

in time to rescue it from a ground squirrel (Richardson's Spermophile) which had laid hold upon it and was about to carry it off.

Eventually the chicken was delivered to the farmer's wife who had supplied the eggs, so that presumably it was privileged to associate with its rightful mother in the barnyard. It is safe to say that the old hen never knew it, even though we concede the farmer's assertion that it "favored her" in appearance, much more than it did the Owl.

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## NOTABLE MIGRANTS NOT SEEN AT OUR ARIZONA BIRD TABLE.

BY FLORANCE MERRIAM BAILEY.

### *Plate XXIII*

#### I. THE FIRST LAP OF THE MIGRATION.

SEEDEATERS such as Sparrows and Doves might naturally be tempted by the offer of a seat at a bird table and in arid Arizona it would not be surprising if a variety of birds came for water. That a Flycatcher—a Cassin's Kingbird—should be one of these and that a Warbler—a Long-tailed Chat—should come for raspberry jam might seem a trifle anomalous, although a day of dry insects and a suddenly discovered sweet tooth might serve to account for them. But most of the insect-eating Flycatchers, Warblers, Orioles, and Vireos, together with the flesh-eating Hawks and Kingfishers, and above all such birds of the air as Swallows, Nighthawks, and Hummingbirds fall in an entirely different category from Sparrows and Doves—a bird table would be a far cry to them. While we did not have the pleasure of numbering them among our Santa Rita dinner guests, many of them visited camp and others were seen about the ranch not far away.

The first of the homecomers which we saw, the bird that heads my migration blank under date of March 5, 1921, was that beautiful Swallow of the western mountains whose name—the Northern Violet-Green—merely suggests the remarkable color combination

it turns to the sky, solid cloth green, black, and purples that run the gamut from dark blue to warm pinkish violet, an exquisite bird which you watch intently in the sky above you in the eager hope that at some turn it may swoop low enough for you to see its famed coat of many colors. The one we saw first was flying so swiftly over the mesquites and catsclaws below camp that only its snowy under surface and the white rump patches that serve as a directive mark could be seen. Some three weeks later two small flocks, one of six Swallows, were seen nearer by, the six over the stony, cactus and candlebush (*Fouquieria*) ridge above camp, perhaps on their slow way up the mountains.

Before the first homecomers appeared, Nature had begun to prepare the feast for them. As early as the first of February, some of the abundant mistletoe was found in bloom, and as it came into full bloom, exhaling its rich fragrance, it was surrounded with buzzing insects. On the twenty-second of February, down in the warm river valley at the foot of the mountains, when looking up in a sycamore top for one of two Gila Woodpeckers busy in the tree I started, for there—on this midwinter day—against a background of soft beguiling blue sky, big beautiful golden buds were bursting into yellow tassels. Such a vivid, radiant picture! I can see it now and feel the thrill of its exquisite color and the warmth of its joyful promise. Spring had crept upon us all unawares, banishing winter from the valley. One of the Gilas was already investigating the newly opened flowers, and after that, as leaf and bloom came gradually up in the mountains, insect hosts gathered about the flowers and the birds came from the south as if bidden to the feast.

Three weeks after the big sycamore buds were seen bursting in the valley, the middle of March, a plain little greenish-yellow Warbler of the Orange-crowned group was discovered early one morning in a blooming sycamore top at camp and hailed as our first Warbler migrant. Soon others of his kind came and their migration swelled until the trees seemed full of them. In March they were seen most commonly flitting about the mesquites and sycamores, and in the sycamore tops which were humming with insects they and the Audubon's Warblers, some of which had spent the winter with us, had to be picked out carefully in the confusion of the large old seed balls, the small pistillate balls, the staminate

flowers, and the new green leaves, Especially was this true of the Orange-crowns, for their greenish back and yellowish rump and under surfaces were easily camouflaged by the greenery. In April the busy little Warblers were seen in the later blooming, tassellated oaks, daintily picking insects from the undersides of leaves with their finely pointed bills, and occasionally dropping to the ground to hunt over the brown leaves. One was seen hunting among the pink blossoms of a small peach tree—the trees of the valley were in full bloom in February and two young trees near our gate were full of bloom in early March, attracting handsome velvety black butterflies with prettily contrasting red and metallic blue spots on their tails.

