THE HUMMINGBIRDS' BROOK

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SAN ISIDRO DEL GENERAL, COSTA RICA

WHEN I planted a hedge about my yard, I chose the purple-flowered *Stachytarpheta,* a kind of bushy verbena, not because it forms the primmest of hedges but because of all the hedge shrubs I know it is the most attractive to hummingbirds. The little, short-tubed blossoms form a compact wreath about the middle of the long, naked flower spike, moving upward as the withelike spike continues to grow. If the early part of the year is not too dry, the plant blooms throughout the twelve months and provides a never-failing source of nectar for the flower sprites.

First to discover the earliest blossoms of my newly-planted hedge, and ever since their best patron, was Guimet's Hummingbird, a tiny emerald gem whose head, turned toward the watcher, flashes forth most intense metallic violet. A white spot behind each eye gives him an alert, wide-awake aspect, entirely in keeping with his swift, dashing movements. Suspended between wings vibrating so rapidly as to be invisible, he makes the circuit of the wreath of florets, the tip of his slender black bill probing the heart of each for a single instant, then darts off to a neighboring spike. These glittering bits of animation carry my thoughts back to the Hummingbirds' Brook.

It was hard to stay inside the thick walls of the old museum in San José during those clear, sunny months that started off the year. All around me in the herbarium were cases full of botanical specimens, long since dry and colorless, for which I had recently become responsible. They clamored, as well as such lifeless things may, for care and rearrangement. But the weather of the early *verano,* with its cold, starry nights and warm, sun-flooded days, was like some heady wine. Try as I might, I could not imprison my thoughts within those massive walls of puddled clay, among the herbarium specimens. They persisted in floating out over the surrounding mountains whence, years before, Pittier and Tonduz and Brenes had gathered those same specimens. Through the deep-embrasured windows of the herbarium I could see nothing of those hills, but only a little sunlit rectangle of courtyard where goldfish swam in a pond and a few orchids grew. But climbing the dusty, circling stairway of the old square tower at the end of the building, I could fill my eyes with the sight of the green hills that swept in a wide circle about the narrow plateau where the city stood, calling a naturalist in so many directions at once that his mind became a disordered whirl of enticing and impracticable projects for exploration. In the northeast, seeming very close in the clear morning atmosphere, rose the immense, sprawling bulk of the Volcano Irazú, with a lofty column of smoke arising from its flat summit. Blown southward by the trade wind, this eruptive material spread a fine layer of dust over the glass cases of the museum.

The call of those green hills was too strong to be resisted, especially by one who had so recently forsworn his full liberty to roam them. Many a plant still unknown to science lurked among those forested mountains, so inviting in the distance, but upon actual contact so rugged and forbidding and opposing such formidable obstacles to the progress of puny man. Would it not be well to collect, now in the good weather, samples

of the flora of some hitherto unexplored nook among the mountains? A few thousand new specimens, more or less, to arrange along with the old ones during the long, wet months that would follow could make no great difference. The sympathetic director of the museum readily agreed with these arguments. I was free to take to the hills!

A friend in the southern part of the country wrote that he had found a little house for me in the valley of the Río Pacuar, on a farm adjoining his own. My horse was waiting in his pasture; Efraim, the boy who in past years had cooked for me and carried the plant press, was again willing to serve. The Ministry of Education provided an airplane pass. Leaving the capital before sunrise, the trimotored machine set me down in the village of San Isidro del General in time for breakfast. In little more than half an hour we had passed over a wilderness of forest and mountain which, without wings, we could not have traversed in less than four days of toilsome journeying over rough trails. That same afternoon, my friend Don Juan and I set forth on foot to visit his farm at Santa Rosa and the cabin he had rented for my use. We went slowly, for those afternoons of late February were warm and the road dry and dusty. We were ashamed to count how many times we paused to rest and chat with farmers while we refreshed ourselves with the sweet golden oranges that grew by the roadside. The narrow, winding cartway rose and fell, crossing many a ridge and many a clear stream in the valleys, passing among hillside pastures, strips of forest, and fields where the dry stalks of last year's maize were already all but hidden among the swiftly springing weeds.

