

pp. 23-24.) in which the second nest was built two thirds of the way around the first and contained two eggs when the young of the first brood were nearly ready to fly. I have seen a Migrant Shrike alternately feeding her fluffy brood recently out in the world and carrying bits of her old nest to a new site seventy-five feet distant, and I have watched a Magnolia Warbler, a Blue-gray Gnatcatcher, and a Yellow-crowned Night Heron each courting his mate before the young of the first brood were out of the nest.

The other factor that makes for stability is the matter of the territory. After the birds have thoroughly established their habits of confining their activities within certain limits which mean home to them, of following certain routes and avoiding others, and of considering their neighbors their enemies, it seems unnatural for them to change all these reactions and wander to a new territory to find a new mate. Although one of my Song Sparrows built her fourth nest in the territory of the neighboring pair, there was never the slightest indication of change of relationship between the pairs, each of the four birds showing constant hostility to both male and female of the other pair.

To sum up, I do not believe that birds ordinarily change mates within a season unless each nesting-cycle is more or less of a closed circle, probably involving a desertion of the territory near the end and subsequently a definite new beginning.

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## OBSERVATIONS OF THE NESTING ACTIVITIES OF THE HERMIT THRUSH

By OLIN S. PETTINGILL, JR.

(With three photographs by Alfred O. Gross)

NOT long ago a part of the shore and vicinity of Douglas Lake in northern Michigan was swept by fire, resulting in the loss of a well-timbered forest. Among the avian settlers to the devastated area were a surprising number of Hermit Thrushes (*Hylocichla guttata pallasii*). Here, unprotected by a heavily wooded territory, where many people believe their habitat to be, these birds made their home. Of the six nests found in an area of a square mile, one was located not a hundred feet from the shore of the lake itself. Few trees grew in the neighborhood of this nest. A quaking aspen partially shaded it;

a cluster of three gray birches offered the only protection from man's intrusion, while scrub blueberry bushes and bunchberry plants overhung the rim of the nest, and occurred as well in many other places throughout the burned locality. Several juneberry trees were scattered here and there, and a wooded swamp lay in the opposite direction from the lake.

It was in this setting that the domestic routine of the Hermit Thrush was carried out before me. Five feet from the bowl of the nest a burlap blind was erected. My first visit as well as my first observation of this bird at home began under the cover of darkness. I could not refrain from being a little excited that morning when I crept on hands and knees from the boat on the shore to the interior of the blind. My notes read: "The Hermit is present although at a glance by the aid of a flashlight I can scarcely distinguish between bird and ground. A white patch just visible about the throat is the only evidence of its presence. A careless movement on my part causes the blind to vibrate, and then a whirl of wings! Dark as it is, this has proved too much for the Hermit. Four minutes elapse, and then there is a rustle among the leaves, followed shortly by several more. I can see a near-by blueberry bush swaying with an unaccustomed burden. A gust of wind moves the burlap, the beating wings fade into the distance, and then return becoming louder and louder. The Hermit can be seen circling the nest on wing, suspended in hummingbird fashion. Finally it alights on the ground and cautiously steals on to the nest.

"Ten minutes have passed and now daylight has come. To my surprise two Hermits are outside. One is perching while the other slowly nears the nest. A muffled *pweet, pweet* comes from both at various intervals. Suddenly the one in a juneberry tree drops to the ground and begins to scratch the leaves, twigs, and soil from one particular spot, where a grub is found and eaten. Meanwhile its mate has flown to a near-by tree. The first bird approaches the nest, giving several stiff-legged hops, hesitates a moment, and then hops a little nearer. This method of approach or traveling reminds me of the Robin's similar habit. On the edge of the nest the bird hesitates and looks carefully about the place, as well as examining the nest itself. A shove here and there with the bill after stepping into the bowl puts the eggs in the desired position and rolls them at the same time. An interesting and yet common performance among many species of birds follows, —the process of adjusting the eggs to the body by moving the breast back and forth over the upper surface of the eggs. In



Characteristic Position of the Bird When Covering the Eggs. Note the Crossed Primaries with the Tail at One Side.

so doing the breast feathers are worked aside, enabling the bare surface of the breast to come in direct contact with the eggs. Six periods of this 'rolling of the body' take place before the bird is finally settled. The raised feathers of the neck and back slowly fall to their natural position. The tips of the primaries are crossed over the rump, and the tail instead of lying in the plane of symmetry, lies on the right side of the crossed primaries. (See photograph.) The bill is pointed slightly upward. I note that the mate of the incubating bird has disappeared while my attention has been diverted by the activities on the nest."

The tail of the Hermit Thrush plays an important role at least from the standpoint of human observation. Its reddish-brown color serves as a dependable mark of distinction from the rest of the genus *Hylocichla*. To me the sudden raising and slow lowering of its tail to a natural position is an indicator of external activities. For instance, if I caused too great a commotion within the blind, the movement of its tail increased greatly, followed by a *chuck, chuck*.



