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## HABITS OF THE ROOK Some notes on an Essex Rookery.

BY

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For over twelve years I have kept regular notes on the habits of Rooks (*Corvus f. frugilegus*) at a rookery near my home in Essex. A considerable amount of information has been obtained during this period, but the following notes refer only to certain aspects of their life history, concerning which information is still especially required. By indicating which these are, the *Life of the Rook*, by G. K. Yeates, has been of great assistance while working through my notes.

Courtship.—The courtship of the Rook, the bowings and cawings and posturings which take place with so much excitement in the nest trees and on the ground near the rookery, has often been described. The love-flights which are surely equally a part of their courtship, have been apparently almost overlooked; in fact, the only reference I can find is that by Mr. Burkitt (antea, Vol. XXVIII., p. 322), who states that " mating flights (more clearly proved as such in spring) generally in sets of three . . . have seemed as prominent at times (mainly September) as at the pre-nesting period". A similar state of affairs exists at my rookery where, during the last few days of September until the end of October, the atmosphere in the rookery is similar to that which immediately precedes the construction of nests. There is great excitement at the nests, much courting in the trees, and many love-flights. While courting displays are especially conspicuous at this season and in early spring, they may also occur throughout the winter months whenever the weather is fine and sunny. Autumnal courting displays are not confined to the Rook alone amongst British birds. With certain of the Corvidae, indeed, they would seem to be a regular feature, and I have often watched Ravens and Jackdaws displaying then at their nesting sites, in an identical fashion to that employed during spring.

Although Mr. Burkitt mentions these flights, he gives no description of them, nor does there appear to be any in the literature dealing with the Rook.

I have noticed that the flight of Rooks indulging in these performances, which most often take the form of chasings of the "follow the leader" type around the nest trees, similar to, but more dignified than, those carried out by Jackdaws, is quite different from that employed on any other occasion. This difference is a change in the character of the wing-beat, the wings being lifted higher above the body than usual so that the flight appears much more buoyant; the Rook, in fact, employs a longer, slower stroke with the emphasis on the upstroke of the wings. This distinctive flight is also employed at times when birds are approaching or leaving the nest trees, but I have never so far seen it employed outside the rookery. There is much cawing during these flights, and often the following birds attempt to "caress" the leader exactly as courting Ravens do. The love-flights of many species depend on a subtle change in the character of the wingbeat, most marked, perhaps, in the waders. The love-flight of the Oyster-catcher is a good example.

Mr. Yeates, in his book, states that the "mating rite" is performed only on the nest. While at my rookery this is certainly the general rule, it is also carried out occasionally in the branches beside the nest, sometimes in trees which do not hold nests, and also, very rarely, on the ground near the rookery.

The amount of "territorial jealousy" exhibited in the immediate vicinity of their nests varies very much with individual pairs. In many cases during the earlier part of the nesting season it is not much in evidence and, strangely enough, it is not till incubation starts that it appears to play a conspicuous part in limiting the number of nests in a tree, and then it is the female or incubating bird which by repeated attacks hampers the construction of new nests near her own. This is especially noticeable in outlying trees, where attempts at nest building are often abandoned apparently solely on this account.

Mobbings, etc.—Mr. Yeates has shown that the "mobbings" of nesting Rooks by other members of the colony, a conspicuous feature of the rookery during the incubation period, are sexual in origin; he is doubtful whether "mobbing" of stick-thieving Rooks occurs. While my observations agree with the view that the majority of these have a sexual basis, milder mobbings occasioned by stick-pilfering do undoubtedly occur, but they are never so violent nor do so many birds take part in them. Any disturbance among the nesting birds in the earlier stages of the breeding season, has an apparently irresistible attraction for neighbouring birds. Mr. Yeates also produces evidence of promiscuity in connection with these mobbings. As Mr. Yeates points out, this is difficult to prove conclusively, but on two occasions I have obtained satisfactory evidence of promiscuity at this rookery. Incidently I have also seen an apparent case in the Starling.