At length, as the sun fell lower, we came to the brow of a slope longer than any we had left behind. Far below, the tree-bordered channel of the Pacuar meandered through verdant, shady pastures, amid which stood, here and there, low, rough farmhouses roofed with dull-red tiles. Beyond the valley the coastal range rose up, summit behind summit, all clad in a dark green mantle of forest. The steep hills were notched by wooded gorges, whose cool, shadowed depths stood out in dark contrast to the intervening ridges aglow in the sunshine. In the north rose the rounded bosses of El Cerro de la Muerte, huge and grim and gray, and the other lofty summits of the Talamancan Cordillera. What a scene it made!—the deep, narrow valley with its quiet dwellings set in the bright green of pastures and cultivation like "a haunt of ancient peace" in the midst of those wild hills.

Near the foot of the long slope we entered Don Juan's pasture, caught and saddled our horses, and resumed our journey on four feet instead of two. By a broad, shallow ford we rode across the Pacuar, passed over a level pasture, then forded the rocky bed of the Río San Antonio. On a shelf cut into the steep hillside above this stream stood the house I was to occupy. It was of the usual type and soon inspected: a narrow porch across the front; opening onto this, two small, square rooms to serve as living room and kitchen; two tiny, rectangular cubicles under the sloping roof at the rear to be used as bedrooms. In the kitchen were some shelves and a wooden platform covered with clay upon which to make a fire, the smoke escaping as best it might; in one of the bedrooms, a wooden bedstead with hard boards instead of springs; in the *sala,* or living room, a rickety table, a pair of stools without backs, and a great heap of maize ears piled up in a corner. The roof was of unglazed tiles, the walls of rough, unpainted boards, partly papered over on the interior with old newspapers boldly announcing patented remedies for the most intimate maladies.

Not a palatial nor even a homelike dwelling, certainly; but with a few cooking utensils and a folding canvas cot—enough, with the collecting apparatus and some staple supplies, to fill an ox-cart—it would make an exceptionally comfortable camp. If there were no pictures save the cartoons in the yellowing newspapers to relieve the drabness of the walls, it was only necessary to throw open the wooden shutters that closed the glassless windows to enjoy a diorama painted with master strokes on the grandest scale. In the foreground spread level pastures, shaded by slender, stately *ojoche* trees nearly fifty yards high. In the midst of the meadows, two lines of lower trees, converging into one line at the right, indicated the point of confluence of the Pacuar and San Antonio rivers. Beyond, the mountains rose up, crest above forested crest, to the bare, treeless summit of El Cerro de la Muerte; and the long ridges of the continental divide, with their ever-changing masses of cloud, closed off the prospect to the north.

Locking up the vacant cottage, we mounted our horses to ride up the ridge that rose sharply behind it. A hundred yards from the dwelling the forest began like a wall, forty yards high. As we neared its edge, a small bird with spotless white plumage flew out from a tree-top and swung in a long catenary curve across the valley to the hanging forest on the farther side. It was my first Antonia's Snowy Cotinga (*Carpodectes nitidus antoniae*). I looked upon it as an augury for a prosperous season.

Two days later we moved into our little cabin. Efraim made up the fire and put the beans and rice on to boil; Bayon grazed contentedly in the pasture at the side; I unpacked and set up the apparatus for drying the botanical specimens. In a day or so we had settled down to a routine. Arising at daybreak, we breakfasted as the sun's first rays struck up the valley, dissolving the silvery mists that had gathered during the night. Almost every morning at sunrise, a flock of Little Blue Herons (*Florida caerulea*), four adults in slate-blue plumage and eleven young birds clad in purest white, winged deliberately up the river, following every winding of the tree-shaded channel and holding our gaze enthralled until they vanished around a curve. At sunset they returned down the valley. Later I found where they roosted, on leafy boughs overhanging the channel.

