

## FROM FIELD AND STUDY

**Failure of Estrogen and Prolactin Treatment to Induce Brood Patch Formation in Brown-headed Cowbirds.**—It is known that cowbirds and other birds practicing brood parasitism (Miller, *Scientific Monthly*, 62, 1946) fail to develop brood patches (Davis, *Wilson Bull.*, 57, 1945: 190). Since experiments by Bailey (*Condor*, 54, 1952:121-136) have indicated that brood patch formation in passerines depends on the synergistic action of estrogen and prolactin, the absence of a brood patch in the Brown-headed Cowbird (*Molothrus ater*) could be attributed to (1) insensitivity of the skin of the abdominal and breast areas to estrogen and/or prolactin, (2) insufficient production of one or both of these hormones, or (3) a combination of both factors. A deficiency of estrogen seems unlikely, and attention centers on prolactin, the pituitary hormone which also induces broodiness and other parental behavior in pigeons and chickens, since inadequate production of this hormone might also be an important factor in the development of the behavioral peculiarities of parasitic avian species.

In the course of studies on the behavior of cowbirds, their response to large doses of these hormones was tested in the following experiment performed on captive birds in the Biology Laboratory Building of the University of Texas, in Austin. On April 30, 1959, 3 mg. pellets of estradiol (Progynon, Schering) were implanted subcutaneously in the necks of four adult females, four adult males, and a bilaterally castrated adult male of *Molothrus ater*; and a pellet was also implanted in an adult male domestic Canary (*Serinus canaria*). Seven days later, the Canary had a defeathered, highly vascular, and moderately edematous brood patch, but the cowbirds exhibited no response. From June 23 through July 1, two female and one intact male estradiol-implanted cowbirds were given daily intramuscular or subcutaneous injections of 50 I.U. (as 0.05 ml. of aqueous solution) of prolactin (Panlitar, Armour), the potency of which was confirmed by the standard pigeon crop-sac assay method. At the time of prolactin treatment, the estradiol pellets were still visible through the neck skin. No defeathering, increase in vascularity, or edema was noted in the cowbirds.

Working with fringillids, Bailey (*op. cit.*) obtained complete brood patch formation with estradiol treatment alone and provided experimental evidence suggesting that estrogen acts to induce secretion of prolactin by the pituitary. His experiments with hypophysectomized individuals suggest that estrogen initiates the vascular response, while prolactin is responsible for defeathering and edema.

The present work would seem to indicate that the skin of the abdominal and breast areas of the Brown-headed Cowbird is insensitive to estrogen and prolactin. Recently, E. O. Höhn (*Nature, in press*) has shown that the pituitaries of breeding Brown-headed Cowbirds produce prolactin in amounts comparable to those produced by pituitaries of breeding female Redwinged Blackbirds (*Agelaius phoeniceus*), a related, non-parasitic species of similar size in which females have brood patches. Höhn's work nicely supports the conclusion suggested by the present study, namely, that the absence of a brood patch in parasitic cowbirds is attributable not to a deficiency of prolactin or estrogen but, rather, to a failure of tissues in the brood patch region to respond to these hormones.

It would be interesting to compare the behavior of hormone-treated and untreated female cowbirds. One of my females treated with estradiol, but not with prolactin, repeatedly manipulated straw and small twigs, defended a nest-shaped wire feeding cup against another female, and made brief nest-molding movements while sitting in the cup. There are several reports of female Brown-headed Cowbirds feeding juvenal cowbirds (Bent, *U.S. Nat. Mus. Bull.* 211, 1958:441-442). With proper hormone treatment, it is possible that other latent nesting and parental behavior could be induced in *Molothrus ater*.

This study was supported by the National Science Foundation (Grant G-7121).—ROBERT K. SELANDER, *Department of Zoology, The University of Texas, Austin, Texas, November 7, 1959.*

**Elegant Tern and Royal Tern Nesting in California.**—In the spring of 1959 the Elegant Tern (*Thalasseus elegans*) and the Royal Tern (*Thalasseus maximus*) nested on a dike at the salt works at the south end of San Diego Bay, San Diego County, California. Heretofore these species have not been known to nest in California. Evidently they have colonized the San Diego area from the breeding colonies that have existed for many years 350 miles to the south in central Baja California, as at Scammons Lagoon.

The tern colony was first found on May 2, when five nests of the Elegant Tern were noted, each with one egg. On May 6 there were seven nests; May 9, 14 nests; May 12, 20 nests; May 16, 27 nests:

May 20, 30 nests; and May 23, 31 nests. On May 20 two of the nests held two eggs each. The first young were noted on May 27 and on June 3 there were seven young which were banded.

