit" FCN, (this latter is often organized into almost well-defined "multiple" CN's, eg "Whit-whit-whit", like this — — —). All sorts of intermediates between all types seem to exist, and I think that the intermediates are almost as common as the extremes.

A little later, of course, a few of the Palms have come back.

One of the birds does something I have seen before on the island, but didn't believe. In this case, an apparently single bird landed in a tree top (probably less than 20 ft from me), and then opened his bill, and stayed like that for a minute or so, in one of the more or less "forward" postures from which WS is so common. This looked exactly like WS, but the bill didn't open or close repeatedly at all — and there seemed to be absolutely no sound at all at any time!!! This sort of "silent WS" (SWS) might be related to the G of other Thraupids, but it certainly wasn't associated with any obvious overt hostility, (and the bill was not open quite as wide as in the usual G's of other species). I have seen what seemed to be the same pattern performed by birds on the island, by both apparently single birds and members of apparent pairs.

Thraupis, I

February 2, 1958

Barro Colorado

One Palm flew to attack another, and gave a series of rather harsh notes — — — — — as it did so. Presumably HAC, but not as hoarse as the HAC of some species.



Thraupis, Feb. 2, 1958, II

(20)

Several times today I have seen one bird of an apparent pair of Blues (probably several pairs) carrying what looked like nest material. Never led to anything, however, as the material was soon dropped (or the bird disappeared from view). I have seen several similar cases at various times during the last two weeks, but they were equally inconclusive.

Thraupis, I

February 3, 1958  
Barro Colorado

There is a pair of Blues hanging around a small tree near the new lab. Apparently interested in nest-building. One bird carrying m. in bill, going to fork where there is a half completed nest.

(I should add that an apparent pair of Blues has come to this tree from time to time ever since I came to the island. But they seem to be much more interested now than ever before.)

Building is continuing now, but very intermittently. One bird is much more arduous than the other, but at least once they both brought material at the same time.

No interesting display. Nothing but a little WS and a lot of flitting of the usual type.

Thraupis, I

February 4, 1958  
Barro Colorado

I finally saw a copulation attempt, early this morning, by the pair of Blues which were building a nest yesterday, although I didn't



Thompson, Feb 11, 1958, I

(21)

use it very well.

None of the birds showed up near the half finished nest until well after dawn (i.e. around 7:00 a.m.) Then the ♂ flew to the nest tree, stood a few seconds (apparently looking toward the nest), and then flew to a much taller tree near Chapman House. He stood there for a moment, then flew up to a higher branch, where he landed right beside the ♀ (I don't know how long she had been there, or what she had been doing, but at least she had been quite silent.) She was just sitting in an apparently relaxed posture, with head & bill inclined moderately diagonally upwards (neck not stretched at all), wings folded at sides (not raised over base of tail), body feathers just slightly fluffed (breast & belly feathers probably slightly more fluffed than the wing feathers). The ♂ mounted the ♀ almost immediately after he landed beside her — without any preliminary display at all by either bird — not even any wing-quivering by the ♀ (although, of course, I can't be sure that she didn't quiver before the ♂ flew to her). The copulation was apparently successful. No trace of any post-cop display by the ♀, but the ♂ immediately assumed a very erect posture (like the "It" drawn on Jan. 23, p. 12) for a second before relaxing.

This pair eventually began to build again, like yesterday, with one bird, presumably the ♀, doing most of the work.

The behavior of the other bird, presumably the ♂, was rather interesting. He spent most of his time in some of the taller trees near the nest tree rather than in the nest tree itself. Gave a lot of WS from these positions, and it was quite obvious that he usually, or always, gave these WS's when the ♀ was more or less



Thraupis, Feb. 4, 1958, II

(99)

separated from him but still in sight (or at least he knew she was still in the neighborhood) He did not give WS's either when the ♀ was sitting beside him or when she had flown away into the forest apparently to gather more n.m.

The pursued ♂ once flew to the ♀ while she was by the nest; and she apparently attacked him. At least she ended up by apparently chasing in a very fast if not very prolonged aerial pursuit. Apparently both birds were quite silent throughout.

Thraupis, I

February 5, 1958

Barro Colorado

The building pair of Blues showed up at the same time this morning, and behaved much as yesterday (although I didn't see a copulation — but I was rather distracted by other matters.)

Both today and yesterday the Blues seemed to lose interest in n.b. by mid-morning. Largely gone from neighborhood too.

I watched several groups of Palms this morning. The only thing of interest was some Gaping (which seems to be what I have been calling the "SWS.") Once a pair landed after a very fast flight (a real pursuit?) about 2 ft apart, and both stood, for several seconds, in rather alert very sleek postures, more or less facing one another, with definite  $\curvearrowright$ . Gradually relaxed. Later on, in another group, one Palm (♂?) flew to another (♀?), WS'd at it from only a few inches away, whereupon the bird toward which the WS was directed turned toward the singer and did a definite  $\curvearrowright$  in a moderately oblique-forward posture. Whereupon the singer flew away.



Thraupis, I.

(23)

February 7, 1958

Watching a couple of Blues this morning at dawn. Probably the pair that copulated on earlier days. ♂ apparently sitting alone when I first saw him, apparently waking up, preening, etc. Then gives a couple of WS's (all this on one side of the big Guayacan). Then flies down to Cecropia to feed. Then flies back to same perch on Guayacan. Sits a second. Gives 2 WS's. Sits a second. Then flies to the opposite side of the Guayacan, lands beside a ♀, mounts her immediately without preliminaries (and she certainly didn't give any preliminaries either in the very brief period I saw her), copulates. Apparently unsuccessful, as the pair is attacked by another Thraupis (I couldn't tell if it was Palmar or Blue). Fly apart without display.

Thraupis, I

February 8, 1958,  
Barro Colorado

Today I have several times seen Palmas making supplanting attacks on birds of other species, e.g. Blue Honeycreepers, Banana-quits, Plain-colored Tanager. Signs of approaching reproduction.

It is difficult to tell if the WS of the Palmas is exactly comparable with the WS of the Blues. It also seems to be given by a bird separated from its mate when the latter is still visible. but this is usually difficult to confirm because of the fact that the Palmas (at least at present) are certainly much more gregarious than the Blues. (They are usually at least 3 or 4 birds together at any given time) I rather



Thraupis, Feb. 8, 1958, II

(24)

think, however, that the WS of the Palm may also sometimes contain an appreciable hostile element. I have for instance, heard it uttered by a bird immediately after making a supplanting attack on another.

All the WS's of the Blue Tree or here these days — and they are always apparently in mated pairs — seem to conform absolutely to the rule that they are provoked by the distant presence of the mate. They seem to be purely a means of "calling in" the mate. If true this is a perfect example of a behavior pattern whose "communitary stimuli" (i.e. the closer approach of the mate) cannot be, or at least are not, attainable by any locomotory behavior by the performing bird.

Thraupis, I.

February 13, 1958  
Barro Colorado

Watching a fairly large flock of Palms in a pair tree near the Bahia this afternoon. Anything from 3 or 4 to 7 or 8 birds in the tree at any given time (they were also flying back & forth to neighboring trees quite frequently) spending part of the time preening & resting, in a typical pre-roosting fashion, but they also did a lot of other activities.

When I first watched them, the birds were flying about from twig to twig, in a very alert fashion, most of the time. Most or all of them were uttering a lot of what appeared to be "Wheeee" notes (they might be better transcribed as "Wheeeeee" in many cases), for a long period. (I think that I shall call these "SN's") It was very conspicuous that there was no WS during the period when SN's were particularly common!! Every once in a while, when



Thraupes, Feb. 13, 1958, II

(25)

one bird  
other, one  
bird that  
bird that

— but never  
incidents I

was a very marked st. Posture

was anything more than an int. mov. of flying; but it was obviously ritualized. The angle of the body was variable (see the drawings above); but the head was always brought back on the shoulders and the bill was pointed vertically upward!

Something about the circumstances of these SN's suggested that they were subserving the same function as the WS of the Blue Tanager

Later on, one of the birds began to give WS's. This appeared to inhibit the SN's — either directly or indirectly. It certainly coincided with an outbreak of obviously hostile chasing. One bird gave a series of WS's before and between a series of supplanting attacks on another. This would seem to be a pretty definite proof of the hostile nature (and probably rather aggressive nature) of this pattern in this species.

Some of the birds did very pronounced & drawing some of these disputes came ca:

Bill  
sometimes  
opened wider.



Rather low posture, but no  
fluffing of any kind.

Obviously hostile!





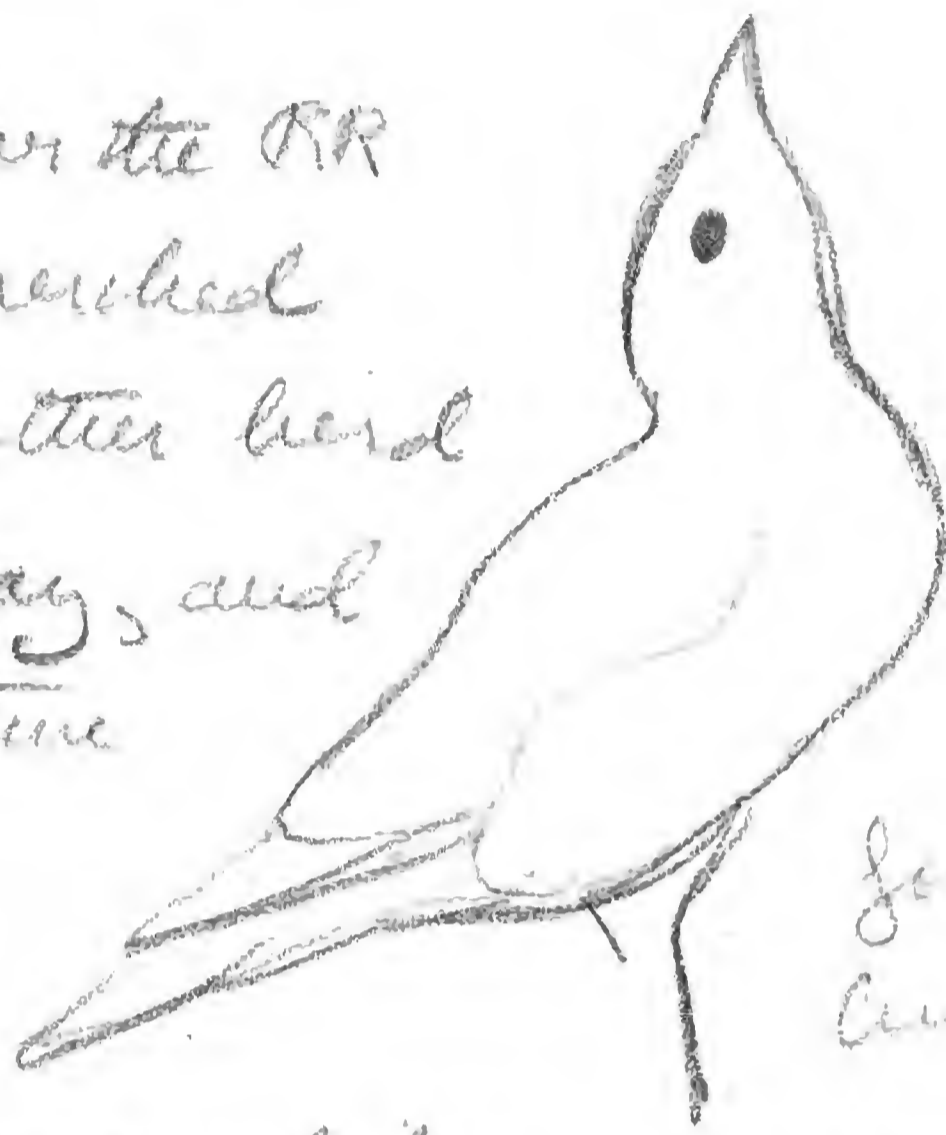
Thraupis, I

26

March 6, 1958

Gamboua

Watching a few Blues near the RR station in Gamboua. One bird perched alone on a telephone wire. Another bird flew to the wire a few feet away, and immediately went into an extreme crouching posture. Stayed in this posture for almost a minute, at least. The first looked at the displaying bird for a while, off. This looked as if the St might be a definite threat pattern. Obviously highly ritualized. (I didn't hear any notes during this performance - but the birds were rather far away).



