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## BIRD ARCHITECTURE.—IV.

### THE HUMMING-BIRDS.



FIG. 1.—RUBY-THROATED HUMMING-BIRD (TROCHILUS COLUBRIS). [SEE PAGE 171].

THAT we may be able to do full justice to the wonderful and exquisitely beautiful architectural constructions of the humming-birds, it will be necessary for us to refer also to several of their most remarkable peculi-

arities as a family. The *Trochilidae*, or humming-birds,—and no name more appropriate than the latter can be found,—are, without doubt, the largest family of the class, numbering nearly or quite four hundred species.



It stands out, distinguished from all other families, by a combination of characteristics found nowhere else. Not one of all this large family naturally alights upon the ground. The shortness of their legs and other peculiarities require them to rest on branches or leaves, or similar means of support. As a group, it is remarkable for the smallness in size of the species composing it, and numbers the most diminutive bird-forms among its members. It also contains some of the most beautiful and diversified in brilliant colors. The family is exclusively American, and is found throughout the islands and main-land of the continent from Alaska to

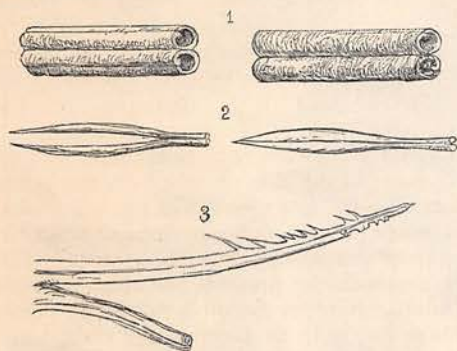


FIG. 2.—DIAGRAMS OF TONGUES OF HUMMING-BIRDS.

Patagonia, but is most abundant in the tropical portions. Some species are only found in such high and temperate regions as the table-lands of Mexico and the Andes.

The bill of the humming-bird is generally longer than the head, and in one remarkable instance, that of the sword-bearer (*Docimanes ensiferus*) [Fig. 3, 3], is nearly as long as the rest of the bird; it is usually straight [Fig. 3, 4], in some curved in a remarkable manner, some having a downward curvature [Fig. 3, 2], and with a few, like the avocet-billed, curved upward [Fig. 3, 1].

Their wings are scythe-like in form and differ from those of all other birds, and are well illustrated in the wing of the saber-winged humming-bird (*Campylopterus hemileucurus*) [Fig. 4]. The shafts of the quill-feathers,—in all remarkably strong and elastic,—in the saber-winged species have an extraordinary development. The upper bone of the wing is shorter than in any other family, and this renders possible the wonderful rapidity with which, while hovering in the air, they vibrate their wings. These vibrations are so rapid as to render the wings invisible, and produce a musical note which varies in

pitch with the variety and sex. Their flight is always rapid. They never perch, either while feeding or when building their nests, but invariably take their nutriment hovering in the air before a flower, or near a column of minute insects, and their position is the same when they build the frame-work of their nests. The tail-feathers of the family present no uniformity in their character. The usual fan-like form is well presented in our figure of the mango humming-bird [Fig. 6]. Another striking example of these powerful aids to a rapid flight may be seen in our figures of the long-tailed humming-bird of Jamaica (*Polytmus*) [Fig. 9].

The tongue, in this family, is too wonderful a structure to be passed by in silence. It presents the appearance of two tubes laid side by side, united for the greater part of their length [Fig. 2, 1], but separate for the remainder [Fig. 2, 2]. Near the tip, the outer edge of each laminated tube becomes spread out and presents irregular fimbriæ which point backward, with soft, flexible points that are said to serve the purpose of spoons, enabling the birds to retain their insect or nectar food. [Fig. 2, 3].

The flight of the humming-bird is of two quite different kinds,—their rapid horizontal movement and the vertical position maintained by the vibrations of their wings, aided by the movements of the tail. Their food is largely and principally insect. They are also very fond of the nectar of flowers, which seems to afford them some nourishment, and upon which, in captivity, they can subsist for a long while without any apparent inconvenience.

All humming-birds have a notoriously aggressive disposition, attacking with singular fury whatever excites their animosity, and pursuing birds much larger than themselves, while they are very rarely molested by the birds which they thus assail.

In enumerating some of the more prominent peculiarities of this wonderful family, we must not fail to notice the lavish profusion of metallic colors of every conceivable tint and shade with which their plumage is adorned, excelling in their brilliant splendor the costliest gems. These often vary, in the most wonderful manner, in the same individual, with the position in which the bird is presented to the eye, and our wonder is not lessened when we realize that the sides of the fibers of each feather differ in their shade from the surface, producing these sudden changes as the position is altered. The common rufous hummer of California (*Selas-*



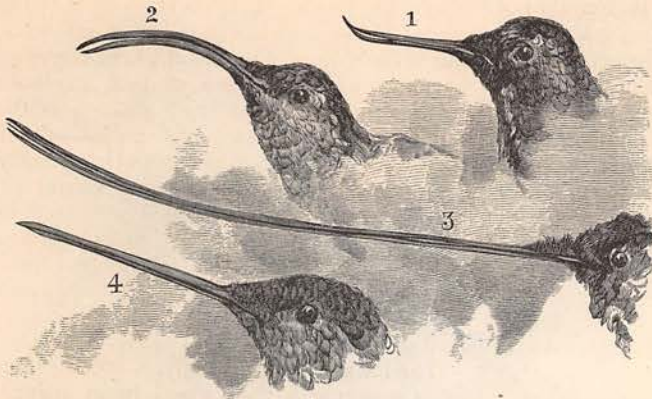


FIG. 3.—BILLS OF HUMMING-BIRDS.

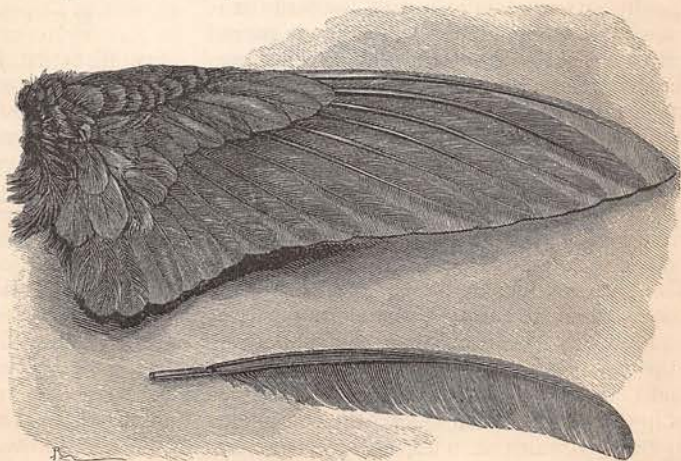
*phorus rufus*) will, in a moment, change the vivid, fire-like color of its throat to a light green, and the celebrated Mexican star (*Calothorax lucifer*) at one moment exhibits a plumage of the brightest crimson, and at the next, one of an equally brilliant blue.

