

STRANGE FEATURES IN BIRD HABITS

By FRANK A. LEACH

I HOPE it may be found excusable, in the introduction of this subject, for me first to express regret and some disappointment that none of our students and observers of habits of the birds of California have yet found sufficient interest in the life of the California Woodpecker to discuss or question the remarkable communal habits attributed to this highly interesting bird, in a contribution appearing in the CONDOR of January, 1925. The facts set forth in that article were so inconsistent with the known habits of bird kind in general that no doubt they were commonly regarded as being inaccurate, or a misinterpretation of actions of the birds, or at least of questionable character. I know that something like this must have been the point of view of an editor of a prominent eastern publication to whom the description was first sent, for he said he would hold it for use upon receipt from me of supporting evidence.

The article did not assume a discovery establishing the peculiarities as being customs of the species as a whole, but simply as the conduct of a particular colony of eight or ten woodpeckers that habitually made their headquarters in a certain cluster of valley oak trees. I remarked, however, that the strange habits might be found to be common with the species, as I had noted some features of the same conduct in the nesting activities of another colony located in a cluster of oaks a few hundred yards distant from the first mentioned. Beyond the statement of Mr. Joseph Dixon to the writer, that he had noticed some of the mentioned peculiarities among woodpeckers inhabiting the Sacramento Valley, and the reference in Mrs. Myers' bird book to other than parent birds aiding in feeding woodpecker nestlings, I have read or heard nothing from any authority on the habits of birds alluding to the subject.

It would seem that the evidence so far presented warrants investigation by skilled observers, to determine whether or not the California Woodpecker follows habits in nesting so greatly at variance with the behavior of other bird species. Obviously, if it should be found true, the fact is worthy of place in our bird histories, to say nothing of the interest from a biological point of view.

For the benefit of those who may not have read the publication referred to, and as well as to attempt some justification of my criticism, perhaps it would be well here to describe briefly the principal features of what has been referred to as "strange conduct." In doing so, let it be borne in mind that the description refers to the acts of a certain lot of eight or ten California Woodpeckers (*Balanosphyra formicivora bairdi*) that seemed to form a colony. That they formed a colony was suggested by their acts in making a certain oak tree their headquarters; and while they apparently dwelt in harmonious relations among themselves, the presence of a woodpecker from other sections of the Park was regarded as trespass and this bird at once became the object of attack. Besides, the idea was strengthened by their conduct in the breeding period.

My attention was first called to these birds in the early part of 1921 when I found them excavating a hole on the westerly side of a telephone or trolley pole situated near the oak tree mentioned. A heavy storm in March caused them to stop their work and abandon further operations in the undertaking. On February 2 of the following year the birds were discovered in a renewed attempt to excavate a nesting place in this pole. This time the entrance hole was started on the northeasterly side, where it would be least liable to be flooded by rain.

In watching their operations it was soon discovered that more than a single pair of birds were giving their time and labor to the work. It appeared as if each member of the colony took a turn at the job. There were at all times two to four birds perched on the cross arm or wires near by, ready to drop down and relieve the working bird when their turn came. Thus the excavation was continuously and most industriously carried on from early morning until dark, with but little interruption, until about the first of April. The cavity for nesting purposes was so enlarged by the month of March, or the latter part of it, that two or more birds were frequently working inside at the same time. By April 1 the birds began to show more interest in mating affairs than in construction of the nest.

In the incubation period it appeared as if the duty of covering the eggs was divided among the members of the colony, operating in relays devoting from five to ten minutes each. I say "appeared", for it could not be seen what was taking place in the nest, but the idea was suggested by the continued going in and coming out of the nest by the different birds of the colony, a proceeding that lasted during all the daylight hours. In all probability the thought would not have occurred were it not for the communal actions displayed in other features of the general proceedings. When the young birds were hatched a most lively interest was manifested by the members of the colony. The frequent arrival at the nest of two or more birds with food, sometimes three and again as many as four, indicated that a goodly portion of the colony, if not all, participated in the needs and care of the youngsters.