St Posture  
for almost a  
bird just  
and then flew

Thraupis, I

March 13, 1958

Pano Colorado

I saw a very violent aerial chase this afternoon, with incredibly rapid twisting and turning, involving 2 Blues. Accompanied by loud harsh screeches, presumably a form of HScr, (possibly the same thing as the call of the Palmes noted on Nov. 17, p. 3). Obviously hostile, I think. And then one of the birds gave a complete WS, right in the middle of the chase, without hesitating for a fraction of an instant!! This must have been hostile too, I think; and it would suggest that the WS of this species is also the result of some sort of general frustration.



Thraupis, I

27

March 17, 1958

K-6

Watched an apparently single ♂ "Blue", for about 15 minutes, sitting in the top of a tree and giving WS after WS after WS. The fact that "he" didn't fly to join any other bird in the wood, and that no other bird ever came to join him, would suggest that he was really unmated, which would seem to be further evidence that the WS of this species fulfills most of the functions of the "Tune" song of lower parrots.

(I might just add, here, in case I have forgotten to do so elsewhere, that I have never watched a pair of either Blues or Palms in which I thought that more than one bird of the pair gave WS's.)

The "♂" Blue mentioned above also defended his tree against at least one intruder, i.e. a ♀ Sangre de Toro!

Thraupis, I

March 20, 1958

K-6

A peculiar incident today. A Blue flew to a tree (possibly returning from a chase of some kind), and gave repeated WS's. Each WS was preceded by one or two harsh notes (HAC?), or one or two of these harsh notes were inserted, irregularly, in the middle of a WS. And each WS was definitely accompanied by Qu! (The wings were hardly held out at all, but the vibration was quite conspicuous.)



Thraupis, I


(28)

April 14, 1958

Frijoles

An aerial fight between a couple of Palms was accompanied by a few HAC Notes. Just like the HAC's of other species, but perhaps a little weaker and less harsh. Might be transcribed as "auh hauh hauh".

A pair of palms here seems to be accompanied by 2 juvenile birds. One of the juveniles occasionally utters rather weak, hoarse but high-pitched "Whee whee whee whee whee . . . ." Notes. Not too rapid. Probably "begging"; but I haven't been able to detect any ritualized postures or movements with it.

One thing about the WS of the Blues has just struck me the last 2 days. The last note of the usual WS phrase, the long ascending note , seems to be indistinguishable from the "whereupon" notes (SN) used to "call in" the mate (This is particularly obvious in the case of a pair on the island which is showing signs of low-intensity reproductive behavior). This may help in explaining the motivation of the WS.

The ♂ of this pair on the island also uttered a lot of rather soft doublet CN's — the 2 notes being less different in pitch than the doublets of the WS.

I just saw a single Blue do a quite slow and relaxed-looking, but quite extreme St toward another pair of Blues in the same tree with him — whereupon the pair immediately flew off!

I have also now seen the Begging Notes of the young Palm accompanied by very slight & rapid wing shimmering or quivering



Thraupis, Apr. 14, 1958, II

(29)

W was held out during the Qu, but not drooped greatly. The Qu continued after the call had stopped and the parents had moved away (Other juv. seem to seem to be getting much of a response to his Begging). The Begging (B) and Qu were done from an apparently slightly ritualized posture course ca

Mouth kept very wide open even after B Notes stopped



I have now spent a little time watching 4 adult Palms on one of the RR pylons. Much hopping back & forth, chases, apparent supplanting attacks, etc. — and a lot of WS-ing. This all certainly looked hostile, apparently a territorial boundary dispute (2 of the birds eventually left, whereupon the remaining 2 relaxed). It may be that the WS's themselves were hostile, but it is also possible that they can be explained in much the same terms as the WS's of the Blues. WS's might be induced by any sort of frustration. If, if they are only produced by thwarted sex or pairing drive, it may be that the actual con of attack & escape motivation conflicts with the sex drive — or, possibly, the presence of outside birds is a disturbing factor in the "communitary" situation, something which does, in fact, prevent it from being fully consummatory.

(But, if this last hypothesis is correct, shouldn't one expect more WS's when there are more outside birds by the pair, nearer to the pair, than when there are fewer outsiders further away ??? Does this occur ??? I must check this, but my first impression is that it does not. If not, does it mean that the hypothesis is wrong, or does it merely mean that the presence of a few out-



Thraupis, Apr. 15, 1958, III

(30)

inde birds is just enough to stimulate WS while the presence of more outsiders "inhibits" WS in some way ?? (The whole situation might be comparable to the situation in the Blues, where a small separation from the ♀ stimulates WS while a longer or larger separation suppresses it.))

Before the disputing among these 4 birds became too active, I heard one of them add an SN at the end of several WS phrases.

Thraupis, I

April 16, 1958

Barro Colorado

The pair of Blues which were described yesterday as showing "signs of low intensity reproductive behavior" turned out to have an almost completely fledged young in the nest! It is interesting, therefore, that the ♂ of this pair gave as many WS's as frequently, as any I have ever watched. This would indicate that the WS cannot be strictly sexual in nature.

It may play a role in parental activities. After the young of this pair left the nest (prematurely - due to my interference), the parents apparently tried to "lure" it to another part of the clearing. They excitedly back and forth, to and from the perch where the young was sitting, repeatedly and excitedly. The young bird gradually seemed to "get the idea" and followed the parents by slow stages. The adult ♂ also did a lot of WS-ing during this whole performance. He did this several times when the ♀ was only a few feet away; so it is barely possible that the WS was being used to



Thraupis, Apr. 16, 1958, II

(31)

"call in" the young bird. This, in turn, might suggest that some of the ♂'s WS's were produced by some sort of thwarted parental drive or desire to be near the young.

Thraupis, I

May 3, 1958

Barro Colorado

An adult ♂ and a juvenile bird were around the lab this afternoon. Presumably part of the same family as described above. Again I got the impression that the ♂ sang in relation to the juvenile just the way he would have in relation to his ♀.

Once, when the juvenile was sitting near the ♂, it began to utter notes, sometimes single, sometimes in series, sometimes in accelerated series. Without ritualized postures or movements. The sound of these notes was definitely reminiscent of the CN's of the Palm Tanager — and so, of course, was their organization — but they were definitely much softer. They didn't seem to induce any definite response by the ♂.

Could this possibly suggest that the vocal repertoire of the Tangara tanagers is neotenic ????

Thraupis, I

August 2, 1958

Barro Colorado

I now have a captive Palm Tanager (♀?), unbanded. I kept it first in a small cage in Chapman House. The



Hirundo, Aug. 2, 1958, I.

(37)

Just few days after I caught it, it gave a lot of single, more or less plaintive "Wheet" - like notes (when I was out of the room) This sounded as if the bird were trying to call in a mate or something. These notes were probably just a form of N.

Yesterday we transferred this Palm to the big aviary. When carrying the cage the bird began to utter "Whoah" notes. Quite rapid, (although not as fast as the flick notes of gulls) Long continuous series, lasting perhaps 10 or 15 minutes

---

Quite regular, all the notes apparently identical. Apparently given with each intake of breath. I thought the bird might be having a fit! The bill was spread with each note, and the tongue pushed forward. Bill closed or almost closed and the tongue retracted at the end of each note. Almost exactly as if the bird were gasping for breath. Then I was sure the bird was having a fit, because when we put the cage down, it fell half over on its back, and lay there apparently quite paralyzed and unable to move its legs (at least), while continuing the "Whoah" notes absolutely steadily in the same rhythm as before I picked the bird up, and it continued "Whoah" notes without struggling in my hand. I put it flat on the ground, and it just lay there, still continuing "Whoah" notes! This went on for several minutes more, when I suddenly made a movement toward the bird — and it suddenly flew off to a branch where it perched perfectly normally! But it still continued to give "Whoah" notes in the same rhythm, with the same bill & tongue movements, while sitting in an apparently perfectly unstrained posture. Only



Thomomys, Aug 2, 1938, II

(33)

gradually died the intensity of the performance die down. The intervals between notes gradually became longer, and the whole thing tended to break up into series of several notes, with longer pauses between each series. Comme ça:

After this the bird was quite calm until this afternoon. Then, when I approached the cage, it began to give the long continuous, apparently high intensity, series of "Waaah" Notes (which I will call P) just like it did at its most extreme yesterday, but just sitting or flying around — no sign of paralysis.

These gradually declined in much the same way as yesterday. But I did notice that, at the stage when the continuous series was breaking down into shorter separate series, some of the latter notes of several of the shorter series became higher & purer in tone and more "Wheet" — like — sounding perhaps more like the usual AlCN's of other species (and the "AlCN's" I have heard this species give before?).

Now the bird has started to give just single "Waaah" Notes, with definite and somewhat regular intervals between each note, while I sit beside the cage.

It is also noticeable, occasionally, that some of the more or less single "Waaah" Notes have a somewhat plaintive "Wheeeeh" — like quality. These may be transitional to the SN's.

I think that I had better call single "Waaah" Notes "SPCN's".

The really diagnostic characteristic of these notes, whether single or in series, is their hoarse quality. They sound unlike



Thraupis, Aug 2, 1958, III

(34)

I am not sure exactly what to make of this performance or series of performances. I think that even the complete  $\sigma$  must be a "display" of some sort - although presumably caused too far yesterday. If so, obviously high intensity. Obviously contains a very strong escape component. But escape not necessarily overwhelmingly predominant. May contain a strong attack component also. Probably an alarm call in function? But possibly also comparable to the extreme scolding or mobbing of other primaries???? (The hoarse quality, although very much less, is slightly reminiscent of the "scolding" of Ant Tanagers.)

Confirm - it does definitely seem to be display. The bird did  $\sigma$  (without catatonia) and  $\sigma$ PCN's again later this afternoon when I came back again.

September 28, 1958

Thraupis, I

Barro Colorado

I have had a captive Blue for quite some time. Haven't done anything.  $\sigma$ ? For a couple of weeks after I caught it, it was frequently visited by a wild bird, apparently  $\sigma$ , probably its mate, who constantly gave WS's toward it from nearby trees.

