

effective isolating mechanisms. Therefore, I now believe that if contact between populations of the two forms of *Rhynchopsitta* were established, they would not interbreed. I thus recommend that *R. pachyrhyncha* and *terrisi* be regarded as full species. I wish to point out that this opinion does not represent that of Dr. Dickerman, probably owing mainly to the fact that he has not read my paper upon which this conclusion is founded.—JOHN WILLIAM HARDY, *Moore Laboratory of Zoology, Occidental College, Los Angeles, California 90041, 1 October 1966.*

The Temporary Establishment of Dominance between Two Hand-Raised Juvenile Cactus Wrens (*Campylorhynchus brunneicapillus*).—Two nestling Cactus Wrens, aged 13 and 14 days, were removed from different nests and hand-raised together. Eight days later, when they were placed together on a table, as was customary, for feeding in the morning, they began to fight vigorously. They were facing each other, sitting well back on their tarsi with their wings outstretched as props, grasping with their feet and pecking hard with their bills. The younger bird (Red) clearly had the advantage over the other (Blue) from the outset. During the fighting Blue was pecked hard and often and made loud cries, but Red made no noise. When they were pulled apart, Red pecked hard at Blue's back and head. After a second separation, Red pulled at Blue's tail feathers, and Blue in turn did the same to Red. Fighting continued in this manner whenever the birds were together throughout most of the morning.

When the young were observed carefully again at noon, Blue had become markedly submissive to Red, who in turn had become very aggressive and dominant. In the presence of Red, Blue generally crouched low, with its belly and breast touching the table top. Its tail was kept down, and its head was drawn back with the bill pointing slightly above the horizontal. The wings were folded close into the body. Occasionally Blue gave cries, similar to those of begging juveniles, while in this posture. No quivering of the wings or body was noted, and Blue made no attempt to flee. Once when Red was not looking, Blue pecked at his body. Red then turned and attacked Blue who defended for about five seconds and then adopted the submissive crouch.

Red's reaction to the submissive crouch was at first to peck Blue on the head and back. Later, Red would stand over Blue and peck lightly and only at Blue's bill. Often, Red would stand quietly on top of Blue's back, occasionally autopreening, or else completely ignore Blue.

The birds were separated early that afternoon, but when placed back together that evening they were amiable toward each other and remained so for the remaining four days that they were kept.

In summary, fully developed agonistic behavior was observed between two hand-raised birds from different nests at 21 and 22 days of age (1–2 days after they would have fledged normally). One was clearly superior from the beginning, and within three hours the other had adopted a submissive behavior when in the presence of the now-dominant bird. The birds were then separated for about five hours after which no antagonism was noted between them.

These observations indicate a propensity, in this species, for the rapid development of dominance/subordinance relationships among fledglings which may facilitate cohesion within the family group. In the Cactus Wren, as well as other wren species, the family group is maintained for a long period of time and is spatially very close-knit.—ROBERT E. RICKLEFS and F. REED HAINSWORTH, *Department of Biology, University of Pennsylvania, Philadelphia, Pennsylvania 19104. (Present addresses: Smithsonian Tropical Research Institute, Box 2072, Balboa, Canal Zone and Department of Biology, Duke University, Durham, North Carolina.) 16 November 1966.*

A Case of Classical Conditioning in Nestling Cactus Wrens.—In April 1966 I fitted several Cactus Wren (*Campylorhynchus brunneicapillus*) nests in the vicinity of Tucson, Arizona, with counters to record visits of the adults. The nest is roughly flask-shaped with the entrance to the side. A trip-bar, within a wire mesh collar, was positioned in front of the entrance of each nest. With this arrangement, an adult had to perch briefly on the bar before entering the nest. The bar was attached to a relay which triggered a battery-operated event counter. Note that the adult had to perch on the bar before feeding the young, and that the counter made a rather loud click.