When the migration of the Orange-crowns was at its height, with the perversity of human nature I began to lose interest in them, for whenever a bird that might be new and strange stirred in the thick live oak tops it almost invariably turned out to be either one of them or the Western Ruby Kinglet which had been with us all winter. By the end of six weeks, however, their migration had waxed and waned until, on the second of May, it was a matter of note that two were still left to be seen.

About a week after the first Orange-crowns appeared, another Warbler, the Black-throated Gray, with its clean, clear-cut black and white stripes and patches conspicuous in the thin-leaved mesquites and catslaws, reached us, and gradually increased in numbers, being fairly common during most of April, although it was never so common as the Orange-crowned. It seemed to be always craning its neck reaching after an insect, which perhaps accounted for its seeming longer and more slender than the plump Orange-crowns and Kinglets in the same oak tops. Sometimes it dropped down through the air and would fly up with a snap of the bill, returning to a branch to shake and eat its insect.

These were both old friends of the field, bringing us pleasant reminiscences of California and New Mexico, but by the middle of March another migrating Warbler had appeared, a new and wonderful bird to me, the spectacular, theatrical Painted Redstart, which comes up from Central America just far enough to grace the mountains of Arizona. Unlike the other Warblers it never became common, three being the largest number ever seen at a time; but

one was enough to set agog both camp and ranch. Its black plumage which in the sun had the exquisite silken sheen of that of the Phainopeplas might well have been given its strikingly contrasting snowy wing patches and outside tail feathers as well as the appropriately rich carmine breast by the careful hand of an artist deliberately painting a feathered masterpiece. What matter if the artist were Mother Nature working through long ages to produce masterpieces which should stand the test of time, in which plume and habit of life were so harmoniously adjusted that the race could not fail to be perpetuated. As if actually conscious that its protecting blackness would effectually hide it in the dense shadowy oak tops and as if knowing that at all hazards it must not be lost from its kind, it fairly flaunted its white plumes, going about with wings drooping to display their white patches and its long fan tail widely spread to exhibit the open shears of white. The white of the eyelid might well have had its use when two met in the shadows, but it seemed a trivial detail Nature had added gratuitously. Suppose the manner of carrying the wings and tail were best suited to effect sudden Flycatcher-like sallies after insects—is it then unusual for Nature to make one device serve two ends? The actions of two seen among the live oaks of the ranch the last of March suggested courtship display. To be sure they may have been quite unregardful of each other's presence and their actions nothing out of the ordinary, but what flaunting of plumes, what mad chasing through the oaks, what incessant opening and closing of the white tail shears!

In catching insects they often dropped through the air or made downward swoops in conventional Redstart and Flycatcher-manner and once one dropped about twenty feet to catch on a hanging rope and then on a vine that swung with it prettily; but in the main they hunted in the sycamore and live oak tops and markedly and perhaps preferably on the great slanting trunks of the live oaks where the crevices of the bark seemed to supply a ready feast. Even in the mesquites a Painted Redstart was seen flying from one trunk to another. On the oaks, when the long black and white fan tail was outspread against the bark the suggestion was of a museum specimen, a pinned-out gorgeous butterfly. Another interesting pose of the Redstart's suggesting a close scrutiny for

insects was a forward tilt of the body with the black crest raised enquiringly.

In hunting habits a combination of Redstart, Flycatcher, Creeper, and Sparrow, this individual bird may be seen hopping over the ground or hopping and flitting lightly up the side of a slanting tree. This surprising characteristic was illustrated one day at the ranch. After a tour of the live oaks a sudden gleam of the rich carmine which glows under a stray sunbeam, together with a rich contralto call announced the Redstart's descent to the corrugated iron roof of the old adobe ranch house. An apparently unexpected answer to his call from the mesquite overhead was greeted so joyfully that it seemed for a moment as if he would forget about dinner and fly to his comrade. But it was getting late and he must keep at work or go hungry to bed. So he proceeded to hunt over the roof, hopping from one corrugation to another on his short legs as a man walks ties, occasionally skipping one or making a misstep and dropping in between. He partly crossed the roof twice with his droll short-legged hops, picking up a few tidbits as he went. Another time when two of the birds were seen hunting near together they separated, perhaps to keep to unworked territories.