Recently it has been frequently visited by a pair of wild birds. Possibly its mate and his new mate. This pair is constantly flying back & forth around the cage, in a most excited fashion, while the captive bird flies around excitedly inside the cage. Difficult to tell exactly what the motivation



Thraupis, Sep. 28, 1958, I

(39)

of any of the participants in this performance might be, as there is almost no overt behavior associated with it. (There may have been a few hostile-looking pecking bouts between the captive bird and one of the visitors.) There are only a few points which seem to be both clear & interesting. Both the visitors have given WS's during their visits; one (the ♂?) much more frequently than the other (♀?). As the 2 visitors are obviously paired to one another, this would seem to confirm Shutch's statement that females "sing". Also it seems to be quite significant that I have seen almost nothing in the way of ritualized postures or movements (except flucking) by any of the birds involved — certainly nothing above the very lowest intensity intention moves. One or more birds may just possibly have given one or two int. moves. of st. The presumed ♀ of the visiting pair tends to sit in a rather hunched fluffed posture. Nothing more

November 9, 1958

Ornith Zoo

Thraupis, I

~~XXXX~~ = miscellaneous Thraupis species

There is a single bonariensis (in molt) here, and a single olivi-cyanca, in the same large cage as the silver-bills, Magnie-fauazis, etc. Not very interesting.

Both of them have much the same proportions and build as Blue-fauazis, i.e. chunkier than Salus. (The olivi-cyanca has yellow thighs like Pelliopterus, but otherwise seems quite different.)



Thraupis, Nov. 9, 1958, II

(30)

The olivaceo-cyanus has been quite active flying about its cage. Uttering single "Tsit" CN's, and doing WF's and TF's like the other Thraupis species.

The lanarinus has been very inactive, and I have seen it also do TF's and WF's of the same type.

Thraupis, I

December 9, 1958

Barro Colorado

Watching a pair of Blues on the edge of the clearing today. Quite possibly the same pair whose sexual behavior I watched in February. At least feeding & sitting in the same area. Their favorite sitting & preening spot, in a small Guayacan behind Kodak House, is exactly the same spot that was favored by the pair in February, for the same purposes (and also where the copulations occurred). Indicates considerable courtship. The behavior of these birds is also quite similar to that of the February pair — except that they aren't showing any sex! The ♂ seems to give WS's quite as frequently when he becomes separated from the ♀ which would indicate that the WS is not strictly a product of sexual motivation!

One thing I did notice today, when the two birds fly off together the ♂ often flies a little in front of the ♀. Then when he lands, he often gives a WS just as, or just after, he lands, even though the ♀ may be right behind him. I.E. he isn't "sure" she is following him.



Manaus, Dec. 9, 1958, II

(37)

The only thing I saw today which might have been even the slightest indication of activated reproductive mood was once when the ♂ flew to the branch on which the ♀ was sitting. He landed some distance away from her, and then rolled along the branch toward her in a slight stretch posture like the one of the Palm Tanager drawn on Jan 23, p. 12. Didn't lead to anything, as he soon relaxed.

December 14, 1958

Manaus, I

Iquitos

There are both Palm Tanagers and White-winged Blue Tanagers (= 1111) here in the rather scrubby wood growth around the outskirts of town. Both are behaving generally in the same way as they do in Manaus, but are apparently less gregarious. Some of the Palms may be nesting; but all the White-winged Blues I have seen look rather as if they might be entering into the first part of the breeding season. I have seen absolutely no evidence that the two species associate with one another, in spite of the fact that they occur in the same areas at the same time, even in the same trees at only slightly different times. I have also seen little or no indication of gregariousness within the species. I was seen 3 Palms in the same tree at the same time, and once 2 pairs of White-winged Blues in the same tree at the same time, but both groups soon broke up. They seem to have been entirely coincidental. In the relative lack of gregariousness, particularly the



Thraupis, Dec. 14, 1958, II

(38)

Lack of inter-specific gregariousness, due to the fact that there is no "nuclear" species like the Plain Tanager around in this area at this time. It may be significant that I have seen no real mixed flocks of any kind here.

As far as I can tell, all the calls, including WS, of the Palms here are identical with those back in Panama. The ♂'s certainly give "Whereet" or "Whereesoo" Notes (SN) to "call in" their mates, and they also give the WS in the usual circumstances, when they have become separated from their mates.

The White-winged Blues also give SN's and WS's in the same way and the same circumstances as the Panamanian race. The SN's are equally identical with those of the Panamanian birds, but the WS is definitely more distinctive. Also largely composed of doublets, at least in many cases, but it also usually contains a series of essentially monotonous single "Where" notes. Some of these are: "where where where where ..."

I think that these monotonous notes are particularly apt to occur toward the middle or end of WS phrases. I think that every WS I have heard has contained a series of at least 3 of these monotonous notes. I think that most WS's of these White-winged Blues usually contain more notes in general than the WS's of the Panamanian Blues.

Back looking at the same birds this afternoon. None of the same behavior, in building variety and with great rapidity.

The White-winged Blues have been very very active this afternoon. There are at least 4 birds here, and they have frequently occurred in the same trees together. But they are coming together almost



always lead to vigorous and presumably hostile aerial chasing. Most of these apparent disputes, surprisingly enough, are accompanied by quite a lot of SN's, by one or more of the birds involved. I also observed one apparent fight which was accompanied by WS's by one or both birds involved.

All these White-winged Blues, or at least all the ♂'s, have given lots & lots & lots of WS's this afternoon, in an apparent wide variety of circumstances. Sometimes one bird of the pair certainly gives WS when its mate is quite close by, within a few feet. One, for instance, a pair landed together on a branch, less than a foot apart, stood there a moment, then one bird gave a WS and flew off, and its mate followed a few seconds later.

I have also watched a pair of Galus which showed somewhat similar behavior. Pair sitting together on a branch. One pursuing the other, giving repeated WS's in a sleek pre-flight posture. Gradually the pursuing bird relaxed, and started to preen ~~the~~, gradually stopping the WS's. The pursuing bird apparently wanted to go some where or do something, but it is probably significant that it made no attempt to get closer to its mate during the time it was giving so many WS's so rapidly.

It is gradually becoming clearer and clearer that the WS's of these 2 species are not just provoked by thwarted pairing and/or sex drives. Apparently can be provoked by the acting of other types of motivation also - although I still don't know what other types. Apparently a general frustration reaction.

The SN's may be the same thing - at least in the case of the White-winged Blues. They often seem to be just low intensity



versions of what ever is causing the WS, uttered as a passing or general frustration. (I have also noticed that the monotonous "Whiceee" Notes in the WS of this form are quite similar to single SN or sn round.)

Some CN-like notes of this form which are either form of SN or very closely related to it, are more like "Whiceeah" than "Whiceeeet" or "Whiceeeoo". Quite nasal. Could this be significant in connection with the evolution of the peculiar nasal "Auh" CN's of some Rhamphocelus sp. ???

I have heard 2 Palms give HAC-type notes during an aerial dispute.

I have also seen both species assume a lot of "stutter" postures this afternoon. Some quite extreme. But I am becoming convinced that they are all pure, general, simple pu flight patterns, like the stutters of the Tangara tanagers. But it is also possible that they are ritualized as such.

The WS's of these White-winged Blues seem to be more like the WS's of the Palms than are those of the Panamanian Blues insofar as some (at least) of them seem to include one or more accelerated "jumbles" of notes.

I have now seen a dispute between 2 or 3 Palms perched on a branch. Accompanied by HAC. The HAC given from a rather wau-able & probably unritualized low-forward posture. I think

that the Palms utter the Blues (both although they do not seem to dispute more frequently



pu flight it is quite possible that HAC more frequently Panamanian & White-winged



Thruangis, Dec 14, 1958, V.

(41)

I think that the whole hostile behavior of both species may be comparatively reduced (or, at least, modified in a peculiar way) in addition to their display behavior itself. There has been an awful lot of chasing back & forth among both the Palms & White-winged Blues here this afternoon, but perhaps less than one might expect in view of the comparatively great frequency with which pairs of the same species come close together. And all this chasing seems to be remarkably ineffectual. The pursuer(s) usually break off before the pursuit goes very far, and the pursued(s) seldom seem to be properly stimulated.

Thruangis, I

January 15, 1959

Barro Colorado

Wild pairs have been continuing to visit my captive birds from time to time. Both Blues & Palms. I think that the 2 species are about equally likely to visit in this way.

All the visits are accompanied by bursts of WS, by either the captives and/or the visitors. Both species are about equally likely to give WS in these circumstances. But the captive Palm never sings when wild Blues are the visitors. Nor does the captive Blue sing when wild Palms visit.

One of the visits by a pair of wild Blues which was accompanied by lots of WS was also marked by a lot of fighting, through the net, between the captive bird & one of the visitors. A further indication that the WS may be correlated with hostility in some cases.

This is presumably the breeding season, and I am not now exactly how gregarious the 2 species are now. I have only seen groups of



Thraupis, Jan. 15, 1959, II

(48)

two or three birds of both species, but nothing more. It may also be significant that I have seen no cases of Blues associating with Palms, or vice versa, recently. Flocks of Palms are relatively very rare now, and it would seem that their absence has removed the "cement" which bound the other species together.

Thraupis, I

January 17, 1959

Barro Colorado

I got 2 more Blues in my net yesterday and put them in the cage with the other captive Blue and the Palm, Palm, & Golden-marked. One of the new birds is banded blue left, the other red left, apparently a mated pair.

When I first put the new birds in, they were very scared, and just shuddered in the bushes. Eventually they started to emerge, and then one of them apparently gave repeated calls of a distinctive type. Long series of short nasal notes "Wah wah wah waah waah waah waah....." Apparently low when the captive Palm came too close. Each syllable rather hoarse in quality, sounding like an H-b note of other species, but definitely shorter. This whole call is presumably homologous with a series of HAC notes of other species, but it relatively very well integrated. I shall call it WHAC. I think it must be hostile.

Later on, I caught another bird in the net. When I handled it, it also gave several long WHAC performances. (Eventually let it go.)

I think that the WHAC of this species must be the strict homolog of the "P" of the Palm Tanagers described above on Aug. 2, p 32 + 33. Doubtly just a little more rapid.



Thraupis, Jan. 17, 1958, II.

(43)

The WHAC patterns of both species are obviously very high in intensity indeed.

Thraupis, I

March 8, 1959  
Cerro Punta

Surprisingly enough, there are Blue Tanager birds here at Cerro Punta itself (6000 ft.). A pair, apparently, with 2 full-grown young. I don't remember seeing any Blue Tanagers up here last September when I was with Eisenmann.

The only thing I have noted about the behavior of these birds is that the song of the ♂ seems slightly peculiar. Has an introductory formless warbling but, very much like the song of the Pale Tanager, before he goes into the regular doublet-type WS of the Blues at BCI.

Thraupis, I

August 5, 1959  
San Antonio, ca. de Punta

~~XXXXXX~~ = bonariensis (see also notes of November 9, 1958, p. 35., for notes on capture specimen at Bronx Zoo.)

