

minutes of this strange maneuver the birds lifted together until they stood tall and straight with their heads held high. Now starting at their heads a wave of vibrations shivered down their bodies and was flicked off from the ends of their tails. Both birds now assumed a natural pose as though all the ecstasy of love making had been shivered from their systems.

As the cormorants puffed out their gleaming throat pouches they seemed to show a relationship to the *Sceloporus* lizards, who have a similar habit of puffing out gleaming blue throat pouches.

The love making of the cormorants was all very public and it was of interest to note that near neighbors paid not the least attention to the antics of a lovelorn pair.

We were rather surprised to find both birds of the pair of Brandt Cormorants wearing the full nuptial plumage. Naturally we thought that those long feathery white filaments of the back and the flowing white side whiskers were adornments of the male alone.

Among the Farallon Cormorants who occupy the upper terraces of the area there was no evidence of sexual excitement. However, some of the Farallons were wearing the shaggy white "eyebrows" of the nuptial plumage.

On January 31, all of the completed nests that could be seen were occupied by sitting birds, and beside each nest a second bird stood guard. Four of the nests were so close together that the rims almost touched. There was nothing to indicate that young had come to any of the nests.

The completed nests were bulky, well built affairs, apparently made entirely of eel grass, well matted and firmly plastered to the rocky platforms on which they rested. All nests were inaccessibly situated on the face of the sheer cliff and so we could not examine them closely. But studying them through our field glasses from a distance of a hundred feet or so we judged the nest rim to be from four to eight inches in thickness. An outside measurement around the cup appeared from our observation to be somewhere close to three feet. An incubating bird could rest comfortably with bill on one side of the rim and tail on the other side.

On February 28, the behavior of one of the cormorants at the nest we saw started on December 21, led us to suspect that young had hatched; but it was not until the morning of March 6 that we actually saw young birds. On this date the young were quite active, poking their heads out from under the protecting wings of their parent, and occasionally a bird would squirm free from cover, stand up and stretch high its neck. During the hour we spent with the cormorants we saw no food passed to the young.

While we were watching the cormorants a man in a rowboat passed close below the cliff. All birds flew from the cliff and took to the sea, except the birds on nests. These nesting birds refused to budge and no doubt the ever watchful Western Gulls were disappointed.

On April 6, the young of the nest of December 21 were almost as large as their parents and they looked as though they might venture from the nest almost any day. There were still many occupied nests in all stages of development, from eggs to well grown young.

On April 12 the apparently full-grown young were still at the nest site and still being fed by their parents. Western Gulls were not nearly so numerous and now it looked as though most of the cormorants would successfully rear their broods. However, nests not protected from above by an overhang are in danger, for it is the sport of boys to throw branches and rubbish over the cliff in an effort to dislodge the birds.

On our last visit to the cormorant colony (April 12) some few birds were just laying the foundations of their nests. It would appear from this that the cormorants of this colony have a long nesting period.—CHAS. W. MICHAEL, *Yosemite, California, June 4, 1934.*

Altitudinal Migration in Southern Utah.—During September and October of 1934, I had opportunity to observe the downward progress of altitudinal migration from Cedar Breaks National Monument to lower Zion Canyon. Cedar Breaks, 10400 feet elevation, is the most southerly extension of a great Boreal plateau extending through central Utah from the Wasatch and Uinta ranges of the Rocky Mountain system. It is only 29 miles, air line, from Zion Canyon, 3700 to 4300 feet elevation, which is one of the most northerly extensions of the Lower Sonoran portion of the Colorado River drainage. This close proximity of two extensive winter and summer habitats results in an

intensified altitudinal migration, since transients from the north "pile up" at the Breaks as long as possible before flying on down to the more slowly cooling deserts below Zion Canyon. The autumn bird population at Cedar Breaks is further increased by post-nesting migrants from nearby Austral and Transition Zone areas.

Such a pronounced concentration of birds renders observation of departure dates relatively easy, especially when autumn is heralded by a rather sudden drop in temperature, as it was this year. A definite migration wave started from the Breaks between September 30 and October 8, reached the middle altitudes of 7000 to 8000 feet (upper portions of Zion National Park) between October 1 and 20, and arrived in Zion Canyon from October 2 to 30, beyond which the wave spread out and became relatively lost in the flocks of various species stopping along the way at their respective winter ranges. It was noted that practically all but the permanent residents left the Breaks within a week, but in traveling south 29 miles and down-hill 6300 feet the wave had spread over a time interval of a month or more.

An attempt to secure accurate data on any one species was not very successful, but the following observations on Townsend Solitaire (*Myadestes townsendi*) may have some value. This species was last noted at Cedar Breaks on October 7. At middle altitudes, where there is a fairly constant resident population, the last of the large and apparently migratory wave was noted on October 19, and at low elevations in Zion Canyon the first arrival was heard on October 28. The last date has little significance, since most of the solitaires terminate their migration in the juniper forests of the higher Upper Sonoran Zone, only a few coming down to the lower edge of the Upper Sonoran in Zion Canyon.—C. C. PRESNALL, *Zion National Park, Utah, November 6, 1934.*

An Influx of Dickcissels into Central Colorado.—Over a period of many years only an occasional Dickcissel (*Spiza americana*) has been seen in Boulder County, Colorado. The writer, in five years of observation, had not seen one here until this past summer. During the summer of 1934, however, the species became abundantly established about the fields east of Boulder, and within a mile of town. I first observed singing males on June 28 and 29, two different individuals being seen; but they had probably arrived much earlier.

On July 7, on a short automobile trip especially for a census of the Dickcissels, fifteen singing males were observed on the telephone wires and road-side fences along a route of approximately six miles. In other words, in one summer the species attained an abundance in a new region nearly as great as that in its expected haunts farther east; for, during the past three summers, it was not reported near Boulder at all.

I have been wondering if the long period of drought (or unusually dry weather during the spring migration last year) may not have forced the species west. The immediate environment of Boulder is now favorable to the species, because, being irrigated, it is less subject to drought conditions than the region to the east. A letter from Mr. J. Earle Wycoff, Shenandoah, Iowa, suggests a confirmation of this theory. He informs me that on a trip from Boulder, Colorado to Iowa last summer, through Nebraska, only a few Dickcissels were seen. This theory of a sudden westward movement is in line, too, with the recent suggestion of Dr. W. P. Taylor (*Ecology*, 15, 1934, pp. 374-379) that extreme conditions rather than average conditions are of major importance in animal (or plant) distribution. Information from others who have observed the occurrence of Dickcissels during 1934 would be appreciated.—GORDON ALEXANDER, *Department of Biology, University of Colorado, Boulder, Colorado, November 3, 1934.*

Records of Green-tailed Towhees in the San Francisco Bay Region.—Previous to the present writing there have been but two records of Green-tailed Towhee (*Oberholseria chlorura*) in the region of San Francisco Bay. These are to be found in Pacific Coast Avifauna No. 18, page 125: A single bird was observed by W. O. Emerson in Golden Gate Park, San Francisco, May 9, 1884; and one was secured in a river bottom near San Jose during the winter of 1889 or 1890 and recorded by John Van Denburgh.

Since these records there have been two more. Donald D. McLean obtained a Green-tailed Towhee on April 30, 1933, on Silver Creek grade, about four miles south-east of Evergreen, Santa Clara County, on the slope of Mount Hamilton. On September 25, 1934, the writer trapped one of these birds in the University of California Botanical Garden, Strawberry Canyon, near Berkeley. This towhee was kept for three