The rare pleasure of watching these unusual and fascinating Painted Redstarts was ours at intervals for nearly six weeks, for while they apparently went on up the canyon on warm days, they drifted back on cool days. Once one was reported to me by the ranchman's wife during a warm wave and when I expressed my surprise she assured me that he was "hopping around as happy as he could be," which expressed one's natural reaction to this gay little messenger of spring.

Migration was now well underway. On the middle of March when our neighbor was rounding up cattle in a canyon where there was piped running water, he saw a flock of migrants which were passing high through the sky interrupt their flight by circling down to the stream to drink, after which they circled up again and continued their course.

At camp so many new birds were arriving that the first thing in the morning I looked from the tent door to the sycamore tops, after which I went down to the ranch to look in the live oak tops

to see what had come in the night. All three Orioles—the handsome lemon-and-black Scott's, the black-faced Hooded, and the orange and-black Bullock's were discovered in the tops of the white-trunked sycamores, piping up with a loud Oriole whistle or picking carefully about among the young tender green leaves.

A small Vireo whose early morning song was a rapid *chickaty-chickaty-chickaty-chee*, and whose jerked out *chickory-chickory-chech-ah* reminded me of the "*chick-a-de-chick-de-villét*" of the Bermuda White-eye, proved to be the brown-eyed Least Vireo. When pursued it kept low in the dense thorny thickets where on our approach its song would stop and it would presently appear beyond. A vertiable Will-o-the-wisp it seemed, tantalizing us with its White-eye song. As time went on, however, it apparently got used to seeing us around the tent and finally a pair were noticed going about together quite indifferent to our presence.

Another wandering voice was a puzzling mystery at the time but on our return from the field was recognized by Mr. Frank Stephens' description of the song in the 'Nuttall Bulletin,' as that of the Beardless Flycatcher, with only a few records to its credit this side the Mexican line, several of those being not many miles from our camp. The plaintive minor notes, the first five slowly descending the chromatic scale ring in my ears to-day, recalling vividly our days of tent life among the mesquites in sunny Arizona; for the striking song with its many variations was heard around camp day after day for about a month. Like that of the Least Vireo it came mainly from the mesquite thickets, but on several notable occasions we were favored with a good view of the small gray bird when it showed all the earmarks of a Flycatcher.

Various other Flycatchers and Vireos had been seen by the first of April, among them the Swainson's Vireo, the Ash-throated Flycatcher and the Cassin's Kingbird, the Cassin's announcing itself by its loud familiar '*ka-wheer*' from the sycamore top.

Besides the two Doves that came to the bird table, the Inca and the White-winged, and the Mourning Dove which was seen on rare occasions during the winter not far from camp, a fourth was seen on the first of April as we sat at breakfast in front of our tent—a powerful-winged bird with a square, cut-off look compared

with the long-tailed Inca and Mourning Doves, which flew swiftly overhead making me exclaim, "Band-tailed Pigeon!" Another was seen the next day also rushing up the canyon. One of the pleasantest meetings was with the Townsend's Solitaire, an old friend of the high mountains of California and New Mexico, found in late March in the live oaks above us. Near the middle of April another New Mexico acquaintance was seen flying over by Mr. Bailey who hurriedly called me to the tent door exclaiming, "A Zone-tailed Hawk—I saw the white bands on his tail!"

But most delightful of all was the return of the Hummingbirds. As early as the thirteenth of March when a few pink pentstemons were the only spring flowers we had discovered, I was thrilled by the whiz of a Hummingbird passing swiftly over camp. A Hummingbird already! Spring had come to the mountains! A few hours later, with the characteristic rattle of the Broad-tailed it came back as fast as it had gone, the few pink blossoms evidently not holding its attention. But in the next two weeks there was an awakening in the plant world. On windy days the old brown leaves of the live oaks rained down so thickly that the ranchman had to rake them up. Then in a gray thicket of unleafed trees an ash blossomed, its clusters of green leaves and green terminal pistillate flowers contrasting so strikingly with its brown seeds from the previous year and with the surrounding bareness that pilgrimages were made to it to enjoy its beauty and spring promise. After that the ranch fig trees, and the black walnuts, sycamores, mesquites, and catsclaws began to leaf, and around camp there was a pleasant prophesy of greenness.