There are quite a lot of these birds around here. Some actually in the suburbs of Quito, others in the low scrub around the cliffs and hills near a stream here (Most of the area here is dry temperate, but along the stream there seems to be an infiltration of humid subtropical types.)

The general effect of these birds is quite finch-like in the field.



Thraupis, Aug. 5, 1959, II

(44)

I have seen one group of 4 or 5 of these birds, feeding via little groups by themselves in a grove of Eucalyptus. All the others have been scattered individuals or small groups, occurring in much the same areas as a large variety of chickadees, Yellow Greenlets, gold finches, finches, may flycatchers etc. As far as I can tell, the species is relatively very little gregarious. I am not sure that any of the groups I have seen are more than family groups. And I am fairly certain that there have been few (or no ???) non hostile social reactions between the bonariensis and the other species occurring in the same areas.

It may well be significant, therefore, that bonariensis seems to be remarkably stolid and silent for a Thraupis tanager. Moves about from limb to limb quite a bit, but rather less than most of the Palms & Blues I have seen. Its WF and TF patterns seem to be the same as those of the Palms & Blues in physical form, but comparatively rare and slight. All the bonariensis I have seen close up have been quite silent when perched, but I have heard flying birds utter at least 5 or 6 "ful" CN's (not very rapidly) in actual flight.

Thraupis, I

August 6, 1959

Ca de San Antonio

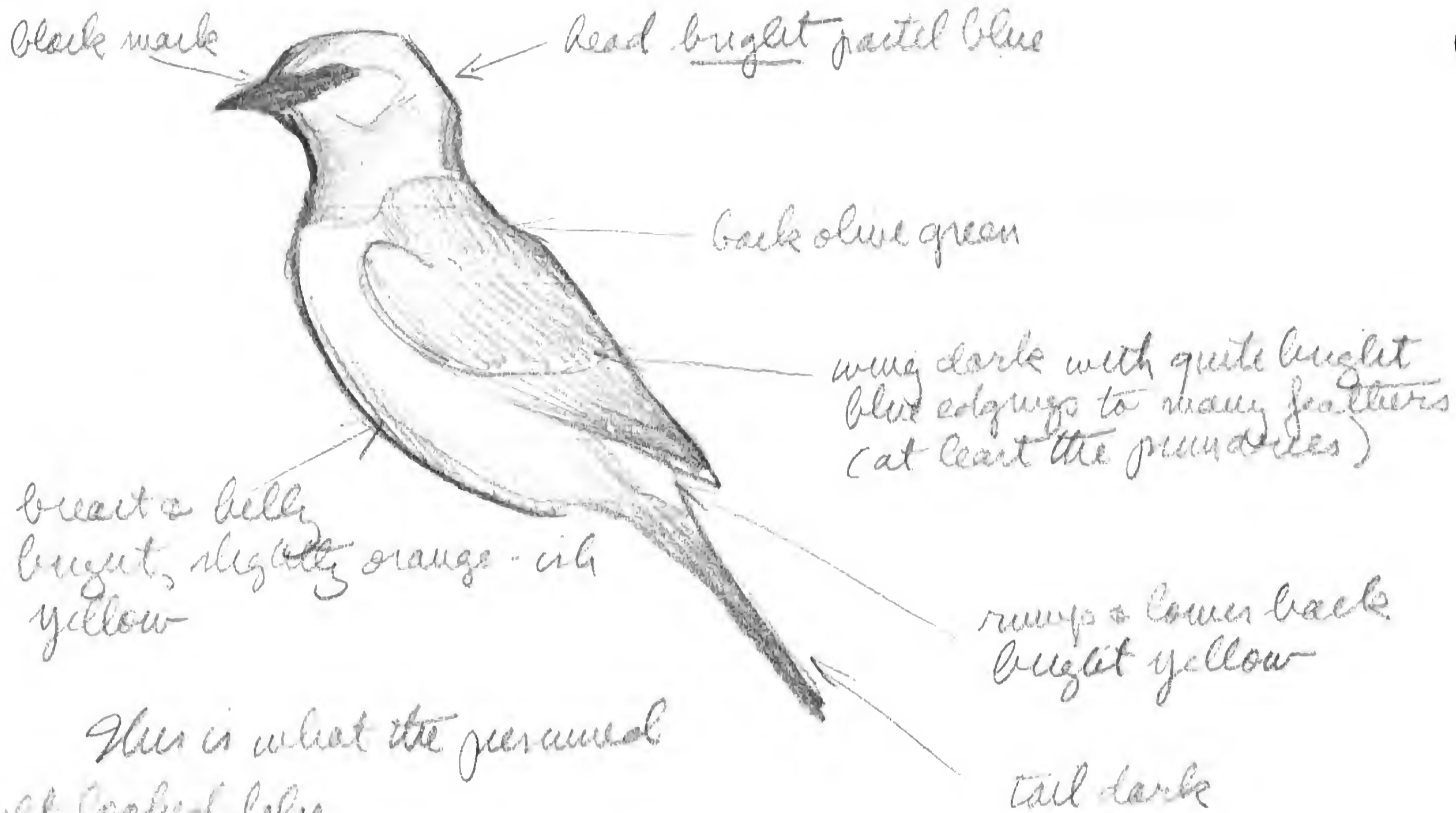
I am beginning to think that all the bonariensis I have seen until today were immature. At least, all the ones I saw here earlier, and the bird I saw in the New York Zoo were relatively dull in color, gray or blue gray and yellow (usually not very bright). But today I saw a group of 3 or 4 of these dull bonariensis-type birds associated with another, single, bird which was much more brightly colored but



Thanager, Aug 6, 1959, II

(45)

patterned in the same way as the dull-colored birds. I think that this brightly colored bird may have been an adult of the same species as the dull colored birds.



This is what the presumed adult looked like.

The dull-colored birds flew around from tree to tree with the brightly colored bird. In fact, they showed a definite tendency to follow the brightly colored bird.

Although I don't think these tanagers are specialized to play a role in mixed species flocks, it should be noted, incidentally, that a single Zonotrichia capensis followed this flock around, going wherever the tanagers went, for at least a half hour.

Once, when I disturbed the group of tanagers, they all flew up more or less together, into a nearby tree. The brightly colored bird then sang, in an apparently unmutualized diagonal sitting posture. The song itself was very reminiscent of the Palm Tanager. A very rapid phrase, which might conceivably be transcribed as "Dah dah dah wheeewee", repeated again & again (at least 4 or 5 times, possibly more) very rapidly. The



Thraupis, Aug. 6, 1959, III

(46)

dull opening & closing with the notes. Didn't seem to provoke any response of any sort.

Another time, I flushed the brightly colored bird and (I think) one of the dull-colored birds. They flew to a distant bush. During this flight, one or both birds uttered a most peculiar medley of loud sounds which I didn't really catch. I think that part, at least, of this vocalization consisted of a series of very loud "CN-like" notes ("Subatutakatakataka... ?? ??") followed by a loud rattle I haven't the faintest idea who really uttered these sounds!

I am rather baffled by this association between the brightly colored and the dull-colored birds. If the brightly colored bird really is the adult of the species, then it is quite remarkable that adults are so rare, and that most of the groups I have seen have been composed of juveniles only. If the brightly colored bird is another species, then it is remarkable that it has attacked still so closely to the dull-colored birds.

Thraupis, I

May 26, 1960  
Cerro de Pulvinilla

This afternoon, greatly to my surprise, we saw an apparently single ♂ olivi-cyanus in the area where I have studied many other species. Quite silent when flushed, but uttered a couple of "Treet" CN's in flight.

I shall mark this species ~~XXXX~~ (see also the notes on p. 35, on the behavior of a captured olivi-cyanus in the Bronx Zoo.)



Thraupis I

May 27, 1960  
Ca de Maqueto

We have seen a few more Darwin's Tanager around here from time to time. Also near San Antonio, where I saw them last year.

In both places, there has always been one "adult" in bright plumage associating with one or two "juveniles" in dull plumage

I can certainly confirm that this is a relatively sluggish & silent species. Doesn't behave at all like Blue and Palm Tanagers in the field. Near Maqueto, at least, it often feeds in low shrubbery, only a couple of feet from the ground.

At Maqueto we have also heard some most peculiar sounds, almost certainly uttered by Darwin's Tanagers. (It is actually very difficult to "track down" these sounds. The birds are so shy that we can not get close enough to them to be able to see their bills clearly. Still we have only heard these songs when we knew there were Darwin's Tanagers in the neighborhood.)

On May 25, late in the evening at Maqueto, we watched one "adult" Darwin's, sitting apparently by itself in an Eucalyptus tree, about 15 ft off the ground. We heard definite "Tills" and low "Growls" coming from the direction of this bird. The Tills sounded very much like the songs of D'Orbigny's Seed-eaters. The Growls were low and irregular, sounding almost mammalian. Usually, one Till was followed by one Growl or short burst of growling, in very regular alternation. (This was not always the case, however, as sometimes a Till might be repeated without intervening Growl, or a burst of growling might be repeated without intervening Till.) If this bird was really uttering

approximate transcription of the sounds







Thraupis, I

May 31, 1960  
Cerro Pichincha

We did most of our work today near Hono (see today's notes on Diglossopus). This evening we watched a pair of olive-cyaneras moving along the vegetation of the ravine of the river. Usually sitting near the top of moderately small trees. Apparently feeding. (We also saw a single bird of this species, from a great distance, sitting near the top of a tall Eucalyptus, the day before yesterday.) This must be the area from which came the bird we saw 1000 ft higher up on May 26. It would appear to be the normal habitat of the species.

As far as we can tell, this species seems to be completely non-gregarious. Shows no tendency to associate with other species. This is interesting, in view of the fact that its plumage is comparatively bright and boldly patterned - brighter than that of the Palm Tanager, and more boldly marked than that of the Blue Tanager.

Thraupis, I

June 2, 1960  
Cerro Pichincha

Working near Hono again today.

This morning, rather late, around 9:15 a.m., I watched a pair of olive-cyaneras for quite a long time. Feeding methodically, as usual. Long periods of sitting quite sluggishly, only moving the head from side to side (looking for insects?), between active feeding trips through the shrubbery (once, at least, I saw a bird eat berries).