While the sun was still low above the crests of the forest, we locked up the cabin and set forth on the day's excursion, with lunch in the knapsack and the plant press full of papers for the specimens. No matter where a man lives, he soon finds a favorite walk which attracts him beyond all others and of which he never tires. So it was with us. There were few roads or even clean paths in the immediate neighborhood, but the course of the Río San Antonio became our highway. We drank from and bathed in its waters, and it led us back among the hills into haunts of unsuspected beauty. It was an enchanting stream. Its current, filtered through scarcely broken forests, was always clear. Even when swollen with the heavy rains of May and June, it never became brown and turbid like the Pacuar, which flowed through a cleared and cultivated valley and when in flood formed a sharp contrast with the limpid tributary stream. During the nearly rainless months of February and March both rivers were low and gentle, and the smaller San Antonio could at many points be crossed dry-shod on stepping-stones.

First we explored the lower portion of the stream, where it flowed through the pastures. Here and there it slipped over a rock to form a low, murmurous cascade, but there were no falls of any great height. The channel was shaded by

trees, chiefly the gnarled *sotecaballo*, or riverwood (*Pithecolobium*), whose long boughs reached far over the channel and in places completely overarched it, forming a dark, cool retreat never penetrated by the hot midday sun. Verdant masses of the river *Cuphea*, a shrubby relative of the humble clammy herb of northern fields, covered the rocks that rose above the water; and on the portions of these rocks recently left dry by the falling current, innumerable tiny brown seed pods of the Podostemonaceae, no bigger than the moss capsules for which they are sometimes mistaken, stood up on their short, threadlike brown stalks. Feathery green fronds of the same delicate water herbs—which include some of the very smallest of all flowering plants—waved in the flowing water where they grew attached to portions of the rocks still submerged. At the end of February a climber of the bignonia family spread a profusion of pretty pink trumpet blossoms over the lower branches of the riverside trees; and later another woody vine (*Securidaca*), an aspiring relative of the little northern milkwort, displayed in the treetops dense masses of small, two-winged, pealike blossoms, forming delightful expanses of pinkish-lavender color.

Where the twisted riverwood trees cast the deepest shade over the water and were most heavily burdened with an aerial garden of orchids, ferns, bromeliads, and other air plants (displaying here in the open air a collection of conservatory plants which for the variety and magnificence of its specimens would make any northern florist turn green with envy) a slender log formed a footbridge from shore to shore. The slippery upper face of the log had been only slightly flattened with the axe, and one wearing shoes found it prudent to support himself with a long pole as he passed over. Beneath this rustic bridge, the current, which just above had passed turbulently along a boulder-strewn reach of the channel, flowed smooth and deep over great, dark, flat rock strata of gentle inclination, locally called *lajas*. Later, when the flood waters carried the log away, we could scarcely leave our secluded camp save by fording the swollen current on horseback or else making a long and difficult detour down the river.

Above the still waters by the footbridge, a Royal Flycatcher (*Onychorhynchus mexicanus*) hung her yard-long nest of brown fibers; here where no boisterous wind could roll the two brown eggs from the shallow niche in the middle of the tangled mass that so little resembled a bird's nest. Only on the rarest and most memorable of occasions did she or her mate spread fanwise their high, scarlet diadems, which transformed a pair of dull, olive-colored birds with low topknots into superb creatures of regal distinction. Here, too, lived a pair of Buff-rumped Warblers (*Basileuterus fulvicauda*), perpetually wagging their dark-tipped, pale yellow tails as they foraged along the shore and over the rocks in the channel. The male sang a ringing crescendo, loud, mellow, and jubilant; and from time to time his mate replied in a full-toned warble so beautiful that, no less than the music of Orpheus, it seemed to possess the power to "draw iron tears down Pluto's cheek." In April this happy pair, working side by side to the accompaniment of their flowing song, built their domed nest upon a fern-shaded rock on the bank of the stream; but some creature broke up the nest before the two spotted eggs could hatch.

One morning in April, as we crossed the footbridge, a small animal clambered up the underside of the thick trunk of a great riverwood tree. Climbing backdownward along the inclined trunk until it reached some erect branches, it easily scrambled up among the foliage, where it stopped in full view. It was a kinkajou (*Potos flavus*), a relative of the raccoon and the coatimundi, about the size of the former but more slender and shorter-legged, and everywhere, including its long, gracefully curving tail, clothed with brownish-gray fur that appeared very thick and soft. Despite the low, flattened crown, its little face was attractive and appealing, with its short, blunt, black muzzle, large dark eyes, and little ears set far down on the sides of the head and expressively mobile. I have sometimes seen that puckish, somnolent face thrust sleepily from the doorway of a hole made by one of the large woodpeckers, or out of a small natural cavity, in a trunk where my taps had aroused the beastie from its day-long slumbers.

