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## HAPPENINGS IN A ROBIN HOUSEHOLD

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On coming to my room at the California Academy of Sciences, in Golden Gate Park, San Francisco, on the morning of May 9, 1929, my attention was attracted by the sight of some dry grass, 18 feet from the ground, in the top of a tree poke berry (*Phytolacca dioica*) that grows outside of the window in front of my desk. On this tree the year's growth of foliage was yet young. With first thought of English Sparrow coming to mind the return of the owner of this building material was awaited with interest, for the reason that a nest in such a place would be in plain sight, on a level with one's head (a little lower would have been better), and only ten feet away.

Construction work seemed to be a bit slow in getting under way and it was rather a difficult matter to keep a watchful eye on the tree top while I was trying to attend to desk work. After quite an interval a fresh load of material arrived, but the builder was not an English Sparrow—it was a Western Robin (Turdus migratorius propinquus). After this, building went on apace. Unfortunately, weekend absences interfered with continuous observation of the nest, and in some of these absences minor things happened that it was rather annoying to miss; but this could not be helped.

About the middle of the morning of May 14, the female robin brought some fine dry grass to the tree and for a while perched pensively on a branch near the nest, all the time holding the dry grass in her bill; but she finally flew away, apparently having concluded that the nest needed no further touches. The process of construction had been interesting to watch, especially the turning of the bird in the nest while moulding the structure into proper shape to suit necessities. The male robin did not do much in the way of assistance, as far as observations went, but confined his labors mostly to criticisms which did not seem to be particularly constructive, judging by the way in which his better half received them.

Upon my arrival at half-past eight on the morning of May 15, the female was seen to be on the nest, where she remained until early afternoon, when she flew away and did not return before I left my desk that evening. By going on the roof of the Academy building and looking over the parapet, one egg could be seen in the nest about 15 feet below.

Next morning the bird again was on the nest at 8:30, but she left it at 10:15 and did not appear again during my stay that day. On May 17 the bird was not seen at all, but examination showed that the nest contained three eggs. A fourth egg was probably laid on Saturday, May 18, during my week-end absence. On my return three days later the female was comfortably established in her incubational

capacity, and she did not leave the nest except once in the afternoon, when she gave a loud squeak and left it very hurriedly, returning in about a quarter of an hour.

While building the nest the female was too much occupied to pay serious attention to the fact that a man was sitting in plain sight only a few feet away from her; but upon my first appearance after incubation began she showed some signs of uneasiness. By my keeping as quiet as conveniently possible, however, and moving only slowly when necessary to move at all, her fears were soon allayed; and after that, unless I stood up suddenly or made some movement of hand or paper toward the window when she happened to be facing it, no uneasiness on her part was manifest.

With the exception of the robin leaving her nest occasionally, always with a screech, and returning in 15 or 20 minutes, there were no happenings to record until May 29, when the first young one appeared in early morning. At 3:43 p. m. the mother left the nest, presumably to obtain food, and examination from the roof showed three eggs to be still intact. On May 31 there were three young in the nest and one unhatched egg. The mother bird was absent on my arrival at the usual hour that morning and remained away until 10:30, when it commenced to rain a little, whereupon she promptly returned and remained on the nest brooding the young most of the afternoon, even long after the rain had ceased falling. After a three day absence from my desk observations were resumed on June 4, when nothing of consequence concerning the robin household was noticed other than the regular feeding of the young by the female parent.

For a long time after the nest was finished the male robin appeared only on two occasions, when he perched for a few moments on the parapet of the east wing of the Academy building, 70 feet away, and uttered a few notes without going near the nest. After the second occasion he staid away so long that it looked as if he had either left his mate or left the world; but on the morning of June 5 he greatly surprised me by suddenly appearing. And from that moment he assisted, more or less assiduously, in feeding the offspring.

On the morning of June 5, which was showery, the female was chiefly brooding the young, but after eleven o'clock she began foraging. Upon returning with supplies from one of these forays she would approach the nest, alight on its rim and gaze into it, at the same time moving or gently snapping her bill. If no beseeching beak were lifted she would settle down on the nest and brood for a while. This action of hers was so much in contrast to her previous activity in supplying food that it made me suspicious of there being something wrong, so that the next time she left the nest it was examined from the roof, from which point only one young bird could now be discerned.

The twigs and leaves of the poke berry tree had been growing around the nest in such manner as partly to hide it even from the roof; so I tied a knife to a stick and managed to cut away a little of the foliage, which left the nest in plain sight from my desk. Upon her next return the mother bird eyed me rather askance, but finally quieted down again. After a while a gaping bill forced itself up beside her and she went off for more food. In a few moments the male arrived and perched on the edge of the nest as a beak was uplifted, but he caught sight of me and hastily fled. However, he returned in a couple of minutes and fed the young one.

This morning the female occasionally stood on the edge of the nest and pecked at something inside, after each peck going through the motion of swallowing. These actions suggested the presence of some insect pest either in the nest or on the young bird and that the parent was picking up larvae and swallowing them. The dis-

appearance from this nest of the other nestlings, which were present and alive on May 31, had at first been ascribed to the depredations of either a squirrel or a rat, unlikely as it seemed that this nest would have been discovered by these rodents, which did not frequent this particular locality, or that one of the nestlings would have been left unharmed when the others were taken. The actions of the mother bird on this particular morning seemed to indicate the possibility that the nest had been visited by a parasitic fly of the genus Protocalliphora, if so, most probably of the species azurea (see Plath, Condor, xxi, 1919, p. 37), and that the missing nestlings had died from weakness caused by the draining of their blood by the larvae of this fly, after which their remains had been removed from the nest by the parents. It may seem rather a short time, between May 31 and June 5, for all this to happen, but some members of this parasitic genus of fly are viviparous and others lay eggs even in the nest itself-that hatch in a day or two, so the larvae would promptly be ready to begin their deadly work on the young brood. Under the first impression, that the loss of the nestlings was caused by predatory animals, the ground under the tree was, unfortunately, not searched for remains.

