

## ON INCUBATION.

BY

ERIC B. DUNLOP.

IN a previous article on this subject (Vol. IV., pp. 137-145), I showed that there is a considerable number of birds which commence to incubate as soon as the first egg has been deposited. The birds which have this habit it will be convenient to term the Ovitegæ; the species which do not sit until the full clutch has been laid, the Ovinudæ. In this paper I shall show how extensive is the former group. Writing of the Raven (*C. corax*) in my last paper, it was suggested that many eggs of this species would be rendered infertile by the elements, if the bird did not sit from the first. Further experience of these birds proves that incubation does begin with the deposition of the first egg. The habit is not only of value to the species in saving the eggs from the effect of frost and snow, but also by protecting them from egg-stealing birds. This was proved in an unusual manner: A pair of Ravens having been disturbed at their nest by a keeper, forsook it; very shortly afterwards the nest was raided by Crows; search revealed the eggs, which had been sucked, on an adjacent hill-end.

In my previous paper, I stated that the Magpie (*P. rustica*) exceptionally covers her eggs from the time the first is laid, but this species undoubtedly belongs to the Ovitegæ. Building of the large nest commonly begins in March, and the trees being then leafless, it is a prominent object, frequently being visible at a distance of fully a mile. Great risk is run thereby from the depredations of egg-sucking animals. If the bird was not constantly present to protect her eggs, it is probable that few would be left to hatch.

The Carrion-Crow (*C. corone*) also commonly sits as soon as egg-laying has commenced and, no doubt, the same is the case with the Hooded Crow (*C. cornix*).

Coming to the Turdidæ, Mr. W. G. Sheldon, writing in BRITISH BIRDS for November, 1911—after stating that the Fieldfare (*T. pilaris*) places its nest in a very conspicuous position—says that “the hen commences to sit immediately the first egg is laid” (p. 153).

The owls (Strigidæ) are ovitegous in habit. In a clutch of two eggs of the Tawny Owl (*S. aluco*) which I watched, one hatched on May 4th, the other two days later. This species frequently lays in old Crows' nests, and even in a Rook's nest in an inhabited rookery. The white and conspicuous eggs would remain a very short time if left exposed. The Eagle-Owl (*B. ignavus*) and Little Owl (*A. noctua*) have both been recorded to sit from the first egg. Similar cases have been noted of the Snowy Owl (*N. scandiaca*) in the far north. It is worthy of remark that in confinement the habit remains the same. In the *Zoologist* for 1875, a pair is recorded to have bred in Mr. Edward Fountaine's aviary: “The first egg was hatched on the 1st of July, the second on the 3rd, the third on the 6th, the fourth on the 8th, and the fifth on the 9th.”\*

The Columbidae also lay white eggs, and in many cases in situations resembling those occupied by owls. The analogy is particularly noticeable between the Tawny Owl and the Stock-Dove (*C. œnas*). I have frequently known this pigeon to incubate from the deposition of the first egg. The Ring-Dove (*C. palumbus*) often protects its eggs in like manner, but this is not always the case. Some domestic pigeons whose incubating habits I noted, also varied in this respect. Out of fifteen cases, eleven sat as soon as the first egg had been laid, and four did not incubate until the clutch was complete. The cock as well as the hen sat before the second egg had been laid, in several instances.

\* Although it is true that the Barn-Owl in many cases incubates as soon as the first pair of eggs is laid, there are exceptional cases in which the eggs are laid without the big pauses between the pairs, and the difference of incubation is very slight.—F.C.R.J.

Another group which lays white eggs, in holes in trees and cavities in cliffs, is the Psittaci. All those parrots concerning which I have any information relative to their incubating habits, cover their eggs from the laying of the first. No doubt the habit is common to most or all of the species, for it must be of great value in preserving the white eggs from the unwelcome attentions of egg-seeking animals.

When last writing on this subject (Vol. IV., pp. 141, 142) I gave examples of the hatching off of clutches of eggs of the Black-headed Gull (*L. ridibundus*), showing that incubation, in this species, commences as soon as the hen has deposited the first egg. Other species of Larinæ in which I have noted the same habit, are the Great Black-backed Gull (*L. marinus*), the Common Gull (*L. canus*), and the Lesser Black-backed Gull (*L. fuscus*). In all probability the habit is common to the whole subfamily. I have noted the same thing in the case of the Arctic Skua (*S. crepidatus*), and have good reason to believe that the Great Skua (*M. catarrhactes*) does not differ.

It is interesting to find that Mr. F. M. Chapman, in his *Camps and Cruises of an Ornithologist*, writing of the Skimmers (Rhynchopinæ) on Cobb's Island, says: "The four creamy white eggs are conspicuously marked with black, and are by no means difficult to see." Later he states: "The chicks seem to appear on successive days." No doubt these birds are ovitegous.