But this particular kinkajou preferred on a warm afternoon to take its siesta among the open boughs. Disregarding two human spectators, the animal settled itself comfortably among the branches and began to wash its fur with its tongue, which was remarkably long and slender. It seemed very sleepy, for it frequently interrupted its licking to yawn, extruding its pink tongue to an amazing length. It continued alternately to yawn and lazily lick its pelage until we grew tired of watching. Returning at intervals through the afternoon, I found the kinkajou slumbering in various comfortable positions, once resting back downward in a crotch, its head bent forward and resting on its abdomen, its arms thrown over the neighboring branches for support, its feet in the air. When aroused, it yawned with sleepy indifference and promptly resumed its slumbers.

An hour after nightfall, when day had dawned for it, I found the kinkajou moving away among the uppermost boughs of the riverwood tree, doubtless to breakfast upon the fruits of neighboring trees. Its eyes shone with intense brilliance in the beam of my electric torch. I wish that I could have followed as it moved off through the dusky foliage, to learn more of its ways. What a pity that so many of our fellow-mammals are children of the night, going about the business of living under the cover of darkness and remaining stranger to us than the birds, which are not so close of kin. Even the crepuscular Pauraque (*Nyctidromus albicollis*) that drowsed all day beneath the thicket at the edge of the pasture, venturing forth in the twilight to sound its clear, plaintive cries, was more companionable than most of the wild four-footed animals among which we dwelt.

FROM the pastures we gradually extended our explorations along the upper reaches of the river. The number of specimens to be gathered made it impossible to cover a great distance on any single day; but each day we penetrated a little farther into the mountain fastnesses. Now we were no longer able to walk easily over the meadows by the riverside and found it simplest to make our way along the bed of the stream itself, stepping or jumping laboriously from rock to rock or from ledge to ledge, often crossing from one side to the other to take advantage of the rocks closest together. But sometimes, where deep pools extended from shore to shore, we were obliged to leave the channel and with our long machetes cut a path through the undergrowth at the forest's edge.

At most points the slopes rose up steeply from the brink of the stream. They were covered with lofty forest trees that met above the narrowing channel and cast a deep shade over its waters. In February, a tall shrub of the acanthus family, a species of *Aphelandra*, displayed glowing masses of scarlet blossoms in the rather open glades along the river. But aside from this attractive shrub, which soon passed from bloom, there was, as usual, scarcely any color in the undergrowth of the forest. The

course of the stream itself was slightly more colorful. At times during the brighter hours of the day, a wide-winged Morpho butterfly traced its swift, erratic course above the channel, flashing glints of the most intense azure. Other brilliant butterflies were not absent; and there were gigantic dragonflies whose long wings were of glassy transparency and colorless save for a small rectangle of deep blue at the tip of each. Over the rocks in and beside the river and on the foliage along the banks rested bright-colored little frogs, seldom much over an inch in length, boldly marked with black and green and—on the larger specimens—red. These were sluggish creatures and, unlike the majority of batrachians, exceedingly reluctant to remove themselves from beneath human feet. At best they would creep slowly out of our way, so that often they owed their lives more to our own care in placing our steps than to any praiseworthy efforts of their own. We forbore to touch these showy frogs, for they are said to be poisonous. Their excessive abundance and their indifference to concealment, in a region where even inconspicuous green and brown frogs are careful to hide themselves from the many frog-eating birds and reptiles, made me confident that we had here a genuine example of warning coloration.

The rocks along the stream were overgrown with delicate ferns of great beauty. A low herb with modest white flowers (*Spigelia humboldtiana*) blossomed on ledges where a little soil had accumulated. Great boulders whose tops stood well above the water level supported profuse overgrowths of plants, including a tall, glossy-leafed begonia with white flowers and clusias with fleshy foliage and fragrant white blossoms. On an islet we found a splendid shrubby *Columnea,* whose long, furry leaves, red over most of the lower surface, were spread out fanwise and completely sheltered the slender, tubular, red corollas. I had never before seen this beautiful plant; nor, apparently, had any other botanist, for in Washington it was declared to be of a species new to science.