Frequently, when an incubating bird is being fed by her mate, other hungry females from adjoining nests will persistently solicit the male so engaged, for food. Such attempts are resented strongly by both members of the rightful pair, but in 1933 a male was seen on several occasions, after feeding his mate, to fly to an adjoining tree where he fed another female. This was not a true case of polygamy, for this second female had certainly a mate of her own.

During April, 1935, a nest was under observation at which two birds were incubating. For some time it was thought that both these birds must be females, but after many hours observation it became clear that one of them, from its behaviour, was evidently a male, for at irregular intervals this bird would leave the nest tree and return to feed its mate. After feeding was over this bird at once resumed brooding. When brooding, the position occupied was invariably the same -on top of, and at right angles to, its mate. On the rare occasions when the male returned to find the nest empty it adopted the orthodox brooding position, but at once came off the nest on its mate's return. Once she had settled herself on the eggs, the male immediately came on to the nest and brooded on top of her. This state of affairs continued for several days, but eventually the male gave up attempts at brooding and became reconciled to the usual routine of male Rooks.

The immature Rook at the rookery.—A number of immatures accompany the adults on their visits to the rookery during September and October. They spend little time at the nest trees, but visit the oak trees near by for acorns. Few immatures come in the winter months, and even at the beginning of the breeding season it is generally impossible to find any at the nest trees. Later on, in the middle of March, a few birds with black " nasal bristles " and traces of the black "face" turn up. As a rule these show little excitement and appear ill at ease. One or two pairs, however, construct nests each year which they usually eventually abandon. In 1934 and 1935 a pair of birds with nasal bristles successfully reared a brood of young. In 1935 the male (?) of another pair which reared young was also a bird with nasal bristles. Mr. Witherby, in his account of the "Plumages of the Rook" (antea, Vol. VII., p. 132), suggests that such birds may possibly act as "nurses", for the generative organs of all those examined in first summer-plumage were not in a breeding

condition. The few birds of this age which I have examined have also had the gonads only slightly enlarged. During the breeding season immature Rooks with nasal bristles and traces of the black "face" are not scarce in this neighbourhood. Some, even in April, as far as one can make out with field glasses, show no signs of any face moult, and Mr. Witherby has pointed out that the moult of the "face" is a lengthy process and evidently varies individually. After the breakup of the winter roost they are to be found with lackdaws. using feeding grounds other than those used by Rooks from the rookery. In the evening many of these non-breeding birds return to the rookery to roost in the "communal roosting trees. It is, perhaps, worth mentioning, that while a number of male breeding Rooks pass the night in their own nest trees near their mates, a large number, especially from outlying nests, roost together in two trees in the centre of the rookerv.

*Pellets.*—As soon as the Rooks start roosting at the rookery. pellets or "castings" of undigested food material appear below the nest trees. These consist mainly of the husk of corn—wheat, oats and barley—with occasionally whole grains which have not been "digested". Eggshell of the domestic fowl (occasionally), the elytra of "click beetles" (twice). and bones of a small mammal (once) have also been identified. The majority contain also a varying amount of grit, of which red brick and burnt clay form the largest proportion. With the hatching of the eggs, fewer pellets occur below the nests. I have never actually seen a Rook bring up a pellet at the rookery-Mr. Yeates only saw one-but from careful examination of the ground below the nests in the morning and evening it seems that a small number are ejected during daylight. Two tame Rooks which were fed continuously on a corn meal " diet, brought up pellets as often by day as by night, frequently ejecting one immediately before being fed. The number produced by one bird varied and on more than one occasion two were formed within twelve hours. Although undoubtedly dependent on the amount of residue in the dieta tame Rook and Carrion-Crow fed on a non-husk diet never ejected pellets—it was interesting to find that the two young Rooks mentioned above did not eject pellets until they were fully fledged.