

three or four ventured within a few feet of the action, uttered scolding cries and retreated to the foliage cover.

Still standing on the now lifeless form of the sparrow in the water, the grackle began to peck and tear at the head, breaking the skin. Tearing small pieces of flesh from the head it proceeded to eat them. Not once did it try to drag the bird from the water to dry land but remained in the pool which had been the center of action. When I left the grackle had consumed a considerable portion of the head, possibly the brain, and had started on the back. From what I could see, it did not eat any feathers but only flesh and tissue. Since I did not stay I cannot say how much more it consumed before it was satisfied. Several somewhat similar instances of predation by grackles of House Sparrows were reviewed by Poor (Proc. Linnaean Soc. N. Y., Nos. 54-57: 54, 1946).—KENNETH TAYLOR, 128 Charles Street, New York 14, N. Y.

Indigo Buntings in Lazuli Bunting Habitat in Southwestern Utah.—

During the period June 6–August 1, 1957, two pairs of Indigo Buntings (*Passerina cyanea*) were observed along Leeds Creek at about 5,000 ft. elevation in the Pine Valley Mts., Washington Co., southwestern Utah. Behle (Univ. of Utah Biol. Series 7, no. 5: 70, 1943) cites three records of the Indigo Bunting in Washington Co., Utah, one supported by a specimen. He regarded the species as one of casual occurrence in this region. The A.O.U. Check-list (1957) mentions no Utah records, but indicates that this species ranges west into the Great Plains, where it overlaps the range of the Lazuli Bunting (*P. amoena*) and hybridizes with it.

The males were in adult breeding plumage, dark blue throughout without wing-bars. There was an extended opportunity to compare these birds with Lazuli Buntings, from which they differed markedly in plumage, and to a lesser extent in song pattern. The females associated with the Indigo Bunting males lacked wing-bars, differing thus from Lazuli Bunting females. One of the Indigo Bunting females was considerably disturbed by the observer's presence, but no nests or young birds were found.

During June, one of the male Indigo Buntings was seen fighting with a male Lazuli Bunting. The two birds would take up singing perches on trees about 100 feet apart and sing back and forth until one took off in vigorous pursuit of the other. After about June 20, the Lazuli Buntings disappeared from the Indigo Bunting areas, although still sparingly present at both higher and lower elevations along Leeds Creek, in essentially the same type of habitat.

The vegetation at this altitude (5,000 ft.) is a closed stand of evergreen chaparral, ca. 1–2 meters high (*Quercus turbinella*, *Garrya flavescens*, *Arctostaphylos pungens*, *Ceanothus greggii* and other sclerophyllous shrubs). Dwarf conifers form a sparse overstory, the scattered trees averaging 3 to 5 meters in height (*Pinus monophylla*, *Juniperus osteosperma*); along Leeds Creek, birch and willow are entwined with wild grape (*Betula fontinalis*, *Salix* sp., *Vitis arizonica*). Edge effects were provided by the stream, by a dirt road, and by some large clearings bordered by groves of deciduous oak, 3 to 5 meters high (*Quercus gambelii*). The two pairs of Indigo Buntings were spaced about a half-mile apart along the road, in both cases near clearings. The favorite singing perches were the relatively tall birches (to 7 meters) along the creek, overlooking the cleared areas, but they also sang from junipers and were seen foraging in all the plant communities of the area.

Perhaps originally a bird of successional vegetation within the Eastern Deciduous Forest of North America, and of the oak openings along the prairie-forest ecotone, the Indigo Bunting was undoubtedly restricted in numbers by the relatively closed

canopy of the climax forest in the East, and by the great stretches of grassland to the west. In the East the opening of the forest canopy by agriculture, logging and burning, and in the western grasslands the planting of trees, coupled with cessation of burning, converted great areas into potential Indigo Bunting habitat. This species has apparently responded to these changes with a great increase in population and extension of range, so that it has now invaded areas formerly occupied exclusively by its western representative, the Lazuli Bunting. A population increase may result in a genetically more varied population, with potentially greater adaptability, and this may partially explain the current success of the Indigo Bunting in extending its range. The Indigo Bunting apparently exhibits more aggressiveness than the Lazuli Bunting, which seems to have undergone no spectacular population increase in the relatively less disturbed region west of the Great Plains.—PHILIP V. WELLS, *Department of Botany, Duke University, Durham, North Carolina.*

An Observation of Luminosity in Marine Birds.—It is well recognized that birds and mammals do not produce light (*cf.* E. N. Harvey, "Bioluminescence," Academic Press, Inc., N. Y. 1952). However, there are some rare instances whereby birds become secondarily luminous. W. L. McAtee (*Amer. Midl. Nat.* 38: 297-213, 1947) reviewed this subject and came to the conclusion that two general instances of luminous birds have been reported by creditable observers. Various owls that live and nest in hollow trees become luminous due to fungi of rotting wood adhering to their feathers. Luminous spots on the breasts of various herons have been widely reported, but the cause is unknown. In the present note the writer records an instance where marine birds became luminous from contact with light producing organisms of the sea.

On the evening of September 26, 1957, the "Hermes," of the Gulf Coast Research Laboratory, lay at anchor in Mississippi Sound, just off Ship Island Lagoon. Many birds, including Royal Terns (*Thalasseus maximus*) and Least Terns (*Sterna albigrons*), were in the vicinity, often resting in large groups along the sand beach. As twilight faded into black night, a squall line that had threatened most of the day struck in full force. Heavy raindrops, driven by howling winds that shifted from easterly to south and back again, pounded the surface of the water to a white sheet. Single drops seen through a porthole as they struck the surface appeared as tiny explosions of light. Occasional white caps, whipped up even in the sheltered water of our anchorage, were racing splashes of luminescence. Then, as the rain slacked momentarily, formless spots of pale light drifted through the outer limit of visibility, completely evading all sense of distance. They brought to mind old sea stories of St. Elmo's fire playing about the masts of sailing ships and tales of the will-o'-the-wisp.

Shortly thereafter, a bird, clearly visible and brightly luminescent, flew into the wind close aboard. The entire form of the bird glowed with a clear, steady light. The movements of the wings were easily observed. This phenomenon, observed by Louis Beaugez and the writer, was repeated many times. At least two species were clearly present. One was about the size of the Royal Tern and the other approximately the size of the Least Tern. It seems likely that some of the light producing organisms from the water stuck to the feathers of birds disturbed by the weather.

None of the commercial fishermen and biologists later questioned reported that they had ever seen similar phenomena. Henry Nash, a commercial fisherman of many years experience, reported that the wing tips of night-flying Black Skimmers (*Rynchops nigra*) sometimes become luminous.—J. Y. CHRISTMAS, *Gulf Coast Research Laboratory, Ocean Springs, Mississippi.*