During most of the day a profound silence reigned along this forest waterway; the only habitual sounds were the soft murmur of the falling waters and the loud buzzing of the great cicadas among the trees. These noises were so continuously in our ears that we soon lost consciousness of them; they formed the background against which less constant sounds stood out. Among these were the loud, sweet songs of the Buff-rumped Warblers or, more rarely, the clear, ringing notes of the bay-backed River Wren, which dwelt here where the stream flowed through the forest as well as along the bushy margins of its course through the clearings. Now and again the short, compelling whistles of the Wood Wren rang out of the forest. Seldom, indeed, at this season, did we hear the voice of some other bird such as the exquisitely modulated whistles of the Chestnut-headed Tinamou. But on the morning when we frightened a pair of Crested Guans passing with half-grown young through the treetops, we had no lack of loud, excited calls, high-pitched and weak for such big, long-tailed fowl, the size of a hen turkey.

Continuing up the main stream, we reached a portion of the channel which was, if possible, still more beautiful than that we already knew. The river here followed the dip of the strata of the massive dark gray rock of which those hills were so largely built; but its descent was more gradual than the inclination of the rock layers. Thus each stratum exposed its edge to the erosive action of the stream. The soft layers had been worn away, leaving pools held back by the hard layers. Some of these pools were wide and deep, each brimful of the clearest water, which slipped over the lip to flow down a long, even incline to another pool below. In places there were abrupt falls, but there were also long reaches of nearly level channel, strewn with great, irregular rocks. Here and there low cliffs, draped with verdure, rose from the water's edge. Everywhere the great trees of the forest stood along both banks and cast their shade over the hurrying, dancing waters. In the inmost recesses of this mountain forest the world and its bustling activity seemed infinitely remote; yet at times even here our thoughts were abruptly recalled to it by the hum of an airplane passing unseen above the treetops on its way from San Isidro to one of the little coastal towns.

As we laboriously worked our way up the rough, difficult watercourse, Efraim espied on the rocks ahead a bird such as neither of us had ever beheld. It was a fairly big, stout-bodied fowl, with long legs, long slender neck, and a sharp, straight bill of moderate length. In form it somewhat resembled a heron or bittern, but in coloration it was quite different from members of these families, and its relatively much longer tail set it apart from them at a glance. Its colors were rather subdued: black on the head, brown on the neck, maroon-brown on the breast, dark gray on the back and closed wings, white on the throat and abdomen, and nearly everywhere barred, spotted, or streaked with black and white. Its eyes were deep red, and its long legs, naked to well above the knee joint, bright orange.

Such was the appearance of the strange bird as it walked deliberately over the steeply inclined rock face between two pools, plucking certain small objects from the rocks washed by the smoothly-flowing rapids. We had watched it for many minutes, attracted by its rareness rather than its beauty, when it slipped on the smooth wet rock and, half-opening its wings to balance itself, dazzled us with a glimpse of unsuspected splendor. As it flitted from boulder to boulder, it continued to reveal tantalizing flashes of hidden beauty. But only when the bird spread its wings broadly for a longer flight did it display their full magnificence. On each was a big, round shield of deep orange-chestnut, set in the midst of an area of much paler orange-buff—a sun darkly glowing in a sunset-tinted sky. There was also a second patch of orange-chestnut near the tip of each wing. When I saw those lovely wings painted with the image of the sun, I had no doubt that I had my first Sun-Bittern (*Eurypyga helias*) before me. Like that other denizen of these forest waterways, the Royal Flycatcher, this rare bird kept its proudest ornament concealed most of the time.