The paper previously mentioned detailing the above stated facts was not given publication until observations had been noted on the production of three broods of young in the pole nest in 1922 and the same number in 1923, and in 1924 after the colony was forced to nest in the big oak tree by the destruction of the trolley-pole; and, moreover, after witnessing similar conduct by another colony a quarter of a mile away. So it must appear that conclusions as to facts, or errors of interpretation, if errors there be, were not matters of hasty decision, but reached after devotion of many days and hours of close observation to the conduct and habits of the woodpeckers.

Another common bird that has always claimed my interest is the jay. In speaking thus I make no distinction between the two species familiar to Californians. These birds are common in numbers and are uncommonly endowed with intelligence, activity in life, and possibly mischievous habits. In these matters there are no differences between the two species, even though in appearance they are quite unlike. Their habits of misbehavior are of such conspicuous character that they bear a bad reputation among most people, and, what is more, the birds are outlawed by legislative action of the state. It is possible that their unpopularity would be modified if the public could be made better acquainted with all of their habits, and with the good that comes from their appetite for many forms of insect life.

I confess that a number of years ago I shared, to some extent at least, the feelings of popular enmity. I was completely won over, however, to the opposite way of regarding the birds, after watching a pair of the California Jays (*Aphelocoma californica*) and their offspring during the length of a brooding season. Whether at work or otherwise engaged, the birds always displayed a wonderful degree of active intelligence. While commonly expressing their emotions in loud and rather harsh voices, I was astounded when I discovered their capability to produce some of the sweetest and softest warblings of bird music. It was never given in vibrant tones, but in low soft notes, scarcely audible beyond a hundred feet or less, as if the birds were indulging in private rehearsal. Again, I detected them in what I thought were attempts at mimicry of notes of other birds. The crested jay of the mountains, cousin of the California Jay, imitates

the screech of the Red-tailed Hawk so perfectly as to be indistinguishable from the genuine cry; so it would not be surprising to find the habit of mimicry in other branches of this family.

In conclusion I will relate a little incident of recent occurrence in Oakland, observed by a friend, which illustrates the unusual wisdom of the jay. This friend maintains a feeding table for the birds that inhabit the grounds about his home. Last Christmas morning he put some pieces of bread crust on the table. Soon after, he saw a jay take one of the pieces of crust to the ground and thrust it into the soft dirt, then take a leaf and lay it over the buried morsel. This done, the bird repeated the act in all its details. Thereupon my friend called his brother, relating what he had witnessed, and while the two stood there watching proceedings the jay twice repeated the act of burying the bread and covering the place with a leaf, making four caches altogether. The burial alone of the bread crusts might not be considered so very remarkable, but the attempt to conceal the places by covering them with leaves indicates an unexpected degree of cunning.

Probably this is as rare in the habits of the California Jay as was the action of a male quail in an incident that came under the observation of a friend living in the country near Lafayette, Contra Costa County. A common hen stole away from the chicken house and hatched a brood of chicks, to return later to the vicinity of the house proudly piloting a dozen or so of little ones. The members of my friend's household were astonished to discover that the brood was accompanied by a male Valley Quail, and that he was manifesting all the care and interest of a parent in the welfare of the chicks. This was not an affair of the moment, or of passing attraction for the quail. On the contrary, he had attached himself to the group as if inspired by some instinctive sense of obligation to share with the mother hen all the duties of rearing the family, a feeling that never weakened or abated from the date of hatching until the chicks reached the stage when they no longer needed the mother hen's care. During all this time he manifested in various ways his devotion to the task he had assumed. When first seen he was scratching the ground in regular chicken fashion, with several chicks hovering around ready to receive each morsel of food he uncovered. As may be imagined, this was one of the most entertaining features of the strange combination. He was ever alert for the approach of enemies, such as a hawk, dog, or cat, in the vicinity. On such occasions this quail would take a position on top of a post or other place of vantage, sounding the peculiar quail notes of alarm or warning of approach of danger.

As notes of warning and cries of distress, though much different in quality with each species, have such likeness in expression or accent, their meaning seems to have universal understanding among all bird kind, and it was not strange that the young chicks should respond to the foreign language of the foster father by hastily seeking places of safety with the mother hen. This strange alliance of a wild quail with domestic chickens was a feature of great interest, which my friend took pleasure in exhibiting to visitors to his country home, and therefore there were numerous witnesses to the incident.