Hummingbirds were frequently seen darting through the air and whizzing past camp, but always too high or too fast to determine the species. In a rich Hummingbird country to be right in their path and yet unable to see them was too aggravating. They were looking for flowers. Why not give them some to bring them down where we could see them? We went out and gathered some of the vivid pink pentstemons then lighting up the dark places under the mesquites and potting them in cans started a Hummingbird flower bed in front of the tent door. The reward was one Hummingbird seen flashing his colors for too short an instant for identification and then compacently seating himself on a twig with

his back to the tent. The idea was a good one but other flowers were needed. By this time the candlebush was coming into bloom, some of the tips of its long rods having already burst into flame. Climbing the stony cactus-strewn bench above us to get them, we brought down several of the scarlet-tipped spikes. After sticking them into the ground—one went deep down a gray tarantula's hole—while Mr. Bailey was adjusting a tripod to hold a basin of water beneath them, right over his head buzzed a Hummingbird. Quick work! To add color to attract passing eyes, I tied a red scarf around the tripod, and we withdrew with high hopes. The device was decidedly successful. Had we been in camp all the time we would probably have seen more species, but that was not the fault of the species. Green females or immatures came quite freely, and occasionally a handsome adult male delighted our eyes. A Black-chinned with his velvety black and violet gorget, a Broad-tailed with bright bronzy green head and deep rose-pink throat, and a third that suggested the Costa's but flashed away all too quickly for sure identification, came and buzzed about the red flowers. Others which were probably halted in their head-long flight by the flower bed whizzed around the tent, and once two stopped only a few yards from us to have it out bill to bill in air—one with the brilliant pink flaring ruff of Costa's—so absorbed in their fencing that they quite disregarded our presence. Another morning, when we were breakfasting in front of the tent, in our migrants' sycamore top looking down on us we discovered a large Hummingbird with a long dark tail and apparently a glint of blue on the throat, which reminded Mr. Bailey of the Blue-throated seen in New Mexico and Texas.

## 2. SNOWBOUND MIGRANTS DRIVEN TO SANCTUARY.

The first migrant noted at our Santa Rita mountain camp, as I have already said, arrived on March 5, and during the following month twenty-five species were listed, among them five Hummingbirds, five Flycatchers, three Orioles, one Swallow, three Vireos, and four Warblers. In fact, migration was in full swing when, on the afternoon of April 4, after very severe winds it began to rain and hail and finally snowed. Just before sundown when it was snowing hard, the Canyon Towhee, who was a familiar bird-table



and tent visitor came to our door with an eager call. As the flaps were tightly closed to keep out the snow he could not get in and flew up on the side of the tent calling so insistently that I opened the top of the flap a crack. In a few moments he appeared there with crest up and after giving his cheerful chirp looked down inquiringly and then dropped to the floor to hunt for the rolled oats scattered for him. When he had gone I hurried out to the feeding table and after scraping off the snow put out enough for all the hungry flock. The next morning our pretty brown-capped visitor again called at our door, strong in the faith that all his wants would be supplied. When he had had his breakfast and I threw back the tent flap, one could have imagined it a beautiful winter scene in the north, for above the white earth, every bush and tree was laden with snow. About two inches had fallen and around the tent where the night's accumulation had been shaken off, arousing memories of roof shoveling in the north country, there were white piles seven inches high.

When I was starting out to see what birds had taken shelter in the big live oaks in front of the ranch house, I was thrilled to see a little wanderer from below, a Vermilion Flycatcher with his globular flaming crown and puffy scarlet breast, come flying from our gate straight through the air toward me as if to meet me—the gorgeous full-blown scarlet blossom! Swerving only slightly from his course, he lit in the mesquite at the corner of the tent. A strange picture he made there, his red breast standing out against the white snow as he perched among the new tender green leaves of spring.

When I first reached the live oaks there was a short interval of sunshine that set the birds calling and singing, although the voices I noted were mainly those of the old residents whose winter in the mountains had perhaps put them in braver temper than the newcomers from the south. The strident call of the Woodhouse's Jay, the nasal cry of the Gila Woodpecker, the busy chatter of the Western Ruby Kinglet, and the soft liquid call of the Phainopepla were heard; while the superb Arizona Cardinal which had been in full spring song long before this piped up cheerfully as if it took more than an April snowstorm to affect his spirits. The camp Mockingbird was silent as he flew into his favorite grape vine

but its small new leaves barely veiled the lodged snow beneath and snow apparently is not to the liking of this Nightingale of the south. A Palmer's Thrasher, another familiar of the neighborhood, while keeping discreetly silent as was his wont when about the premises, was taking advantage of an island of brown on the white ground, hopefully raking the earth with his long curved bill.

