

Two observations on the orientation of day migrants heading inland from the Massachusetts coastline.—(1) On 22 September 1959, between 0715 and 1000 (EDT), while driving in a semi-circle around the coast of Cape Cod Bay from Wellfleet Bay past Plymouth to Lincoln, I kept a count of the Blue Jays (*Cyanocitta cristata*) crossing the highway, and estimated their direction by comparing it with the direction of the sun at the time. The observations were nearly continuous except for occasional periods of watching the road and traffic.

From 0715 until about 0800, while still on the Cape (southwest wind, 10 mph), I saw 12 Blue Jays flying singly, heading in directions that lay between south and southeast by south. Between the Cape Cod Canal and Lincoln (light west wind) I saw 36 jays in all, heading in directions varying from southwest by west to west. As soon as I crossed the Cape Cod Canal I saw birds oriented west, and the last group of six birds I saw near Lincoln was headed southwest. I saw four jays headed northeast, between Plymouth and Route 128, and two groups (one of two and one of three) flying northeast, near Lincoln. The directions were accurate to within 10 or 15 degrees, and show that the birds were following different average directions. The birds on the south and east sides of Cape Cod Bay were flying south; those on the west side of the Bay were flying west; those near Lincoln were flying southwest.

If we plot these directions on a map of Cape Cod Bay region, it appears that the Blue Jays near the coast were flying in many directions, but in each case directly away from the water; while those farther inland were taking a single, generally southwest, direction. If the birds on the Cape were merely leaving the coast, they cannot have been aware of the presence of the coast farther south.

(2) On Plum Island on 9 October 1959, a group from the Hatheway School of Conservation and I saw the southward migration of five flocks of Double-crested Cormorants (*Phalacrocorax auritus*) between 1030 and 1300. These flocks numbered between 20 and 45 birds. They were all headed in a direction just west of south, which led them to the coastline. One flock passed over Newburyport Harbor; three others met the coast near the mouth of the Merrimack, and a fourth met the coast near Plum Island Point.

We watched three cormorant flocks come in from over the sea in a regular formation with steady flight, toward the shore, from a point east of the Isles of Shoals, New Hampshire, until they started to pass over the beach. At this point the three flocks broke formation, but the two flocks that we saw near Newburyport Harbor quickly re-formed their V and followed the coastline. The flock of about 45 birds that we saw cross the coast at the southern end of Plum Island broke up and started to circle higher and higher. After the whole group had circled twice, a section of about 15 birds turned from the rest, formed a loose V and moved across the beach in a southwest direction which would carry them inland of Cape Ann. They then shifted their course to the south and continued in a south by west direction out of sight over the land. The larger group continued to circle higher, and was blown gradually offshore by a gentle northwest wind for a period of about 10 minutes until they were at about 3,000 to 5,000 feet up; then they also formed a loose flock and moved to the southwest. They turned again and followed the shore in a southerly direction over Ipswich Bay, but continued on in this southerly direction to pass overland west of Cape Ann.

The cormorants were following a consistent heading across the sea, and as they met the shore, they altered their course as Geyer has suggested for his *Leitlinien* (leading or deflecting lines) (1929. *J. f. Ornith.*, 77:17-32), and the fact that deflection and "indecision" were involved is shown by their milling about.

This course, and these actions, compared with the coastline of New England, and the

migration route of Double-crested Cormorants shown in the map in an article by Baird and Nisbet (1959. *Mass. Audubon*, May-June), show that a southwest direction is the primary one for cormorants coming from Maine to cross Massachusetts into Narragansett Bay and Long Island Sound.

On both days on which these diurnal migrations of jays and cormorants were seen, the weather was clear and there was a light wind, southwest and west on 22 September and northwest on 9 October. On both days there was little other evidence of migration, and both days followed several days unsuitable for migration. These two observations point to the compromise between the primary direction and the effect of topography, in the migration of New England birds. These observations show the influence of these deflecting lines, which have led most American students of migration since William Brewster to consider use of topographic features as the primary orientation mechanism in bird migration. Many observations are needed to clarify how diurnal migrants make their way along the New England coast, but at present it is reasonable to accept these observations as further evidence that they use sun orientation together with clues from topography to maintain their primary directions and avoid local dangers.—WILLIAM H. DRURY, JR., *Drumlin Farm, South Lincoln, Massachusetts. Contribution Number HS-30 from the Hatheway School of Conservation, 25 April 1960.*

Phoebe builds over dead young.—While banding nestlings in the summer of 1959 I observed an unusual nesting of the Eastern Phoebe (*Sayornis phoebe*) about five miles from State College, Pennsylvania. The nest was located just above eye level on a ledge of a rock cliff. When first discovered on 29 May two well-feathered young could be seen—one a Brown-headed Cowbird (*Molothrus ater*) and the other a phoebe. The young were not disturbed. The nest was next visited on 1 June at which time it contained a few loose bits of moss on top of two dead young. Since these two dead young were at an earlier stage of development than those previously observed they must have been hidden beneath the cowbird and phoebe at the time of the earlier visit on 29 May. The adult phoebes were protesting quite near so I decided to check again at a later date. By 8 June about an inch of fresh moss and lining material had been deposited on top of the dead young in the nest, and four eggs had been laid. On 18 June only three eggs could be seen, and on 30 June the nest was empty. The adult phoebes were still in the area on 30 June but showed no interest when I approached the nest. The nest was later collected and examination verified the presence of the two dead young beneath the added layer of nest material.—DOROTHY L. BORDNER, *926 West Beaver Avenue, State College, Pennsylvania, 12 July 1960.*

A prehistoric record of the Trumpeter Swan from central Pennsylvania.—Sections of the Sheep Rock Site, an Indian rockshelter located approximately 22 miles south of Huntingdon, Huntingdon County, Pennsylvania, were excavated during the summers of 1958 and 1959. Preliminary test pits dug in 1958 revealed quantities of dry organic material such as cordage, fabric, and wood as well as the usual amounts of flint projectile points and chips, bone remains, and other Indian refuse typical of such dry rockshelter sites. The Sheep Rock Site is dated at approximately 1500 A.D. Under the sponsorship of the Pennsylvania Historical and Museum Commission, Harrisburg, more detailed excavations were undertaken for an eight-week period in 1959 and they were directed by John Witthoft and W. Fred Kinsey III, Curator of Anthropology, Pennsylvania State Museum.

The presence of corn and beans in the midden deposits suggests that agriculture was practiced by some of the later groups occupying this site. However, the quantity of vertebrate remains throughout all excavated levels points to the significance of the local fauna