A Nest of the Hermit Thrush in an Unusual and Picturesque Setting

The Hermit Thrush at noon day seemed more restless than at any other time of the twenty-four hours. Possibly this was due to the excessive heat. There was never, however, any quick movement of the body while the bird was on the nest, and even the head was always moved slowly. The brooding bird would adjust its eggs many times during the day uttering at the same time a succession of smothered *quit, quit* notes. The approach to the nest was always on foot in a series of three to seven hops with a few seconds of hesitation between, lengthened according to the amount of disturbance about the nest. At first I believed the blind to be the cause of this characteristic coming and going, but after two days of its presence, the Hermit continued in the same way, even following the side of the blind to the nest. I was always able to make as much noise as I liked while in the blind, but once let the least motion be visible through the burlap, and away went the bird.

Non-human intruders to the vicinity of the nest were not infrequent. Ants in droves crawled into my lunches, over me, and even to the top of the blind. The Hermit would casually peck at them from the nest. Once, during a noon hour, the bird flew from the nest giving its alarm-notes and fluttering. A young garter snake appeared suddenly from under the dead leaves near the nest. The parent bird manifested concern by hovering over the unwelcome guest in a defensive attitude and voicing *quit, quit* notes in rapid succession. One day a Slate-colored Junco alighted among the three aspens, and it was immediately driven away by both Hermits, which chanced to be near-by. My own approach by day was received with no great alarm except by a dash from the nest and several distress calls.

Of all my visits with the Hermit Thrush there was one morning which I shall never forget. In the home of the Hermit Thrush an important event was taking place. My notes, incomplete to a certain extent, as I was unable to write down occurrences fast enough, read: "I observe that the eggs are hatching. A bird takes a piece of egg-shell in its bill and flies away. Two youngsters are wiggling helplessly in the nest. After three minutes the bird is back with a small larva, barely visible at the tip of the beak. The new nestling is fed. Three more minutes elapse and the parent is back with a small may-fly. After another three minutes more food is brought, but this time I am unable to identify it. The Hermit fails to make the nestling respond at first; so it pecks at it gently. The bird broods after an interval of nine minutes. She (I assume the bird is a female) takes great interest in what is going on beneath her (see cover picture). She picks now at the last egg, removes a part of the shell, and devours it. She cranes her head over the edge of the nest to get a better view of a passing bird. She seems far more alert to-day, no doubt owing to her increase in domestic cares. Again she leaves, taking with her the last bit of egg-shell, returning shortly with a small larva. The nestlings this time do not respond to the approach. She beats her wings on the edge of the nest to arouse them. They shoot their heads up promptly, but are unable to hold them up for long as they are very weak. The last of the three to hatch is fed eighteen minutes after the breaking of the shell."

The process of rearing the young was a source of great interest. Both of the birds took part in this domestic duty, but at no time throughout the entire incubation period did I see the two birds together about the nest. The only way in which I was able to distinguish one bird from the other was by

means of the variation in the mottling on the breast. Often while one parent fed from the edge of the nest, the other, which I believed to be the male, arrived with additional food. Instead of waiting for the bird on the edge of the nest to leave, he merely "billed" over the food to his mate who fed the young. On other occasions I had what I considered a good opportunity to see the difference between male and female as to their judgment in regard to the quality and quantity of food. For instance, I saw one bird arrive and delicately place a mayfly or a small spider in the throat of a youngster. Immediately on the departure of this bird the other arrived with a green caterpillar an inch and a half in length and vigorously started to thrust it down the gaping nestling's mouth. The first attempt being a failure, he tried it a second time, and so on, making each push stronger and stronger until the bedraggled worm fell to the bowl of the nest, the nestling appearing tired out. The parent bird then swallowed the larva and flew off again to search for food. Once this same bird brought a salamander two thirds as long as the nest was wide, but it was not fed to a young bird.

So, through the long periods of observation, with plenty of entertainment and interest, I have made the acquaintance of this famous songster. The song of the Hermit Thrush rivals all other bird-songs in beauty and I believe surpasses the powers of human imitation. That flute-like song of a late afternoon and early evening in summer is no less beautiful to me for having been at home with its maker.

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## A POSSIBLE MIGRATING FAMILY GROUP

By WENDELL P. SMITH

ONE of the problems awaiting solution and one which affords an unusual opportunity for bird-banders is that of the group habit. Perhaps it would be better to say a series of problems connected with the group habit, for a number of interesting lines of investigation are involved.

An explanation of the term and a summary of present knowledge concerning it may be helpful to an understanding of the contents of this paper. The phrase "group habit" was used by S. Prentiss Baldwin to describe the behavior of a group of White-throated Sparrows (*Zonotrichia albicollis*)