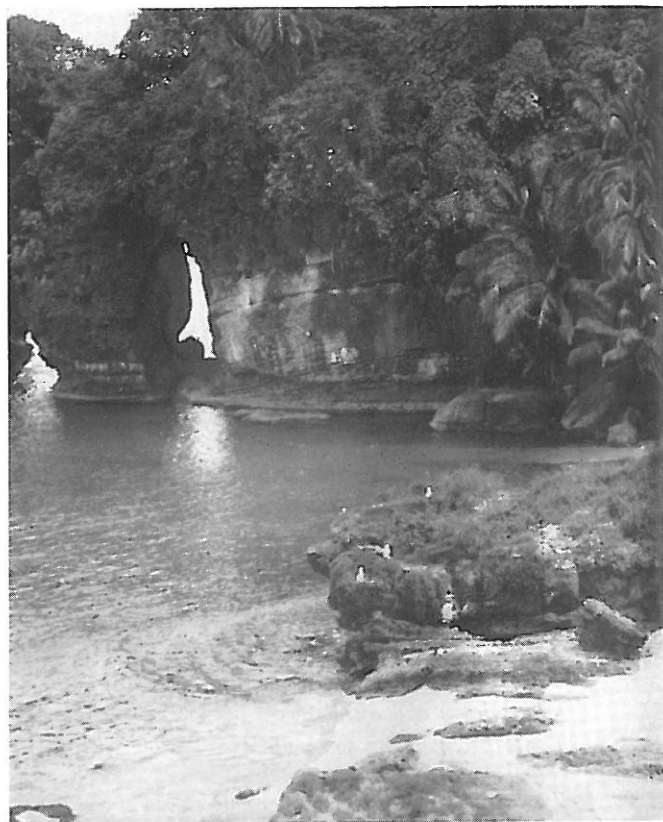


# HOW NESTLINGS DEFEND THEMSELVES

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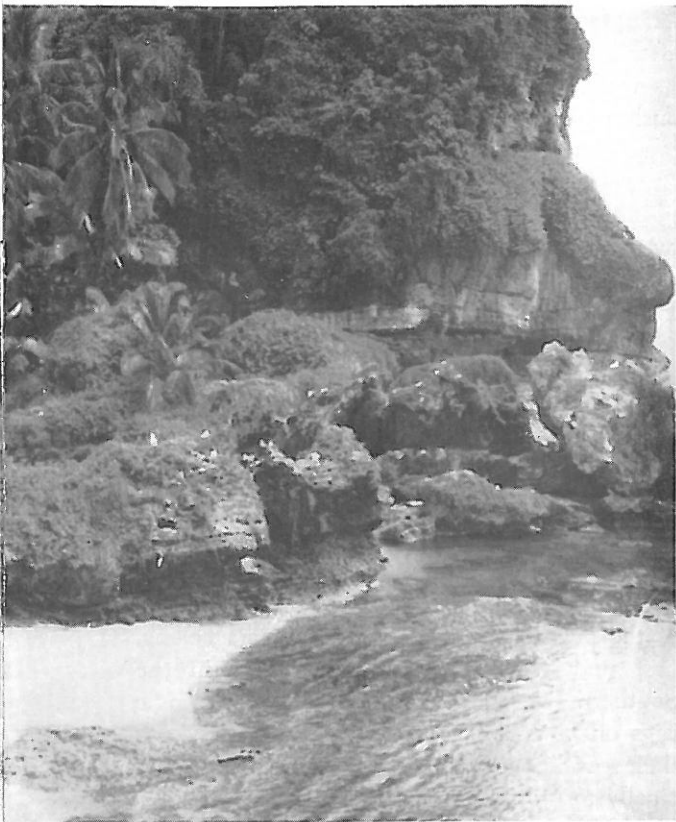
**T**HE NESTLINGS of song-birds and other small birds are nearly always too weak and harmless to hold aloof the creatures that crave their flesh. While they are very young and sightless, the shaking of their nest, or almost any movement close above it, stimulates them to lift up their gaping mouths for food, just as they do when a parent arrives with a meal, and doubtless they greet in this trustful manner the snake or squirrel that comes to devour them. After their sight is well developed and they can distinguish their parents, the approach of a strange object causes the nestlings to crouch down in the nest and make themselves as inconspicuous as possible. They may clutch the lining of the nest so tightly that one who removes them for examination or photography must be careful not to cut their toes on the horsehairs or other fine strands from which he separates them. If feathered young have disappeared from the nest between the watcher's visits and he is uncertain whether they left spontaneously or were forcibly removed, examination of the lining will often provide the desired information. If it is pulled up, the young have probably



been torn away by a predator; if it lies flat, they have probably left spontaneously. But if the visits were widely spaced, there is a possibility that a building bird has pulled up the lining while extracting strands for its own nest.