While the sun lasted one of the newcomers, the little Beardless Flycatcher from Mexico, was heard giving his minor descending notes with which we had become familiar in the three weeks since his arrival.

But soon the sun was darkened and the snow was falling so fast that it was hard to keep eye-glasses and upraised field glasses dry enough to see through. They had to be used, however, for the tree tops were fairly astir with Kinglets, Vireos, Flycatchers, Warblers, and Orioles, the big oaks and the protecting thicket adjoining them serving as sanctuary from the worst force of the storm. Once when an unusually strong gust came driving in from the southwest the flock shifted farther inside the trees for better protection.

It was fascinating to pick out one by one from among the host—now a friend of the winter, now a spring arrival which perchance had already been welcomed but which had passed on up the canyon, and, most exciting of all, among the newcomers of the day to discover some bird actually new to one's experience. On the trunk of one of the big live oaks might be seen a Gila Woodpecker, turning over his scarlet-patched brown head to better examine the cracks of the bark, while from among the moving host, half hidden by the snow and the darkness of the dense tree tops might be discovered a dainty Black-throated Gray Warbler which had come two weeks before, looking up and turning his head over as if consciously showing off its pretty black and white stripes; or one of the small Orange-crowns which had come three weeks before and swelled in numbers until seeming to be everywhere among the flowers and fresh green leaves of the tree tops. Once a sedate Vireo very different from the jaunty little Least, having the green cast of the Cassin's was eagerly set down as a new arrival. Two of the large lemon and black Scott's Orioles which had not been noted for ten days were greeted with enthusiasm—it was

not necessary to wipe the snow off your glasses to see and appreciate their beauty.

Two small Flycatchers flitting about among the oaks puzzled me sorely until one considerably lit on the top rail of the ranch corral showing its brownish back and flew across the corral showing the unusual buff which has named it the Buff-breasted Flycatcher. As it was the first I had ever seen I exulted over even that fleeting glimpse. But that was not the best. Back and forth low through the trees along the road leading to the corral, with short flights went a large Flycatcher so unafraid that he let me come near enough to con all his unfamiliar remarks, which when looked up proved him to be the Coues' Flycatcher, the Mexican counterpart of the familiar Olive-sided Flycatcher—my second new bird for the day. As he went and came letting me follow close behind him, he uttered a slow, plaintive, easily-imitated cry that I whistled after him with growing interest and absorption. Sad-voiced friend of the mountains! Had he reached his summer home in the canyons above us only to be driven down by the snow that covered the mountains? However, that may be, when the storm was over he left and was never seen again. Long after he had gone his simple notes with their penetrating plaintive quality rang in my ears and I found myself repeating them over and over as a lament.

Two new birds in one day! As I walked down the road between the trees thinking over my blessings, happening to glance up, clinging to the underside of a branch like a Woodpecker, right over my head I discovered a Painted Redstart with widespread black and white wings and tail, one of those whose presence had delighted us on cold days ever since the middle of March. My cup seemed full. Later in the morning another of these delightful birds was discovered. While the trees above were alive with birds, several Green-tailed Towhees, one of which had frequented the bird table all winter, and also a fresh invoice of Alaska Hermit Thrushes, one of which, if it were the same subspecies, had been seen about the ranch all winter, kept appearing from the shadowy ground and along the dry wash as if a flock had been overtaken by the storm on its way north. And under one of the oaks the gray head and yellow breast of the first Macgillivray's Warbler of the season were recognized with pleasure.

During most of the snowy afternoon one of the two Vermilion Flycatchers seen chasing each other in the morning, perhaps the glowing scarlet one which had come flying up to camp, acted like a familiar little home body instead of a royal beauty, making himself at home under the big live oaks in front of the ranch house, where he was watched with pleasure from the windows as he went about flycatching over the snow-patched ground, or over the puddles made by the melting snow, once shaking an insect with his whole person before returning to his low oak branch. Hour after hour he hunted busily from place to place infrequently giving a thin call—*ee*— and taking short rests on good observation posts between flights, his notched tail and his drooping wings ready for a sudden start. A bare bush on the edge of the gulch was one of his favorite perches and a large stone near by also served for a lookout. At times he flew down into the bottom of the gulch for an insect his bright eyes had detected, lit on a twig over the pump, on a horizontal pipe, on the handle of a wheelbarrow, or on the same hanging rope the Painted Redstart had discovered. Once he rested in the shelter of the dry ventilating space under the roof of the adobe ranch house, looking out comfortably upon the falling snow. Another time he sat on a log with feathers fluffed up, looking as cold as I felt. Again, when he had flitted from the ground at the foot of an oak to its trunk and then onto the arm of a big chair standing with summery suggestion under the tree, a ray of sunshine — the third on that day of gray sky and snow, as if in playful fancy, lit up his raised crest till the gay scarlet globe glowed.

