

FURTHER DATA ON NEST-SANITATION.

BY

B. W. TUCKER, M.A., M.B.O.U.

THE present paper is a natural sequel to that by R. H. Blair and B. W. Tucker (*antea*, Vol. xxxiv, pp. 206-215, 226-235, 250-255). That paper, it may be recalled, summarized the observations on the nest-sanitation of over 70 species collected in the course of an enquiry by the Cornwall Bird Watching and Preservation Society, and to this a résumé of the data already published in the literature on the species in question was added by the present writer. The present communication deals with the published data on British-breeding species which were not studied in the Cornwall enquiry and on species included in the British list which do not breed in the British Islands. It also includes original observations on a number of these species kindly supplied by several correspondents, namely Messrs. E. J. Hosking, G. C. S. Ingram and G. K. Yeates, whose contributions can be identified by their initials. The paper should be considered in conjunction with the previous one and especially with the introduction to the latter, which leaves only a few points to be added or specially re-emphasized here.

As before, the valuable series of references in the note-books of the late Rev. F. C. R. Jourdain has been used as a basis and others have been added by the present writer. All the references have been examined and checked in the original with the exception of a very few in some of the less accessible German publications, which have to be quoted at second-hand. As before, owing to the widely scattered nature of the data, it is not to be supposed that no references have been overlooked, but it is not thought that the omissions can be many or important. It was pointed out in the previous paper that in the past insufficient account has been taken of the tendency to a change in sanitation behaviour with the age of the young and that recorded information was often defective because the age of the young was not noted or the observations were not prolonged over a sufficient period or, again, because no indication was given as to whether they were sufficiently prolonged or not. A number of the observations now quoted are more or less lacking in precision in these respects, but, as before, it has been thought useful to indicate just how much is or is not known up-to-date about each species. It may be hoped, and indeed confidently expected, that the forthcoming enquiry of the British Trust for Ornithology, which

is a direct outcome of the Cornwall investigation, will fill in many gaps.

A point has already been reached, however, where it is possible to make some generalizations with regard to nest-sanitation in the different groups of birds. It is of interest that active sanitation by the parents, whether swallowing or carrying away or both, is practically confined to the Passerine birds (Passeriformes) and the orders which are generally recognized as most nearly allied to them, namely the Pici-formes, which includes the woodpeckers, the Coraciiformes,



GOLDFINCH AT NEST.

Showing mass of feces round edge of nest, characteristic of some finches, resulting from neglect of sanitation in at least the later stages of fledging. (Photographed by E. J. Hosking).

which includes the kingfishers, bee-eaters, rollers and hoopoes, and the Apodiformes, represented by the swifts. In the three orders last named, however, there is much variation in behaviour. Swallowing is recorded in the Alpine Swift while the nestlings are young, but what happens in the Common Swift does not seem to be known. Active sanitation by the parents has been observed in all four British members of the woodpecker group, but in the Wryneck behaviour is particularly variable (*cf.* Blair and Tucker, pp. 252-3). It is not without interest that the three birds whose nest-sanitation, if any, is

most defective, namely the Kingfisher, Hoopoe, and Roller, are all members of one order, and the last two even of the same sub-order as recognized by Wetmore, whose views are adopted in the *Handbook of British Birds*. However, the evil reputation of the Hoopoe in this connexion seems to be somewhat exaggerated, as may be judged from the discussion in the systematic section of this paper, and regular removal of faecal matter from the nest-hole by some pairs is thoroughly established. Probably—as appears to be the case in various other hole-nesting birds—individual behaviour of both parents and young in the matter of sanitation is considerably influenced by the form and depth of the hole and the position of the opening.

It is doubtless because of their largely hole-nesting and nocturnal habits that so little is recorded about the owls. The writer does not profess to have given the sanitary condition of owls' nests any special attention, but such nests with young as he has examined have not been noticeably dirty. Nevertheless there seems to be no record of any special sanitary precautions by the parents with the solitary exception of the observation attributed by Groebbels to Hennings (*Der Vogel*, Bd. ii, p. 406) that the faeces of young Short-eared Owls are swallowed by the female. It will be seen, however, that this statement is in need of confirmation.