As it would be but natural to suppose, this large family, differing as they do in so remarkable a manner in so many of their other peculiarities, differ also, to an almost inconceivable degree in the characteristics of their nests. Indeed it is probable that there is no other family whose architectural achievements are more varied than are those of the humming-birds. These variations include not only the material of which the nests are made and the positions in which they are placed; but also the general style of their construction, exhibiting constant differences, in the several species, in the ingenuity and beauty displayed in each design. The extent and variety of these deviations strike us as all the more remarkable when we bear in mind that the entire family must perform all their labors in building their nests, *while on the wing*, self-poised in the air, and that while thus engaged they are never at rest, save only when adjusting the material of their unfinished cradles. It is not possible in a single article to do more than refer to a

small portion of the most remarkable examples, and we would on no account have our readers imagine that because, with a single paper we dismiss the history of this wonderful family, we have done more than make a beginning. Instead of a few pages, whole volumes might be written, and in the descriptions and illustrations of the nests of each species, were all the story known, well-marked peculiarities would be traced distinctively characteristic of each one of the nearly four hundred species.

The nests of all the humming-birds that we have been privileged to examine, belonging to upward of sixty different species, we have found alike in one very important feature,—the free use that, in every instance, is made of silken fibers derived from the webs of different varieties of spiders. This is a constantly present and characteristic feature. In many instances these long silken fibers not only tie together the several materials of which the nests are constructed, but hold the entire aggregated mass securely attached in a position that would otherwise be impossible. This is strikingly illustrated in the nest of the *Phaethornis eurynome*, and hardly less so in that of the *Eucephala carulea*, both mentioned below.

In both instances nests made of very different materials are securely bound to the very tip ends of long and pendent leaves that

FIG. 4.—WING AND OUTER QUILL FEATHER OF THE SABRE-WINGED HUMMING-BIRD (*CAMPYLOPTERUS HEMILEUCURUS*).



are constantly fluttering in the wind. And in several instances materials that could not otherwise be made to blend together are securely, though sometimes loosely united to form the frame-work of the nest, keeping securely in its place its soft, downy lining. In others small dry mosses, dry and curled leaves, bits of bark and even intractable lichens are securely tied, one to the other, to form an extraordinary frame-work. Of such as these there are very many, and all of them very wonderful exemplifications.

SCALY-BACKED  
HUMMING-BIRD.

THE nest of the scaly-backed humming-bird (*Phaethornis eurynome*) is of a very abnormal and unusual type, and is, in all respects, quite remarkable, both on account of its singular position, and of the materials used in its construction. It is made almost exclusively of the most delicate tendrils and rootlets of trees or wooded

shrubs. These it fastens in position, by binding around them cobwebs and silken fibers of cocoons, and attaching them to the extremity of a drooping leaf of a palm-tree,—usually one growing near the edge of water, or in moist situations. The ingenuity with which these diminutive architects can succeed in fastening such stiff and unyielding materials in a position so full of difficulties as at the termination of a hanging leaf is truly surprising. Each separate rootlet is bound round and round with cobwebs, or silken threads, and securely fastened in place, making each its part of the rounded periphery of the whole. The nest, circular at the top, gradually becomes attenuated at the lowest portion, where undoubtedly its construction was first begun. It is a shallow and seemingly frail structure, and one that does not appear to be capable of long enduring, with safety, the continued motion to which it must be subjected by every wind that blows, for the leaf on which it is tied must be almost constantly in

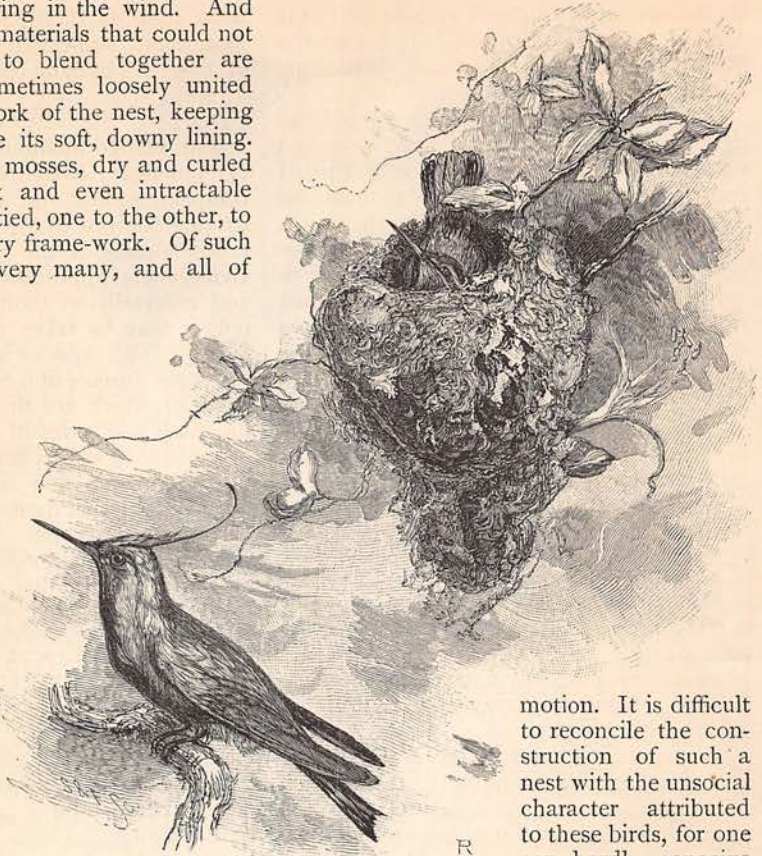


FIG. 5.—PLOVER-CRESTED HUMMING-BIRD (*CEPHALEPIS*  
DELALANDI).

motion. It is difficult to reconcile the construction of such a nest with the unsocial character attributed to these birds, for one can hardly conceive how it is practicable for an unaided pair

to construct a nest with so many inherent difficulties, both of position and intractable materials.

BLUE-CHINNED SAPPHIRE.

SIR WILLIAM JARDINE, in his history of humming-birds, refers to a very remarkable but unidentified nest made by one of this family in the primeval forests of Guiana. It is described as pensile, and composed entirely of down like that of the thistle. The seeds attached to the pappus are so arranged as to form a jagged and prickly outside of the nest, while the down within is its warm and luxurious lining. I am fortunately able to supply the identification of a beautiful and wonderful nest answering exactly to this description, and quite possibly belonging to the same species. It is "the castle in the air" of the blue-chinned sapphire (*Eucephala cerulea*), a lovely species from Para, and one of the most common of its family, being sent annually by



thousands as an article of commerce to the United States and Europe. It is found in Brazil, Guiana and Trinidad, inhabiting chiefly large woods.