Often, if one touches or even comes close to nestlings which have crouched down at his approach, they burst suddenly from the nest. At times a whole nestful of young birds leaves in this fashion, shooting off so swiftly in various directions that they seem to explode. Even if they can still scarcely fly, they flutter to the ground and hop rapidly away. If they are caught and returned to the nest, they often refuse to stay, but perversely jump out again as soon as they are released. Sometimes they can be persuaded to remain by holding a hand over them for several minutes, until they have become quiet, then gently withdrawing it. Although this is the most usual behavior, some young birds that are frightened prematurely from the nest, including hoatzins and anis, try hard to regain it when the alarm has passed.

In contrast to these small birds that shrink and



**Above — A coral islet in the Caribbean where the author visited nesting Brown Boobies. One nestling made a vigorous attack on him. Right — Two of the little Boobies; the one on the left is the elder.**

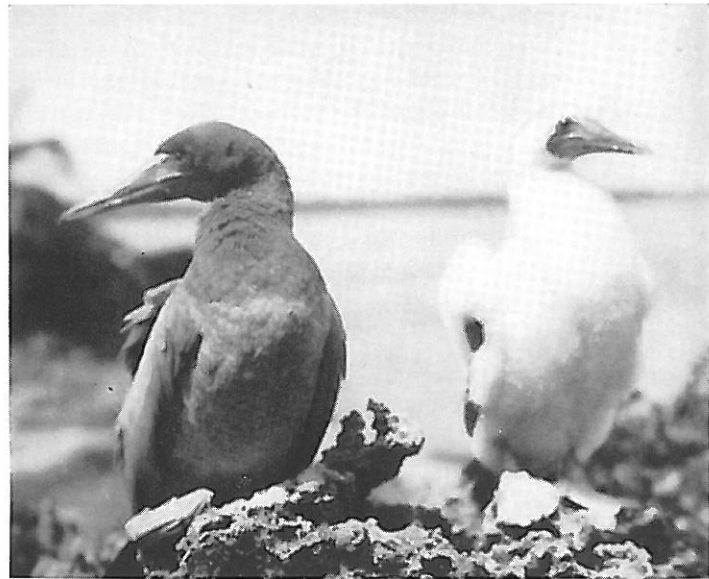
*Both photographs by the author*

flee, many larger nestlings stand their ground and fight. I was impressed by their ability to defend themselves when I visited a coral islet in the Caribbean Sea where Brown Boobies and Red-billed Tropic-birds were nesting. The young boobies rested in little circular areas devoid of the low vegetation which covered most of the rough, pitted surface of the coralline rock, with perhaps a stick or two that seemed to have been placed there as a token of a nest. Except two recently hatched nestlings whose parent stayed to guard them in the face of my intrusion, each youngster was alone. When I approached one of these larger nestlings, clad in thick, soft, pure white down, or perhaps with dark gray feathers already covering much of its body, it spread its wings and uttered hoarse cries while it backed to the farther side of its bare circle. As I came nearer the cry grew louder, until a continuous

*ah-h-h-h* poured forth from a mouth opened its widest, exposing the throat and the rudimentary pouch between the arms of the lower mandible. The downy youngster did not limit itself to vain cries, but with wings widespread and flapping it vigorously bit my hand, my arm, my shoe, or whatever else I presented to it. Sometimes, as the booby edged away from me, it came close to the downy occupant of a neighboring nest, who greeted it with pecks and bites that it returned in kind. When I saw that the boobies treated me much as they did each other, I felt less like an intruder.

The tropic birds nested on ledges and in niches on the steeper parts of the islet. Some of the young were already well feathered, and when taken in hand they raised deafening screams, at the same time attempting to bite and struggling so violently that I was glad to put them down again.

The only other nestlings that I have known to struggle as wildly and make as much noise as the Red-billed Tropic-birds are those of the Ringed Kingfisher, the largest member of the family in



the Western Hemisphere. When I examined a kingfishers' burrow with a single feathered nestling, it fled through the entrance tunnel and jumped into the river, where it spread its wings, turned upstream, and flapped its way slowly against the current. When it encountered ob-

stacles in the form of stranded branches, it hooked its bill over them and scrambled across. Although I pursued through the muddy shallows of the river, the flightless young bird managed to keep ahead of me until the great leaves of a fallen banana plant stopped its progress. When captured, it screamed loudly and tried fiercely to bite. For ten agonized minutes it resisted with all its might, but at last it became reconciled to me and perched on my hand until its feathers dried and I replaced it in the burrow.

Older nestlings of the colonial-nesting Black-crowned Night Heron defend themselves with their bills, which they direct against adults of their own kind who approach too near their arboreal nests of sticks. To avoid being mistaken for a stranger and treated accordingly, a parent arriving with food greets its young with an appeasement ceremony and recognition cry, which causes the nestlings to change from aggressive behavior to begging.