Amongst the diurnal birds-of-prey it is practically universal for the markedly liquid faeces of the young to be discharged with considerable force over the edge of the nest, the nestling taking up for this purpose a characteristic stance with the body tilted so that the head is depressed and the posterior elevated as much as possible. This behaviour, however, is not developed immediately on hatching, as pointed out by O. and M. Heinroth, who observe that "the young in the first days evacuate as they shift backwards a few centimetres and in so doing naturally foul the nest. The old birds apparently renew this soiled nest-material." (*Vögel Mitteleuropas*, Bd. ii, p. 60). In addition pellets are, of course, produced and in some cases accumulate in the nest or at the nest-site, but in the case of the Golden Eagle and Hen-Harrier their active removal has been recorded and this probably occurs in other species besides these two. Amongst flesh-eating birds the liability of fragments of food to get trodden into the nest and the tendency of the parents in some cases actually to bring in more carcases than the young can consume may be considered as constituting an extension of the sanitation problem now under discussion, but no attempt has been made here to deal systematically with the treatment of food remains by birds-of-prey. It must suffice to

observe that such perishable remains are frequently simply ignored and reduce the nest—humanly speaking—to a more or less offensive condition, but in other cases the larger portions, at any rate, are carefully removed. It would be interesting to know whether any distinction is made in the treatment of such uneaten food remains and of pellets. H. B. Macpherson describes the Golden Eagle as removing both from the eyrie.

Amongst the herons and storks and their allies the fæces are usually discharged over the edge of the nest in much the same way as in the birds-of-prey, but some variation in behaviour is recorded, and in some species, such as the Spoonbill, the nests become much fouled with excrement. Attention may be drawn to the very interesting observation of Stoll on the Black Stork, which shows that swallowing of fæces may occur, at least occasionally, in a group in which parental sanitation is almost certainly not usual. This suggests reflections on the origin of the habit in groups in which it occurs regularly. Is there something actually palatable to the adult birds in the waste products of the nestlings, which might account for the beginnings of a habit which may be supposed to have become established as a regular practice in many species because the removal of fæces from the nest is beneficial? And do the parents actually derive any nutriment from this material, as Witherby (*Knowledge*, 1898) and Wilson (*Naturalist*, 1912, pp. 50-1) have both suggested? Some doubt is thrown on both these possibilities by the fact that so often the fæces are carried away and not swallowed and by the fact that birds will remove other extraneous and inedible materials from their nests. Closer research may make it possible to carry such speculations further than they can be usefully pursued at present.

With regard to the groups of nidicolous birds not already mentioned a certain amount of scattered information is recorded, but calls for no special comment beyond observing that a majority of the colonial sea-birds are markedly insanitary in their nesting arrangements.

It only remains to add that for present purposes the term nest-sanitation is not understood as covering the disposal of their own fæces by incubating adult birds. The usual and obvious method is for defæcation to take place during intervals off the nest, but in some cases it may be performed without leaving the nest. In such instances the incubating bird may eject the fæces over the edge of the nest much as is done by the young, as has been observed in some birds-of-prey, e.g. Peregrine Falcon (D. Nethersole-Thompson), while in others

the fæces may be deposited on the edge of the nest or around it or even in the nest-hole in some hole-breeding species. But these comparatively infrequent cases are not dealt with in the present paper.

With these preliminaries we may proceed to the systematic treatment of the species for which information is available. Sanitation behaviour in several species is illustrated by photographs kindly supplied by Mr. E. J. Hosking.

JAY (*Garrulus glandarius rufitergum*).

Fæces swallowed at nest (A. Buxton, *Trans. Norfolk and Norwich N.H.S.*, 1936, p. 170). Male very scrupulous,



HAWFINCH.

Female swallowing fæcal capsule
(*Photographed by E. J. Hosking*)

waiting behind nestlings after each feed, pouncing on and swallowing excrement as soon as it appears; record six on a single occasion. Female also helps. Probing observed (G.K.Y.).

GOLDEN ORIOLE (*Oriolus o. oriolus*).

Fæces at first eaten by female, afterwards carried away and dropped (K. Morris).

HAWFINCH (*Coccothraustes c. coccothraustes*).

Male apparently removed and swallowed fæces from newly

hatched young. Female also seen to swallow (F. Pitt, *Country Life*, July 29th, 1939). Nest kept scrupulously clean until approximately 48 hours before chicks left nest. Fæces removed by both sexes and usually carried away, but female observed swallowing them until young were well-feathered. Photograph shows female swallowing fæcal capsule (E.J.H.).

LESSER REDPOLL (*Carduelis flammea cabaret*).

Occasionally seen to swallow (H. Meyrick, *Zool.*, 1909, p. 270). Carrying only observed in earlier stages, later swallowing and carrying by both parents (W. Wilson, *Nat.*, 1912, p. 50). Swallowed by female during first five days; not under observation subsequently. Prodding observed (E.J.H.). Carried by female from young 6-7 days old; rim of nest in very dirty state when young nearly ready to leave (G.C.S.I.).

SERIN (*Serinus canarius serinus*).

Left behind on edge of nest (F.C.R.J., G. Niethammer, *Handb. deutsch. Vogelkunde*, i, p. 72).