The nest of this bird has been figured and described by Bourcier, and his description of it corresponds exactly with the nest of which I speak. This example is attached to the under side of a leaf of a bamboo. In shape it is the lower half of an oblong oval, its upper portion being a graceful little cup an inch and a half in diameter and about one inch in depth, when it suddenly tapers off into a slender base, two inches long. This fills the hollow space in the end of the leaf, around which the whole is bound. The material is a commingling of the downy contents of the capsules of several trees with floss-bearing seeds, such as the cotton-tree (*Bombax globosum*), the down on the fruit of the boabab (*Adansonia digitata*), and the seeded pappus of smaller plants. Its outer walls and its extended, tapering base are bound about with long, silken threads of spiders' webs, and these also inclose the upper sides of the leaf and hold the nest securely in its position. The curvature of the leaf incloses the nest in its protecting embrace, and effectually shelters it against both sun and rain. One can hardly find, in the architecture of this family, if indeed in that of the entire class, a more simple and beautiful design, or one better adapted for its purpose, than this soft aerial cradle.

#### PLOVER-CRESTED HUMMING-BIRD.

The plover-crested humming-bird (*Cephalopis delalandi*), is a native of Southern Brazil, and one of the most graceful and beautiful of its family. [Fig. 5]. Its lengthened crest of one elongated plume is quite a striking feature. Its nest is an elongated structure, circular at its rim and tapering down almost to a point, and made of fine fibrous rootlets, mosses, lichens and the involucre of composite plants. The whole of these materials are matted together with spiders' webs of so fine and delicate a thread as to be almost imperceptible. Two of

these nests in the collection of Mr. Gould were found suspended from the fine twigs of a species of bamboo.

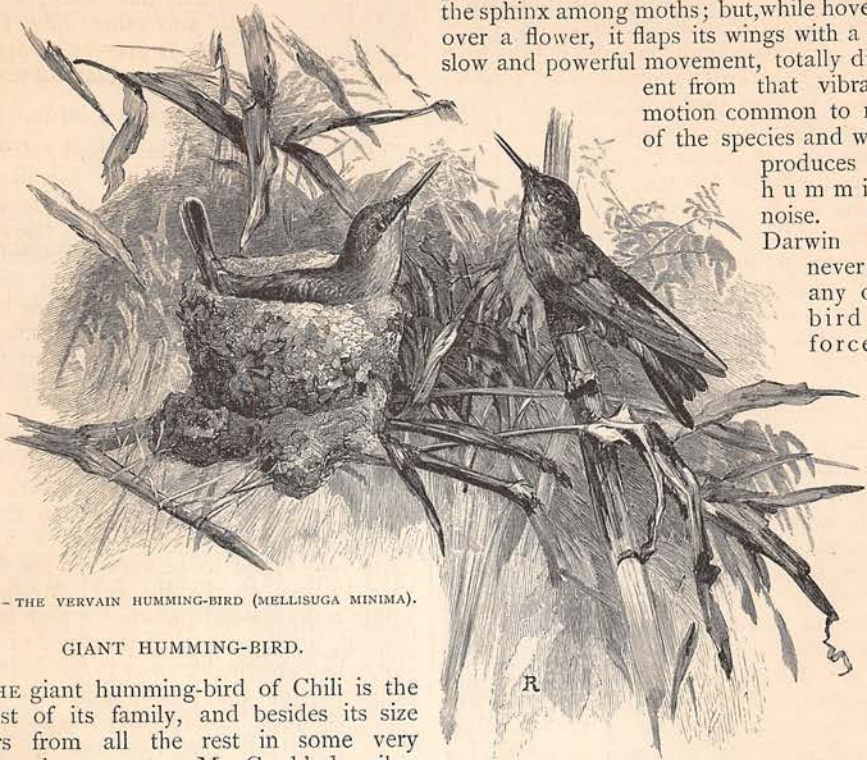
#### MANGO HUMMING-BIRD.

THE mango humming-bird, of the island of Jamaica (*Lampornis mango*), with its compact, robust and rounded form, is in striking contrast to the more common long-tailed species of the same island [Fig. 6]. In its general appearance, its powerful wings, and especially its short, expansive, fan-like tail, it may be taken as fairly typical of its family. This species places its nest upon the upper surface of a horizontal branch, the twigs of which are firmly interwoven with the base and sides of the structure. It is cylindrical in shape, and the bottom of it is nearly flat. Within it is nearly an inch deep, its external diameter and height being each twice as much. The hollow is overhung by the margin, and is cup-shaped. It is a very beautiful structure, composed almost entirely of the silky down of the giant cotton-tree (*Eriodendron anfractuosum*), the base being made of the true cotton. The felted materials of which the inner nest is composed are closely impacted together and tightly bound around with fine and strong threads of spider's-web, employed with wonderful skill and neatness. Overall this the external surface is closely studded with minute whitish lichens that almost entirely conceal the down, and add not a little to the effect with which the exquisite symmetry of the whole is thus enhanced.



FIG. 6.—MANGO HUMMING-BIRD (*LAMPORNIS MANGO*).



FIG. 7. — THE VERVAIN HUMMING-BIRD (*MELLISUGA MINIMA*).

## GIANT HUMMING-BIRD.

THE giant humming-bird of Chili is the largest of its family, and besides its size differs from all the rest in some very noteworthy respects. Mr. Gould describes it as a bold and vigorous flyer, quick in all its actions, passing from flower to flower with the greatest rapidity. Unlike other species of its family, it may be frequently seen perched on some small tree or shrub. It has a very extensive distribution over nearly all the more southern portions of South America. M. Warszewic collected specimens in Bolivia at a height of nearly fourteen thousand feet. The nest is a somewhat large, cup-shaped structure, composed of mosses, lichens and similar materials put together with cobwebs and placed in the fork of a low branch of a tree, generally one that overhangs a turbulent stream. Charles Darwin, in his narrative journal of the voyage of the "Beagle," refers to this species as a resident of central Chili during the breeding season, and his account of it differs, in some respects, from those of other writers, especially that relating to the absence of the rapid vibrations of the wings, generally supposed to be a peculiarity of all humming-birds, without exception. He states that this species, when on the wing, presents a very singular appearance. Like others of the family it moves from place to place with a rapidity which may be com-

pared to that of syrphus among flies, and the sphinx among moths; but, while hovering over a flower, it flaps its wings with a very slow and powerful movement, totally different from that vibratory motion common to most of the species and which produces the humming noise. Mr. Darwin had never seen any other bird the force of

whose wings appeared (as in a butterfly) so powerful in proportion to the weight of its body. When hovering by a flower, its tail was constantly being expanded and shut like a fan, the body being kept in a nearly vertical position. This action appeared to steady and support the bird between the slow movements of its wings. Although it flew from flower to flower in search of food, its stomach contained abundant remains of insects which Mr. Darwin believed to be much more the objects of its search than honey. Its note, like that of nearly the whole family, was extremely shrill.

