

NESTING OF SOME PANAMANIAN BIRDS

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STREAKED TREE-HUNTER, *Thripadectes rufobrunneus*.—On August 4, 1937, I found a nest on Finca Lerida, the coffee plantation of Señor Tollef B. Mönniche, at 5000 feet elevation near Boquete, Province de Chiriqui, Panama. Sr. Mönniche is much interested in ornithology and has bought large tracts of forest in the mountains above his plantation, protecting them against invasion by woodcutters. One of the trails which his men have made to these forests descends steeply from a wooded plateau into a humid *oroya* or gorge, through which flows the Velo, one of the upper tributaries of the Rio Caldera.

Along this trail, at 5400 feet, there is a bank of volcanic ash where the trail-makers had to cut into the mountain-side. This cut, about six feet high, is practically vertical; erosion is prevented by the abundance of roots which knit the ash and rock together. It flanks the trail on one side; on the other there is a sharp drop into the narrow Velo. The Velo is cool and crepuscular by day and is characterized by a rank vegetation among which the cecropia and a spindly 'cabbage' palm are conspicuous. This is the habitat of *Scytalopus argentifrons*, *Pachyramphus versicolor costaricensis*, *Henicorhina leucophrys collina*, *Myadestes melanops*, *Turdus plebejus plebejus* and others also characteristic.

There were many burrows in the bank, of various diameters and depths, the average being closely similar to Belted Kingfishers' excavations in the United States. From one of these, at the top of the bank where the roots of a tree caused a slightly overhanging shelf, I saw a brown bird fly. It alit in a tree close by, and I saw that it was a species of ovenbird. Investigating the burrow, I found that it led upward at a gentle grade for eighteen inches and then turned sharply to the right and slightly downward, opening at once into a chamber about eight inches in all its diameters. Here was a nest containing two warm eggs. When I looked about, the ovenbird had disappeared, so I withdrew for the rest of the morning. Returning about noon, I saw the bird fly out when I was about twenty-five yards away. It flew to the same nearby tree and I shot it. Then I collected the eggs from the nest and drew the nest itself out of the hole. One expects to find a flimsy nest at the end of a burrow, but in this case I was able to pull the structure through a passageway of smaller diameter than itself, to have it spring firmly back into shape as soon as I had drawn it out. It was made entirely of medium-sized rootlets of wiry texture, woven very compactly together. It was about six inches in diameter, one and one-half inches thick, and almost flat.

The eggs were dull white with little gloss and no other markings. As they lay in the nest, the effect was that of a dove's nest. They each measured 33.5 x 23 mm., and seemed very large for the size of the ovenbird. Incubation was almost complete.

The bird which I collected, and which was incubating at the time, was a male, with testes enlarged to full breeding size. This specimen, as well as the nest and the eggs, are now in the ornithological collection of the Academy of Natural Sciences of Philadelphia.

SALVIN'S THRUSH, *Turdus assimilis cnephosa*.—This is a common bird at 4000 feet elevation in the forests and clearings along the Rio Garaché, Province de Chiriqui, Panama. On June 26, 1937, I found its nest, situated about five feet from the ground in a crotch of a small coffee tree. In the very next coffee tree was an unoccupied nest of *Synallaxis brachyura nigri-fumosa*, while in a nearby banana tree a *Glaucis hirsuta aenea* was incubating its two eggs.

The thrush's nest was a compact bulky structure, with a scanty foundation of coarse dead grass and an elaborate superstructure of living green moss. This flourishing exterior, amid which two small ferns were also growing, was an excellent camouflaging device, for the same moss grew abundantly everywhere, frequently forming natural masses, in appearance similar to that of the nest. On feeling the walls of the nest I failed to detect mud in its architecture. Its lining was of fine rootlets. The cavity was deeply cup-shaped. There were two eggs, measuring 21 x 29 and 22 x 28 mm. Their ground color was almost white, tinged with a very pale and diluted green. They were heavily spotted with small dots of russet, so thickly clustered at the blunt end as to become confluent.