When the birds were sitting quietly between active feeding trips they usually made no flicking movements of any kind. But one bird



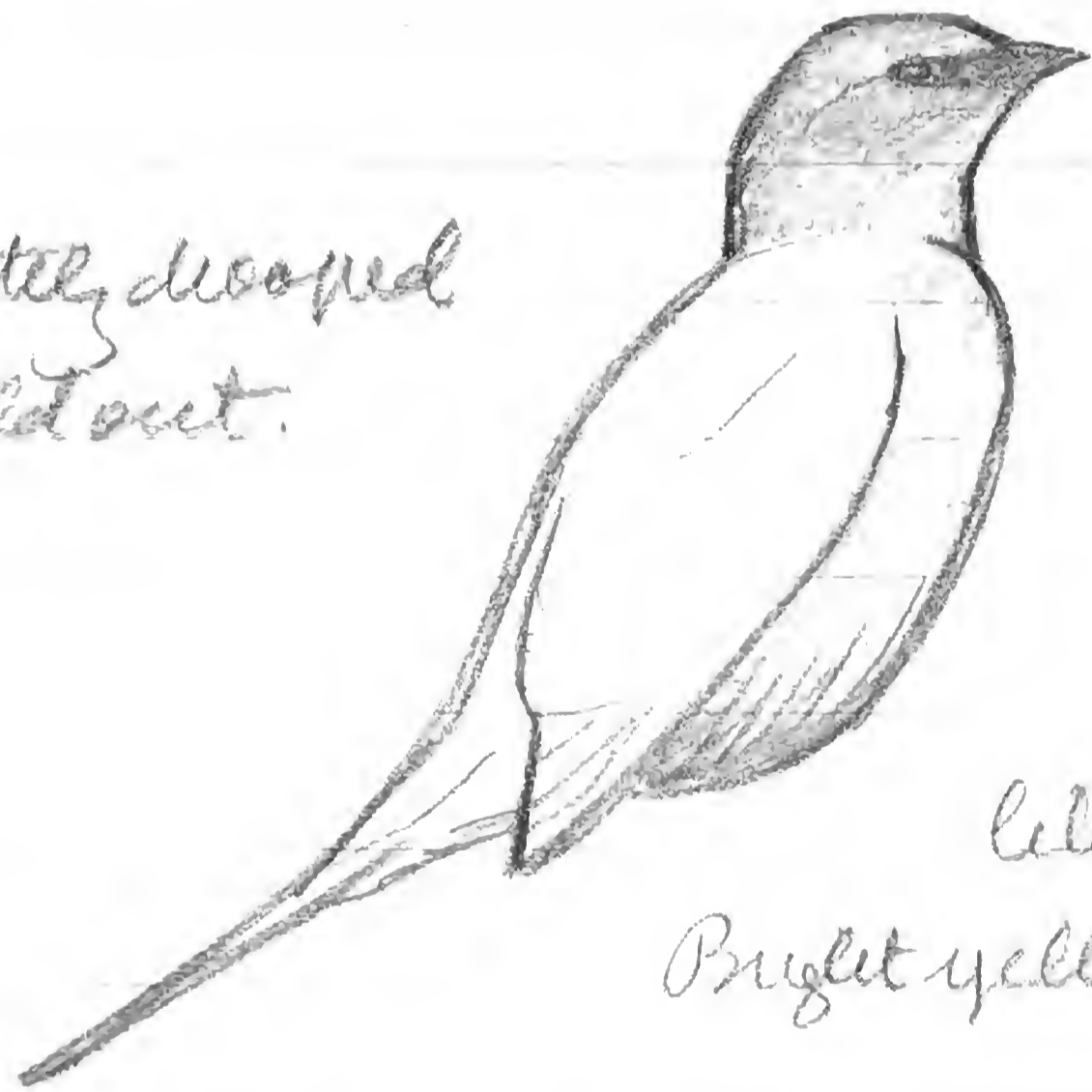
Thraupis, Jun 2, 1960, II

(50)

started to utter single, rather hoarse, "Insect" CN's, and made a few slight, definitely D-V, TF's, without the slightest lateral component, just before flying. (It may be significant, in connection, with the D-V direction of these TF's, that the bird was sitting very erect, like a flycatcher, when it performed these movements.) I have yet to see a bird of this species perform WF's of any sort.

Several times, when one bird of this pair was more or less widely separated from its partner, I thought that the bird uttered rather soft Palm Tanager-like songs (which are also not very different from the songs of the small black flycatcher). (The loudness of the songs was somewhat difficult to judge, as the noise was very noisy in the background, but they were certainly not "whisper" songs.) If the bird did utter these songs (as I am almost certain it did), it kept its bill closed or almost closed throughout all or most of every song phrase. It was sitting in the following posture at the time:

Wings definitely drooped but not held out.



Blue areas indicated gray. Head (except throat) is a much deeper and richer blue than the breast and belly.

Under tail coverts yellow olive like back wings, & tail.

Bright yellow thighs not visible.

This species is quite like bovarius in body proportions. More like the Blue Tanager than the Palm Tanagers.

It is possible that this species also has another, very different type of "song".



Thompson, June 2, 1960, III

(51)

Yesterday afternoon and this morning I heard some distinctive sounds when I was looking at the pair of olive-cyanas. Series of rapid notes, almost, but not quite, rattles. Might be transcribed as:

"Duhaduhdulu Duhaduhdulu Duhaduhdulu . . . ." or

"Duh-du-dulu Duh-du-dulu . . . ."

Unfortunately, there were some Blue and Red Tanager in the neighborhood each time I heard these sounds, and these sounds are not unlike some S and/or SS patterns of the Blue and Reds. But these sounds did not have the nasal quality of the "Ja-auh Ja-auh . . ." Notes of the Blue and Reds, and were not nearly as sharp as the notes of the "Tuh" SS of the Blue and Reds.

Yesterday afternoon and very early this morning I thought that the olive-cyanas might possibly be associating with the Blue and Reds, but when I watched the pair of olive-cyanas later in the morning (and this evening - see below) they were certainly not associating.

I only watched the pair of olive-cyanas very briefly this evening. Being very silent & inconspicuous as usual. But I did hear them utter a few "Treet" CN's; and one bird performed a few D-V TF's (with out WF's).

This morning, much to my surprise, I saw an apparently single Darwin's Tanager, feeding in the same bushes, along the ravine that the olive-cyanas usually visit. This may be slightly higher than I have ever seen a Darwin's before. It is certainly much more humid. This bird did nothing of interest. It was in "adult" plumage.



Thraupis, I

March 17, 1961

Barro Colorado

I have been out looking at tanagers for the first time in a long time yesterday and today. Paying particular attention to Palm Tanagers and Blue Tanagers. One pair of Blues is building a nest in the Guayacan just outside my house. One pair of Palms is building a nest in the Palm outside my house. Another pair of Blues in the neighborhood has one young, apparently just out of the nest. There were probably a few other Blue and Palm nested around the clearing.

All the Blues and Palms are singing quite vigorously and frequently now. In general, my observations of the WS's of both species yesterday and today seem to confirm my previous impressions and interpretations of the WS patterns. Obviously frustration patterns. Usually provoked by the entry of some mating drive(s). Sometimes hostile.

The songs of the ♂ Blue of the pair building the nest have been fairly uniform and consistent. Usually beginning with 3 doublets: "Hweetaa hweetaa hweetaa" Usually followed by 1 or 2 SN's, and/or a 3 or 4 note warbling "flee-uh" Sometimes the SN's before the fleewah, sometimes the fleewah before the SN's. Each SN might be transcribed by something like "Hweetaa". The Blues seem to have been uttering many more, and louder, SN's than the Palms around here during the last two days.

One Blue attacked and chased a Summer Tanager which had attacked its young. The Blue uttered several WS during the chase.

All the SN's uttered by the Blues yesterday and today seem to have been uttered by ♂'s, attempting to call in their mates. I am now fairly certain that the SN's, of this species at least, are purely mating p



I am rather puzzled by the "CN" patterns of both Palms and Blues. (The only thing I am sure of is that the SN's of both species have nothing to do with their "real" CN's.)

The Blues have frequently uttered 1, 2, or 3 harsh, hoarse, rather nasal "chank" notes. Usually uttered by one bird landing near its mate, or landing near a bird of another species. Occasionally uttered by one bird landing more or less by itself (perhaps when it expects to find another bird nearby?). These notes sound rather like HAC and WHAC notes. Probably related to HAC and WHAC. Perhaps intermediate between "ordinary" CN's (but see below) and the HAC-WHAC patterns. Quite probably contain a hostile component.

The sound of these notes, and the fact that they are frequently uttered by one bird landing beside another, is very reminiscent of the CHAC of Green-backed Sparrows and Saltators (and the MEN of Sangre de Toros). It should be noted, however, that I have never heard both birds of a pair of Blues utter such "chank" notes when one landed beside the other. Always uttered by the landing bird, not the bird being landed beside. (This may, conceivably, be due to carelessness of observation on my part. I shall have to watch the birds a good deal more before I can be sure that these "chank" notes are never used in mutual greeting.)

Surprisingly enough, I have not consciously noted any ordinary "Whit" CN's (or FCN's) by the Blues during yesterday or today. Why? (This must be checked very carefully.)

The Palms I have watched yesterday and today have uttered slightly hoarse "Whit" notes, singly, or in doublets, or in triplets, in more or less the same circumstances that the Blues have uttered "chank" notes. These may well be homologous with the "chank"s of the Blues, produced by the same motivation and serving the same function(s). The ques-



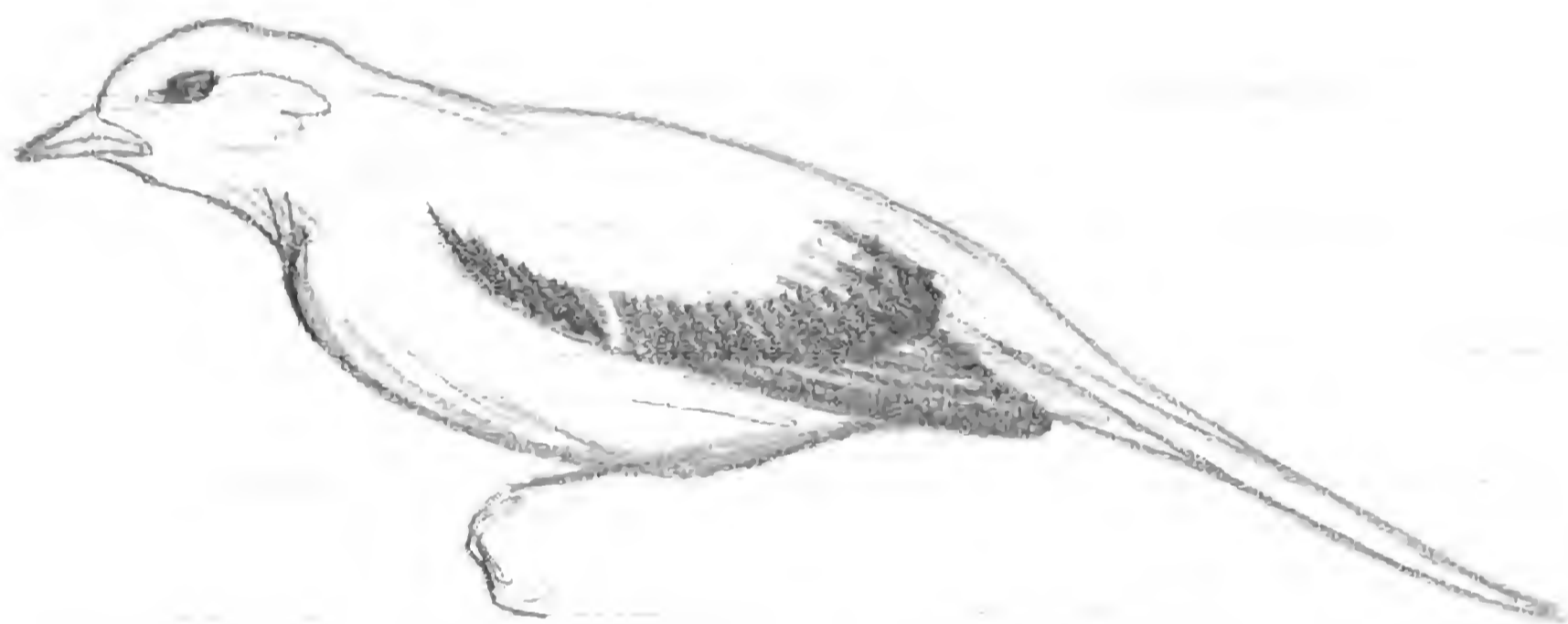
Monkeys, Mar. 19, 1961, III

(54)

tion is: "Are these series of 'Whit' notes the same thing as some or all of the patterns I called 'CN' and 'FN' before"?