On May 12 among the Elegant Terns and the associated Caspian Terns (*Hydroprogne caspia*) a Royal Tern was found. It was seen to settle on an egg between two nests of the Caspian Tern that were only 18 inches apart. Immediately the two Caspian Terns began to peck at the Royal Tern from their nests. We could plainly see the speckled crown of the Royal Tern against the black crowns of the Caspians. We sat and watched them for 20 minutes, by which time they all had quieted.

On May 16 the Royal Tern was not seen, and on the 20th the egg was found to be cold and apparently abandoned. It was collected, as well as two sets of Elegant Tern eggs. One adult male Elegant Tern was also collected (no. 30155 San Diego Soc. Nat. Hist.).

On June 6 all eggs and two banded young Elegant Terns had been destroyed by boys and thrown into a clump of salicornia. We hope the other five young Elegant Terns escaped the vandalism.—FRED GALLUP and BERNARD H. BAILEY, *Escondido, California, June 8, 1959.*

**Occurrence and Breeding of the Golden-cheeked Warbler in Dallas County, Texas.**—Since the spring of 1957 a number of reliable local observers have reported the occurrence of the Golden-cheeked Warbler (*Dendroica chrysoparia*) in the cedar brakes near the town of Cedar Hill in southwestern Dallas County, Texas. An adult male (Dallas Mus. Nat. Hist. no. 5154) was collected on May 12, 1958. This specimen extends the known range of this warbler about 70 miles to the north and east of the range as defined in the A.O.U. Check-list (1957).

A concerted effort was made from 1957 to 1959 to discover nests or other evidence of breeding of this warbler in the Cedar Hill area. No nests have, as yet, been found, but on May 11, 1959, two separate pairs of adults, each accompanied by four fledgling young not more than a few days out of the nests, were discovered. One of these fledglings (no. 5167) was collected, establishing the breeding of the Golden-cheeked Warbler in the Cedar Hill area.

The Cedar Hill district is a relatively isolated area of habitat surrounded by the blackland prairies, but it agrees in general characteristics with the breeding habitat of this warbler in the Edwards Plateau region (Bent, Bull. U. S. Nat. Mus., 203:316–321).

In May of 1959 investigations were begun to determine the occurrence and possible breeding of the Golden-cheeked Warbler in other areas of suitable habitat in north-central Texas. On May 22, 1959, an adult female (no. 5171) was collected in southwestern Johnson County, Texas. This location is approximately 42 miles southwest of the Cedar Hill area.

These records suggest that where habitat conditions are suitable, the Golden-cheeked Warbler may be expected in other areas of north-central Texas.—HAL P. KIRBY, O. M. BUCHANAN, JR., and F. W. MILLER, *Dallas Museum of Natural History, Dallas, Texas, September 16, 1959.*

**The Honeycreeper *Dacnis albiventris* in Brazil.**—In the course of field work on the upper Rio Cururú, an eastern tributary of the Rio Tapajós, in Pará, Brazil, our party took two specimens of the honeycreeper *Dacnis albiventris*. According to Hellmayr (Cat. Birds Am., pt. 8, 1935:283) the range of this species is chiefly in eastern Colombia. It also occurs in eastern Ecuador and northeastern Perú and in the Amazon territory of Venezuela (Phelps and Phelps, *Lista Aves Venezuela*, 2, 1950: 273). Pinto (Cat. Aves Brasil, 2, 1944) does not list the species for Brazil and no reports of its occurrence have been received subsequent to the appearance of his check-list (Pinto, *in litt.*, 1959). The Cururú area is some 700 miles from Colombia and Venezuela and thus the range of this upper Amazon type of bird is extended far to the eastward. Other species belonging to the upper Amazon fauna were also taken in the Cururú area such as the hummingbird *Polyplancta aurescens* and the trogon *Pharomachrus pavoninus*.

The two specimens of *Dacnis albiventris* were taken on the same day, August 9, 1957. One is an adult male, the other an immature male. In the latter the dark blue and black feathers of the mature plumage were only beginning to appear. Their weights were 11.0 and 11.5 grams, respectively, the skulls were fully ossified, and the testes were not active. Both birds were part of a flock of small birds which was active in the top of the trees of the forest, the "mata geral," about thirty feet from the ground. Another species of honeycreeper, *Cyanerpes caeruleus*, was part of the flock. Also in the group was the furnariid *Microxenops milleri*, a rare bird in Brazil, and usually found in the upper Amazon and on the north side of the river.