In his sallies the little beauty was quite preoccupied, and if he gave it a thought, apparently took the stationery or slow-moving, mackintosh-clad figure for a harmless form of tree trunk. To test him I walked up slowly within about ten feet of him when he flew, only to light overhead a few feet from me with his back turned as if wholly indifferent to my presence. At last he flew directly toward me as if to light on the black tree trunk, and looking up before he quite reached me merely turned aside to a better perch, on a neighboring weed top.

Before sunset, when the storm was over and the birds which had taken shelter in the sanctuary had scattered, we went down

into the mesquites below the ranch where we found a Painted Redstart and also a Lucy's and a Virginia's Warbler, migrants seen for the first time, which had very likely shared the protection of the sanctuary but been overlooked among the dense tree tops.

The temperature during the day of the storm ranged from 35° to 44° and the morning after, there was ice a quarter of an inch thick on the bird's water pan. While the storm was a short one, in that year of tragic drought the inch-and-a-quarter of water which it brought spelled relief to the stock left alive on the range and hope to the anxious cattlemen of the country. For the Santa Ritas were white down to their low foothills on the plain, which meant new life to the springs and water holes. On the heights the evergreens were beautifully silvered and the snow lasted some time, but at our level it melted quickly and in spite of cold days the migrants kept on coming. As before the storm, the Painted Redstarts came back on the cool days until nearly the end of April.

But what had the Hummingbird done during the snowstorm? Did they speed on their strong wings to the valley when the cold wave came and speed back when it was over? None were seen during the snowstorm but the day after a Black-chinned was found feeding from the tubular, orange-colored honeysuckle (*Anisocanthus*), which grew among the mesquites, and the following day one came to feed from our candle flowers which had been piled high with snow the day of the storm.

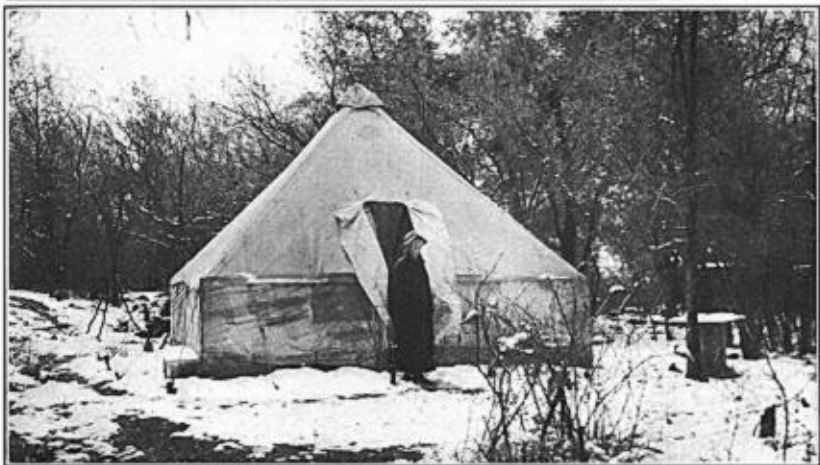
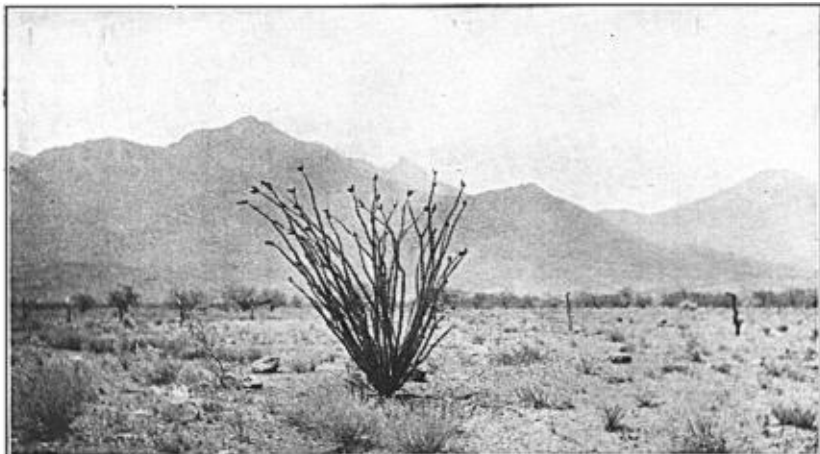
### 3. ONE OF NATURE'S FEEDING TABLES.