In accounting for the conduct of the quail my friend suggested a very reasonable theory, which was, that probably it and its mate had had a nest in the vicinity of the spot chosen by the hen, the hatching in both taking place at about the same time, when the mother quail and her chicks became the victims of some predatory animal or bird. Thereupon, the father quail found in the domestic chicks a brood of youngsters quite similar in every way, except as to size, to his own brood, minus the protective and assisting services of a male parent, and he immediately filled the vacancy, probably instinctively directed to this action by the loss of his own family.

There are certain actions of birds, also noticeable in some other forms of the animal kingdom, that have caused me to wonder if nature had not given birds and other ani-

mals a sense of perception in locating food far beyond anything of the kind possessed by man. The details of two cases are set forth in the following paragraphs.

One spring-time I planted some peas in my garden. Noting that none "came up" upon the expiration of the usual time necessary for the sprouting of the seed, I made several excavations, to uncover them and to discover if possible the cause of the delay; the fact was disclosed that not a single seed remained where I had planted the lot. The flitting of a pair of California Towhees through some nearby shrubbery at once suggested a possible agency for the disappearance of the planting. With little hope of producing a crop, but with greater desire of discovering the actual facts relative to the mysterious disappearance of the seed, I concluded to plant another lot.

Preparatory to this, the ground was thoroughly pulverized so that the surface would be sufficiently smooth to record the tracks of animals, whatever ones should prove to be the culprits. Then I planted the peas about a foot apart in rows, putting 3 or 4 seed in each spacing or "hill". Special care was taken that no stray seed was left on the surface to advertise the planting beneath to any bird or animal scouting for food in that district. When the job was finished there were three rows, about 18 inches apart, twenty feet in length. I watched the place quite closely for a couple of days, but nothing happened. About a week later, however, I discovered the towhees there industriously scratching in the bed in a manner indicating that they were excavating and appropriating the planted pea seed. The behavior of the birds caused me to make an examination of the bed, when I found that it had again been robbed of the planting. Not a single seed had been overlooked by the robbers.

The surprising feature of the case was that the thieves knew exactly where each pea seed lay hidden beneath the surface of the ground. Apparently their knowledge was as accurate as if they had watched the planting and had staked out each hill, for there had been no experimental excavations made in hunting for the seed. The undisturbed condition of the surface of the ground in all parts except at the exact spots where the seeds had been planted affirmed that much. No mistakes had been made in locating the booty, and it had been as completely removed as before. This fact was made evident by the presence of empty little pits or holes as regularly spaced as the spacing of a checker board. It would have been impossible for a man possessed with the knowledge of how the peas had been planted to have removed the seed, with the neatness and without some error in location, comparable with the work of the robbers. The birds were possessed with such superior faculty or discriminating sense in locating the food that the operation bore the appearance of a Houdini performance.

While such behavior in birds is astonishing, perhaps an explanation can be found without resort to the unknown, or crediting the feathered family with mysterious powers of discernment. We all are cognizant of the fact that skill is the result of practice, and that wonderful accomplishments come through long and constant repetition of some particular act, and this within the lifetime of the performer. With this thought in mind it does not seem so strange that the capacity of all forms of wild life to obtain food should be raised in many instances to high degree, with performances appearing miraculous. Take the case of the towhee: As it and its ancestors have devoted about all the daylight hours of their existence to locating food, should we not expect the senses of touch, smell, hearing and sight, to be of extraordinary character? We have common evidence of the vast superiority of the eyesight of some species of birds over that of man. I have in mind the bluebird, as an example, that, perched high on a telegraph wire quickly detects the movement of a small insect on the ground, thirty to forty feet distant; and the flycatcher, darting into midair from some point of advantage and seizing a wandering object so small and distant as to be invisible to the ordinary observer; and the woodpecker, springing into the air and "looping the loop" seemingly for

no purpose, until the snap of the bill is heard. Then again, we have frequent exhibitions of the wonderful power of discernment of food possessed by robins. You see them scattered about on lawns or other grass plots endeavoring to satisfy a ceaseless appetite with angle worms. A robin suddenly pauses in its search, for a moment it is like a fixture, then in a flash its bill is thrust into the earth, seizing a worm. You know from the tugging of the bird and the stretching of the worm that the victim was buried beneath the surface. But here we may have an exhibition of superior keenness in some of the other senses in addition to sight.