I haven't heard anything by either the Blues or the Palms yesterday or today, which seemed to be a special alarm pattern.

Early this morning I saw one Palm feed another, presumably its mate (certainly not a juvenile). I saw a similar incident at Injoll a few days ago. No sounds or ritualized postures or movements by any of the birds during either incident. But the bird that received the food this morning was in a rather low posture before hand. Comme ça:



The ♂ and ♀ of one obviously mated pair of Palms today did a little "responsive" singing. First one bird would utter a WS phrase, then the other, then the first again, then the other again, etc. As far as I could tell, the WS's of the ♂ and ♀ were identical.

The parents of the young Blue quit out of the nest fed it very frequently.

Begging posture with ♀ and trace of St (?)



The young bird usually begged whenever a parent came near. This begging was remarkably simple and unritualized-looking.

Half the time the young bird did nothing but open its mouth. Sometimes it also ♀'d a little. Wings held out, but not drooped very much. Once it lifted its be



Manus, Mar. 19, 1961, IV.

(53)

and in what may have been an *st* (see drawing). I presume that the young bird must have been uttering some call when its bill was open during begging; but the call must have been very soft. I never heard it distinctly. Only once, when the young bird was only 10 feet away from me, did I think I heard it at all. At that time, it appeared to consist of doublets!! "Tut-tut tut-tut tut-tut...." Quite Plain-colored Saverger-like. (It is hardly possible that these doublets were being uttered by some bird other than the young Blue - but I doubt it.)

I forgot to mention that both the pairs of Plain Savagers in which one bird fed the other were almost certainly not incubating yet.

Both Palms and Blues tend to keep their bills wide open throughout their WS's. The mandibles probably move a little in rhythm with the notes, but this is seldom or never conspicuous.

I went out to watch the birds again around 3:00 p.m. Concentrated on Palms.

Several times, I heard one bird of a pair utter "Whit" notes when the pair flew off more or less together. Once, at least, uttered by the bird which flew slightly behind its mate. Sometimes only 2 or 3 notes uttered. Once at least 5 or 6 notes were uttered.

I am now fairly certain that some of these "Whit"s are what I called "FCN" earlier, and possibly what I called "CN." I still think that they all probably contain a hostile component.

Every once in a while, a Plain will utter "Whit"s that are much harsher than usual. Almost as harsh and harsh as the "chank" notes of Blues. These notes are uttered in much the same circumstances as the less harsh "Whit"s, but they probably contain a stronger hostile component than the latter. I think that the most harsh and least harsh "Whit"s intergrade almost or almost not completely. (and the most harsh "Whit"s may not



Thraupis, Mar. 19, 1961, I

(56)

engrade completely with the HAC - WHAC patterns).

I think that the complete list of vocal patterns I have heard uttered by adult Palms might be summarized as follows:

1. Less harsh "CN"s and "FCN"s. (These might all be called "CN".) Probably only slightly hostile
  2. Harsh "FCN"s. (These might be called "HN"s). Somewhat more strongly hostile
  3. HAC - WHAC. Very strongly hostile
  4. SN. Not usually, perhaps never, hostile. Usually or always pairing or mating.
  5. WS. General frustration. Usually pairing or mating. Sometimes hostile.
  6. "Jill"? A possibly distinct pattern sometimes incorporated into WS's. Presumably hostile
- (1, 2, & 3 intergrade. Either 4 and/or 6 may be linked with 5, without intergradation.)

The vocal patterns of adult Blues might be arranged in a very similar way (although Blues seem to lack the "Jill" pattern).

(I forgot to mention that I saw one Palm chase another round and round a tree top yesterday. Almost certainly hostile. One or both of the birds uttered many HN's during all or most of the chase.)

I saw what appeared to be a less boundary dispute between two pairs of Palms just before sunset this evening.

Both pairs in the top of a large tall absolutely bare tree most of the time. Every once in a while one bird would fly from one branch to another, toward or away from one or both birds of the other pair, but this never developed into anything like a real "pendulum" or "see-saw" performance. There were no actual contacts or supplanting attacks



s during this performance. Whenever our bird advanced toward a bird of the other pair, the latter retreated. The hostile nature of this encounter was revealed by other aspects. At least 2 of the birds, 1 bird of each pair, and possibly all 4 birds, did lots and lots of singing uttering WS after WS. The birds uttered these WS's even when standing right beside their own mates.

Interestingly enough, none of the WS's uttered during this encounter included full components. Nor did any of the birds utter HW's, or HAC's, or WHAC's. This might suggest that the whole encounter was low intensity. Or perhaps none of the birds was very aggressive. The encounter certainly lasted for over 15 minutes.

I think that this encounter may have been quite typical of territorial boundary disputes among Palms. The fact that the birds did so little that was conspicuous or distinctive may help to explain why I have tended to overlook such disputes.

All 4 Palm Tanager performed a number of peculiar activities during this encounter which may have been "displacement". Frequently raised both wings above back, keeping carpal flexed, and then stretched one wing sideways and downward. Sometimes it was the wing toward the opponent that was stretched, sometimes it was the wing away from the opponent. This raising and stretching looked very much like a comfort pattern, but it was remarkably common during the encounter this afternoon. I have also seen such raising and stretching in other situations when I thought it might not be an ordinary comfort pattern. Perhaps it is a preliminary or intention movement of flight? The birds this evening also performed a number of other patterns which looked like comfort activities, including general ruffle and shakes, and scratching, and these patterns were relatively much rarer. Sometimes associated with raising and stretching of the wings and sometimes not. Then other comfort activities were



Thraupis, Mar. 17, 1961, VII

(58)

ing have been pure "autochthonous".

The birds this evening also frequently beat down in a peculiar sort of bowing. Lowered head & neck way down, and appeared to look under the branches on which they were perching. Very much as if they were looking for insects on the under side of the branches. Usually single movements. Not repeated like Bowing of domestic honeycreepers. These bowing movements may have been incooperative and/or ritualized intention movements of BW. Usually, but not always performed by a bird flying above its opponent(s).

Thraupis, I.

March 23, 1961

Barro Colorado

The pair of Blues building a nest in the Guayacan near my house seems to be continuing to behave as before. As far as I can tell, all the actual building is done by one bird of the pair, presumably the ♀. But the other bird, presumably the ♂, usually accompanies the ♀ whenever she brings m.m. to the nest. Sets on a nearby perch while the ♀ works. Usually utters lots of SN's and WS's while perched in such circumstances. Usually SN-WS, SN-WS, SN-WS, etc. etc.

Several times, when the birds of this pair have flown more or less together, the bird flying right behind its mate has uttered 2 or 3 "Whit" notes just after taking off. Presumably ordinary CN's or "FCN"s.

This evening I saw what appeared to be another prolonged boundary dispute among the Palm Tanagers. Involving 4 birds. Probably the same 4 birds involved in the dispute described ab



Chlorophanes, Mar. 23, 1961, II

(59)

ove on March 19, but the dispute this evening occurred in a different area.

The birds flew and hopped excitedly back and forth, in a generally irregular manner. Very rapid. Accompanied by lots and lots of WS's, a few SN's and "Whit" CN's (some of them barely others not). During most of this encounter, there were no special ritualized postures or movements, and no "displacement" reactions!

All the WS's uttered during this encounter appeared to be exactly the same, in sound, as the WS's uttered by a bird separated from its mate. No Jll's.

Only once, when 2 birds came particularly close together, did one of the birds assume what looked like an St Posture. Long and slim and erect. Accompanied by a very brief and faint trace of Q. This performance may also have been accompanied by a soft "muffled" WS.



St. Posture.

I am almost certain that the birds involved in this St. reaction were opponents. In any case, they separated without doing anything more.

This whole performance this evening ended in a prolonged back down and drag out fight. Involving one Palm, and, surprisingly enough, one Blue. (Where the Blue came from, I don't know). The



Thraupis, Mar. 23, 1961, III.

(60)

2 birds tumbled all over one another for almost a full minute. The other 3 Palms hopped all around the combatants in a very excited manner. All the Palms uttered many ordinary - sounding WS's during the fight and (probably) "Whit - HAC"s (ordinary "Whit"s, very harsh "Whit"s, and possibly some real "HAC"). The Blue Tanager uttered a lot of very harsh "Chauh" notes and possibly some real HAC during the fight. The fight ended when the Blue flew away. The Blue uttered a WS as soon as it landed after the fight.

It is my impression that the WS's of the Palms are relatively more frequently hostile than are those of the Blues, while the WS's of the Blues are relatively more frequently produced by thwarted pairing drive(s) than are those of the Palms; but this impression may be misleading.

Thraupis, I

March 25, 1961

Barro Colorado

Both the pair of Blues and the pair of Palms near my house seem to have stopped building - presumably temporarily.

I have noticed that the crown plumage is usually, or always, sleeked down during the WS's of Palms - at least during boundary disputes.

Typical WS

Posture of Palms →





Thraupis, Mar. 25, 1961, II.

(61)

Yesterday, a male tried to get at the young of a pair of Sangre de Toros, and the parents raised an unholy racket. This attracted a lot of other birds to the scene, including a pair of Palms. The Palms seemed to be quite excited, hopping & flying about rapidly, but they remained quite silent.

Thraupis, I.

March 27, 1961

Barro Colorado

Early this morning, I saw a solitary Palm sitting on a bare branch at the top of a tall tree. Unusual posture. Uttering SN after SN after SN, at rather regular intervals. No WS's. So perhaps "call notes" are beginning to replace "song" in this species also.

Somewhat later, I watched another pair feeding quietly in a breadfruit tree. Suddenly, one of the birds flew away. The other bird immediately uttered a typical WS. This is perhaps the clearest example of a WS produced by thwarted "pairing drive" I have seen in the Palms.

Thraupis, I.

March 28, 1961

Jaydes and Barro Colorado

I watched some Palms near the RR station this morning.

One case of sexual feeding. Presumably the ♂ feeding the ♀. (I know both the birds involved were adults. It is also obvious that they do not have eggs or young yet. They do, however, seem to have a nest in a Coconut Palm. I shall call this pair "A.") The ♂ flew to the ♀ and landed beside her. Uttered "Tawhit whit whit" as he landed. The ♀ took the food, and then flew away immediately. As soon as she left, the ♂ utt



Thraupis, Mar. 28, 1961, II.

(62)

end WS.