The candlebushes or ocotillos were soon blooming freely on the foothill slopes above us calling a variety of hummers and other birds to feast on their abundant honey and the many insects which gathered about their flowers. One conical hill was so closely beset with the candlebushes that we dubbed it Fouqueria Hill. Before the leaves came out the hissing of the wind through the thorny rods could be heard from a distance. From the east slope of the hill I looked down over the landscape through a network of long interlacing rods, each with a fire-tipped torch. While waiting for Hummingbirds, I studied the novel screen with interest. Some of the torches flared against a distant background of green mes-

quites on the slope beyond, some of the long arms crossed the straw-colored Range Reserve still lower, while others yet cross-lined the blue-gray faces of the distant Rincon and Catalina mountains rising from the valley below. In detail the rods were most interesting. Their bark adapted to desert life with its tight, hard, cellulose cuticle, waterproof and evaporation proof, split in growth so that it produced green striations. Heavy protecting thorns down the length of the rods as the season advanced were spaced by clusters of oval leaves which gave just green enough to afford a pleasing contrast to the terminal scarlet spikes. The individual tubular flowers of the spicate racemes suggested tiny boxes squarely and as tightly closed at the top as closed gentians until ready for winged visitors, when their waxen lips opened, disclosing richly fringing stamens with pollen ready to be transported by bird or bee.

When the Hummingbirds visited them, mainly in the early mornings and late afternoons, their characteristic mannerisms could be easily observed. A Black-chinned which came probed the tubes in a business-like way with needle held down almost vertically, his wings extended and whirring so rapidly that their form was blurred, only the top and bottom lines of the strokes being visible, while his tiny feet were tucked up in his feathers or closed tight-fistedly below. As he fed about the red flowers his white collar showed as a good field character, contrasting conspicuously with the dark underparts and velvety black gorget. One of the long rods accidentally bent in the middle afforded an inch or two of horizontal perch which the midget was quick to take advantage of, perching there undisturbed while the rod swayed in the wind.

While I was sitting canopied by the interlacing rods watching the Black-chins one afternoon, a Hummingbird came rushing down the candlebush slope with a loud peculiar clicking noise entirely new to me, quite different from that made by the Rufous or the Broad-tailed, and probably made by the Broad-billed. One of the beautiful adult males with peacock-blue throat and peacock-green breast had been secured by Mr. Bailey on the slope the day before and soon after the noise was heard a female Broad-bill came and lit on a candlebush so close to me that I could see



1. Candlebush or Ocotillo (*Fouqueria splendens*).
2. After the Snow. Humming Bird Flower Bed in Foreground.
3. Live Oaks where the Painted Redstarts Hunted.

her wide, livid-red bill with its blackish tip and also the white streak back of her eye. Her tail held her up with its rapid pump-handle motion as she probed the open, stamen-fringed flower tubes. Although silent when probing she made a slight clicking noise in flight. While I sat there under the candle bushes, White-throated Swifts passed overhead, a tarantula killer flew by and a big shining black beetle came and fed from the flowers.

A variety of birds was seen among the ocotillos at different times. A Sparrow Hawk was discovered using one as a perch, probably because it was the highest thing in sight. A House Finch whose sweet song was heard among them may have stopped in passing or may possibly have come for nectar as one was seen in another place helping itself to the juicy cactus (*Viznaga*) fruit. Another finch, the Green-backed Goldfinch, was seen perching in a candlebush. One of the Crested Flycatchers was noticed working its way through the forest of rods and a Scott's Oriole was found feeding from the red flowers. Two male Hooded Orioles stretched their necks as they explored for insects and one that swayed on a rod showed its black-faced yellow head and black back to advantage. One was seen actually perching on the red raceme probing the flowers. As they worked they occasionally gave their single note and their chattering scold. The nasal *tang* of a Gnatcatcher was heard from one exploring the thicket. Several Warblers were found at different times, the Black-throated Gray, the Audubon's two of the Orange-crowns, one of the Pileolateds, and the Painted Redstart, its own little red flame going well with those of the candlebushes as it lit on a rod near the flowers.