SCARLET GROSBEAK (*Carpodacus e. erythrinus*).

Encapsuled fæces at first extruded immediately after feeding and swallowed by both sexes. Later deposited by young on edge of nest and removed at next feeding. Apparently greater part swallowed up to time of fledging (O. Steinfatt, *Beit. Fortpfl.-biol Vög.*, 1937, p. 219).

CROSSBILL (*Loxia c. curvirostra*).

Not removed from edge of nest; first noted six days after hatching (W. Nolte, *Journ. f. Orn.*, 1930, p. 6). Confirmed in Scottish race (*L. c. scotica*) by D. Nethersole-Thompson.

REED-BUNTING (*Emberiza s. schæniclus*).

Removal by male mentioned (J. H. Owen, *Brit. B.*, xxiv, p. 159). Removed by both sexes (H. E. Howard, *Introduction to the Study of Bird Behaviour*, p. 16). Fæces of young 5 days old carried by both sexes; only swallowed twice in several hours on two days (R. Chislett). Carrying observed; chicks 5-6 days old (G.K.Y.).

TREE-SPARROW (*Passer m. montanus*).

Fæces of young c. 8 days old carried by parents; swallowing not seen (R. Chislett).

BLACK LARK (*Melanocorypha yeltoniensis*).

Carried by female in confinement (R. Phillipps, *Avic. Mag.*, 1899, p. 162).

AMERICAN WATER-PIBIT (*Anthus spinoletta rubescens*).

Carried away by both sexes (H. S. Johnson, *Wilson Bull*, xlv, 1933, pp. 114-7).

SCOTTISH CRESTED TIT (*Parus cristatus scoticus*).

Nest cleaned by female only ; fæces carried and dropped at a distance (S. Smith, *Brit. B.*, xxxiv, p. 169). Female carries away fæcal sacs in bill (D. Nethersole-Thompson).

MARSH-TIT (*Parus palustris dresseri*).

Carried by both parents ; age of young uncertain (G. C. S.I.).

BEARDED TIT (*Panurus b. biarmicus*).

Female undertakes ordinary sanitation of nest (E. L. Turner, *Broadland Birds*, p. 18). Fæces carried by both sexes ; removal by male shown in photograph (E.J.H.). Female carried fæces from nest about every second visit (Aug. 23-Sept. 4) ; male never seen to do so (J. B. Watson).



BEARDED TIT.

Male removing fæcal capsule.

(Photographed by E. J. Hosking).

RED-BREASTED FLYCATCHER (*Muscicapa p. parva*).

Fæces carried away by both parents (G. Niethammer, *Handb. deutsch. Vogelkunde*, i, p. 286).

(To be continued).

I've been having trouble acquiring and changing some of the basic data available from the Nest thermostat. Using a command line, how can I get or change individual settings or values on my thermostat? nest-api. share | improve this question | . follow. 42333 silver badges 1313 bronze badges. I know this isn't the basic premise of stackoverflow but the Nest API page routes users to this site. By adding a post like this, I'm hoping it helps other users who are confused. Is there any better way you suggest doing this? I'm completely new here. jfudgeelder Jul 7 '14 at 17:37. You can change the question to be more on the lines of "How would Acquire and changing basic data on the Nest thermostat?" then put the information you've collected as the answer. On sanitation, WHO monitors global burden of disease and the level of sanitation access and analyses what helps and hinders progress. Such monitoring gives Member States and donors global data to help decide how to invest in providing toilets and ensuring safe management of wastewater and excreta. WHO works with partners on promoting effective risk assessment and management practices for sanitation in communities and health facilities through the WHO Guidelines on Sanitation and Health, Safe Use of Wastewater, Recreational Water Quality and promotion of Sanitation Safety Planning. WHO also sup Data that is shared over a Works with Nest connection is limited to the categories of information listed on the permission screen and you can review these categories below. Personal data, such as your email address, is not shared with developers through Works with Nest connections. To review the categories of information that can be shared with developers as part of Works with Nest connections, see below. You're in control of access to your data. Nest Sanitation. photographs of a European Starling and White-breasted Nuthatch by Rohan Kamath. The very fragility of nests may be adaptive in forcing many birds to build a new nest every year; nests that do not deteriorate over the winter can harbor potentially lethal numbers of parasites or pathogens that may withstand the cold and await returning nesters. Indeed, despite their appearance as peaceful retreats, nests are often alive with invertebrates feeding on the birds, on the birds' waste products, or on each other. SEE: Masterbuilders; Nest Materials; Nest Lining; Feathered Nests; Disease and Parasitism; Incubation: Heating Eggs. Copyright © 1988 by Paul R. Ehrlich, David S. Dobkin, and Darryl Wheye.