THE most important affluent of the Río San Antonio from the right was a rocky streamlet hemmed in by steep, forested slopes, so narrow that at many points we could leap from bank to bank. But it also had its picturesque cascades and shared the wild beauty of the river to which it delivered up its unsullied waters. Along this narrow watercourse we discovered more birds' nests than along the broader stream. Here, in the still air, attached to the long, dangling, cordlike roots of epiphytic plants or to slender pendent vines and shoots of climbing bamboo, hung the exquisite nests of the little olive-green flycatcher called Pipromorpha. Each nest was a pear-shaped structure a foot in length, covered with green moss; a small round doorway in the side led into a cozy chamber well padded with vegetable fibers. In an even more conspicuous position above the channel, the Myiobius, a brisk little forest flycatcher with a bright yellow rump, had constructed her nest, a thin-walled pocket of brown fibers, with a visor-like projection shielding the round doorway in the side.

Most abundant along the watercourse, although also most difficult to detect,

were the nests of the Guimet's Hummingbirds (*Klais guimeti*), each a tiny chalice of green moss, softly lined with seed down of a light buffy color and fastened by spider's silk to slender, usually drooping, leafy branches overhanging the channel, at heights of from three to twelve feet above the water. Without making a thorough search, we found three of these nests along the Río San Antonio and five along the smaller affluent, making eight occupied nests along two or three miles of waterway. There were perhaps as many more empty ones, of which we kept no accurate count. Early March is the height of the breeding season, and the nests might contain anything from two minute, elongate white eggs newly laid to feathered nestlings almost ready to fly. But there were never more than two eggs or nestlings in a nest. Because it is so unusual to find hummingbirds' nests in such abundance in the lowland forest (I have rarely seen more than three or four in a year) we decided to name the stream above which they hung *La Quebrada de los Gorriónes,* "The Hummingbirds' Brook."

After several hours of leisurely progress along the rocky bed of the brook, we halted for lunch in a spot of rare beauty. A steeply sloping ramp of naked gray rock rose in the stream bed before us between low, vertical cliffs. Down this incline the shrunken current of March flowed in two separate streams, one against the right base of the cliff in a long, even trough; the other, with a low waterfall in its course, made a broken and precipitous descent on the left. At the foot of the twin cataracts, the waters were reunited in a broad pool, nearly square in outline, about forty feet on a side, and deep enough to swim in. But only a naiad could have entered its pellucid depths without seeming to defile them. We left them in their unruffled serenity, to mirror the broad, infinitely subdivided fronds of a cluster of tree ferns that grew at the brink, surrounded by exuberant verdure and deeply shaded by the giants of the forest.

Climbing the tongue of rock between the cataracts, we found two more nests of the hummingbird, only forty feet apart. One, in a bush leaning over the falling water halfway up, held two eggs; the second, on a moss-covered pendulous branch of a small tree at the head of the waterfall, cradled two feathered nestlings. It was surprising to find these two occupied nests of the same species of hummingbird so close together; but as we continued along the course of the brook above the cataracts, we made a discovery still more astonishing. A richly branched bush, leaning far out over the narrow channel, almost blocked our way. As we pushed past, we espied another nest of the same kind, attached to a slender pendent branch, only three feet and three inches—almost exactly one meter—above the water. This nest was unusually tall, as though it had been built atop an older one—as hummingbirds' nests sometimes are—and it held two eggs. Four feet away in the same bush and fifteen inches higher above the water, was yet another nest, from which a well-feathered fledgling took flight as we approached. After a short pursuit, I captured the young fugitive and returned it beside its nestmate, where rather unexpectedly it was good enough to remain.

HUMMINGBIRDS are generally held to be unsociable. Certainly they lack the true convivial spirit that inspires such flocking birds as crows, grackles, and cormorants; and except in their courtship assemblies, where they exhibit a certain degree of community enterprise even in rivalry, it is every hummer for himself. Even male and female form no lasting attachments, and the latter always attends her nest and nestlings

quite alone. Hence the discovery of two hummingbird's nests in the same small bush was a memorable event, calling for further study. But the day was already far spent; and since it would be folly to try to move along that broken stream bed in the black dark that would prevail an hour after sunset, we were obliged to hurry downward before daylight forsook us.