I think that "Ja whit whit whist" is the most common avian event and number of "Whit" notes uttered by one Palm landing near another (or, at least, a Palm landing near its mate). Very reminiscent of the GHAC's of saltators and Gray-backed Sparrows — and I think I shall call it by the more naive

The SN's of Palm Tanagers seem to be longer, on the average, and usually or always more plaintive sounding than the SN's of Blues. The usual SN's of Palms might be transcribed as "Jseeee-eeeee", while

the usual SN's of Blues might be transcribed as "Jseeee-eee" or "Jsee-eeet"

Thus both the SN's and GHAC of Blues tend to be harsher or harder sounding than the corresponding calls of Palms.

One isolated Palm Tanager near Frijoles this morning uttered a long series of SN's and WS's in regular alternation, comme ça: SN-WS SN-WS SN-WS SN-WS etc etc etc. Reminiscent of some vocal performances of Blues (see notes March 23, 1961, p. 58).

I saw a boundary dispute involving 4 Palms on the island around noon today. Probably the same 4 birds that were involved in the dispute described above on March 19, 1961. The behavior of the birds was much the same as during the March 17 dispute. One bird lifted its wings, and then stretched one wing sideways, in an apparent "displacement" reaction.



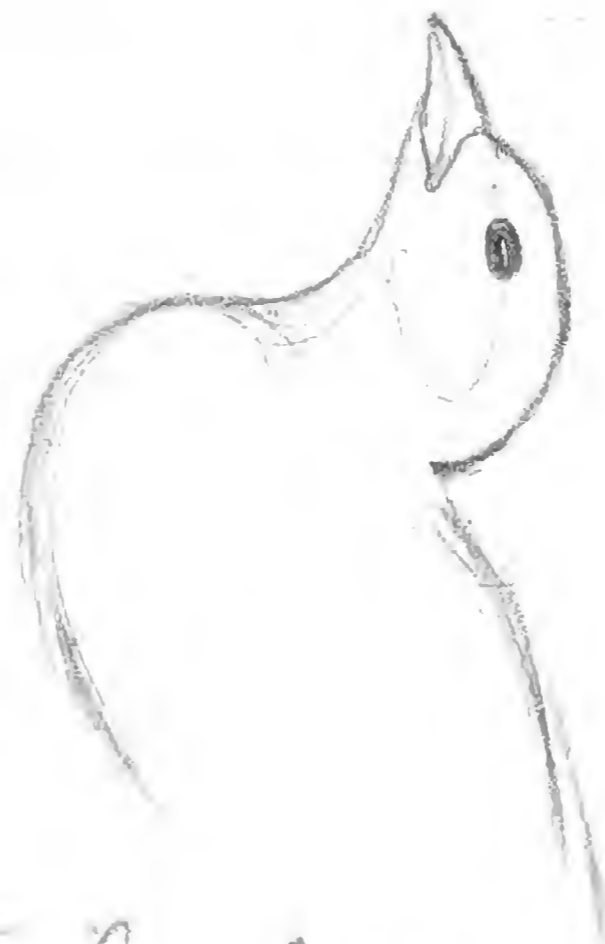
Thraupis, I

March 29, 1961  
Barro Colorado

A single Blue perched by itself 6:13 a.m. Giving song performances as follows: 1 or 2 "chauh" notes - WS - SN . . . . .  
1 or 2 "chauh" notes - WS - SN . . . . . etc. etc. (This may not be common.)

Later this morning, 4 birds flew back and forth and around and around, in a Cecropia tree. Apparently a dispute. Very much like boundary disputes I have seen before. Once, during this incident, one bird assumed a much more extreme St. Posture than I have ever seen before. Comme ça:

Unfortunately, I was looking at the bird from such an angle that I could not really tell how the wings and tail were held



I think that the bird uttered a clear, soft, moderately short whistle note in this posture. Rather like an SN, but softer.

The St patterns of this species might be described as frequently very extreme and exaggerated in form, but apparently not ritualized in form.

Thraupis, I

March 31, 1961  
Frijoles and BCI

Watched a pair of Palms near Frijoles early yesterday morning  
This pair seems to have a nest in a Coconut Palm



Thraupis, Mar. 31, 1961, I.

(64)

One bird of this pair, presumably the ♂, frequently uttered WS's when a few yards away from the other bird, as long as the latter remained visible. Then usually stopped if the latter disappeared from sight (presumably going to the nest, in most cases).

One bird of this pair once uttered a WS as "greeting" just after landing beside its mate.

This morning I saw some interesting behavior among the Palms around the clearing here.

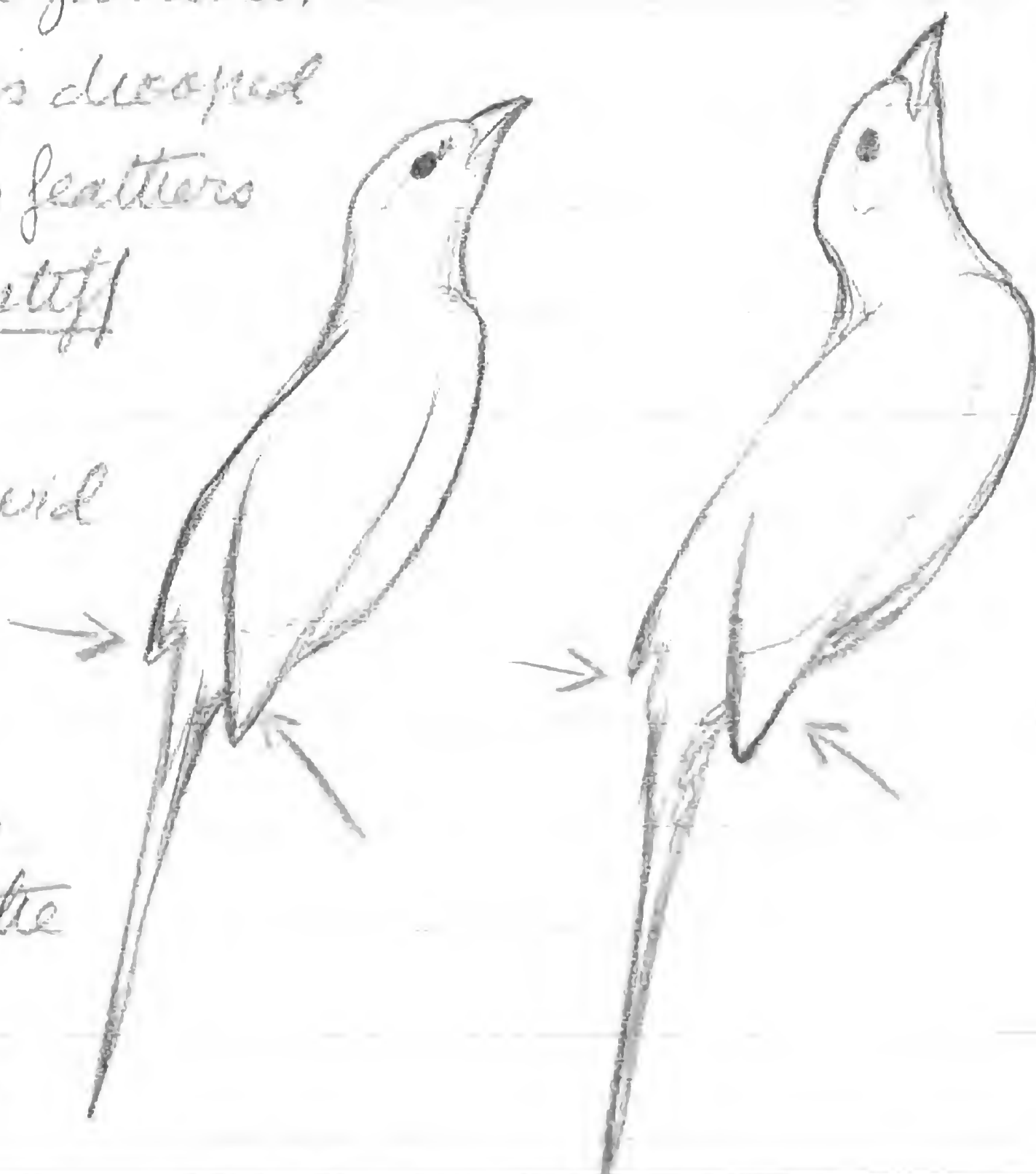
One pair flew excitedly from tree to tree. Uttering lots of WS's and "Ja what what what" GAC notes. Then, just after the ♂ landed beside the ♀ in a Cecropia tree, the ♀ went into a slight unritualized-looking crouch posture, and the ♂ fed her. The ♀ lifted her head to receive the food, while she remained uncrouching, but this didn't look ritualized either. The ♂ uttered a WS almost immediately after this feeding.

Then a third bird appeared. One of the birds of the pair immediately went into a distinctive posture.

A very erect St, with wings drooped but not spread, and rump feathers just slightly raised. Very stiff and rigid looking.

In this posture, the bird uttered many soft WS's. Just barely audible about 30-40 feet away.

At the same time, the bird hopped sideways down the branch toward





the newcomer remained in the erect ft Posture as it did so, and continued to utter soft WS's. During this happening, the ft Posture varied a little. The two extremes of this variation are shown in the preceding page. (The posture drawn on March 29, 1961, p. 63, was presumably an even more exaggerated version of an erect ft Posture.) Finally, the third bird flew away and the displaying bird relaxed.

This is by far the most elaborate hostile display I have ever seen performed by Palms. The erect stretch Posture is obviously highly ritualized in form. Presumably threat.

I am beginning to think that all the WS's of Palms (and presumably Blues too) may contain a hostile component. If so, all my discussion of WS's in pairing situations (consummatory situations, etc.) is superfluous.

Earlier this morning, just before dawn, I watched a single Palm flying from tree to tree. In each tree, it would perch for a few seconds, in a high exposed position, and utter a number of SN's. These SN's were slightly variable. Sometimes "Whree-eeet". At other times, more like "Whree-ooo".

Sometimes, but not usually, these 2 types of SN's were alternated regularly, first a note of one type, then a note of the other type, then a note of the first type again. Reminiscent of some song patterns of *Sayornis* *de Jous* and *saltator*. But usually the 2 types of SN's were uttered in an apparently random order.

It is obvious, I think, that the SN's of the Palms (and presumably the Blues too) are the "real" song of the species, insofar as they are the patterns used to attract a (or rather, the) mate. It is interesting, therefore, that the SN's are so much simpler than the WS's.



Thraupis, I.

April 1, 1961  
Barro Colorado

I watched a group of 4 Blues this morning. Apparently all adults. Hopping about in a bare tree. One bird repeatedly assumed an St. when another bird came close to it. It assumed these St's very slowly, looking very "stiff" and "ceremonial." Obviously ritualized. I think that another bird of the group also assumed similar St's, in the same way, a few minutes later, again when it was approached by an other bird.

All these St's were common.

Head & neck nearly vertical.  
Body nearly horizontal.  
Wings not drooped



Neck perhaps sometimes a little longer

All these St's were quite silent.

I am beginning to think that the Blues do not have the very rare type of St which is the typical St. of the Palms.

I think this encounter between the 4 Blues this morning was hostile. It may have been a boundary dispute.

The whole encounter was quite silent — except for 3, rather soft, and more or less incomplete WS's. These WS's were not accompanied by any special ritualized postures or movements.

