

tendent knowing of the swift roost. But one has not only to visit the chimney but also to watch its mouth closely, for in cool weather the few which come enter the chimney with little or no circling, come low and drop in immediately. Trusting to mere chance of seeing a swift on the wing one does not get those late dates. What kept them so extraordinarily late in 1925 and in such large masses as reported by Mrs. Ridgway is a mystery, though a great heat wave lasted in the Southern States till October 27, when it ended with a tornado in Alabama and zero and subzero weather in the Northwest.

It seems that the temperature alone does not decide the departure, as the record of 1924 shows. On September 2, 3000 swifts entered the Tower Grove chimney. On September 19, 4000; on September 26, 4800; on September 30, 3600; on October 2, 2000; on October 9, 2000; October 18, 60; and on October 19 only 10. The weather on the 18th and 19th was warm, 85° and 84° max., with all fall flowers in full bloom and the tropical water lilies, day and night bloomers, in Shaw's Garden and Tower Grove Park blooming so late in the year for the first time in fifty years. The change to cold came only on the 21st with frost on the 22d.

ST. LOUIS, MO.

HOW DOES THE TURKEY VULTURE FIND ITS FOOD?

BY JOHN B. LEWIS

A recent article in the *Auk* (July, 1928, pp. 352-355), by Mr. Alexander H. Leighton, entitled "The Turkey Vulture's Eyes," interested me greatly and called to mind some experiments I have made along similar lines, which may be of interest to others.

On January 19, 1927, a dead chicken was placed in an open field ninety yards from our home in a spot easily seen from the windows. A burlap bag was laid over the hen and a weatherbeaten box was placed over all to keep dogs from carrying the carcass away. Either the burlap or the box would have prevented the carcass from being seen, but would offer little resistance to the escape of odor. Either Mrs. Lewis or myself kept close, though not continuous, watch on the situation until February 21, without seeing a vulture near the box. At 10:30 A. M., on February 21, the temperature being just above freezing, the sky clear and a light west wind blowing, I removed the burlap and box from the carcass, placing the box four feet from it, so that if it had frightened the vultures away while the carcass was concealed, it would do so when the latter was exposed to view.

After arranging the carcass and box I carefully scanned the sky, and saw but one vulture, which was flying low in the southern horizon. I walked to the house, washed my hands and went to the window just in time to see a vulture (*Cathartes aura septentrionalis*) alight on the ground fifteen feet from the carcass. In less than as many minutes, three others alighted near the first. All four walked cautiously around the carcass and box for some time before venturing to begin the feast. The temperature all through this experiment was low enough that the carcass did not develop very much odor.

We might summarize the results of this experiment as follows: A dead hen lay in an open field concealed from sight for four weeks without attracting any apparent attention from the vultures that sailed across the sky every day. The carcass was then exposed to view without changing any other of the surroundings, and in less than ten minutes four vultures alighted within twenty feet of it.

On July 20, 1927, I placed the carcass of a Barred Terrapin, ten and a half inches long, under a box in an open field, for the double purpose of letting the carrion beetles clean the skeleton, and to learn whether the vultures would find it when concealed from sight. There was a crack, one-half inch wide by eleven inches long, in one side of the box five inches from the ground, but it is hardly thinkable that a vulture could have seen the terrapin through it, unless from the ground near the box. On July 24, at 1:00 P. M., seven vultures were on, and near, the box.

On December 21, 1927, I shot two stray tom cats that came to our place. The carcass of one was placed in an open field without concealment. The other was placed under a low, thick, branching holly tree in the same field, 140 yards from the first. The lower branches of the holly were far enough from the ground that a vulture could easily have got at the cat, but effectually concealed the latter from above. The vultures found the cat in the open the next day, and were at work at it, trying to get at the flesh under the tough skin, for several days. The cat beneath the holly attracted no apparent attention from the vultures during eleven days, at the end of which time it was carried off bodily during the night, probably by a dog.

At 8:20 A. M. July 15, 1928, the carcass of a newly killed opossum (*Didelphys virginiana*) was placed in an open field in view from the windows of my home and covered with a weatherbeaten box in which all cracks had been covered. Twenty-six yards from the box stood an old telephone pole, left from an abandoned line. This layout was watched closely, though not quite continuously, for four days. At

3:30 P. M., July 16. a vulture alighted near the box, walked up to it and remained eight minutes, then left. At 9:10 A. M., July 17, two vultures circled about over the box for four or five minutes and then left without alighting. At 10:00 A. M. on the same day a single vulture circled over the box and left. At 2:35 P. M. a single vulture circled over the box, then alighted on the telephone pole, where it remained twelve minutes. At 6:10 A. M. on July 18, I removed the box from over the opossum placing it four feet away. Decomposition was now far advanced, and many carrion beetles were at work. Omitting details, between 10:00 A. M. and 5:00 P. M., eighteen vultures came to the carcass, sailing low over it, many alighting on the telephone pole; but only one was seen to alight on it and eat. Two Black Vultures (*Coragyps urubu urubu*) were with the Turkey Vultures at this time.

I failed to go to the carcass of the opossum early in the morning of July 19 to see that it had not been devoured by dogs or other mammals during the night, but between 9:00 and 9:45 A. M. sixteen vultures, about half of which were of the black species, gathered about it and completely cleaned up whatever remained of it.

These experiments seem to indicate that in cold weather when little odor is thrown off, sight is the vultures chief means of locating food; but that they have no difficulty in locating it by scent alone, in warm weather when odor is strong.

These observations and some others of the author may throw light on a question raised by Mr. Russell M. Kempton in the WILSON BULLETIN for September, 1927, as to whether vultures willingly feed on the carcasses of carnivorous animals. That they will eat such carcasses there can be no doubt, as I have frequently seen them eating the carcasses of dogs and cats. They seem to have great difficulty in getting at the flesh of such animals on account of the toughness of the skin, for in some instances I have seen them work day after day without effecting an entrance into the body cavity. In such cases they eat the eyes, tongue, and usually manage to get some of the viscera through the vent.

In my own experience most of these cases have occurred in winter when food may have been scarce, and may not indicate that the flesh of carnivores is eaten from choice.

I hope to experiment further along this line very soon.

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