In the late afternoon as the sun sank and the shadows crept down the hillside the green rods grew dim, only the outstretched red candles showing above the shadow; while in the landscape below, the foothills of the mountains lowered to pinkish brown hills and Huerfano, the pyramidal orphan butte standing alone on the plain, showed one face in black shadow. The Humming-birds having gone for the night, I started down to camp. As the trail dropped below, I turned to look back where the torches flamed against the dark background of seamed mountain walls.



## 4. LOITERING MIGRANTS AND HOME-MAKERS.

Before the candlebush came into bloom around us, as early as the middle of March, a desert tree was delighting our eyes on our trips down through the giant cactus country—the palo verde, a solid mass of vivid lemon-yellow bloom, gorgeous in the sunshine. Soon after, in the valley bottom the richly fragrant elder blossoms delighted our nostrils. And then, the middle of April, on our own freshly green mesquites the tassels began to yellow.

The later migrants were now appearing. An Olive-sided Flycatcher was noted on its way to the north the last of April, its mountain home not abounding in insects so early in spring. For similar reasons, it may be, the handsome Golden Pileolated, the Townsend's, and Hermit Warblers were seen loitering along their way; while a Nighthawk, perhaps waiting for warm weather to produce an abundance of the small high-flying aerial insects, was not seen until the first of May. A Poorwill, a wandering voice of the dusky shadows, had been heard about the middle of April, large low-flying moths beetles and grasshoppers, of which fewer would be required, being sufficient for his needs earlier in the season. Our most inappropriate visitor, a Belted Kingfisher, perhaps bound for frozen mountain streams, was discovered the last week in April, perching footlessly over our "dry wash." He soon saw his mistake, however, and went rattling up the canyon.

By the sixth of May when we left the mountains, the main spring migration had waxed and waned, the homecomers bound for the north having largely passed on; while some of those which had come back to the Santa Ritas for the summer, together with those which spent the year in the region, were beginning to nest. The White-winged Doves were courting, the Verdin and Least Vireo were seen going about in pairs, fresh Cactus Wren nests were discovered underway, and two Hummingbird's nests, one a Black-chinned and the other presumably a Broad-billed, were found practically completed. The Scott's and the Bullock's Orioles had been seen in camp only on their way, but the Hooded had returned home. A pair had evidently established themselves in the sycamore by our tent as both birds were seen in its top. And one morning about the first of May we were called out of the

tent by the excited cries of the old male who was trying to drive off a persistent young one who had appeared on his premises and who had to be chased out of the tree again and again. Then two fresh-looking cup-shaped nests of the shallow Hooded type were discovered in the leafy sycamores opposite the ranch house, and the birds were seen flying busily around.

The mesquites which had now come into fresh green leaf were fragrant with yellow tassels. And here and there big cactus flowers were to be seen. The desert was putting on bridal garments.

*1834 Kalorama Round, Washington, D. C.*

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## REASON AND INSTINCT IN BIRD MIGRATION

BY N. F. LEOPOLD, JR.

IT is a well known fact that every species of animal, having had its origin in a very small section or territory, tends to spread farther and farther in all directions from its center of origin. This gradual spread continues until progress is checked by a barrier of some variety. This entire principle has been summed up under the zoological law of "barrier control dispersal from a geographic center of origin."

It is very easy to explain this tendency, and the resultant gradual extension of range of resident animals, but when we attempt to carry our explanation further, to the extension of migration ranges in birds for example, we are confronted with a more difficult problem.

In the case of resident animals it can easily be understood why this tendency must exist. A species springs up in a limited area; its numbers increase; the food supply in the original area proves inadequate to satisfy the needs of the increasing number of individuals and some of the more hardy members of the race go forth to seek new territory and a new food supply. Their selection of direction followed in this quest for food is a matter of chance, but those going in a direction where they find conditions favorable, survive, and settle there permanently; while those which are less fortunate in their choice of new quarters are either killed off, or