

It is well known that *E. t. trailli* breeds abundantly in Ohio and there are several old records of its breeding in Michigan, particularly in the southeast corner of the state and in the southern two tiers of counties. (See Barrows' "Michigan Bird Life," page 404).

After the young left the nests it was noted that but one adult was seen about the nest area in any of the Jackson County localities. Two Traill's Flycatchers thus collected proved to be adult males. This would point to the fact that the female and young leave the nest locality as soon as the latter are able to travel, while the male parent lives in his "territory" until the end of July or later, and he is almost certain to be found in a rather restricted area, say of two hundred feet along a stream.

JACKSON, MICHIGAN.

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## A THEORY OF HOW THE TURKEY VULTURE FINDS ITS FOOD

BY WILLIAM BREWSTER TABER, JR.

Having read Mr. Lewis' "How Does the Turkey Vulture Find Its Food" in the *WILSON BULLETIN* (Sept., 1928, also published in the Oct. 1928, *Auk* under the title "Sight and Scent in the Turkey Vulture"), and Mr. Leighton's article on the same subject in the *Auk* (July, 1928), it seems pertinent to contribute the results of an experiment which I made to test the food finding faculties of Turkey Vultures, and to advance what I believe is a new theory of just why it is easier for a Turkey Vulture to find its food by *sight* when the food is rotten and of a particular offensive and foul odor than when it is fresh.

First, let me describe an experiment which convinced me that vultures do not find their food by scent and that sight is their only means of discovery, and then I shall give some observations which led to the before mentioned theory.

In the late winter of 1926, while trapping Crows, I caught a Turkey Vulture. Thinking that it would serve as a call bird for Crows, I kept it for several weeks and during that time repeated Darwin's experiment with Condors (Voyage of the Beagle), which led him to believe that vultures find their food by sight alone. During this period the vulture was kept at night, and likewise during the days when I did not use it as a call bird, in an old empty chicken house. It inhabited these quarters for more than two weeks before the experiment was made, and had been fed there many times, so that the effect of these artificial conditions was reduced to a minimum. The first procedure was to whet the bird's appetite. This was done by supplying it with no other food than water for a period of sixty hours. It showed no signs

of inconvenience or suffering during this time, and except possibly for a keener, more alert, attentive, and expectant attitude whenever I entered the building showed no visible signs of excessive hunger. Nevertheless after such a fast there could be no doubt that the bird was hungry.

I then cut from a hog carcass, which I had been using for bait for Crows, a piece of strong smelling meat and wrapping it in newspaper placed it on the ground before the vulture, which was perched on a low roost a foot or so above it. Believing that my presence might distract the bird I retired from the building, closed the door, and watched through a crack. I could distinctly smell the bait from where I stood fifteen feet away and outside the building. After what appeared to be a casual inspection from the roost, it preened its feathers and paid no further attention to the newspaper or its contents. Waiting for full twenty minutes, I then entered the building, opened the newspaper, left the meat on the paper, and took a seat inside the chicken house about ten feet away. As soon as the carrion was visible the vulture was all attention, waiting only until I had moved a few feet away before hopping down from its perch onto the newspaper and its long postponed repast. It was plain that neither the newspaper nor my presence deterred it from eating; and it also seemed certain from its lack of interest before the paper was opened that the bird simply did not know the food was there. This was in spite of the strong odors, so unpleasantly apparent to even the dull sensory organs of a human being. The experiment convinced me that scent is not a factor in finding food.

But then how shall we explain Mr. Lewis' experiences in the summers of 1927 and 1928 when vultures were attracted to covered baits, which were not visible, only after they had been dead long enough and under warm enough conditions to be somewhat decomposed and odoriferous? The first inclination is to conclude that it was the smell that attracted them. But it may have been by their sight they detected the presence of food even though they could not see the food itself, as I shall explain.

My explanation is based on the fact that the association of events has meaning to birds as well as the lower animals. This does not necessarily imply the ability to reason, although they may to a limited extent possibly have that ability, but merely that through long experience they have learned to recognize the significance of certain events, and consequently govern their acts accordingly. Anyone who has witnessed the rapid response of a group of tree sparrows, juncoes, woodpeckers and chickadees to the stimulus of the sight of a Sharp-shinned

Hawk skimming above the tree tops, realizes that this event has meaning to the group, and a meaning which causes immediate action. As I have pointed out in an article, "The Mentality of the Crow," published in the WILSON BULLETIN (March, 1927), a number of Crows feeding on the ground attract other Crows to their feast. Similarly vultures perceiving Crows in a compact group about an object realize that often this means food for them. It is by such signs that the vultures found Mr. Lewis' bait although they could not see it. In these particular instances, it was unquestionably not Crows that attracted the vultures. However there are other creatures which through smell detect the presence of carrion and are attracted to it. Carrion beetles and some small rodents feed upon decomposing meat and undoubtedly find their food by following up the scent. Although such small creatures could not be seen by a human being at any considerable distance, the carrion beetles, some of which are brightly colored, and the larger forms of mice and ground squirrels converging upon a rotting carcass might be easily distinguishable to the keen eyed vulture flying over-head in search for just such indications; and having perceived these signs the vulture through long experience knows that this means food.

I therefore wish to advance the theory that vultures find their food by observing the actions of carrion feeding creatures, as well as by discovering the food for themselves by direct vision.

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## A SOUTHWARD MOVEMENT OF BREEDING SAVANNAH SPARROWS IN OHIO?

BY LOUIS W. CAMPBELL

It is a general fact accepted by ornithologists that the trend of breeding ranges of birds is always northward. Familiar examples in Ohio are the Carolina Chickadee and the Bewick's Wren. But occasionally one observes a species which apparently is either not obeying this rule or is returning to its original nesting ground. At present it is the Savannah Sparrow (*Passerculus sandwichensis savanna*), whose normal breeding range is given as southern Canada, which seems to be spreading southward through Ohio.

The history of this species in the state as a nesting bird is soon told. Dr. Wheaton in 1879 lists it as a probable breeder in the northern counties but states that it was not recorded by Dr. Kirtland or Mr. Read. In fact, his only positive record was that of Mr. H. C.