## VERVAIN HUMMING-BIRD.

IN striking contrast, in size and the rapidity of its movements, to the giant hummer of Chili, the islands of St. Domingo and Jamaica present in the vervain humming-bird (*Mellisuga minima*), the smallest of its family, and the most diminutive bird in the world [Fig. 7]. It is an abundant species in both islands, and derives its name from its frequenting the blue flower of the common vervain, an abundant weed in neglected pastures. It visits and probes those azure blossoms in the manner of, and with the



business-like application of, the honey-bee. Unlike most of this family, this diminutive creature is gifted with a real song. The author of "A Naturalist's Sojourn in Jamaica" thus describes it: "The most minute of birds, the tiny vervain humming-bird, not larger than a school-boy's thumb, utters a song so sweet, but of sounds so attenuated withal, that you wonder who the musician can be, and are ready to think it the voice of an invisible fairy. Presently you see the atom of a performer perched on the topmost twig of an orange tree, his slender beak open, and his spangled throat quivering as if he would expire his little soul in the effort." The nests of this tiny species are usually placed in the forks of a small lantana bush, or are attached to the twigs of a bamboo. In the latter case two parallel twigs are usually connected together by spiders'-webs, irregularly and profusely stretched across. Upon these are placed layers of silk cotton, ornamented on the outside with bits of gray lichens bound to their places with silken gossamer of spider-webbing. Placed on the joint of a bamboo branch, the diverging twigs form part of its base. It is about the size of half an English walnut shell cut transversely. The female presents an amusing appearance as she sits in this tiny structure, her head and tail both excluded, the latter erect, like that of a wren, and her bright eyes glancing in every direction.

#### FIERY TOPAZ.

VERY little is known in regard to the individual peculiarities of the fiery topaz (*Topaza pyra*), probably the most brilliantly beautiful species of a family so abounding in beauty. The few specimens of it that have been procured were all taken in the region of the Rio Negro, a tributary of the Upper Amazon. One of its very remarkable nests was obtained near Barra by Mr. William H. Edwards, author of "A Voyage to the Amazon." The nest is said to have been built about the small branches of a twig growing over water, and the material of which it is composed is precisely similar to the substance used by the crimson topaz and other species in the formation of their nests. It is a spongy cellular substance, supposed to be that of fungi, and, in appearance, is compared by Mr. Waterton to tanned cow-hide. With this material the bird builds a homogeneous and partially pensile nest, which is cup-shaped, and can only have been made when its material was soft and pliable, and before it had assumed its

leathery consistency. The original materials, whatever they may have been, are mingled with cobwebs and other silky fibers, and when found, always present an appearance of uniformity and simplicity of texture.

#### LONG-TAILED HUMMING-BIRD.

THE long-tailed humming-bird (*Aithurus polytmus*), a species local to Jamaica and not known to occur anywhere else, is one of the most remarkable in form and one of the most elegant in plumage even of this brilliant family [Fig. 9]. Its graceful and slender shape, its crest of velvet, its gleaming breast of glittering emerald, and its long tail-plumes, which, closed in its upward flight, expand to their utmost in its descent, quivering like a streamer in a gale, all combine to impart to it the appearance of a radiant little meteor. For all that is known of the nesting of this species, we are indebted to the investigations of Mr. Gosse, an English naturalist. The situations chosen for its nests were found to be very various. One near Bognie, on the Bluefield Mountains, within a thick woods, where the path wound beneath an overhanging precipice of limestone, had attached its nest to the fibers of a projecting root that was hanging down over the steep sides. The rootlet was as slender as a whip-cord; the nest was composed wholly of moss, and its thick walls were interwoven with the rootlets at its side. This nest having been afterward disturbed, the same pair built a second exactly similar, affixed to another twig not a yard from the first. It was unfinished when first noticed, and Mr. Gosse enjoyed a rare opportunity of witnessing its construction. The female was seen to hover opposite the nest with a mass of silky cotton in her beak. She was at first disturbed by his presence, but soon returned, alighted on a twig, and, after clearing her mouth from the silky fibers, flew to the face of the cliff, which was thickly covered with soft, dry mosses, and, hovering on the wing, as if before a flower, began to pluck the moss until she had a large bunch of it in her beak. His near presence seemed to be no hindrance to her proceedings.

A third nest, fastened to a twig of a seaside grape-tree (*Coccoloba*) was almost over the sea, fifteen feet from the ground, and contained young. Unsuccessful attempts having been made to capture the female, she deserted her nest, but not until after her nestlings were removed to some place of safety to which they could not be traced.





FIG. 8.—PUFF-LEG HUMMING-BIRD (*ERIOCNEMIS LUCIANI*).

A curiously constructed nest of this species was built around a hanging twig of a black mangrove tree, the twig passing perpendicularly through the side and out at the bottom. It was a very compact cup, one inch deep within and one and three-quarter inches without. The sides were a quarter of an inch thick, the inner margin overarching so as to narrow the opening. It was mainly composed of silky cotton, closely impacted and mixed with the still more glossy cotton of an asclepias around the edge, the seeds remaining attached to some of the filaments. The outside of this structure was entirely covered with spiders' webs, crossed and re-crossed in every direction, and apparently made to adhere by some viscous substance applied after the web had been placed. Small fragments of a pale-green lichen and pieces of thin, laminated bark were stuck here and there on the outside, the web keeping them in place. Another nest, and one of exceeding beauty, is described as having been composed wholly of pure silk-cotton, bound profusely with webs so fine as to be undistinguishable, except on close examination; not a fragment of lichen

marred the beautiful uniformity of its appearance. Other nests were studded all over with lichens, and these also possessed their own peculiar symmetrical attractions.

Mr. Gosse made ineffectual attempts to accustom individuals of this elegant species to confinement, in the hope of taking them alive to England. They soon became accustomed to his presence and seemed to be perfectly tame, fed regularly on sweetened fluids and caught insects on the wing; but all soon died from various causes more or less connected with their peculiarly emotional and excitable natures.

