

Ferns in Birds' Nests

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Fern study is one of those happy pursuits which we follow for their purely intellectual or aesthetic stimulus, without feeling the obligation to consider material gains or losses. Aside from those which enter into the florist's trade, few ferns are of commercial importance, and none on a scale which equals that of hundreds of flowering plants, and even of some fungi and seaweeds. Still fewer are the ferns inimical to the interests of man; only one with which I am personally familiar can be classed as a noxious weed—the Bracken. To other animals as well as to man, ferns are of slight utilitarian importance. They appear rarely to be touched by herbivorous animals, which will eat almost any kind of monocotyledonous or even dicotyledonous foliage in preference to fern fronds. They seem to be relatively free even from the attacks of leaf-eating insects. The Bracken, for example, appears to owe much of its success in the world to its amazing freedom from animal enemies, whether vertebrate or invertebrate.

Among the few higher animals which find a use for ferns are birds. Like ourselves, they probably use them for adornment more often than for utilitarian ends. According to Sharpe, Newton's Bower-bird (*Prionodura Newtoniana*) of Queensland, Australia, collects ferns, along with tufts of moss and clusters of green fruit, for the ornamentation of its astonishing "bower," which may be six or even eight feet in height, and is the playhouse of numerous individuals of both sexes. The female Newton's Bower-bird is said to decorate the outside of her cup-shaped nest with the same mosses and ferns that are placed in the bowers. In Central America, the Scarlet-rumped Black Tanagers (*Ramphocelus passerinii pas-*

serinii and also *R. passerinii costaricensis*) habitually decorate the exterior of their cup-shaped nest with a spray or two of green fern, preferring for this purpose an epiphytic Polypody with cordlike, creeping rhizomes, such as *Polypodium ciliatum* Willd.

The Orange-billed Sparrow of tropical America (*Arremon aurantiivirostris*) often uses many pieces of green fern frond in the construction of its oven-shaped nest, built on a steep slope or a little mound of earth beneath heavy forest. The large pieces torn from the living fronds may form part of the roof, or a platform or pavement in front of the wide round doorway. Once I found parts of fronds of three species in one nest; but at another nest *Selaginella* had been substituted for the ferns. Since the nest is often built among ferns, these bits of frond make it less conspicuous.

A nest of a small Costa Rican honeycreeper, the Scarlet-thighed Daenis (*Dacnis venusta*), a slight structure not much broader or deeper than the crystal of a man's watch, was entirely covered on the bottom with green pieces of *Nephrolepis pendula*, some of them four inches long—the length of the bird!—and one and one-half inches wide, containing many pinnae. With this covering, the nest blended so well with the tangle of the parasitic vine (*Struthanthus*) amid which it was placed in a tree-top that it cost me several hours to find it, in spite of the loud, betraying cries of the noisy nestlings. In these last two instances the ferns employed in the bird's nest served the utilitarian purpose of making it harder to find.

As an integral part of the nest, ferns are used by birds far less often than mosses and hepatics. The brown ramentum-scales of tree-ferns and other species with giant fronds are perhaps more often used as an essential building material than any other parts of ferns.

Hummingbirds not infrequently seek this light and soft material for their delicate little nests. I once found a nest of the lovely purple-and-green Colombian Wood Nymph (*Thalurania colombica*) composed almost wholly of brown fern ramentum, bound together with cobweb. A nest of the Costa Rican Mountain Gem (*Oreopyra castaneiventris*) contained a liberal admixture of ramentum, along with fine leafy hepatics. Among bigger birds, the beautiful ovenbird *Pseudocolaptes Lawrencei* of the Costa Rican highlands carries many billfuls of fern ramentum into its nest in an old woodpecker hole or other cavity in a trunk.

While collecting ferns along a rivulet which flowed through a narrow chasm between rocky walls overgrown with ferns and aroids, in the Costa Rican mountains, I found my first nest of the Green Hermit (*Phaethornis Guyi*), a relatively big hummingbird with a long, strongly curved bill and a long, white-tipped tail. The downy cup was fastened beneath one of the broad strips into which the great leaf of a *Heliconia* had been torn; with liberal quantities of cobweb passed over the back of the strip it was firmly attached to the glossy leaf, and additional cobweb bound together the walls. Beneath the green roof two homely, naked nestlings slumbered in their swinging cradle. Cobweb so thickly covered over the surface of the nest that I could not without injuring the fabric determine of what soft material it was made. But three weeks later I returned and, finding that the young hummingbirds had flown, pulled apart the empty nest and learned that it was composed principally of the long, slender, brown ramentum-scales of a tree-fern, mixed with which were a number of fine fibrous rootlets, probably also of ferns. The tiny brown Dusky Hermit (*Phaethornis Adolphi*) also at times incorporates a liberal portion of ramentum-scales in its downy nest,

attached beneath the pointed tip of a segment of a palm frond.

Thus ferns may enter into birds' nests as an essential structural constituent, as ornament, or as camouflage.

SAN ISIDRO DEL GENERAL, COSTA RICA.