Perhaps the WS's of this species are less hostile than those of Palms? Or perhaps not hostile at all ????

Later this morning, I watched an apparently single Blue utter



Thraupis, Apr. 1, 1961, II

(67)

a lot of WS's. They all began with the usual doublets, and then continued (without pause) into a formless twittering warble, and then ended with a SN. I think that quite a lot of the WS's of this species include the formless twittering warble. Such phrases may be typical of "complete" WS performances.

I watched the ♂ of one pair of Palms feed the ♀ twice this morning (about 1/2 hour apart). There was no display of any kind, either bird before, during, or after these feedings. No special postures of any kind.

Thraupis, I

April 4, 1961

Barro Colorado

Early this morning, I saw a single Blue, at least several yards distance from any other bird, assume an extreme St. Posture just before flying up. This St. itself was exactly like the posture drawn on the preceding page. But the bird went into the posture very rapidly. Did not look at all stiff or ceremonial. Quite silent. This St. Posture this morning looked very much like an unritualized intention movement of flight. But it probably was at least partly ritualized in one way or another. If not, then the stiff and ceremonial St's observed on April 1 must have been peculiarly strongly inhibited intention movements of flight.

Thraupis, I

April 15, 1961

Cerro Punta

I watched some Blues getting ready to go to bed in some large trees near El Volcan this evening.



Manupis, Apr. 13, 1961, I

(68)

One of the birds uttered WS's repeatedly (in the usual circumstances). These WS's included rather more "formless warbling" than the usual WS's of Blues in central Panama. Little bits of warbling, inserted apparently at random among the usual doublets. Quite variable.

The songs of Blues I have heard at Cero Punta truly during the last few days were more or less similar to those of the bird at El Volcan this evening.

The songs of the Blues here might be considered to be intermediate between those of the Blues of central Panama and those of Palms.

As far as I can tell (by very brief observation), the rest of the behavior of the Blues here is the same as that of the birds of central Panama (I have heard them utter SN's and "cha-cha" Notes, and perform silent H's).

There was also one Palm sitting high in a tree by itself near El Volcan this evening. It uttered some peculiar "songs", while sitting in an apparently unritualized posture. More or less comme ça: "m<sup>2</sup>m<sup>2</sup> - trawee" or "m<sup>2</sup> - trawee-trawee-tree". These "songs" must have been partly twittering WS and partly SN. Reminiscent of some Cuckoo-finches and Cuckoo-tanagers!

Manupis, I

May 21, 1961  
Ca de Maqueto

This afternoon I caught a brief glimpse of some Couacouacou here, in the same place that I saw the birds last year.

When I first saw the birds this afternoon, there were two of them, one bright colored and one dull colored. Yesterday afternoon I also saw a Couacouacou together, near Hono Agam one bright



Thraupis, May 21, 1961, II,

(47)

and one dull. I am beginning to think that such twosomes must be mated pairs. Are the dull birds female?

I was first attracted to the pair this afternoon because one or both uttered 2 or 3 "Isawee" Notes, more or less like the notes I heard last year. Apparently while the 2 birds were together. Then the bright bird flew away. A few seconds later, the dull bird also flew, in a different direction. It uttered 4 "Isawee" Notes, one right after another, as it flew.

I wonder if these notes are homologous with the similar notes of Dalmanas and Yellow-thighed Titchies (as well as the "Ja-ah" Notes of Fire-bellies) ???

Thraupis, I

May 22, 1961  
Ca de Maqueto

Working in the same place again this morning.

Several times this morning, beginning shortly after dawn, I saw a bright bonariensis sitting all by itself, high in a tree, rather exposed. Each time, it uttered notes which were obviously related to, and sometimes identical with, the "Isawee" Notes I have heard before.

The first time it uttered "Treet treet treet" at least 4 or 3 times. Nothing else. Then flew away.

The second time, it uttered 4-note series "Treet treet treet treet", 2 or 3 times. Nothing else. Then flew away.

The third time, the bird uttered lots of 4-note calls. Sometimes "Treet treet . . ." Sometimes "Isawee tawee . . ." It was obvious that these two types intergraded completely.



Monarchia, May 22, 1961, II.

(70)

(I shall call both types of notes "TW", like the similar notes of Subura.)

Some of the TW's uttered by the bright bird this time were associated with other calls. Once the bird uttered 4 TW Notes, followed immediately by a twittering or warbling phrase (which I shall call "Twitter"), which "tailed off" into a real R! Once the bird uttered a peculiar medley of TW Notes and Twittering Notes, all jumbled together. Again, the bird flew away silently, after uttering the calls.

The few times I saw a bright bird uttering by itself, it uttered many 4 and 5 note series of "Za-waa" Notes. These were uttered in the same rhythm as ordinary TW Notes, and I think that they were nothing more than aberrant TW Notes. Again, the bird flew away silently after a while.

I think that it was the same bird uttering all these calls.

They were all uttered while the bird was sitting in a rather erect, apparently unritualized, sitting posture. Usually looking sharply from side to side in a quite regular "automatic" way.

I think the bill opened & closed in rhythm with the TW and Twittering Notes, but I am not sure about the R.

During almost all the series of TW Notes, the last notes of each (3, 4, or 5 note) series were slightly louder than the first. Most of the TW Notes were fairly long. Not repeated very rapidly in any single series. Usually long pauses between series. All the TW Notes were loud.

The Twittering Notes were also rather loud (although probably not usually quite as loud as the TW's). The Twittering phrases, as a whole, were very reminiscent of the WS's of Palm Saver.



Stranpos, May 22, 1961, III

(71)

s., except that the individual notes were perhaps more distinct. The individual notes of these Twitters were certainly more distinct than the individual notes of many Twitters of Yellow-thighed Ticks.

Later in the morning, I saw two bonarienses, 1 bright and 1 dull, fly out of a bush together. Flew together for some yards. During this time both birds uttered Twitter - R. Calls of both birds apparently identical with the corresponding calls of the single bright birds. (The bright bird of this pair may have been the same as the one I heard calling by itself.) Then the 2 birds separated, and flew silently in different directions, landing at different sites.

At one time this morning, I saw a group of at least 4 dull moving and apparently feeding together, in a hedge and then high in some Eucalyptus. The group was accompanied by 1 bright for a few minutes, but it soon separated from the group.

The dulls of this species do seem to be moderately gregarious among themselves.

While the 4 dulls were together in the Eucalyptus, I heard quite a lot of TW & other calls from them, without, unfortunately, being able to see the calling birds. Several calls of 3 and 4 "Isaw-eet" TW Notes. Also several calls of 2 and 3 "Isaw-eet"s followed by Twitters (just like the corresponding notes of the bright). Also 1 call of 2 "Isaw-eet" TW Notes, followed by Twitter, followed by R (again just like that of the bright). This latter call was more or less comme ça:

✓ ✓ W r o o r m m m



Thraupis, May 22, 1961, IV

(72)

Some aspects of the calls of this species would seem to be clear now.

The TW Notes are probably largely or completely homologous with the SN's of Blue and Palm.

The Twitter is probably largely or completely homologous with the WS of Blue and (especially) Palm.

The circumstances in which these calls are uttered would suggest that the TW's are non-hostile, used to "call in" a mate and/or other sexual companions, and that the Twitter and R may be partly hostile and partly "friendly" or sexual. (I thought that the duels today might be using Twitters - and perhaps R - as "greeting"s.)

I rather think that the R's I heard today must be the same as the calls I called "Jill"s last year. I don't know what the calls I termed "Growl"s last year might be (possibly aberrant R's or combinations of Twitter + R ???).

Went back to the same place this afternoon.

Nothing new. Except that I heard a bird utter several bursts of TW which included at least 6 notes.

Thraupis, I.

May 23, 1961

Cs de Maqueto

Working in the same place again this morning.

Several birds uttered many series of TW Notes shortly after dawn. I paid particular attention to two. In different trees, about 50 yards apart. One was bled - the other I couldn't see. These two birds did a lot of "duetting". Uttering series of TW Notes, apparent



Chondestes, May 23, 1941, II

(73)

ly in response to one another. Timing variable. Sometimes the birds alternate quite regularly. Sometimes almost synchronous. Even when they were almost completely synchronous, I think that one bird started slightly before the other (not always the same bird, however).

After continuing these duets about 1/2 hour, the 2 birds disappeared and shut up. I think they must have joined one another. The whole incident suggested that the 2 birds slept separately at night, and then "found" one another in the morning by means of TW's.

There were no traces of any other calls during this duetting.

It is obvious, now, I think, that series of TW Notes are the only patterns used to call in companions in this species.

The bright bird sat in a posture more or less common during the duetting.

light bill →



← green area very extensive

This bird may have been sunning itself while it sat in this posture. I have seen TW's uttered from quite a variety of other postures at other times. Almost any unritualized sitting posture will do. Usually, or always, rather erect.

Later in the morning I saw 3 bonariensis engaged in a long, twisting aerial chase. Apparently hostile. At least one of the birds



Thraupis, May 23, 1961, III

(74)

ids involved was bright. One or more of the birds uttered a Twitter during the chase.

A few seconds later, a bright uttered TW (3 or 4 notes) - Twitter as "greeting" when it landed beside another bird in a bush. (I think these were birds which were involved in the previous chase.)

All very good evidence that the Twitter is hostile or partly hostile, just like the Twitter of Yellow-thighed Tanager.

(I don't know if I mentioned it last year, but both brights and dulls utter series of essentially single "Tut" CN's in flight. Quite soft. Can only be heard when the birds are very close to me. But low & round like al CN's.)

Thraupis, I

May 25, 1961  
Cerro Pulvincha

I came across an isolated bright bonariensis near Hono this evening. Sitting quietly on a rather exposed perch near the top of a tall bush. It uttered 2 bursts of TW Notes in this position. Each burst consisted of  $3\frac{1}{2}$  notes "Tsee-waa tsee-waa tsee-waa tsee." Then the bird flew away.

Thraupis, I

July 25, 1961  
Luzon

This morning shortly before sunset, I saw a single Peter's Tanager or perched bright in a tree, in the savannah country near the old American base. Uttering lots and lots of SN's, interspersed with occasional single warble notes which might be transcribed by something like "Chauk." These



Thraupis, July 20, 1962 II

(175)

latter notes were very reminiscent of the "chank"s of Blue Jays (and some ACN's of Jays). Almost all these notes, and especially the SN's, were separated by comparatively long intervals — much longer than the intervals between the notes of the "Dawn songs" of most related species. The whole performance of this Oriole might be represented as follows:

The bird was sitting in an ordinary sitting posture while it uttered these notes. Eventually flew away without doing anything more.

Thraupis, I

February 15, 1962  
Trijoles

I have been watching birds along the RR track here the last two mornings. Between 6:30 and 8:00 a.m.

Paying special attention to a pair of Orioles. They apparently have a nest, with young chicks, in a pylon (20-13). Being food frequently. I have also noticed a few other interesting reactions by the adults.

This morning, the first sounds uttered were WS's. at 6:21. (It was already quite light by then). This species does not become vocal comparatively early. Seems to have lost Dawn calling without securing a replacement. These WS's were uttered by the ♂ in a pylon some distance from the nest.