My experience of the Black Guillemot (*U. grylle*) has been, that incubation begins with the deposition of the first egg.

A bird which commonly lays its eggs in very exposed situations is the Water-hen (*G. chloropus*), and, as might be suspected, this species sits on them constantly.

The Accipitres are ovitegous. The Egyptian Vulture (*N. percnopterus*) has been recorded as covering her eggs from the time the first is laid. The habit is well known in the case of the Sparrow-Hawk (*A. nisus*); the following is an example of the hatching off of this species: The

first egg hatched on June 13th, the second on June 14th, and the third and fourth on June 15th.

The Marsh-Harrier (*C. ceruginosus*), Montagu's Harrier (*C. cineraceus*), and Hen-Harrier (*C. cyaneus*) have all been recorded as sitting from the laying of the first egg—at least, as in other cases, I deduce it from the statement that the young vary in size and development. Howard Saunders, in the *Zoologist* for 1875, wrote the following significant passage concerning the nesting of Montagu's Harrier. After the bird had been disturbed from the nest, "when Rooks were about, and particularly if they crossed the line of the nest, she displayed great anxiety, and occasionally made a dash at one or two of those nearest, sometimes uttering a cry something like that of a Kestrel, but feebler and more querulous. There was reason for her antagonism, for both Rooks and Carrion-Crows (there are plenty of the latter in the Island) showed by their movements that they were perfectly aware of the position of the eggs, and I soon learned to dread them more than any prowling cowherds."

John Wolley recorded instances of the Golden Eagle (*A. chrysaëtus*) sitting with the first egg laid, and it is interesting to note that the same was the case with a pair belonging to the late Lord Lilford, the hen sitting closely at first, and subsequently both sexes by turns.\*

There are several records of the Common Buzzard (*B. vulgaris*) incubating from the laying of the first egg, and my experience has been that this is the habit of the species. The Rough-legged Buzzard (*B. lagopus*) and the Honey-Buzzard (*P. apivorus*) have both been noted as sitting closely as soon as the first egg has been deposited, as does also the Kite (*M. ictinus*).

My experience of the Peregrine Falcon (*F. peregrinus*) has been that it is ovitegous. This species lays early in

\* Other Eagles in which the young are found in different stages of development and the eggs are not hatched simultaneously, are the Sea-Eagle (*H. albicilla*), the Imperial Eagle (*A. mogilnik*), and the Great Spotted Eagle (*A. clanga*). These I can record from my own observations.—F.C.R.J. †

April, and occasionally in March, also not infrequently Ravens nest in the vicinity ; early eggs are undoubtedly saved from the effects of frost and snow by the habit, and all from the attacks of the Corvidæ. The variation in the size of the young, produced by their difference in age, has sometimes wrongly been attributed to sex.

The Merlin (*F. aesalon*) also covers its eggs as soon as laid. The following are the data from a nest I watched : May 3rd, one egg ; May 4th, two eggs ; May 5th, three eggs ; May 6th, three eggs ; May 7th, four eggs. On the 4th the cock bird was sitting. It is certain that in many species the male assists in incubation before the clutch has been completed.

The Osprey (*P. haliaëtus*) has been recorded as sitting with the first egg.

In the Ciconiiformes all those species respecting whose nesting habits I have information, belong to the Ovitegæ.

The Cormorant (*P. carbo*) and the Shag (*P. graculus*), though the latter often nests in recesses, would soon cease to exist if their light-coloured eggs were exposed for any length of time to the attacks of the more agile gulls. Mr. F. M. Chapman records that the young of Darters (*Plotus*) vary in age in the same nest, and the same is noted of the Boobies (*Sula leucogastra*).

The Common Heron (*A. cinerea*), as previously recorded, incubates as soon as the first egg has been deposited, and undoubtedly so also does the Purple Heron (*A. purpurea*) and the Great White Heron (*A. alba*).

In an article on the Bittern (*B. stellaris*), (Vol. I., pp. 329-334), Mr. E. W. Wade gives a photograph of a nest belonging to this species, and underneath it notes that the nest was visible at thirty paces when the old bird was not sitting. He further notes that some of the eggs in each clutch are more incubated than others, and the young are of unequal size. The Harriers would certainly profit by the absence of this, and allied species, if they left their nests uncovered.

The Spoonbill (*P. leucorodia*) does not leave its eggs unprotected.

Finally, the Grebes (Podicipedidæ) are ovitegous. No doubt numerous eggs are saved by the presence of the bird, which would be lost, even covered as they are, if they were left for some days; for many nests are very exposed, and egg-sucking birds would have their attention drawn to them by the Grebes when in the vicinity of their home. Also, it seems possible, as the eggs are frequently laid almost in the water, that they would suffer from its effects if they were not constantly incubated, although the nest itself generates a certain amount of heat.