#### BUQUET'S PUFF-LEG.

THE nest of Buquet's puff-leg (*Eriocnemis luciani*), represented in Fig. 8, was given me by the late Captain Joseph Couthouy, and had been taken by him, with its owner, near the snow-line on Mount Pichincha, at a height of 10,500 feet. It is a species but little known, and was first discovered by M. De Lattre, near the village of Guaca, in the republic of Ecuador. It has since been found by Professor Jameson near Quito, as well as on the western slope of the mountain from which our specimen of the nest was procured. Rude memoranda written on a fragment of an Ecuador newspaper show that the nest was found October 5th, 1855, near the ground, in the crevice of a rock, on a recumbent gualteria vine, on the eastern slope. When taken, the nest was circular at the top, with a diameter of about two inches, and, for the size of the nest, its cup was very shallow. The base tapered to a length of nearly five inches, becoming at the bottom less than one inch wide. The lower portion of the nest is composed wholly of impacted hypnum mosses, strengthened with, here and there, a long black rootlet of the gualteria. The receptacle for the eggs is made of finer mosses, with a slight lining of white vegetable down. It was suspended in a loop made by the interlacing branches of the vine.

#### AVOCET-BILLED HUMMING-BIRD.

THE Boston Society of Natural History possesses a specimen of the very rare and curious nest of the fiery-tailed avocet (*Avocettula recurvirostris*), whose remarkable recurved bill we have given above. Unfortunately, very little is known as to the history of this species, and conjecture must supply the place of facts. It is a native of the interior of Cayenne and Demerara.



FIG. 9.—LONG-TAILED HUMMING-BIRD (*AITHURUS POLYTMUS*).

An interesting nest of this bird, taken near Surinam, was given to the society by the late Captain Cragin, a naturalist resident in that place. The nest itself is a mere loose aggregation of leaves of various kinds, now dried and withered, but green and fresh when first made use of to hide the cup within, where the eggs were concealed. The leaves were of various kinds and mingled with bits of bark and the flossy pappus of seeds, tied together with the finest gossamer threads of spider's-web. Within this spherical ball is a bed of the softest vegetable down, the entrance being through a small opening at the top, the upper rim of the nest projecting over and sheltering the cavity below. This was placed in a recess of a wild vine, and so well concealed that it would not have been discovered but for the unwise animosity of its owner, whose aggressive attack upon a passer-by betrayed the treasures he sought to guard. The bill of this beautiful little creature is without any known parallel in any land-bird, and presents, in miniature, a striking resemblance to that of the avocet. One can only con-

jecture the use of this singular formation, but it is quite probable that the principal



sustenance of this bird is drawn from pendent blossoms of the bignoniæ and other similar plants whose corollæ are long and bent in their tubes; the nectar and the insects attracted thereto being at the bottom, cannot be reached either by a straight or an incurved bill, though very easily by one thus corresponding to the shape of the flower. It is also equally probable that the peculiar shape of its bill aids it in collecting insects on the under sides of small limbs in tangled thickets which it probes while on the wing.

#### RED-BREASTED HERMIT.

In the rich collection of the nests of the trochilidæ belonging to the late Dr. Bryant, and now in the museum of the Boston Society, are two of a very unusual character. They are the nests of the red-breasted hermit (*Pygornis pygmaeus*), a species so rare that Mr. Gould was not able to include it in his great work [Fig. 11]. We only know of it that it is found in Guiana and northern Brazil, that it belongs to a small group called hermits, from the retiring and secretive habits of its members, besides what we can gather from the structures before us as to its manner of nesting. Both were constructed in thick tussocks of coarse grass or rushes, such as grow in tropical swamps, and could not have been more than a foot or two above the ground. Some thirty or more of these stout blades are fastened together within a few inches of their tops by a strong interweaving of spiders' webs, and within this hollow is placed the impacted nest, made of fine stems of hypnum mosses,

fragments of the grass itself, the soft inflorescence of the same, cobwebs, and other vegetable substances whose origin is not clear. The nest, in shape, is an oblong ovoid, nearly three inches in length and one in diameter. The entrance is at the top between the stems, which are so bound together with spiders' webs as to unite above the rim, thus giving it protection and concealment. It is possible that there are in this large family other similar constructions, but there is no record of any that correspond with this very interesting and peculiar hermitage.

The nest of the Columbian violet-ear (*Petasophora anais*) is a peculiar and interesting structure, differing in materials, shape and position from any we represent. Placed in the fork of vertical twigs, it enfolds one within its thick walls and is firmly bound to the other with strong filaments of spiders' webs and other silken threads. Its shape is that of an oblong spheroid abruptly cut at the top. Its base is a hemispherical mass of fine, impacted mosses, and is nearly half of the entire structure. Upon this rests the comparatively shallow cup. This is made almost wholly of hepaticæ, mingled with a few mosses, all firmly bound together with cobwebs. The dark-brown mosses of the center, overwrought with pale stems of jungermanniæ and other hepaticæ, give to it a variegated and peculiar appearance. The nest is three and a half inches long and one and a half wide, but the shallow cup is less than one inch in depth. Its lovely and richly variegated architect is a species strictly confined to the mountainous districts of Columbia, and is especially abundant in the neighborhood of Santa Fé de Bogota, whence its range extends northward to Caraccas and southward to Peru; it neither descends to the hot plains below, nor upward to the bleak mountain sierras, but dwells perpetually in the luxuriant and temperate regions lying between these extremes, and where it is more numerous than any other species.

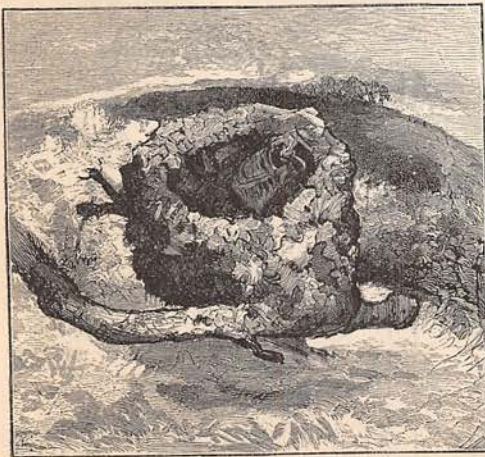


FIG. 11.—NEST OF FAWN-BREASTED HUMMING-BIRD (*AMAZILIA CERVINIVENTRIS*).

#### UNITED STATES HUMMING-BIRDS.

THE number of humming-birds assigned to the United States fauna, excluding one of doubtful claim, is fourteen. One of these has not been taken in our territory, we have not the nest of one to illustrate, and three others have only, in rare instances, been traced just within our southern borders, and their story is wholly unknown; that of the



remaining nine we must give as briefly as we can consistently with their claims upon our attention.

FAWN-BREADED HUMMING-BIRD.