When I first found the nest, one of the parents was incubating. It had large dark eyes, rimmed conspicuously by yellow eyelids. Its beak was shorter and stouter than is usual among thrushes, but the streaks on its light throat seemed quite Robin-like. It waited until I was within ten feet of the nest, watching me intently, and then darted down into the undergrowth. There it ran away as silently and unseen as a rail, for I did not see it again that day. Nor did it make any remonstrance on any of my visits during the following week of incubation.

On July 3 the eggs hatched. The young were adorned by a few tufts of long buffy down. A parent flew off as I arrived and for the first time showed some concern at my presence. Reaching a perch about fifty yards away, it uttered a soft note which sounded like *pyew pyew* several times and flirited its wings and tail in a very Robin-like fashion. It elected to do this, however, at some distance from the nest, and the outcries, although displaying anxiety, were subdued and cautious. The bird showed none of the unrestraint so typical of Robins in the United States.

I was unable to make further observations on this nest, since I soon left the Rio Garaché vicinity. But my friend, Samuel L. Cresson, collected the female parent and one of the fledglings for me on July 17. The other fledgling had already flown. These two specimens and the nest are now in the ornithological collection of the Academy of Natural Sciences of Philadelphia.

CHIRIQUI CHLOROSPINGUS, *Chlorospingus ophthalmicus novicus*.—This tanager builds a globular nest with a concealed opening at the top. This is not only an unusual nest for a tanager, but also an exceptional type of doorway among birds of the Rio Garaché region, Province de Chiriqui, Panama, for at this elevation (about 4000 feet) there is heavy rainfall in the forest belt, and most species which build spherical nests there provide them with entrances situated well below the equator of the sphere. Such a plan, which succeeds in keeping the rain out, is followed by most of the wrens and several of the ovenbirds and woodhewers.

I found the nest of this *Chlorospingus* on June 28, 1937; it was about nine feet from the ground in a tall coffee tree. The discovery was purely a chance affair, for I was making a routine investigation of all the mossy spheres in the coffee grove; almost all of them were nothing but naturally growing moss. Besides, I had previously seen *Chlorospingus* only in the forest, but it seems that many forest species become adapted to the edges of clearings. As I touched this sphere a small olive bird darted out. Bending the tree over, I found that the scarcely visible opening at the very top of the nest led into a deep cavity, lined with a few dry strips of dead banana leaves.

There were two eggs in the nest, nearly round, measuring 21 x 17 and 21 x 17.5 mm. They were white with a moderate sprinkling of pinkish-red dots, concentrated at the blunt end so that on one egg they became confluent as a large reddish blotch, mottled and irregular in shape.

The parent bird flew nervously about in nearby trees, coming close enough for me to see its conspicuous white eye-stripe. It made small sharp scolding noises, something like *tsit tsit*. On July 6, one of the eggs hatched; the other contained a dead embryo. The fledgling was pink with tufts of rather long down, dark grayish, tipped with buff.

As I approached the nest on this day I noticed great excitement among the birds in the vicinity. I could find no other cause for it than my own intrusion, though I searched for a marauding cat or other mammal. As I drew near a pair of *Megarhynchus*, a *Myiodynastes*, a *Centurus*, and several smaller birds joined the two *Chlorospingus* in protesting against my presence. The *Megarhynchus* swooped at me, flapping their wings loudly, and uttering harsh calls, like *karr-r-r karr-r-r*. This occurrence was not repeated

on my subsequent visits to the nest and may therefore have betokened young flycatchers—rather than tanagers—in the vicinity. It was, moreover, the only instance resembling a marked parental demonstration which came to my notice during a summer of ornithological work in the Chiriqui region. I would be much surprised if the other birds had been thus aroused to excitement by the visible anxiety of the tanagers.

