FROM FIELD AND STUDY

Unusual Feeding Behavior of the Fulmar.—A Fulmar (*Fulmaris glacialis*) was recently encountered by the author while skin diving in the kelp beds about 200 yards off the private beach of Dos Pueblos Ranch in Santa Barbara County, California. On this occasion, the weather was foggy, with visibility of perhaps 150 yards. The water was relatively calm and estimated to be 60° F., with clarity adequate to see the ocean floor below at about twenty feet.

When first noted, the actions of the bird suggested that it was suffering from hunger or disease; however, observations during the following thirty minutes indicated it to be vigorous, although no flight was observed. Subsequent to the initial encounter, the Fulmar followed, within three to six feet, all my swimming movements.

Because the Fulmar was assumed to be hungry, a small sea urchin was retrieved from the ocean floor, broken open, and the eggs thrown approximately four feet to the bird. By the time the Fulmar had swum to the eggs, the mass was three to six inches beneath the surface of the water. Immediately inverting, the bird plunged its beak beneath the food, then raised the beak so that the eggs settled in the depression on the top of the beak just distal to the tube nose. The Fulmar then returned to a sitting position on the surface of the water with the eggs hanging over the top of the beak. A shake of the head was sufficient to dislodge the food, and before it could reach the water, it was grasped and ingested. I repeated this experiment ten to twelve times utilizing one large and three small sea urchins. In each case the same behavior was observed. Visibility of the water and proximity of the Fulmar allowed clear observation of the entire procedure.

On one occasion one half of a sea urchin shell containing eggs was held at arm's length at the surface of the water. At this time, the food was taken with the tip of the bill, or pecked, as one would normally expect.

Observation of this phenomenon impressed me with the seemingly inherent difficulty of withdrawing the beak from the water without the food being dislodged by the considerable drag forces present. The food was never lost upon withdrawal, and yet the slight indentation distal to the nares seems hardly adequate to hold the food in place.

Fisher (The Fulmar, 1952:451–452) states, without specific reference to the investigator, that the Fulmar cannot inhale through the nostrils because of a one-way valve located within the nose. I made dissections of the entire narial cavity of one Fulmar which, although fixed, was also slightly desiccated. (This Fulmar was kindly donated by Dr. Larry Z. McFarland, Department of Anatomy, University of California, Davis.) These dissections revealed a membranous structure within the tube nose. This structure, however, closed off only about 50 per cent of the air passage. Other valve-like membranes were not observed. If inhalation is possible through the tube nose, a slight suction could be applied to the food in order to retain it on the beak during its withdrawal from the water.

The observations here reported then suggest that while retrieving the sea urchin eggs used in this experiment, the bird may have applied suction at the nares upon this food and thereby held it on the beak as it was lifted from the water. Previous reports of this unusual feeding behavior by the Fulmar have not been found in the literature.

I wish gratefully to acknowledge the critical discussion of this report by Dr. Loye Miller.—
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Early Nesting of the Costa Hummingbird in Southern California.—On the morning of February 3, 1962, a group of four persons including this writer discovered the nest of a Costa Hummingbird (*Calypte costae*) in a narrow canyon about one and one-half miles southeast of the Anza-Borrego State Park campground in northeastern San Diego County, California. It was located two feet above the ground in a small bush. The female was seen flying to the nest, which held two nestlings in the pinfeather stage of development. A short time later nearby I saw a male Costa Hummingbird courting a female with its characteristic high diving. These observations lead me to suspect that in southern California the nesting period of this species in 1962 may have been earlier than usual.

Bent (Bull. U.S. Nat. Mus. 176:371) recorded March 11 as the earliest egg-laying date for Costa Hummingbirds in California based on 100 records. The usual egg-laying period extends from May 12 to June 10. In Baja California the earliest record for eggs is February 24 based on 14 accounts. Hann