THE fawn-breasted humming-bird (*Amazilia cerviniiventris*) is a recent addition to the fauna of the United States [Fig. 10]. It had been known before only as one of the rare humming-birds of Mexico, and was of comparatively recent discovery there, also. We owe our first knowledge of its existence, in considerable abundance, in southwestern Texas, to the investigations of Dr.

James C. Merrill, United States surgeon, stationed with the army of the frontier. Nothing had been recorded as to its history. It was observed by Dr. Merrill to hover over wild flowers near the ground, among small cacti and low shrubs, and to him we are especially indebted for the opportunity of illustrating its very beautiful nest, which he found, in September, within the reservation of Fort Brown, on the lower Rio Grande River.

The nest is described as having been placed on the fork of a small dead, drooping branch of a tree, on the edge of a path through a thicket. It was about seven feet from the ground, and contained the shriveled body, or skeleton, of a young bird. The nest is a strongly and prettily constructed fabric, composed chiefly of the soft down of a bush very common in that region. It is firmly bound around on the outside with cobwebs and sparingly covered with lichens, measuring internally something less than one inch in depth and half an inch in its internal diameter. The upper rim projects over the cup-like hollow, adding not a little to the protection and safety of the contents. The branch upon which it depends is inclined at an angle of  $45^{\circ}$ . This species was found to be quite abundant in the Fort Brown reservation, where it frequents dense thickets and narrow footpaths. It is a noisy, restless bird, is very difficult to procure, and is



FIG. 10.—RED-BREADED HERMIT HUMMING-BIRD  
(PYGMORNIS PYGMAEUS).

migratory, arriving in March and leaving in October.

RUBY-THROAT.

THE ruby-throat (*Trochilus colubris*), the only humming-bird of the regions lying east of the Great Plains, has generally been taken by writers as the type of the whole humming-bird family. [See Fig. 1.] No other member of this family is known to breed throughout so wide an area in its season of reproduction, and none to wander in its migrations through so many parallels. It breeds from Florida nearly to the sixtieth parallel of north latitude, and from the Atlantic to the high central plains, and its migrations extend from  $57^{\circ}$  north to several



degrees south of the equator. It chooses for its winter retreat the moderate climate afforded by the regions in Central and South America that lie in elevations of from three thousand to four thousand feet above the sea.

The nest of this species is always, without exception, saddled upon the upper surface of some limb that is almost always moss-covered several feet from the ground, and is covered so closely and uniformly with similar lichens as to be made to appear a portion of the branch on which it is built. Nests in the southern states are chiefly made of a downy substance of vegetable origin resembling wool, soft and warm, and of a deep buff color. This is bound around on the outside with cobwebs and strengthened with fibers of wood. Over these is a compact thatching of small lichens, a species of *parmelia* peculiar to the southern states. Similar nests are found at the north, but here this vegetable wool, when of a buff color is gathered from ferns; but more frequently the nest is principally composed of a fine white silk-like down gathered from the expanding buds of the red oak (*Quercus ruber*), and a different species of the *parmelia* lichen covers the outside of these exquisitely artistic structures.

Occasionally when these tiny parents are in haste to occupy their home with their expected family, the nest is built exclusively of down and the ever present cobweb, and is occupied by the female and her treasures before a single lichen has been attached. Afterward her mate occupies his leisure moments with finishing and embellishing their common cradle, often continuing this employment until he is called to do his part in providing sustenance for his tender young.

Audubon and other writers state that these lichens are made to remain in place by adhesive secretions of the builders, but this belief is ridiculed by Waterton, who insists that lichens thus attached would be washed off in the first summer's shower. Possibly the latter is correct in the opinion that spider's webs alone hold these ornamental protections in their places, but this is hardly conceivable, in the striking example we present, where the covering of moss on both limb and nest correspond so wonderfully, that, to all appearance, the lichens grow as naturally on the sides and rim of the nest, as on the dead bark of the limb on which the nest had been but just constructed.

#### THE REFULGENT HUMMING-BIRD.

THE refulgent humming-bird, also called the Rivoli in honor of Massena, Duke of Rivoli (*Eugenes refulgens*), is the largest and most brilliant of the family yet detected within the United States. It is a well-known Mexican species, having a wide range of habitat from Guatemala north to Arizona, frequenting only high table-lands. Within our borders it is only known to occur in Arizona, where it was discovered by my friend, Mr. H. W. Henshaw. He first met with it in 1873, at Camp Grant, and afterward found it to be an abundant summer inhabitant of mountainous districts of southern Arizona, around Mount Graham. There, early in August, Mr. Henshaw was so fortunate as to meet with its nest. Except in its much larger size, and the difference of the materials made use of, this symmetrical and graceful nest resembles the constructions of the ruby-throat. Its framework is largely composed of fine hypnum mosses, elaborately interwoven with spiders' webs, forming a perfectly circular cup. Within, it is softly and warmly lined with downy feathers, a material rarely seen in nests of this family. The exterior is elaborately covered with lichens of a singularly beautiful appearance. These are strongly bound on by slender and almost invisible silken threads from spiders' webs. Whether these lichens were placed there from a blind, instinctive habit, or from æsthetic taste, in this instance they certainly were not of value as means of disguise, for the nest was saddled on an alder limb on which there was not one lichen, and the conspicuous adornment with lichens of light and varied hues exposed to view rather than concealed so prominent an object. Its location was, however, favorable for concealment, being in a high position and directly above the bed of a brawling mountain-stream, in a deep glen overhung with large mountain-spruces.

#### BLACK-CHINNED HUMMING-BIRD.

A UNIQUE and beautiful little nest of the black-chinned humming-bird (*Trochilus alexandri*) was taken near St. George, in southern Utah, by Dr. Palmer, and was found attached to a low shrub, only a few feet from the ground. It is a nest of very peculiar and unusual construction, being composed almost exclusively of the finest and whitest of vegetable down, while around its outer surface, and on the lower portions only, is



attached a thin covering composed chiefly of fine hempen fibers, withered blossoms, and bits of broken leaves. This apology for a frame-work is so very slight and so loosely adherent that it needed to be kept in place

slender end of which it generally rests,—and bind together the frail materials of which it is made. The bird breeds very early in the season, and its nest is found to contain eggs the first of May.

