

were crushing the fruits in order to obtain the seeds, and immediately dropping those fruits which were not easily opened.

The method by which they removed the seed from the fruit seems interesting enough to be described. The birds seized the fruit with their beaks, pinching the edges of the blade near the distal end of the enclosed seed in such a manner that the fruit split open. Though they generally picked at the fruits from stretched positions, they sometimes carried one to a branch and held it with their claws. It is possible that this method of feeding is a habit of general occurrence. Wetmore (1919. *Auk*. **36**: 190-197) records an equally unusual food-securing technique in the Bronzed Grackle, whereby the shells of acorns were split in two by repeated impressions around the shells from the keel on the palate.—ROBERT NERO, University of Wisconsin, Madison, Wis.

MORTALITY IN MEADOWLARKS AS A RESULT OF SEVERE WINTER WEATHER

In January and February of 1949, in the vicinity of Lawrence, Douglas County, Kansas, there was prolonged sub-zero weather accompanied by sleet and snow. Storms occurred frequently, and the ground surface, particularly in open areas, remained covered with ice which prevented birds from reaching food on the ground. Beginning 3 miles east of Lawrence, birds were observed on a 3.5 mile stretch of highway bordered by cultivated fields and meadows. The observer made a round trip over the highway each day on his way to and from Lawrence. There is an open deciduous forest adjoining the eastern and southern margin of the fields and meadows. There are brush covered hills to the west and fallow fields to the north. In the area studied the Meadowlark (*Sturnella magna*) was the most conspicuous species. In early January several species of fringillids, in company with the Meadowlarks, foraged at the margins of the highway. The snow plow, in clearing ice from the pavement, had left a strip 2 feet wide on the shoulder of the highway on either side of the concrete and it was on this open ground that the birds congregated. With the continued icy conditions, fewer fringillids were seen; many individuals probably retreated to the protected wooded area on the eastern margin of the field. However, the Meadowlarks remained, clinging tenaciously to the narrowly cleared strip.

In early February the Meadowlarks were noticeably weakened, and some individuals on being flushed seemed to have difficulty in flying for a distance of as much as 30 feet. As the days passed there were progressively fewer Meadowlarks along the margin of the highway, and on occasion freshly dead individuals were noted.

A brief search of forested and brushy land bordering the fields and meadows was made on February 20, 1949, but there was no indication that the Meadowlarks had sought food and shelter in these areas. Probably they remained along the roadway in spite of inadequate cover and, I suppose, with a constantly diminishing food supply, with the resulting high mortality. There was no evidence of mortality among the fringillids; these birds seemingly dispersed to more favorable areas. The Meadowlark, according to Grinnell (1928, *U. Calif. Chronicle*, XXX. 429-450), "is equipped to get its food safely and in adequate amount only from ground surface which is open-clothed with a low type of plant cover". The fact that these birds failed to use the adequate food in the adjoining, though ecologically different, habitats is testimony to the limited ecological tolerance Grinnell pointed out.—PHILIP H. KRUTZSCH, Museum of Natural History, University of Kansas, Lawrence, Kansas.

EARLY WOODCOCK NESTING FAILURE

On March 17, 1949, Aiden Ripley advised me that he had located the nest of a Woodcock (*Philohela minor*) with 2 eggs in Lexington, Mass. On March 18th it began to snow in the Boston area at about 9 A.M. and by midnight, when the temperature had dropped to approxi-

mately 10°F in the suburbs, 7 inches of snow had accumulated. On March 19th, a bright day with the temperature approximately 32°F, Ripley and I visited the nest site. There was no Woodcock at the location where Ripley had seen the eggs. However, we finally located, at the base of a 2-inch diameter birch tree, a hollow depression in the snow approximately 4 inches deep, with one egg resting on the snow in the bottom of this depression. The egg was frozen and the shell was cracked. A short way from this depression was a little channel in the snow about 12-14 inches long which indicated that the bird was restless and had left the nest momentarily, stomped around, and then returned. Apparently she had abandoned the nest just before the snow stopped falling March 18th.

Ripley immediately assured me that the 2 eggs had not previously been located at the base of this tree, but had been in a little clearing 2 or 3 feet to the left. We scraped away the snow underneath the depression where we had found the one egg and found the other 2 eggs within 4-5 inches of it, under the snow. During our scraping, one of these eggs was broken; it was not hard frozen. The other was unbroken. Ripley is absolutely certain that the Woodcock had moved the first 2 eggs to this new location, perhaps in anticipation of having to endure the storm, since there was somewhat more shelter at the base of the birch tree.—RICHARD BORDEN, 20 Spruce Street, Boston 8, Massachusetts.

NOTES ON WING-FLASHING IN THE MOCKINGBIRD

For some years before Sutton published his brief paper (*Wilson Bull.*, 58: 206-209, 1946) on the display by the Mockingbird (*Mimus polyglottos*) which he calls "wing-flashing", this behavior had been very interesting and thought-provoking. Now, certain conclusions have been rechecked by further observation and seem valid enough to set down in writing.

Since June, 1943, it has been possible to watch Mockingbirds nearly any day all year long, at Savannah, Georgia. Some seasons or parts of seasons specific things set the adult birds apart enough so that individuals could be recognized and the sex known. One year the resident male had a lame leg. Another summer there was no male on territory for some weeks, until another bird took up residence. In spring the females arrive in clean plumage and for some time are in contrast to the males with their dirty plumage.

For some time it seemed that the males never used wing-flashing, but at least 3 undoubted instances of male indulgence have been seen; a few other times it may have been a male that displayed. The performance has been seen many hundreds, possibly thousands of times, which indicates that male indulgence is quite rare. The females come on the grass every few minutes when feeding young, and the males nearly as often.

The fact that the male rarely flashes its wings may explain why Sutton at Orlando, Florida, and Mrs. Lasky at Nashville, Tennessee, did not observe the display commonly in winter since the males remain on territory all winter, but the females appear to leave soon after the postnuptial moult in late August or in September. The male is always somewhere around in the winter, but with the gonadal influence low and little need to defend territory he sings very little until about February. In spring a female comes and accepts the territory. In 1945 the female came on April 15, in 1946 on March 31, while in 1948 one arrived on March 28, and was carrying nesting material the next day.

When a brood of young birds follows the parents on the grass, begging for food or learning to catch it themselves, some will flash the wings and others will not. One such brood of 3 which was seen daily for a week, contained 2 birds that did and one that did not display on each occasion when all were present. This is thought to indicate that the sexual differentiation in this particular appears quite early in life.

There seems no portion of the summer season when the females flash their wings any more than at any other time. In other words, there is no waxing and waning as in other behavior