Next morning I laboriously retraced my steps along the stream. I had already proved at other nests that if I sat quietly on a rock at no great distance, the hummingbirds would soon return to attend their eggs or nestlings. I seated myself on a rounded boulder, from which I commanded a good view of the two nests. The well-feathered nestlings in the one nearer me were bright, alert little sprites, who frequently preened their plumage and from time to time beat their wings into a haze, the while anchoring themselves to the bottom of the nest with their feet lest they be carried away by these vigorous exercises. When an adult of their kind came within sight, they were all alertness, uttering clear little droplets of sound in anticipation of good things to eat. Apparently they were unable to distinguish their mother from her neighbor, for they called in the same fashion at the approach of either. But the incubating hummer, each time she arrived, went directly to sit upon her own eggs, paying no attention to the other's family. The two fledglings had the gray throat of their mother rather than the deep violet of the adult male, as did all others of their age that we found.

The owners of these two nests, upon returning from an excursion into the forest, would sometimes approach me closely, hovering only a yard or two from my face while they subjected me to close scrutiny. Then, apparently satisfied that this strange monster that spied upon them was not to be dreaded, they went to their nests. Or, again, after feeding her nestlings, the mother of the two would approach to look me over once more before darting off. At a nest farther downstream, a hummingbird flew up to feed her babies, apparently without having noticed that during her absence I had seated myself near by. While she was in the midst of regurgitating food to them, my sudden movement in raising the binoculars for a closer view attracted her attention. At once interrupting the nestlings' meal, she darted up to examine her visitor in the usual fashion. Then she returned to plunge her sharp bill far down into a nestling's throat and continue the process of feeding, making me feel that I had created a favorable impression and my presence was not distasteful to her. These and many other examinations to which I have been subjected by hummingbirds of varied kinds appeared to be deliberate and purposeful acts, prompted in some instances by simple curiosity and in others by concern for the safety of their nests and offspring. They suggest that hummingbirds may be somewhat nearsighted, which is not surprising when one considers the minute size of the nests they build and of the insects they pluck from the vegetation or snatch from the air.

On approaching her nest, each hummingbird would alternately dart and hover, shooting a short distance now to this side and now to that, irregularly back and forth, at the end of each abrupt shift of position hanging stationary for an instant, on swiftly beating wings. Then of a sudden the tiny bird would plop down upon her eggs with her wings already folded against her sides, or alight upon the rim of the little cup to thrust her slender black bill far down into the crop of a fledgling and begin to pump nourishment into it. The hummingbird with eggs seemed a trifle fearful of her neighbor with nestlings, for

on two occasions she suddenly flew away as the other came to attend them. Once she continued to sit while the young birds received their meal, only to dart away as her neighbor was leaving.

No violet-throated male appeared on the scene; in fact, I never saw a single male Guimet's Hummingbird anywhere along the stream. At this season the more brilliant sex was to be found on sunny perches near the edge of the forest, each bird sounding his metallic little voice through all the long, bright day and interrupting his animated but tuneless song only to moisten his throat at the inexhaustible fount of the flowers. Often four or five of the Guimet's Hummingbirds sang close together, but each on his own perch, to which he returned after every brief absence. So the males let the other sex know that they waited to woo them; but never once did they give assistance in the care of the nest.

While seated on the boulder watching the two nests above the forest stream, I was assailed by that uncomfortable feeling I sometimes experience in the woods, of being myself watched by unseen eyes. Suddenly, a long black snake, mottled with yellow, glided down an oblique ledge of the cliff on my right. It moved rapidly without a pause until it came to rest on a rock in midstream, almost beneath the two nestlings. There it lay motionless with its head lifted high, looking up at the young hummingbirds and without much doubt considering in dull serpentine fashion how it could reach them. Knowing from repeated unhappy experiences the insatiable appetite of the mica (*Spilotes pullatus*) for eggs and nestlings, I resolved to remove all possibility of tragedy. A snake intent upon ravin appears to become insensible to everything else, at times even to mortal wounds. This one was no exception to the rule and lingered immobile while I approached and delivered the stroke that sent it writhing madly into the water, where the current bore it slowly down the stream to die.

