

Swan is "sometimes seen out of captivity on lowland bodies of water in company of wild waterfowl." The bird we saw was alone.

In its native Australia the Black Swan is most abundant in fresh water, but at times it is common on salt water, particularly in lagoons and on tidal flats. It generally avoids open, rough water, moving as the wind changes to feed in the lee of a bank or point (Mathews, *The Birds of Australia*, 4, pt. 1, 1914-1915:12-22, pl. 200). The habitat where the bird reported here was observed therefore seems unusual. Inquiry at the San Diego Zoological Garden and from a local bird fancier who keeps Black Swans has failed to indicate that any birds of this species have been lost recently.—JAMES R. STEWART, *Scripps Institution of Oceanography, University of California, La Jolla, California, June 13, 1957.*

Pigeon Wing-beats Synchronized with Breathing.—Moving pictures of a pigeon (*Columba livia*) in flight reveals that it inhales on the upstroke of the wings and exhales on the downstroke. The analysis of breathing was aided by fastening a rubber balloon over the bill and external nares of the bird, leaving a small area at the rear of the mouth uncovered for an air passage. As the bird breathed, the balloon collapsed and expanded. The balloon was left in place for over an hour, and the bird showed no signs of distress. The bird was an adult homing pigeon flying free except for a long light line secured to a light harness which did not apparently interfere with normal flight. The tether kept the pigeon within range of a 16mm. camera. Thirteen complete wing-beat cycles at 48 frames per second were carefully analyzed with the results stated above, and six more cycles at 32 frames per second agreed with these results, although they were not as complete. The pigeon was photographed in short flights of about 30 feet. The method works very well and should be adaptable to other types of birds under different conditions.



Fig. 1. Flying pigeon with balloon on bill. Left, upstroke, showing collapsed balloon. Right, start of upstroke with balloon inflated.

The figure shows on the left a pigeon near the end of an upstroke with the balloon collapsed and, on the right, the start of an upstroke with the balloon still expanded from the preceding downstroke. The inhalation begins at this position. These illustrations are copied from 16mm. Kodachrome film. A red balloon was used. The collapsed state of the balloon could be readily detected on the film by shadows along the sides of the open mouth. Unfortunately these shadows do not show in these reproductions. It is suggested that white or yellow balloons be used for better photographic recording in future tests.—JACK T. TOMLINSON, *San Francisco State College, California*, and ROBERT S. MCKINNON, *Oakland Junior College, Oakland, California, July 1, 1957.*

A Western Representative of the Rufous-sided Towhee Collected in New Jersey.—On December 23, 1952, while on the Raritan Estuary Christmas Census, Mr. George L. Daniels and I were canvassing a swamp located near Metuchen, Middlesex County, New Jersey. In the process of counting the various birds present, my attention was drawn to an unusual towhee which hopped out