

8th day of incubation. The reluctance of adults to do so before this time suggests that they had not yet become physiologically prepared for the final parental-care phase of the reproductive cycle.

This research was supported in part by an NSF grant to J. T. Emlen and by a Public Health Service Fellowship (1-F2-MH-29, 115-01 PS) from the National Institute of Mental Health. I thank the Calcite Division of the U.S. Steel Corporation for permission to conduct this study on their property.

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Accepted for publication 10 August 1971.

SPASMODIC TIC, A BEHAVIORAL TRAIT OF THE CRACIDAE

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This study was initiated in 1966 when it was observed that the curassows contained in the St. Louis Zoo collection exhibited a nervous twitching of the head. After observing other collections, particularly those of the Houston Zoo and the private collection of Mr. Mickey Ollson in Glendale, Arizona, it was apparent that this behavior is characteristic of cracids in general. This spasmodic tic had been noted among other birds, but never on a regular basis or involving a number of individuals of a species. The tic is simply a nervous side-to-side twitch of the head and upper neck, with the head slightly tilted. John O'Neill (pers. comm.) describes the tic of the Nocturnal Curassow (*Nothocrax urumutum*) as follows: "It differs from the typical tic of *Penelope* in that instead of being from side to side it is a back and forth movement combined with rapid head shaking. I can best describe it as the motion that a human goes through when suddenly surprised. The head is jerked back quickly and slightly upward. It is then returned to the forward position with no interruption. When the head is being returned to the original position the bird may or may not give a series of quick side to side jerks. These jerks may be described as the type of movements given by a bird when bothered by an insect." The twitch is more evident when a bird is excited or feeding and it is most evident in *Crax* and

Mitu. Initially, we thought that this could indicate a dietary deficiency, so we began inquiring among colleagues in order to find if they had noted this behavior in their collections or in the field. We received much evidence supporting our observations.

This spasmodic tic is not the false preening mentioned by Heinroth (*J. Ornithol.* 79:278, 1931); it does not involve throwing the head back nor deal with any part of the anatomy save the head and neck.

Thus far we have noticed this tic in 26 species of nine genera of cracids. Of the two remaining genera, *Oreophasus* and *Penelopina*, Robert F. Andrie (pers. comm.) says that he recalls observing this twitching in *Aburria* and possibly noted it in *Oreophasus* while feeding in the wild. Dr. J. Estudillo (pers. comm.) also noted the tic in *Oreophasus*.

This tic has also been observed in juvenile birds only a few days old. Charles Cordier (pers. comm.) noticed this tic in feral cracids. He suggested that it may be an adaptation for repelling annoying insects. Since this time, Amadon (pers. comm.) writes me that Dr. Helmut Sick informed him that the eyes of curassows are often infested with parasitic nematodes which live beneath the lids and nictitating membranes. He further states that curassows became nervous when small flies, which probably spread these parasites or their eggs, buzz around their heads. Amadon then writes that Prof. H. Stunkard, a parasitologist, regards it as likely that these parasites may be spread in this manner.

On the other hand, the head tic, which in captive birds at least seems to occur in situations of stress, may have nothing to do with insects or parasitism. It may be a displacement mannerism or have some other function. Prof. A. Stokes (letter to Amadon), for example, found that in a captive pair of Salvin's Curassows (*Mitu salvini*) it occurred in association with courtship feeding.

Accepted for publication 18 October 1971.