Feeling that the hummingbirds were safe for the moment, I continued upstream until I found my way blocked by a wall of rock ten feet high, stretching transversely across the channel. At this point the current was divided into two separate falls, like Niagara in miniature. That on the right dropped with a single leap into a deep, shady recess in the rock. The left branch babbled down among great loose boulders, beneath a huge block of rock which, wedged between the central pier of stone and the high cliff that formed the left wall of the ravine, made a natural bridge over the cascade. Like most of the wider rocks above the reach of the flood waters, this bridge was profusely overgrown with begonias, aroids, clusias, and other plants. I was obliged to crawl beneath this verdant rock bridge in order to gain the top of the wall that obstructed the channel. Passing under the bridge, I almost brushed against a neat little nest that hung above the cascade. It was attached to a splinter beneath the butt of a huge shattered tree trunk lying in the stream bed above. The nest was of pyriform shape with a round entrance in the side, shielded by a visor-like projection; its walls were composed almost wholly of fibrous rootlets and the interior amply lined with light-colored bast fibers finely shredded and some tufts of silky seed down. In this cozy retreat so excellently concealed rested a single pin-feathered nestling, which cried shrilly when I illuminated its nursery with a small electric bulb and looked in with a tiny mirror.

I could not even guess who the maker and owner of this ingeniously hidden nest might be and sat upon the central pier of rock to await her approach. After an hour a tiny flycatcher (*Leptopogon superciliaris*), gray and olive-green and pale yellow, arrived with a small green

tree cricket in her bill. Nervous and shy, she approached and left her nest by darting beneath the bridge of rock, thereby making it still more difficult for hostile eyes to follow her movements. Yet she fed the nestling while I rested in plain view only ten feet off—three feedings in as many hours.

Of a sudden as I watched I was startled by loud, shrill cries rising out of the deep recess at my right, into which more than half the flow of the stream leapt down in a single unbroken fall. Leaning over the overhanging wall of rock, I peered into the obscurity of the chasm without being able to discern more than rock and water —nothing that could possibly utter such earsplitting cries. But the shrill notes continued; so I descended by way of the gentler cascade on the other side, beneath the bridging rock, crept along the base of the abrupt wall, and peered into the recess from the front. There, on the wet, slippery, overhanging face of rock behind the falling water, clung two big, black swifts with narrow white collars. Crying loudly, at short intervals they fluttered from one point on the rock to another. Their hurried movements and sharp cries suggested great excitement. All at once they brushed past me, rose through the narrow chasm between the tree trunks that marked the course of the brook, and vanished into the illimitable vastness above. Nor did they return during the next hour. Numberless times I had watched great flocks of these largest of Central American swifts wheeling with shrill cries far overhead but never before had I come so close to them. They are said to nest in crannies in cliffs and possibly, like the Black Swift, they sometimes attach their nests behind a waterfall. Removing shoes and socks, I waded into the alcove behind the falls (not without a wetting) but could find no indication of a nest nor any cranny that might have supported one. Probably these White-collared Swifts (*Streptoprocne zonaris*) were disappointed in their quest for a nest site, as I, upon my return a fortnight later, was disappointed in my desire to learn something about their home life.

The afternoon was now more than half spent, and I turned homeward, to make sure of reaching the clearing before it grew dark. I was climbing down the long ramp of rock above the big pool, passing over a narrow and slippery ledge in the cataract on its left side and thinking how unpleasant it would be to meet, in that insecure position, the huge snake that had left its slough upon the neighboring slope, when a creature of quite a different character appeared. A hummingbird flew out of the forest and clung to the inclined rock surface over which the water poured in a thin sheet, almost at my feet. First he appeared to drink, then bathed, pushing his head down into the flowing water, shaking his wings, and wetting himself all over. He was big for a hummingbird and had a long, straight, black bill and a deeply forked, black tail. His upper plumage was green; and I caught shifting glints of intense, metallic blue from his throat. He quite ignored my presence, even when to save myself from falling I shifted my position. Then he brushed past to perch in a low bush close behind me, shake the water from his plumage, and put it in order. Before I could maneuver myself into a position to view him favorably in the dim light, he was gone, unidentified in the terms of science, yet ever to be identified in memory with this beautiful cataract in the course of an enchanting sylvan stream. Thenceforth, the highest fall on the Hummingbirds' Brook was known as the "Hummingbird Cascades."