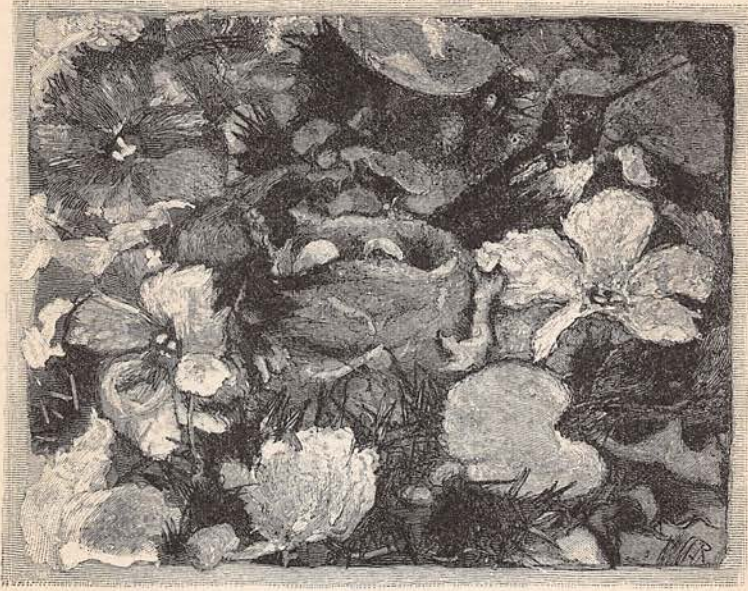


FIG. 12.—COSTA'S RUFFED HUMMING-BIRD (*CALYPTÉ COSTÆ*).

by means of strings, lest the whole fabric should fall apart. Its nest bears no resemblance to that of its near ally, the ruby-throat. In all other respects besides its nest, this bird is the western counterpart of our common species. It is found from the highlands of the Mexican republic, where it was first taken, throughout our Pacific regions as far north nearly as the sixtieth parallel. In Utah it is the most numerous of its tribe. It is abundant about Sacramento and in other portions of California, and has been found common on the western slopes of the Rocky Mountains, even as far north as the boundary line. It is exclusively western, and is not known to occur even as far to the east as Colorado or New Mexico. In its habits and general appearance it is hardly distinguishable from its eastern relative. Dr. J. G. Cooper states that the white, silky down which forms the principal material of its nest is gathered from the catkins of the willow, and he also suggests that these are agglutinated together by means of the bird's saliva. But I think that in this last suggestion he is mistaken, and that the finest of silken threads from spiders' webs constitute its only fastening to the drooping branch of the sycamore,—on the

#### COSTA'S RUFFED HUMMING-BIRD.

Costa's ruffed humming-bird (*Calypte Costæ*) is a Mexican species, most abundant among the Sierra Madre valleys, in the western portion of that republic, and is also found around the southern borders of the United States, in southern California, the Colorado Valley, Arizona, and New Mexico. It is not known to penetrate far within the United States, but wherever found it is a very abundant species [Fig. 12]. It was first made known as one of our birds by the late Dr. Kennerly, who met with it in midwinter (February, 1854) in New Mexico. Even then there were a few flowers expanding beneath the genial rays of the sun, and around them these lovely little aerial gems were gathering in quest of insects. In the museum of the Boston Society of Natural History are two very peculiar nests of this species, each differing from the other, and both unlike all other nests of this family. One of these nests, built on the flat leaf and among the sharp thorns of a cactus, has a base made of fine strips of the long inner bark of wooded shrubs and vines. Upon this rests the frame-work, made



of lichens, bits of bark and leaves, these materials held together by the ever-present silken threads of the spider's weaving; and surmounting the whole is a soft, cup-like structure made entirely of a very peculiar yellowish-white vegetable wool or hair-like substance, derived from some tropical growth, but of what nature we are not able to determine. This nest is oblong in shape, one and a quarter inches in width, nearly two in depth, but the cup is comparatively shallow. The other nest, larger in size, was built in the fork of a low vegetable shrub, the slender twigs of which are enfolded within the homogeneous felting of which the entire nest is constructed. This very peculiar felted material appears to be made by a commingling of spiders' webs with the same unknown, hair-like or woolly substance of vegetable origin. Except that a few bits of fungi, here and there a small lichen, or a piece of moss is tied on the outside, the whole nest is composed of this yellowish wool-like felting, and presents a very singular and wholly exceptional appearance. The nests were found among the collections of my lamented townsman, Dr. Henry Bryant, were taken by the explorer Bourcier, in Lower California, and are marked in the autograph of the latter.

#### BROAD-TAILED HUMMING-BIRD.

THE broad-tailed humming-bird (*Selasphorus platycercus*) was at first only known as a bird of Mexico. It is found exclusively in the high table-lands, and is believed to be there present only, or chiefly, in the winter. In the summer it is abundant throughout the Rocky Mountains and in all the middle provinces of the United States, as far north as the Black Hills; occurring east as far as El Paso, and west to the East Humboldt Mountains. It is especially common in Colorado. A little larger than the ruby-throat, it bears so great a resemblance to it as to be frequently confounded with it. It can always be distinguished from any other living species by the shrill whistling sound of its wings. This noise, made in its rapid flights, is described as a loud metallic rattling, produced at will by attenuating the outer primaries, and is regarded by Mr. Henshaw as analogous to the love notes of other birds; it is only heard during the breeding season. Far above the timber lines of Mount Lincoln it was quite as common and quite as much at home among the bright flowers growing in the highest parts of the mountain as in the valley. It is also

abundant in the valley of Salt Lake City, at an altitude far below its usual habitat, owing to the attractions of the gardens and cultivated grounds. In wilder regions its favorite resorts are the flowery slopes of the highest well-watered ranges of the Rocky Mountains, at an elevation of nine thousand feet. It is said to be of an exceedingly quarrelsome disposition and intrepid beyond any other bird, assaulting with great force and pertinacity any bird, small or great, that comes near its nest, even large hawks. The vigor of these attacks, accompanied as they are, by the shrill, piercing noise of its wings, invariably puts all intruders to flight. Their nests are variously situated, generally on scrub-oaks covering the slopes of the hill-sides; others in willow bushes bordering a stream, and not a few on the drooping twigs of cotton-wood trees on the banks of water-courses. The one we illustrate was taken by Mr. Ridgway, in Parley's Park, Utah [Fig. 13]. On the head-waters of the Rio la Plata, in Colorado, this humming-bird has been found nesting in large numbers among the dwarf willows. The nests were made of thistle-down and soft, cotton-like fibers, and were covered over with lichens and bark fiber, conforming in appearance to the twigs to which they were attached. They varied in size, shape and color; were from three to five feet above the ground and were all suspended from swaying slender twigs, often directly over running water. One was placed on a small piece of curled bark that afforded it a horizontal resting-place.