I made further observations on this nest until July 11, when I left the Rio Garaché. Subsequently the single fledgling flew, and the nest was collected for the ornithological collection of the Academy of Natural Sciences of Philadelphia by Samuel L. Cresson.

COSTA RICAN BLUE GROSBEAK, *Cyanocopsa cyanooides caerulescens*.—On June 29, 1937, I found a nest of this bird in the Rio Garaché forest, a few miles from El Volcan, Province de Chiriqui, Panama, at about 4100 feet elevation. It is one of the few fringilline species that are characteristic of the heavy forest habitat at this altitude, the only other common one being *Arremon a. aurantiirostris*. At the forest's edge two miles away, on the llanos beyond, and even in coffee-plantation clearings of sufficient size within the forest itself, the Fringillidae become one of the predominant elements in the avifauna.

The nest was in a small sapling at the edge of a forest trail. It was about seven feet from the ground and appeared rather flat from the outside, but in reality it was deeply cupped within. It was loosely built of coarse sticks and stalks, with a slightly less-coarse lining of roots and grasses.

When I discovered the nest, the female parent was brooding the two eggs. On this and other occasions she sat very close, not flying until I had practically touched her with my hand. If I circled around the sapling at a short distance, she would turn slowly about in the nest so that she always faced me. When forced to fly, she would dart into a thick bushy copse a short distance away. There I once glimpsed her through a binocular and saw that she was 'feigning' a broken wing. On no other occasion, however, did I see her evince any symptoms of anxiety. Once I waited forty minutes for her to return to her eggs; she took up a station close to me, but behind a large heliconia leaf, and sat there absolutely motionless and silent until I gave up the vigil.

The eggs each measured 25 x 19 mm. They were white, sprinkled rather sparsely with round dots about 1 mm. in diameter; the dots were of two colors, russet and light tan, the russet ones being by far the more numerous. On July 2, the eggs were newly hatched. The young had a sparse covering of down, dirty gray-brown in color.

The fledglings had a short life. On July 6, as I passed the nest, a hawk flew from it into a neighboring tree. Looking at the hawk through my

binocular, I saw that it was devouring one of the young birds. I quickly shot the hawk and then looked into the nest. Unfortunately the hawk had mutilated the other fledgling and it was dead; there were no lacerations upon it, but a large hematoma on the back of its neck was evidence of the hawk's work. The hawk was a male *Micrastur ruficollis interstes*, a beautiful bird with a slaty back and barred reddish-brown breast. The legs and feet were bright yellow, and the claws were brown. The beak, from nostril to tip, was brown. The cere, lores, eyelids, and other visible skin about the head were rich orange yellow. The iris was light buff and the inside of the mouth was yellow. The hawk had a rapid, direct, but rather disjointed flight, superficially resembling that of *Trogon m. massena*. Its stomach contained the grosbeak fledgling as well as a large female cockroach and a cricket.

I left the dead fledgling in the nest, hoping thereby to lure the parents back within gunshot. Two days later, on July 8, I was successful in collecting the male. At that time both birds were in the vicinity. The hawk and the male grosbeak are now in the collection of the Academy of Natural Sciences of Philadelphia.

Strangely enough this nest and one other among seventeen which I found in the Chiriqui region were the only ones which were molested by any marauder besides myself. I did not study all of these nests throughout the periods of incubation and fledging, but I was impressed by the low incidence of predation upon them. This suggestion of a low mortality among eggs and fledglings at Chiriqui needs further corroboration before it can be accepted as an ecological truth. Various residents in the region regard the common Green Toucan, *Aulacorhynchus caerulogularis maxillaris*, as an extremely voracious seeker of eggs and young birds and the worst enemy of small passerine species. It will destroy nests wherever it finds them, and is very bold coming right into the vines growing against the sides of houses.

The other nest which failed was that of *Brachyospiza capensis costaricensis*. It was situated six inches from the ground in a blackberry bush in a garden at 5000 feet elevation near Boquete, Chiriqui, and its two fledglings were destroyed, presumably, by a rat.

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