On June 6 the nestling was uneasy, as if annoyed by something, and several times the mother bird perched on the edge of the nest, as before described, and pecked downward, apparently not deep enough to touch the bottom of the nest, but far enough down to pick something off the young bird, and again always seemed to swallow whatever it had picked up. Most unfortunately the nest was inaccesible to me, even though it was so near the window, as the tree was too slender to be climbed and yet too stout to be bent over so that a proper examination could be made.

With but one juvenile stomach to fill the parents had an easy time keeping it supplied with food. Often a parent would arrive with some choice morsel only to find the young one asleep, whereupon the parent would perch on the edge of or near the nest and patiently wait until the nestling awoke, sometimes gently chirping to it to see if it really were asleep, as being so well fed made the sole young one far less ravenous than would have been a member of a large brood. My notes of June 7 show that the female perched on the rim of the nest in the middle of that morning for about 15 minutes, during which the nestling was quiet except that once it raised its head, whereupon the female thrust her tightly closed bill three times in quick succession down the young one's wide open throat, to all appearances merely going through the motion of feeding it. During this performance there was no outward indication of anything like regurgitation on the part of the parent bird, nor of the delivery of any food whatever; yet after this action the nestling settled down blissfully into the nest as if perfectly satisfied, whereupon the parent did a little more of the mysterious pecking into the nest and flew away.

Upon returning on June 11 from a three day absence I noticed spotted feathers just beginning to show on the young one's breast, with other feather tracts correspondingly advanced. This day was of pleasant temperature, yet the sun seemed to be beating rather too strongly upon the nest, on account of the removal of some of the foliage for a better view, and the female, panting and with mouth open, was sheltering the young bird from the heat. At times she would repeat the performance of pecking into the nest or at something on the nestling, going through this motion several times in quick succession and always swallowing after each peck although nothing was ever visible in her bill by the time that her head appeared again above the edge of the nest.

On June 12 the nestling appeared to be hungry and really eager for food, reaching up and fluttering its wings when a parent came near. In the afternoon it

succeeded in getting its wings over the rim of the nest and on one occasion it almost fell out. This afternoon it was very restless and occasionally would utter a squawk, at the same time acting as if it were much troubled by insects. Toward the end of the afternoon it commenced for the first time to use its bill in attempts to alleviate the annoyance.

Up to this time the nestling had paid no attention whatever to sights or sounds not immediately associated with its parents or with its intimate surroundings; but, on June 13, the noise made by the raising of my window, the nearest part of which was six feet from the nest, evidently created a feeling of fear in the brain of the fast developing juvenile, causing it to huddle down in the nest and to stay in that position for some time. Something was annoying the nestling to such an extent that day that it was impossible to arrive at any other conclusion than that of the annoyance being caused by an insect pest, and finally I tied a can to a long stick and sprinkled insect powder liberally over nest and nestling.

The morning of June 14 found the young robin much more quiet than it had been on the preceding day, as far as insect troubles were concerned, but it was squeaking a good deal, getting up on the rim of the nest from time to time and stretching its wings which were now well feathered and seemed to be sufficiently developed for flight. About half-past eleven that morning I happened to look up from my work and saw the young bird standing on the edge of the nest, with no parent in the vicinity. While I was looking, it deliberately pitched forward off the nest and fluttered to a lower tree near by. The male parent arrived a few minutes later with a large black or dark blue berry of some sort in its bill and stood on the rim of the nest, nonplussed for the moment, gave me a sort of reproachful look and flew away. Twice after that, within a few days, a young robin, presumably my young acquaintance as there was no other brood of its age in the vicinity, came to the nest, staid a few moments and flew away, on the last occasion ending its individual history as far as man may know.

Some time after this the nest was pushed out of the tree in order to examine it closely in case there might be something worth recording concerning it. The inner lining, of fine dry grass, had become brittle and had been worn away from the mud wall of the nest and among the resulting litter in the bottom were forty or fifty small objects that looked a good deal like cocoons. These were from five to eight millimeters long by four to five millimeters in diameter. Some of these "cocoons" had been pressed against the mud wall, near the bottom of the nest, and were still sticking there when the nest was examined. Samples of the "cocoons" were submitted to several entomologists, who failed to identify them, and were then sent to Washington, D. C., where Dr. J. M. Aldrich, of the National Museum, pronounced them to be seeds of plants and Mr. W. L. McAtee, Food Habits Research expert of the Biological Survey, identified them as seeds of the English ivy (Hedera helix), with the accompanying remark that these seeds "... are not known to be used as food by robins and if they had been brought for food it is not likely that they would have been allowed to accumulate in the bottom of the nest."

The ivy seeds did not appear to have passed through the digestive tract of a bird and, furthermore, excrement was always promptly removed from the nest, principally by the male bird. In the climate of San Francisco, as is the case with many other perennial plants, ivy is rather casual about the time of year in which it bears fruit, but the nearest growth of this plant to the nest site is away over on the other side of the Academy building, and no fruit from it could possibly have fallen into the nest, so the presence therein of the seeds is a mystery unsolved.

California Academy of Sciences, San Francisco, November 30, 1929.