I have a feed table for birds in front of a window of my apartment at Diablo, a source of never-ending interest in the study of bird behavior. This table is no more than the roof of a very wide and long porch, a place in itself that has no attraction for birds. Producing no food, and barren of retreat, a bird was seldom ever seen upon this roof until I began to place seed there. When I threw out the first lot I wondered how long it would take the birds to discover the bounty placed so far from where they were commonly seen. To my great surprise, in less than fifteen minutes there were several House Finches partaking of the feast, twittering soft notes of satisfaction as well as some louder notes sounding like calls to absent mates. Before the supply of seed was exhausted several Golden-crowned Sparrows, a couple of titmouses and a pair of California Towhees came and partook of the feast. In all there were fifteen or twenty birds feeding at the table. The most interesting feature of the incident was the celerity with which the visitors responded to the display of a "free lunch" located in such an out-of-the-way place. If some of these birds had been seen frequenting the porch roof in times prior to placing the seed there, I probably would not have noticed their quick response. However, under the circumstances, and considering the fact that the Golden-crowned Sparrows were ground feeding birds, I was impressed with this exhibition of power of discernment that seemed extraordinary to say the least.

For months following I gave the matter considerable attention, making experiments in the hours and regularity in days of feeding. During the periods when the birds were fed daily, their response was almost instantaneous; but when I omitted feeding them for three or four days, it required from one to five minutes for them to discover the seed upon renewal of the lunches. No particular species of my visitors appeared to possess superiority in detecting the presence of the food, for the first birds in doing this were sometimes the titmouses and at other times the sparrows, finches or towhees.

The birds mentioned were the regular patrons. They never missed a meal. Representatives of other species were occasionally seen at the table, among which were quail, juncos, San Francisco Towhees and goldfinches. With the exception of the quail these strangers to the immediate vicinity gave no indication that the discovery of the food supply was of any special advantage to them. Their visits were irregular and such as might have been incidental to their being in the neighborhood at the time of putting out the food. Still there remains to be explained how they came to discover the food even on such occasions.

A year or more has now passed since I established the free lunch for the birds, and I must confess I am not much nearer in arriving at a fully satisfactory theory as to the operations of the senses or instincts of the birds that direct them with such precision and promptness to this out-of-the-way feed table, than when the thought first occurred to me. Unfortunately, from my place of observation, vision is so interfered with, that the approach of the birds in response to the putting out of the food, is almost impossible to determine beyond 25 or 30 feet. But from conditions on the ground below, where is wide pavement, cement walk, and the main entrance to the building, it follows that the common habitat of the birds could be no nearer than the lawn and gardens beyond. The attendance at meal time as a rule began with the approach of one or two birds, to be

quickly followed by fifteen or more, coming from different directions. The majority seemingly flew up from the garden, but others came flying in at some elevation above the level of the porch roof, indicating that they came from a greater distance.

On one occasion, after an absence of four or five days, during which time the birds had not been fed, I made a careful survey of the surroundings and was unable to detect the presence of a single bird of the species that patronized the feed table. Upon throwing out the first handful of seed, a House Finch flew to the table from the top branches of an oak tree thirty or forty yards away. It was almost instantly followed by two or three more birds, and these in turn by increasing numbers until the usual gathering on such occasions was complete. This was accomplished in a few moments time.

The actions of the birds as detailed in this incident suggested the possibility that the finch in the tree top discerned the food supply, and by its manner of going to it revealed the placing of the bounty to nearby birds, and they in turn, likewise, relayed the information to the balance of the patrons. However, even in accepting this simple theory we are compelled to credit the birds with endowment of an eye-sight that is marvelous in its scope and power, which I think students of bird conduct can do with unanimity. But must we not also have to concede a mental activity beyond the realm of ordinary instinct, in the discernment by one bird of the purpose and intention of another by its actions in flight? Here, I fear, we find an obstacle to further unanimity of thought or opinion.

It is such cases as this and many similar ones that compel the thought that we have yet much to learn before the problem is solved.

Diablo, California, May 16, 1927.