The nestlings of some of the larger pigeons have a number of mannerisms which seem to serve for their defense. Although the Scaled Pigeons spend most of their time high in the treetops of the tropical American forests, they often build their thin, open platform nests in tangled second-growth thickets, from two to fifteen feet above the ground. Here they usually lay a single white egg, at least in Costa Rica. When a solitary young Scaled Pigeon is disturbed, it rises in the nest, stretches up its neck, puffs out its breast, and lifts its wings, all of which make it look much bigger than it did while it rested quietly. In this attitude it sways upward and backward, downward and forward, with each forward and downward movement making a low clicking or clacking sound with its bill. As long as it feels itself menaced, it continues to perform rhythmically in this fashion.

The young pigeon's clack is produced by its mandibles in a peculiar manner. The lower mandible is pushed slightly forward, until its apex rests against the downwardly bent tip of the upper mandible. The bill is then slightly open. Apparently the two mandibles are pressed together by muscular tension until the lower one suddenly slips back into its normal position, and the two, striking together along their entire length, emit the sharp sound. The nestling also

dart forward to peck an intruding hand, and after its feathers begin to expand, it strikes with its wings. If taken in hand, it struggles vigorously without ceasing to clack its bill, and at the same time it hisses slightly. Doubtless all this bellicose display intimidates small mammals and possibly also snakes, yet some nestlings are taken by predators.

Older nestlings of the Red-billed Pigeon make a similar clacking sound with their bill, but not so loud as that produced by the Scaled Pigeon. They also strike and bite intruding fingers, but not hard enough to cause pain. The downy nestlings of owls hiss and clack their bills when disturbed and sometimes they fall on their backs to present their talons to the intruder.

Very different from the biting and striking of the foregoing nestlings is the method of defense of the young Fulmar. Although most members of the petrel family, to which Fulmars belong, nest underground in burrows, chiefly in the Southern Hemisphere, Fulmars lay their single eggs on cliffs above cool northern waters. On their seaside ledges the nestlings are exposed principally to the attack of aerial predators, such as Great Black-backed Gulls, Skuas and Ravens. When approached by a flying bird or even a human visitor, the Fulmar chick regurgitates an oily fluid which it shoots from its mouth toward the intruder with considerable force and often great accuracy. The spray from a fasting chick consists of oil alone, but if the nestling has just had a meal regurgitated by a parent, both oil and partly digested food may be ejected.

The studies of L. Harrison Matthews pointed to the probability that the ejected oil is secreted from glandular cells in the mucous membrane of the forestomach. That the oil is a true secretion rather than recently ingested food is evident from the observation of a bird-bander who picked up a Fulmar's egg that was on the point of hatching. The enclosed chick made spasmodic movements, chirped softly, and ejected a small quantity of clear yellow oil from its bill, which protruded from a narrow hole that it had just made in the shell. Obviously it had not yet been fed. Such precocious ejection of oil is, however, exceptional.

To defend itself against a bird that would snatch it up from the air, the young Fulmar must act quickly. Hence it shoots out its protective

**With wild struggles and a great deal of noise the young Ringed Kingfisher defends itself. This one jumped into the river when Mr. Skutch examined its burrow.**

*Photograph by the author*



fluid without pausing to consider whether the approaching object is bird or man, friend or foe. As Eric Duffey observed, even its own parent arriving incautiously may receive the oily spray. The chick defends all the space, above and around itself, within a radius of two or three feet from the point where it rests, and to avoid a hostile reception the parent alights at the edge of, or beyond, this defended territory. The parent cackles, then approaches cautiously, stopping if the youngster shows signs of alarm, to advance with more cackling when it calms down. Finally it reaches the chick's side and nibbles the down on its forehead, face and neck to stimulate it to take food, for which at first it does not seem eager. The nibbling is succeeded by bill-fencing between the parent and chick which resembles two people rubbing noses; then the parent opens its mouth widely and regurgitates to the chick. In its third week the chick recognizes almost immediately its approaching parent, who need now exercise less caution to avoid an oily reception.

The same method of defense is used by the nestlings of many small petrels and certain albatrosses, including the Wandering, Black-footed and Gray-headed. The adults of these albatrosses and the Fulmar either do not spit oil, or they

shoot it less forcefully and accurately than their chicks. Since they can escape by flying, this method of defense is less necessary for them. Possibly the habit of spitting at an intruder evolved from the reaction, widespread among sea birds, of regurgitating food before taking flight when alarmed.

The only land birds known to defend themselves by a liquid volley are the hoopoes and the related wood hoopoes, all of which are confined to the Eastern Hemisphere. When disturbed in their hole in a tree, stone wall or bank, nestling hoopoes first hiss or huff. If further annoyed, they turn around, scuttle across the floor of their nest, and press their breasts against the rear wall with their tails spread out over their backs. Then they discharge a foul-smelling fluid which consists of their excrement mixed with a stinking secretion of their preen gland. The female parent has similar methods of defending herself when cornered in the nest. She huffs violently and discharges a dark, musky liquid at her persecutor.

Many parent birds defend their nests more actively with their bills or feet, or else they try to lure the intruder from their eggs or young by fluttering away as though crippled and unable to fly. But that is another story.