#### DUCHESS OF RIVOLI.

THE humming-bird, so strikingly beautiful as to be deemed worthy of being dedicated to the Duchess of Rivoli (*Calypte annæ*), is a North American rather than a Mexican species. First discovered in the high table-land of that republic, it is there only as a winter migrant. Arizona and California are its home during the breeding season, and there quite a number remain throughout the year. In California it is especially abundant, and in the southern portions of that state during the winter months many are found among the sheltered valleys and sunny hill-sides, where at all seasons a few bush-plants are in flower and furnish their necessary subsistence. In gardens and vineyards, their favorite resort, they build their graceful downy nests on a pendent bough of a small flowering shrub in some concealed corner, and in the wilder portions of the country they attach their nests almost exclu-



sively to the low horizontal branches of the evergreen oak (*Quercus agrifolia*). In a garden in Santa Cruz, this compact and beautiful little nest was found attached to a twig of a snow-berry bush, hanging only a foot or two from the ground. It is small for the bird, one of our largest species, and is formed in the most delicate manner of white pappus and down from various plants matted into the softest felt, mingled with spiders' webs. The base is formed of a few dry blossoms of the oak, and is bound around and tied to the twig by which the nest is supported with innumerable silken threads. Its periphery is covered with a mingling of cobwebs, a few lichens, and, at the upper portion around and over the rim, with the finest and brightest of green hypnum mosses. Nothing can exceed the ingenious and exquisite manner in which all these external adornments are kept in place by the beautiful overweaving of fine threads of spiders' webs. By these, the rim of the nest is firmly bound around and made to

## RUFIOUS-BACKED HUMMING-BIRD.

EXCEPTING our eastern species the rufous-backed humming-bird of the Pacific coast has probably the most extended distribution of this family. It was first described from specimens taken by Cook, the navigator, near Nootka Sound, and is an abundant species, from Alaska to the table-lands of southern Mexico. It is one of the earliest migratory birds to arrive in spring, nesting early in May; it is also very hardy, and its wanderings do not seem to be affected by cold so much as by the scarcity of flowers and consequent lack of insects. When at rest it utters a shrill call-note, resembling the highest note of a violin; it is one of the most noisy of its family, as it is also one of the most combative and aggressive. Nuttall compares the appearance of one of these birds, to whose nest he had approached too near, to an angry coal of brilliant fire, as it dashed to within a few inches of his face.



FIG. 13.—BROAD-TAILED HUMMING-BIRD (*SELASPHORUS PLATYCERCUS*.)

project over its inner cup to the extent of a third of its diameter. A solitary feather is a prominent ornament to the front of this beautiful little specimen of aërial architecture.

Its nest is usually placed in the fork of a low bush. I have seen one which was built in the branch of a small shrub, and only a foot or two above the ground. Its



base is overwrought upon the twig, projecting beyond it on either side, and, with the outer frame-work, is of the finest and most delicate of green hypnum mosses, adorned with a few very pretty little rock lichens. The body of the nest is made of soft, silky down of plants, the pappus of some compo-

nowhere but in that little mountain county. It has been named in honor of its discoverer, *Selasphorus Alleni*, and we are indebted to Mr. Allen for the opportunity of presenting a picture of its exquisitely graceful little nest

[Fig. 14]. This differs greatly from that of *S. rufus*, is hardly half its size, and is composed

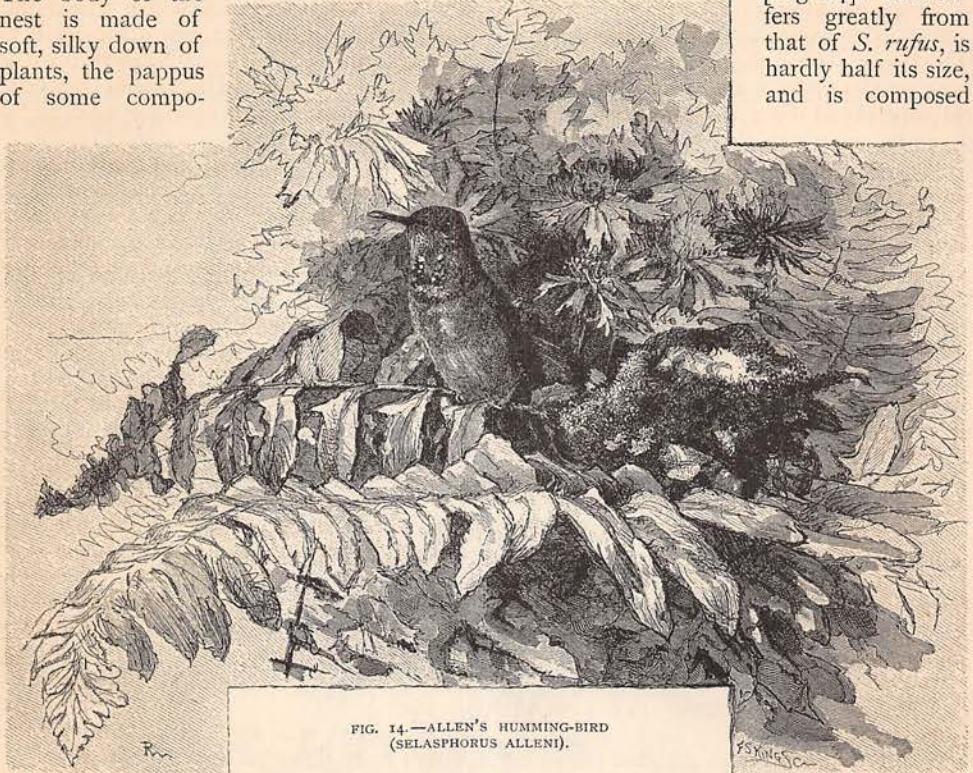


FIG. 14.—ALLEN'S HUMMING-BIRD  
(SELASPHORUS ALLENI).

sitæ. It is comparatively large for its tiny architects, and in its artistic attractions has few superiors even among the varied and beautiful creatures of this wonderful family.

#### ALLEN'S HUMMING-BIRD.

WITHIN a year there has been discovered on the sea-coast of California, a few miles north of San Francisco, in the county of Marin, a new species of humming-bird, closely resembling the preceding. It chiefly differs in having a green instead of a cinnamon colored back, and is also smaller. As to its history, where it lives summer and winter, how far its migrations extend, etc., little is known. It has only been met with by Mr. Charles A. Allen of Nicasio, and

of very different materials. It was fastened to a leaf of a maiden-hair fern, not two feet above the ground, and to this frail support it was secured by slender threads of spiders' webs, so slender as to be hardly visible. It is very small for the bird, is of a delicate cup-shape and is made of the most slender branches of hypnum mosses, each stem bound to the other, and all firmly tied into one compact and perfect whole by interweavings of silky webs of spiders. Within, it is finely and softly lined with silky vegetable down. Even in the drawer of a cabinet, without its lovely natural frame-work, it is a perfect little gem in beauty: what then must it have been in its original position, with the graceful waving leaf of the mountain fern for its appropriate and natural setting!