

**Age of a female *Amazona festiva* at sexual maturity.**—The age until sexual maturity for most species of Amazon parrots (genus *Amazona*) is unknown due to the difficulty in making relevant field observations, in acquiring young birds whose age is known, and in successfully breeding adults in captivity.

Some information is available for a few species. Boosey (1956. "Parrots, Cockatoos and Macaws," Camelot Press, London, pp. 38, 46) noted that he had to wait four years for newly acquired, "young," *Amazona aestiva*, and *Amazona leucocephala*, to show interest in breeding. Vane (1957. *Aviculture*, 63:183–188) kept a pair of *Amazona autumnalis* which started laying when they were "about three years old." The following observations were made on a captive female Festive Amazon (*Amazona festiva*).

The parrot was six months old when obtained by the author in Iquitos, Peru. It was 3.5 years old in January 1967. Since September 1965, the bird has been caged in a windowless room which varies from 21–24 C, and is usually dark from 000 to 0700 hours. It is fed a variety of seeds and fruits and appears healthy.

The bird is handled daily, and for the first time, on 5 December 1966, it demonstrated female soliciting behavior while perched on the author's hand. When stroked near the base of the tail under the wings, or around the cloaca, the bird crouched low pressing its breast against the palm of the hand, raised its tail exposing its cloaca which began to pulsate, rapidly fluttered its wings, and issued a previously unheard sound, like the "whimpering" of a dog. If stroked occasionally, this behavior was continued for up to 15 minutes, after which the bird 'lost interest.' This behavior was evoked almost daily, but became more difficult to elicit by early February 1967. After 12 February 1967, the bird no longer responded and did not tolerate the stroking.

Although the time until sexual maturity may be somewhat different for wild birds, this activity indicates that *A. festiva* females become sexually mature in their third year, not unlike closely related species. It should be pointed out that this breeding behavior was observed only during months which correspond to part of the rainy season in the Peruvian Amazon basin (November–March), the time when much avian breeding activity occurs (G. Cetraro (pers. comm.), and personal observation).—LAWRENCE E. LICHT, *Department of Zoology, University of Texas, Austin, Texas 78712. (Present address: Department of Zoology, University of British Columbia, Vancouver, B. C.). 1 March 1967.*

**Budgerigars are not determinate egg-layers.**—Possible factors regulating the species-typical clutch sizes of determinate and indeterminate egg-layers are extensively reviewed by Lehrman (1961. In "Sex and Internal Secretions," Vol. 2, W. C. Young, ed.; Williams and Wilkins Co., Baltimore, Md.: pp. 1268–1382) and by van Tienhoven (ibid., pp. 1088–1172). Egg removal may prompt an indeterminate female to continue oviposition by preventing or delaying her incubation behavior, thereby inhibiting necessary hormonal changes which stop egg production. Or, the number of eggs in an indeterminate female's nest may act independently as a tactile or visible stimulus in the neuroendocrinological regulation of her ovarian activity. In contrast, the species-typical clutch size of a determinate female (i.e., her ovarian activity) is, genetically, determined by her internal physiological state and is not regulated by her performance of incubation behavior or by such external stimuli as the number of eggs in her nest.

Budgerigars (*Melopsittacus undulatus*) have been classified as determinate egg-layers (van Tienhoven, op. cit.; p. 1144). However, other, anecdotal, information suggested otherwise. Accordingly, it seemed worthwhile to investigate this apparent contradiction.

Budgerigars do not build nests but generally use a cavity (e.g., a nestbox) in which to lay a typical clutch of four to seven eggs. They lay an egg every other day and begin incubation with their initial oviposition.