THE INFLUENCE OF SOME EXPERIENTIAL AND GENETIC FACTORS, INCLUDING HORMONES, ON THE VISIBLE COURTSHIP BEHAVIOR OF BUDGERIGARS (MELOPSITTACUS)

by

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The importance of androgens in stimulating males to perform masculine sexual behavior has been experimentally established for a wide variety of vertebrates. Evidence on hormonally treated adults indicates that some masculine sexual behaviors may be performed by females receiving androgens or estrogens and by males receiving estrogens, but such behavior usually is not as frequent or complete (e.g., copulatory behavior may not include ejaculation) as is that performed by males receiving androgens (for review, see Young, 1961). Although avian data has been collected on black-crowned night herons, herring gulls, valley quail and canaries, most avian studies have concerned domestic fowl.

Avian species differ in the nature, similarity and proportionate activity of masculine and feminine courtship roles. There are also differences between avian species in the nature and frequency of circumstances that prompt pseudomale and pseudofemale behavior (sensu Morris, 1955) and in the hormonal influences on other reproductive behavior (e.g., nest-building). Such differences encourage the collection of information on additional avian species in which the sexual roles are different and clearly defined and in which it is relatively easy to induce normal individuals to perform pseudomale and pseudofemale behaviors. Budgerigars are one such species, with two additional advantages. First, we know something about hormonal effects on other of their reproductive activities (vocal and nestbox-oriented behaviors — Brockway, 1968, 1969a). Second, the use of budgerigars would enable one to correlate data on hormonally-induced visible

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masculine precopulatory displays with previously collected data concerning the relative tendencies to flee and mate following such displays, the componental relations of most of the precopulatory displays, and the sequence of initially observed precopulatory behaviors, under more normal breeding circumstances.

Except for sperm emission and oviposition, both male and female budgerigars can perform all precopulatory and copulatory behaviors of either sex. Therefore, the main intent of these hormonal studies was not to ascertain whether males and females could be hormonally induced to perform pseudomale or pseudofemale behavior. Rather, this study was undertaken to determine: (1) to what extent the major masculine and feminine courtship behaviors could be stimulated in either/or both sexes by androgens and/or estrogens, when solitary individuals were continually exposed to social vocal stimulation; (2) what, if any, relation might exist between genetic and/or experiential factors related to a given sexual identity, hormonal influences and the componential characteristics of the various masculine precopulatory displays; and (3) whether specific displays that are associated with greater or lesser tendencies to move away from or copulate with a mate are affected differently by androgenic or and estrogenic material.

SEXUAL BEHAVIOR OF BUDGERIGARS

Under suitable aviary conditions (pairs can hear others and are provided nestboxes), domesticated strains of budgerigars breed readily throughout the year. Males assume the more active role in courtship and typically perform various visible and vocal displays interspersed with moving toward and away from the female. As the female becomes more sexually receptive, she performs less aggressive and evasive behavior and permits or signals her readiness for copulation. She performs few sexual displays (BROCKWAY, 1964a).

Performance of pseudofemale and pseudomale behaviors by untreated budgerigars is not uncommon. It occurs most frequently in homosexual-pair situations, and budgerigars engage in homosexual activities more often than do many other birds. Males typically perform homosexual and/or form nonpermanent homosexual pair-bonds when a heterosexual partner is unavailable. Females do so less frequently than males. Most normal individuals that perform pseudomale or pseudofemale behaviors in one situation will, in another situation, readily assume their appropriate sexual role and even will successfully breed.

The presence of a nestbox and the opportunity to physically interact with a member of the opposite sex does not seem to be required for either